PREPARING THEIR DEATH:
EXAMINING VARIATION IN CO-OCCURRENCE OF CREMATION AND INHUMATION IN EARLY MEDIEVAL ENGLAND

By

Kathryn Meyers Emery

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Anthropology—Doctor of Philosophy

2016

ABSTRACT

PREPARING THEIR DEATH: EXAMINING VARIATION IN CO-OCCURRENCE OF CREMATION AND INHUMATION IN EARLY MEDIEVAL ENGLAND

By

Kathryn Meyers Emery

Cremation and inhumation can occur within the same mortuary space during the same time period, however, there has been little investigation into this type of behavior. This dissertation seeks to document the relationship between cremation and inhumation burials in order to develop an integrated approach to co-occurrence that can be used broadly. Early medieval England is the ideal period to develop and test this approach due to the presence of both cremation and inhumation burials within the same cemeteries from the mid 5th to early 7th century. The study of co-occurrence of burial forms in this period has the potential to aid answering broader questions of migration, identity, and religion in early Anglo-Saxon England.

Using a combination of spatial and statistical analysis, it was determined that cemeteries were organized primarily into household groups that were spatially clustered and internally varied. Cremation and inhumation burials were found with a similar range of artifacts, with the exception of hair implements with the former and weapons with the latter. The addition of fire to the funerary process was likely an important choice, but how different this choice was from inhumation was dictated at different scales within the household or community. This study demonstrates that we cannot assume cremation and inhumation are separate mortuary programs, and the importance of examining variation at the local scale.

To my family, thank you for inspiring me to travel and be curious, and supporting me throughout this journey, regardless of how winding and weird.

To my partner, who gave me daily encouragement, and supported me despite the late nights, early mornings, and rants about death and funerals.

ACKNOWLEDGEMENTS

This research could not have been completed without the support and guidance of my advisor and committee chair, Dr. Lynne Goldstein. You inspired me to improve every aspect of my teaching and research. I have had so many amazing opportunities and wouldn't be who I ma today without your encouragement. Thank you to my committee members- Dr. Ethan Watrall, for inspiring me to use digital tools in new and creative ways; to Dr. Jon Frey for helping me to think creatively about my research, and Dr. Jodie O'Gorman for her encouragement and enthusiasm. A big thank you goes to Professor Howard Williams, who helped me to think imaginatively about my research and aided me in pursuing early Anglo-Saxon burial practices as a topic. Dr. Joseph Hefner was critical in helping me learn to use R and employ it in my research- I couldn't have completed the research without this new skill.

My research wouldn't have been possible without funding to support my writing, and two research trips to England to collect data. Thank you to the Department of Anthropology and the MSU Graduate School for providing me with financial support and resources to complete my dissertation. In addition, the research was supported by the Society for Archaeological Science and the Medieval Academy in America. Thank you to the museum curators who helped me with the research: Sarah Wilson at the Peterborough Museum, Sue Hirst at the Museum of London, Sara Wear at the Warwickshire Museum and Geoff Denford at the Museum of Winchester.

Also, thank you to Cara Meyers who helped me to catalog and record materials

during every research trip to England, Ben Meyers for reading all of my materials and challenging me to look at things in a new light, and Matthew Meyers, for helping me figure out my conclusion and finally finish.

A big thank you to Dr. Melissa McDaniels, who was a cheerleader and enthusiastically supported me throughout this process. Thank you to my Anthropology friends who supported me throughout this process- you guys kept me going and kept me sane. Thank you to Gloria, Jamie and Lauren for late night phone calls and consistent support during this process, even though you didn't understand my research.

TABLE OF CONTENTS

LIST OF TABLES xi

LIST OF FIGURES xii

CHAPTER 1: INTRODUCTION 1
- I. Why Cremation and Inhumation 3
- II. Research Goals 4
- III. Early Medieval England 5
- IV. Case Study Sites 7
- V. Organization of Present Research 9
- VI. Limitations to the Study 10
- VII. Terminology 13
  - A. Defining Cremation and Co-occurrence 14
  - B. Defining Anglo-Saxon and England 17

CHAPTER 2: HISTORY OF MORTUARY ARCHAEOLOGY & THE PROBLEM 19
- I. History of Mortuary Archaeology 19
  - A. Status and Rank 20
  - B. Death as a Process 23
  - C. Gender, Life course and Ethnicity 25
  - D. Belief and Memory 27
- II. History of Cremation Studies and Lack of Integration with Inhumation 29
- III. Cremation Studies Today 32
- IV. The Problem with Studying Co-occurrence 36
  - A. Lack of Attention to Cremation 37
  - B. Cremation Studies Lag Behind Inhumation 39
  - C. Interpretative Issues Due to Different Foci and Modern Bias 40
  - D. Perception That Burial Forms are Fundamentally Different 43
- V. Current Approaches to Co-occurrence of Cremation and Inhumation 45
  - A. Ignore One Burial Type or the Other 46
  - B. Co-occurrence as a Transitional Process 48
  - C. Complementary Practice 49
  - D. Relational Practice 50
  - E. Status Differentiation 52
  - F. Oppositional Practice 54
  - G. Secondary Practice 55
  - H. Situational Practice 56
- VI. Analyzing Cremation and Inhumation Together 57

CHAPTER 3: RESEARCH QUESTIONS 58
- I. Equalizing Analysis of Co-occurrence of Cremation and Inhumation 58

A. Comparing inhumation and cremation within the multivariate dimensions of funerary behavior 60
II. Interpreting Relationships Between Cremation and Inhumation 66
A. Complementary Practice 68
B. Relational Practice 69
C. Status Differentiation 71
D. Oppositional Practice 72
E. Secondary Practice 73
F. Situational Practice 74
III. Changes in the Patterns of Co-occurrence at Different Scales 75

CHAPTER 4: EARLY MEDIEVAL ARCHAEOLOGY 77
I. History of Early Medieval Archaeology 79
A. Early Medieval Archaeology in the 19th Century 79
B. Early Medieval Archaeology in the 20th Century and Now 86
C. Addressing Co-occurrence in Early Medieval England 93

CHAPTER 5: LIFE AND DEATH IN EARLY MEDIEVAL ENGLAND 95
I. The Broader Historical Context 95
A. Beginning and End of Roman Imperial Rule 96
B. Migration and Chance 98
II. Burial Practices in Early Medieval England 101
A. Inhumation Burials 102
B. Cremation Burials 105
C. Deviant Burials 107
D. Grave Goods 110
i. Clothing and Jewelry 110
ii. Weapons and Utilitarian Objects 112
iii. Pyre vs. Grave Goods 114
F. Size, Location, and Monuments 115
III. Co-Occurrence of Cremation and Inhumation in Early Medieval England 118
IV. Case Study Sites 120
A. Alwalton 121
B. Lechlade 124
C. Mucking 127
D. Wasperton 131
E. Worthy Park 134

CHAPTER 6: METHODS 137
I. Organizational Methods 138
A. Data Collection and Production 138
B. Expanded Multidimensional Framework for Mortuary Behavior 139
II. Spatial Methods 145

A. Spatial Analysis and Mortuary Archaeology 146
B. Spatial Analysis, Mortuary Archaeology and Early Medieval England 150
C. Sayer and Wienhold's 2013 Approach to Cluster Analysis 152
D. Spatial Methods 154
i. Ripley's K Function 154
ii. Kernel Density Estimation 155
iii. Hot Spot (Geits-Ord Gi) 156
III. Statistical Methods 157
A. Chi-Square 158
B. Correspondence Analysis (CA) 159
C. Corrgrams 164

CHAPTER 7: RESULTS 165
I. Organizational Results 165
A. Expanded Multidimensional Analysis 166
II. Statistical Analysis 183
A. Individual Sites 184
i. Alwalton 185
ii. Lechlade 187
iii. Mucking 191
iv. Wasperton 195
v. Worthy Park 199
B. Total Sample 201
III. Spatial Analysis 205
A. Results of Ripley's K and Kernel Density 205
i. Alwalton 205
ii. Lechlade 207
iii. Mucking 210
iv. Wasperton 213
v. Worthy Park 216
B. Results of Hot Spot Analysis 220
C. Spatial Comparison by Presence of Burnt Materials 223

CHAPTER 8: DISCUSSION 230
I. Spatial Analysis: Cemetery Layout 230
II. Statistical Analysis: Patterns of Artifacts 232
III. Role of Structures in the Broader Cemetery 237
IV. Cemetery Discussion 240
A. Alwalton 240
B. Lechlade 243
C. Mucking 246
D. Wasperton 249
E. Worthy Park 251

V. Interpretation 253

CHAPTER 9: CONCLUSION 257
I. Research Questions 257
A. Equalizing Analysis of Co-occurrence of Cremation and Inhumation 258
B. Interpreting Relationships Between Cremation and Inhumation 260
C. Changes in the Patterns of Co-occurrence at Different Scales 263
II. Contributions and Implications for Studies of Co-occurrence 265
A. Framework for analysis of co-occurrence cremation and inhumation 266
B. Importance of assessing co-occurrence at the appropriate scale 267
C. Comparison of burial practices generates new questions and creates more nuanced interpretation 268
D. Need to examine variation and expression locally, not as part of unified dataset 269
III. Future Research 270

APPENDICES 272
APPENDIX A: DATA CODING GUIDE 273
APPENDIX B: MULTIDIMENSIONAL ANALYSIS CATALOG 280
APPENDIX C: RIPLEY'S K 284
APPENDIX D: KERNEL DENSITY ANALYSIS 298
APPENDIX E: HOT SPOT ANALYSIS 302

LITERATURE CITED 315

LIST OF TABLES

Table 1: Comparison of Cremation and Inhumation Burial Attributes 43

Table 2: Goldstein's Dimensions of Mortuary Behavior 60

Table 3: Expanded Dimensions of Mortuary Behavior 66

Table 4: Important Events from Chapter 5 96

Table 5: Summary of Case Studies 121

Table 6: Periods 165

Table 7: Degree of Articulation 166

Table 8: Degree of Burning 167

Table 9: Color of Burning 167

Table 10: Minimum Number of Individuals per Grave 169

Table 11: Mutilations and Anatomical Modifications 170

Table 12: Completeness of Inhumation Remains 171

Table 13: Weight of Cremation Remains 171

Table 14: Grave Goods A-P 177

Table 15: Grave Goods R-W 178

Table 16: Burnt and Unburnt Grave Goods 180

Table 17: Statistical Analysis Guide 184

Table 18: Chi-Square Results for Statistically Significant Artifacts 185

Table 19: Chi-Square of Grave Goods for All Sites 202

Table 20: Summary of Results 229

Table 21: Multidimensional Analysis Catalog, Part I 280

Table 22: Multidimensional Analysis Catalog, Part II 281

Table 23: Multidimensional Analysis Catalog, Part III 282

Table 24: Multidimensional Analysis Catalog, Part IV 283

LIST OF FIGURES

Figure 1: Map of Known Co-occurrence Sites in Early Medieval England 119

Figure 2: Map of the Five Case Study Sites 120

Figure 3: Alwalton Cemetery Map 122

Figure 4: Lechlade Cemetery Map 125

Figure 5: Mucking Cemetery Map 129

Figure 6: Wasperton Cemetery Map 132

Figure 7: Worthy Park Cemetery Map 135

Figure 8: Body Position 168

Figure 9: Leg Position 169

Figure 10: Containers 172

Figure 11: Orientation 174

Figure 12: Age 182

Figure 13: Sex 183

Figure 14: Alwalton Correspondence Analysis for All Burials 186

Figure 15: Alwalton Corrgram for All Burials 187

Figure 16: Lechlade Correspondence Analysis for All Burials 188

Figure 17: Lechlade Correspondence Analysis for Early Burials 189

Figure 18: Lechlade Corrgram for All Burials 190

Figure 19: Lechlade Corrgram Analysis for Early Burials 191

Figure 20: Mucking Correspondence Analysis for Early Burials 192

Figure 21: Mucking Correspondence Analysis for Mid Burials 193

Figure 22: Mucking Corrgram for Early Burials 194

Figure 23: Mucking Corrgram for Mid Burials 195

Figure 24: Wasperton Correspondence Analysis for All Burials 196

Figure 25: Wasperton Correspondence Analysis for Early Burials 197

Figure 26: Wasperton Corrgram for All Burials 198

Figure 27: Wasperton Corrgram for Early Burials 199

Figure 28: Worthy Park Correspondence Analysis for All Burials 200

Figure 29: Worthy Park Corrgram for All Burials 201

Figure 30: All Sites Correspondence Analysis 203

Figure 31: All Sites Corrgram 204

Figure 32: Alwalton Cemetery at Kernel Density 7 meters 206

Figure 33: Lechlade Cemetery at Kernel Density 7 meters 208

Figure 34: Early Lechlade Cemetery at Kernel Density 7 meters 209

Figure 35: Mucking Cemetery at Kernel Density 14 meters 211

Figure 36: Early Mucking Cemetery at Kernel Density 12 meters 212

Figure 37: Mid Mucking Cemetery at Kernel Density 14 meters 213

Figure 38: Wasperton Cemetery at Kernel Density 7 meters 215

Figure 39: Early Wasperton Cemetery at Kernel Density 7 meters 216

Figure 40: Worthy Park Cemetery at Kernel Density 5 meters 218

Figure 41: Early Worthy Park Cemetery at Kernel Density 3.5 meters 219

Figure 42: Mid Worthy Park Cemetery at Kernel Density 4 meters 219

Figure 43: Late Worthy Park Cemetery at Kernel Density 6 meters 220

Figure 48: Comparison of Burnt and Unburnt Grave Goods Overall 224

Figure 44: Alwalton Cemetery, presence of burnt material 226

Figure 45: Mucking Cemetery, presence of burnt material 227

Figure 46: Wasperton Cemetery, presence of burnt material 228

Figure 47: Worthy Park Cemetery, presence of burnt material 228

Figure 48: Summary Map of Alwalton 242

Figure 49: Summary Map of Lechlade 245

Figure 50: Summary Map of Mucking 248

Figure 51: Summary Map of Wasperton 250

Figure 52: Summary Map of Worthy Park 252

Figure 53: Alwalton Ripley's K All Burials 284

Figure 54: Alwalton Ripley's K All Burials Early Period 284

Figure 55: Alwalton Ripley's K All Burials Mid Period 285

Figure 56: Alwalton Ripley's K Cremation All Periods 285

Figure 57: Alwalton Ripley's K Inhumation All Periods 286

Figure 58: Lechlade Ripley's K All Burials 286

Figure 59: Lechlade Ripley's K All Burials Early Period 287

Figure 60: Lechlade Ripley's K Cremation All Periods 287

Figure 61: Lechlade Ripley's K Inhumation All Periods 288

Figure 62: Lechlade Ripley's K Inhumation Early Period 288

Figure 63: Mucking Ripley's K All Burials 289

Figure 64: Mucking Ripley's K All Burials Early Period 289

Figure 65: Mucking Ripley's K All Burials Mid Period 290

Figure 66: Mucking Ripley's K All Burials Late Period 290

Figure 67: Mucking Ripley's K Cremation All Periods 291

Figure 68: Mucking Ripley's K Inhumation All Periods 291

Figure 69: Wasperton Ripley's K All Burials 292

Figure 70: Wasperton Ripley's K All Burials Roman Period 292

Figure 71: Wasperton Ripley's K All Burials Early Period 293

Figure 72: Wasperton Ripley's K All Burials Mid Period 293

Figure 73: Wasperton Ripley's K Cremation All Burials 294

Figure 74: Wasperton Ripley's K Inhumation All Burials 294

Figure 75: Worthy Park Ripley's K All Burials 295

Figure 76: Worthy Park Ripley's K All Burials Early Period 295

Figure 77: Worthy Park Ripley's K All Burials Mid Period 296

Figure 78: Worthy Park Ripley's K All Burials Late Period 296

Figure 79: Worthy Park Ripley's K Cremation All Periods 297

Figure 80: Worthy Park Ripley's K Inhumation All Periods 297

Figure 81: Alwalton Kernel Density by Disposal Type, Both are at 7m 298

Figure 82 Lechlade Kernel Density by Disposal Type, Cremation at 5.75m, Inhumation at 7m 298

Figure 83: Mucking Kernel Density by Disposal Type, Both are at 13m 299

Figure 84: Wasperton Kernel Density by Disposal Type, Both are at 6m 300

Figure 85: Worthy Park Kernel Density by Disposal Type, Cremation at 3.75m, Inhumation at 5m 301

Figure 86: Alwalton Hot Spot Analysis Combs 302

Figure 87: Alwalton Hot Spot Analysis Containers 302

Figure 88: Alwalton Hot Spot Analysis Knives 303

Figure 89: Alwalton Hot Spot Analysis Weapons 303

Figure 90: Lechlade Hot Spot Analysis Beads 304

Figure 91: Lechlade Hot Spot Analysis Containers 304

Figure 92: Lechlade Hot Spot Analysis Toilet Implements 305

Figure 93: Lechlade Hot Spot Analysis Weapons 305

Figure 94: Mucking Hot Spot Analysis Beads 306

Figure 95: Mucking Hot Spot Analysis Brooches 306

Figure 96: Mucking Hot Spot Analysis Buckles 307

Figure 97: Mucking Hot Spot Analysis Combs 307

Figure 98: Mucking Hot Spot Analysis Containers 308

Figure 99: Mucking Hot Spot Analysis Knives 308

Figure 100: Mucking Hot Spot Analysis Pins 309

Figure 101: Mucking Hot Spot Analysis Rings 309

Figure 102: Mucking Hot Spot Analysis Toilet Implements 310

Figure 103: Mucking Hot Spot Analysis Weapons 310

Figure 104: Wasperton Hot Spot Analysis Containers 311

Figure 105: Wasperton Hot Spot Analysis Weapons 311

Figure 106: Worthy Park Hot Spot Analysis Buckles 312

Figure 107: Worthy Park Hot Spot Analysis Combs 312

Figure 108: Worthy Park Hot Spot Analysis Containers 313

Figure 109: Worthy Park Hot Spot Analysis Toilet Implements 313

Figure 110: Worthy Park Hot Spot Analysis Knives 314

Figure 111: Worthy Park Hot Spot Analysis Weapons 314

CHAPTER 1: INTRODUCTION

> While the study of cremation has deep roots within mortuary archaeology, surprisingly little research has considered the coexistence of cremation and inhumation, the commingling of burnt and unburnt bone, and the factors and processes that blur the distinction between cremation and inhumation [Quinn et al. 2014: 5].

This research examines the relationship between cremation, the deliberate burning of human remains, and inhumation, the burial of a body without treatment by fire, when the two forms of disposal co-occur within the same cemetery during the same time period. Despite the fact that the co-occurrence of these two burial forms has been recorded since prehistory and is common among modern Western cultures, their co-existence has been understudied. Therefore, the exploration of co-occurrence and the allowance of diversity in mortuary behavior has the potential to address issues relating to the study of funerary practices in both the past and present, as well as add to our broader understanding of the social, political, economic and religious processes occurring within the period. The lack of study of both forms in a cohesive manner is primarily due to the disciplinary perception that cremation is diametrically opposed to cremation due to the differences in archaeological deposits. The problem is further exacerbated by the lack of attention paid to the analysis, interpretation and development of theory for the interpretation of cremation remains. Due to these differences in study, interpretation of co-occurrence of inhumation and cremation burials is difficult, causing the

study of singular burial forms to be favored. An explicit approach needs to be developed that allows for co-interpretation and data-driven study of these two burial types when they occur within the same time and place.

This dissertation seeks to document the relationship between cremation and inhumation burials in order to develop an integrated approach to co-occurrence that can be used broadly. Early medieval England1 is the perfect period to develop and test this approach. Both cremation and inhumation burials within the same cemeteries from the mid 5th to early 7th century, precise temporal and geographical limit of the study area, high quality excavations and that numerous archival and museum collections that are available for study. Further, the study of co-occurrence of burial forms in this period has the potential to aid answering broader questions of migration, identity, and religion in early Anglo-Saxon England. Five cemeteries have been selected as case studies based on access to materials, presence of both burial types in the same time period, and geographic locations in England. Together they provide a representative sample of the types of cemeteries where cremation and inhumation co-occur and are representative of different sub-regions. Statistical and spatial analysis will be used to improve our understanding of the relationship between these two burial forms, and determine how they vary in each of the five case studies. By examining co-occurring burial practices more carefully in this period, we can aid in the interpretation of mortuary practices, but also help answer broader questions regarding social, political, ideological, economic and religious change in this period.

I. Why cremation and inhumation?

Co-occurrence of burial forms can take a number of forms. Many societies over time and space have practiced various type of burial at the same time. Our own Western society today practices both cremation and inhumation depending on family preferences, religious affiliation, budget constraints and other personal choices. However, co-occurrence of burial can include a wide range of behavior including but not limited to primary inhumation, secondary burial, mummification, open-air burial, and cremation.

While there are many combinations to be explored, and many reasons why multiple forms of burial occur at the same site, this dissertation has chosen to focus on the co-occurring presence of inhumation--burial without treatment of the body by fire, and cremation--treatment of the body by fire prior to burial. Both cremation and inhumation have been the subject of archaeological inquiry for centuries, however there has been little research into the co-existence of these two forms or their relationship to one another beyond simple binaries (ex. Fire vs. Earth, Destructive vs. Preservative, Pieces vs. Whole, etc.). This can be attributed to the lack of investigation into cremation due to the disciplinary perception that burnt human remains lack the data needed to complete a skeletal analysis and that the effort needed for their analysis is not commensurate with the data collected. Over the last two decades, this attitude has begun to change with improvements to both our methods and theories (Thompson 2015; Ubelaker 2009; Williams 2008). This research aims to benefit from the resurgence and rise in critical interpretation of cremation by adding the dimension of co-occurrence to these analyses. Without the changes to our perception and analysis of cremation that have occurred over the last two decades, this dissertation would not have been possible. While the co-

existence of cremation and inhumation is not the only type of co-occurrence, other forms are beyond the scope of this analysis.

II. Research Goals

The study of co-occurrence of cremation and inhumation should be conducted in a manner that allows for both forms of burial to be studied equally in support of an interpretation of the relationship between these two forms of disposal. In order to do this, we need to understand the historical development of the discipline that encouraged the separate study of different burial practices from the same cemetery. Having learned from our past mistakes, we must improve our methods for studying burial to allow for variation in disposal type. Only in this way can we demonstrate that this type of study is possible. Using early medieval England as a case study region, there are three specific questions that will be addressed:

1) Can cremation and inhumation be integrated in an objective and equal manner that allows for complete comparison and avoids falling prey to current disciplinary divides between these two forms as they occur in early medieval England?

2) When found within the same spatial and temporal locations, can we infer patterning and relationships between cremation and inhumation, specifically within early medieval England?

3) Was patterning and variation between cremation and inhumation determined locally or at a regional level?

III. Early Medieval England

Early medieval England represents an ideal period and region to develop an approach to co-occurrence of cremation and inhumation due to the presence of both burial types in the same cemeteries, variation between and within the sites, and the availability of archival data and archaeological reports for this period. Most importantly, the examination of burial practices has the potential to be highly revealing about a complex period of British history that is not well understood. The archaeological remains of funerary behavior provide the largest body of evidence for the period between the mid-5th to late 6th century in England, and therefore are critical to understanding the changes that occurred between the fall of the Roman Empire and the rise of the early British proto-kingdoms.

In 410 C.E., the Roman Empire withdrew its administration and armies from England due to the difficulty of maintaining the island nation, military priorities in Western Europe and efforts by the native peoples to become self-governed (Arnold 2005; Wickham 2006). Following their departure, Germanic and Northern European tribal groups began to migrate into England by invitation, force or other reasons. The changes in population led to a diverse range of relationships between natives, post-Roman Britons and Germanic immigrants that ranged from collaboration and hybridization to enslavement and warfare (Fleming 2011; Heather 2010; Higham 2007; Loveluck and Laing 2011). The archaeological record reflects this diversity in behavior and people, showing dramatic changes in the types and layouts of settlements, cemeteries, material and human remains. The average individual living in early medieval England was part of small kin-based settlements and self-sufficient farmsteads (Crabtree 2010; Crawford 2009). Pre-Christian religious practices were widespread, and were characterized by

the belief in a wide variety of socialized deities and deceased ancestral presences. These practices were dictated by one's family or household group, and the broader goal of the ritual was meant to maintain the status quo (Härke 1997; Oosthuizen 2011; Urbanczyk 2003). Social power was based within the house and one's community, with differentiation occurring at the household level (Arnold 2005). It is not until the turn of the 7th century that broader social differentiation occurs and there is a decline in the variability that once defined these small community groups. By the mid to late-7th century, there is centralization of power and increased social stratification associated with the rise of proto-kingdoms, more coherent, widespread group identities, and increased conversion to Christianity (Dunn 2009; Hamerow 2008; Hines 1994).

These broader social, political, economic and religious processes are clearly seen in the evidence for burial practices. The traditional late Romano-British form of burial consisted of unfurnished extended inhumation with the head placed to the west. Cemeteries were found primarily along the roads and walls of Roman settlements (O'Brien 1999; Philpott 1991). With the decline of Roman influence and influx of Germanic and European immigrants, there was a shift to furnished inhumation burials in the mid-5th century across England, and cremation was re-introduced as a popular form of disposal (Lucy 2000; Philpott 1991). Regional preference for certain burial types demonstrates the patterns of migration, hybridization and resistance, with Central, Eastern and Southern England being more influenced by immigrants and therefore more likely to have furnished inhumation and cremation (Geake 2002; Härke 1997; Lucy 2000). Both types of burial, inhumation and cremation, were furnished with a variety of grave goods including weapons, brooches, jewelry, food and drink, and the deceased was fully clothed,

creating a tableau displaying the individual either within the grave or on the funeral pyre (Williams 2006).

Since burial practices provide us with evidence for both change and continuity in this period, understanding the relationship between co-occurrence of multiple burial forms has the potential to aid in our broader interpretation of the processes set in motion by the exodus of the Romans and influx of immigrants.

IV. Case Study Sites

Five archaeological sites have been selected as case studies for further analysis and for use in development of an approach to co-occurrence. These sites were selected based on the presence of both cremation and inhumation co-occurring in the same time period, the mid-5th to early 7th century CE, with the exception of Wasperton, which also includes mid-4th century burials. Each site has extensive and available archaeological records that I was able to access in their respective museum repositories and in published reports. Finally, all five sites are located in different regions and had variation in their internal spatial and statistical composition allowing for a representative sample. The sites selected include Alwalton, Lechlade, Mucking, Wasperton, and Worthy Park.

Alwalton has a total of 30 cremation and 34 inhumation burials. Previous research by Gibson (2007) documented the presence of clustering at the site, suggestive of groups, and post-holes indicating a structure was once present over a cremation burial. She proposed that the site was primarily occupied by a culturally-Germanic group, who interacted with post-

Roman Britons (Gibson 2007). Collections and archival material are located at the Peterborough Museum, and are managed by Sarah Wilson.

The Lechlade cemetery has a total of 219 inhumation and 29 cremation burials. Boyle et al. (1998, 2011) conducted the site analysis, and argued that the cemetery was used for a single community, and was likely focused around the central burials and roman features of the site. From artifacts, they propose that this group was culturally Anglo-Saxon and did not interact too much with the Britons. It has some of the best-preserved skeletal material and is often used as a comparative sample. It also had a single wooden structure over one cremation (Boyle et al. 1998, Boyle et al. 2011). Records and archival documents for the site are located in the Corundum Museum in Cirencester.

The site of Mucking has a total of 463 cremation and 282 inhumation burials. Clark and Hirst (2009) proposed that the site had strong ethnic ties with Northern Europe during the earliest occupation of the site, which were replaced by local hybridized traditions in the 6th century. It is the largest recorded cemetery from this period, and uses Roman boundary walls as a major defining feature in its layout (Clark and Hirst 2009). Archival material can be found at the Museum of London or online through the Archaeology Data Service, and are managed by Sue Hirst.

Wasperton has 64 cremation and 177 inhumation burials. Carver et al. (2009) identified a number of groups, and argue that these likely represent different families. Both late Roman and early medieval burials are present at the site, and they propose that it was likely used by a multiethnic group, rather than one specific group or population. It cemetery also used roman

walls as boundaries for the cemetery (Carver et al. 2009). Collections and archival material can be found at the Warwickshire Museum, and are managed by Sara Wear.

Worthy Park has 46 cremation burials and 94 inhumation burials. Chadwick Hawkes and Grainger (2003) examined the site, and argue that it represents a mixed community of Britons, Franks and Saxons. They found evidence of discontinuity of use between the 5th century and 7th century, however this was not substantiated in my re-analysis. Little interpretation has been made regarding the site since its author died prior to its publication- two of the books chapters were never completed (Chadwick Hawkes and Grainger 2003, Chadwick and Wells 1983). Collections and archival material are being held at the Museum of Winchester under the management of Geoff Denford.

V. Organization of Present Research

The main goal of this study is to develop an approach to co-occurrence that corrects the issues of its study and allows for equal interpretation of cremation and inhumation in early medieval England. Chapter 2 provides a brief history of the development of mortuary archaeology with a specific focus on the study of cremation. The changes in our models and approaches towards funerary and human remains in the past demonstrate the historic lack of engagement between multiple forms of burial, and how the lack of examination into cremation has affected our interpretation of co-occurrence. In addition, this chapter examines the challenge of studying co-occurrence using current methods and approaches, and reasons for the difficulties in analyzing multiple burial forms together. It then introduces current approaches towards studying co-occurrence of cremation and inhumation in particular,

discussing the positives and negatives of their interpretations. New studies of co-existing burial practices demonstrates that there are potential ways to address multiple burial forms that can be productive and add to our broader understanding of the period.

Chapter 3 discusses the research questions, hypotheses and expectations, and introduces the methods used for analysis of the case studies. Each research question is discussed in depth with relationship to which methods and evidence will be used in its interpretation. Following this, each method is explained and its utility in answering the research questions is demonstrated. Methods were selected based on their proven efficacy both in archaeology broadly and early medieval cemetery research specifically.

Chapters 4 and 5 provides a review of the early medieval period in England, including the history of the study of its burial practices, contemporary texts that have effected its interpretation, and our current understanding of this time period based on archaeological evidence. Chapter 5 also introduces the five case studies that will be used in this research.

Chapter 6 introduces the methods that will be used in the study, and Chapter 7 presents the results of the methods. In Chapter 8, these are discussed in detail relating to the research questions and how this influences our interpretation of cremation and inhumation in this period. Chapter 9 summarizes the conclusions, discusses the contribution of this research for early medieval studies and mortuary archaeology, and indicates potential future research.

VI. Limitations to the Study

There are several limitations to the present study, including the association of burials with broad temporal periods rather than specific, differences in data collection and reporting

methods, and the unknown extent of many of the cemeteries. Temporal overlap of burial forms is an important factor for interpreting co-occurrence inhumation and cremation, and it has been documented by the primary authors and excavators of the five case study sites (Boyle et al. 1998, 2011; Carver et al. 2009; Chadwick Hawkes and Grainger 2003; Chadwick Hawkes and Wells 1983; Clark and Hirst 2009; Gibson 2007). However, it is beyond the scope of the data collected to fully analyze the temporal relationships between burials in detail. Only a broad timeline is available, and will be utilized as fully as possible. Of the 1424 burials studied for this analysis, 287 (20%) are of unknown time period, 24 (2%) are classed as Late Roman (4th to early-5th), 362 (25%) as early (early 5th to 6th), 637 (45%) as mid (early 6th to 7th) and 115 (8%) as late (early 7th and later). As an overall sample, this does provide a range of periods, but a fifth of the burials cannot be properly dated. When it comes to the spatial analysis, this limitation does cause potential issues that must be taken into account. As Bevan and Lake (2013: 42) argue, "Temporal uncertainty is an elephant in the room of much archaeological interpretation. It is a near ubiquitous feature of archaeological datasets, whether these are radiocarbon dates, geoarchaeological deposits or individual artefacts". His proposed solution to this uncertainty is to provide as much information about time as possible, regardless of how 'fuzzy' it may be, but to be explicit about one's uncertainty (Bevan et al. 2013). Where possible, these broad time periods will be used to illuminate development and change in the cemetery.

The second limitation is differences in the data collection and reporting methods of the five cemeteries under analysis, as well as an uncertainty concerning the accuracy of these methods. All five cemeteries were previously excavated, and the author took no part in the excavation. As Allison argues:

> A problem faced by many scholars using legacy data is that they are attempting to analyse data for which they had no role in either collecting or recording. This means that these investigations rely on the previous recorders' assessments and classifications of these data, and also on their selective collation of them. A key concern… is the extent to which data collected for one purpose can be used in analyses that seek to answer different research questions [Allison 2008: 8.1].

The severity of this challenge varies by each site based on when the excavations took place, who completed them, the restrictions and challenges these individuals faced, and how the final analysis and interpretation were recorded. For more recent excavations, there are clear collection methods and standards that are reported on, modern methods were employed and all possible data was recorded to ensure accuracy. Additionally, the authors of these reports can be contacted to clarify any methods or choices that were made that may not be readily apparent in the report. Differences in recording and methods have been noted, and all effort has been made to rectify these issues when possible.

A third issue is that of preservation of the remains, and what could be gleaned from them. The highly acidic soils of the region under investigation as well as the destructive nature of cremation meant that it was difficult for researchers to create basic biological profiles for many individuals. While for many individuals age and sex could still be interpreted, details regarding paleopathology, nutrition, stress and genetic traits were not possible for enough individuals to make comparison of these attributes viable. Despite their potential importance, they were left

out of the analysis. Another confounding factor is the damage done to the sites by ploughs; many cremation burials were heavily truncated, leaving little material left for analysis. While certain comparisons, such as weight and number of grave goods per cremation would have been informative, we are lacking information to complete this.

Finally, only two of the five cemeteries under investigation, have been completely excavated and the full extent of the cemetery revealed. This causes issues for the interpretation of space, because we are left with uncertainty regarding the unexcavated portions of the site and whether the sample we have is representative of the full site. Construction and development, previous excavation, and historic disturbance all impact the availability of material within the cemetery and limit our full interpretation of the site. As a result, it is unknown whether the excavated samples for these sites are representative of the total buried population, or may only represent specific families or sub-groups.

VII. Terminology

Terminology within archaeology often varies with investigator and is defined by previous scholarly, as well as popular, usage. As a consequence, there are numerous terms used to describe similar phenomena (Knüsel 2014). A lack of standardization of terms within both the study of cremation and early medieval are problematic and can be cause for confusion and misinterpretation. Clarification of specific terms and their usage within this dissertation are therefore required in order to avoid obsfucation and promote dialogue. There are two contexts within which there may be debate over meaning: 1) terms relating to cremation and the

presence of multiple forms of body treatment within the same burial site, and 2) terms relating to the case study period and peoples.

A. Defining Cremation and Co-occurrence

Recently, Quinn et al. (2014) argued when dealing with mortuary archaeology and the study of cremation remains, multiple vocabularies and complex terminologies can promote dialogue between disciplines and varying intellectual traditions. However, they caution that "researchers must make efforts to explicitly define the terms used to describe social processes and archaeological features so that comparisons can be made" (2014: 32). Cremation is not only an archaeological phenomenon—it is a modern and social process, highly variable within time and space, and can be approached from different intellectual frameworks. The term cremation defines the act of burning a body and reducing it to bone; it does not refer to the burial of the individual following the burning or the remains of the cremation such as the bone, ash and other related material (McKinley 2013). For purposes of this dissertation, the material remains of burnt bodies will be interchangeably referred to as *cremated remains* and *cremains*. The presence of small amounts of human remains within the burnt material of the pyre will be referenced as *ashes*. While minute amounts of burnt human bone is often referred to as being a *token* burial (McKinley 1997), this term will be avoided as it has social and symbolic meaning associated with it. It cannot be assumed that small amounts of bone are related to ritual or meant to serve as a symbolic burial; they may in fact represent merely the bones that were not collected (Quinn et al. 2014). In cases where this type of deposit is found, its context and meanings will be explored rather than simply referenced using potentially complicating terms.

Another important terminological distinction regards the placement and deposition of artifacts. *Pyre goods* will refer to objects that were placed with the body while on the cremation pyre, whereas *grave goods* will refer to those deposited in the burial following the burning or within inhumation burials (Williams 2008). In some cases, an object can be both a pyre and grave good, if it was placed on the pyre and then collected with the cremains for final burial. This is further complicated by the fact that presence on the pyre may not always be apparent. As McKinley (1994) has argued, smaller artifacts may fall off the pyre during the process of cremation and lack signs of burning. Additionally, objects may have been burnt at separate times and not actually be associated with the pyre (Quinn et al. 2014). To account for these nuances, the terms grave good will be employed for all artifacts found within the burial, and pyre good will be used to note the presence of burning on the artifact. Finally, *grave furniture* will refer to any features found that are used as furnishing, containers or structures within the grave.

There has been little discussion about the terms relating to the presence of multiple types of body treatment within the same cemetery over the same period of time, despite this being a recurring trend. Throughout this dissertation, the term *co-occurrence* is used to describe the appearance of two forms of burial treatment in a cemetery during the same time period. Specifically for this investigation, the expression co-occurrence in Anglo-Saxon cemeteries refers to only those mortuary sites where both cremation and inhumation occur simultaneously. Other terms for this behavior, often found in papers from Europe and Britain, include *bi-ritual* or *mixed-rite* (Crubézy et al. 2006, Rebay-Salisbury 2012, Williams 2014). The term co-occurrence was deemed more appropriate as it does not have potential ideological or

ritual attributions of the former two. Cremation and inhumation occurring simultaneously may represent divergent beliefs or they may be associated with the same set of rituals or ideologies; however this cannot be assumed a priori to analysis. Another term that has been utilized is *bipartite*, as found in Schurr and Cook's (2014) analysis of the cremation and inhumation burials found at the Yokem Site in Illinois, USA. Bipartite refers to the presence of two parts, which assumes that the two burial forms are part of the same mortuary program. Co-occurrence offers a term that does not make assumptions about the relationship between multiple burial forms, but simply describes the fact of their co-existence in time and space.

A potential confounding factor when discussing multiple forms of burial within the same time and space is that similar terms may be used to define different aspects of body treatments. For example, the terms *primary* and *secondary* burial within inhumation studies is associated with whether the individual's remains were buried and left in situ, or if they were moved or reorganized after they had originally been buried, respectively (Brown 2010, Hertz 1960 [1907]). However, Cerezo-Roman (2014) uses the terms differently in the context of cremation burials, with primary cremation indicating the burial of the individual at the site of burning, and secondary cremation referring to transport and burial of the body at a separate location from the pyre. Primary and secondary burial are used in reference to burial, whether the individual was buried without further disturbance, or if they were collected and transported to a second location a burial following the first. This will prevent any confusion when using the terms for both cremation and inhumation. Instead, the terms *bustum* cremation, burning and burial at a single location, and *ustrinum* cremation, the use of two different spaces for burning and burial will be used (Toynbee 1996). When possible, terms used for both cremation and

inhumation will be unified across the two forms to prevent confusion, and will be qualified when necessary.

B. Defining Anglo-Saxon and England

The term *Anglo-Saxon* is loaded with both past and present meaning, and has certain racial, ethnic and inflammatory uses that require careful discussion and understanding. However, as Williams (2015) argues, the use of these terms does not have to fall to their original derogatory usage, and by understanding and acknowledging the political and social baggage of these terms, we can employ them. On a more practical level, we often lack other terms that are recognizable or useable. *Anglo-Saxon* was a term created during the Victorian period to incorrectly identify a mixed group of Germanic peoples who migrated into England following the Roman exodus, and eventually came to dominate the island. It refers to Bede's historical documents, which note that during the mid-5th century, England was invaded by the Angles, Saxons and Jutes (Arnold 2005, Loveluck and Laing 2011). However, this is misleading as it has connotations that only specific Germanic tribes were present in England, it lacks reference to the many native Britons and Roman-Britons still present in the country. It also implies a unified identity among these groups that may not have been present in this period. For purposes of this dissertation, the term *Anglo-Saxon* will be used cautiously and with qualifiers to denote a specific time period and a Northern European or Germanic cultural influence. It will not be used to refer to a geo-political entity or socio-cultural group (Williams 2015). Similarly, a Roman influence will be denoted as culturally Romano-British or culturally Roman in order to demonstrate a possible connection to these groups, but not necessarily

direct ancestry or ethnic affiliation. The term Roman is just as complex and diverse as Anglo-Saxon (For a full discussion, see Fehr 2002, Hakenback 2011, Halsall 2007).

When referring to the time period and location, *early Medieval England* will primarily be employed in order to avoid the culturally associations of Anglo-Saxon. Other terms common to this period, such as *Dark Ages, early or pre-Christian, pagan, sub-Roman or migration period,* will be used carefully and only in the appropriate context since they are value-laden and potentially misleading when used broadly to represent this period in English history (Hills 2003:22-23). The name for the location itself is also problematic- in the period under examination, England did not exist and it did not have a formal name that we recognize. This region was no longer known as Britannia, the Roman name for the island, and it was not recognized as a single entity known as England until the country was unified in the 10th century CE. Despite the fact that England did not exist during the period of this study's examination, we lack better terms to describe the location and it is the best descriptor we have available.

CHAPTER 2: HISTORY OF MORTUARY ARCHAEOLOGY & THE PROBLEM

In order to understand the problems facing modern archaeologists regarding the study of cremation and inhumation within the same cemetery, we need to understand how the discipline developed and the contextual factors that shaped it over time. First, we will examine the history of mortuary archaeology broadly. Second, we will focus on how studies of cremation have changed over time. Finally, we will use this historical information in order to better understand the problem of studying co-occurrence, and examine how it is being treated today.

I. History of Mortuary Archaeology

Mortuary archaeology has been an essential part of the broader study of the material remains of human behavior in the past. The remains of funerary practices, including the skeletal material, has been pivotal in our interpretations of social organization, ethnic ties, ideology, religious beliefs and broader political, social and economic structures. While death is a universal, the ideological concepts and cultural reactions towards it are highly varied, and continue to change over time and space. Over the past century, mortuary archaeology has changed dramatically in the types of data used, theories, methods and approaches employed, and our perception of what can actually be recovered from this type of material. The way that archaeologists interpret the past is often in response to broader changes in our academic context, as well as the development of new theories, critiques within and outside the discipline, acknowledgement of bias, and changes in technology (Rakita and Buikstra 2005). There are four major stages in the development of mortuary archaeology that shape the way we conduct

research today: 1) the acknowledgement of the potential for mortuary archaeology and the development of the sub-discipline as a method for interpreting status, rank and social organization, 2) the critique of analyzing final burial deposits and a switch to viewing funerary behavior as part of a process, 3) the acknowledgement of bias and an expanded perspective to include gender, life course and ethnicity, and 4) increased focus on beliefs, memory and emotion.

A. Status and Rank

Modern anthropological approaches towards mortuary studies emerged as a critique of the early 20th century studies of funerary behavior. Kroeber's (1927) cross-cultural study of mortuary practices in South America and Africa led to a conclusion that these behaviors were emotional and fashionable, and occur in isolation from other cultural, political, economic and social factors. Critique of this work in the 1960s by anthropologists revealed that mortuary behavior could indeed be used to better understand the broader social structures, religious beliefs, political organization and more (Bloch 1971; Goody 1962; Hertz 1960 [1907]; Van Gennep 1960 [1908]). It is within this context of a renewed interest in the relationship between mortuary behavior and broader cultural milieu, that Saxe developed his Social Dimensions of Mortuary Practices (1970), a dissertation that shifted the archaeological approach to death in the past. Saxe's goal was to create a model of sociocultural systems based on mortuary practices using processual regularities and universal laws. He argues that formal disposal types can reveal how social structures are organized through the use of componential analysis of archaeologically valid variables from ethnography. From this, he proposes that different

components of disposal represent different social personae, principles organizing social personae in death are congruent to those in life, redundancy is indicative of egalitarianism, and formal disposal areas maintained by corporate groups with ancestral claims to the area. Among the most influential was Hypothesis 8, which proposes that the presence of formal disposal areas was linked to territoriality and corporate group identity.

During this same period, the 'New Archaeology' was beginning to take hold with Lewis Binford at the helm. The broader archaeological approach espoused by Binford emphasizes quantitative methods and the search for generalizing cross-cultural theory (Rakita and Buikstra 2005). Binford (1971) recommends the use of middle range theory for determining social organization and rank from mortuary sites. He argues that the status of the deceased determined the effort and actions of the mourning community, and that there were certain identities that would be recognized and emphasized within the creation of the burial (1971). Binford proposes that the more complex a society, the more identities that would be expressed at death. Therefore, hunter-gatherers would have fewer graves goods and variation, whereas farming communities would have increased diversity in grave goods and a wider range of possible identities to express. Other research supported this line of inquiry and approach to mortuary deposits. Brown (1971) used formal analysis to assess the relative rarity of different grave goods found within cemetery sites, and argues that increased rarity associated with higher status. Tainter (1978) created a measure of energy expenditure based on grave construction and material contribution of the mourners in order to determine relative social ranking. These studies argue that there was a direct relationship between the social status of the deceased and the relative amount of grave goods and effort into creating the grave site,

and that burial patterns are a reflection of the broader social, political and economic structure. While this approach is a simplified and misleading one, it has continued to dominate much of American mortuary archaeology (Rakita and Buikstra 2005).

Despite the enthusiasm of what could be learned from burials about past societies, critiques were quickly leveled against these simplistic arguments. The problem with studies like those of Tainter (1978), as Braun notes (1981), is that they are based on subjective rankings and make assumptions regarding rarity and energy. Further, they fail to identify horizontal group distinctions that may be obscured by the strong focus on vertical differentiation (O'Shea 1981). Goldstein (1981) identifies flaws within Saxe's (1970) Hypothesis 8, primarily noting that it does not assess the full range of available data, and while formal burial sites may indicate corporate group identity, the converse is not always true. She argues that a multidimensional approach is required when assessing social organization; we need to examine more than just grave goods and burial patterns to create more appropriate interpretations of the past. Finally, Brown (1981) argues that we need to be careful when examining grave goods, and try to identify the symbols that were used by the mourning community to identify authority. Symbols of status are culturally and contextually specific, and no single approach will work for all sites.

Modern studies of rank, status and social organization have built upon these critiques and now recognize that funerary behavior can be used to mask, negotiate, manipulate and transform identities and status of both the living and dead. Kujit's (1996) analysis of Pre-Pottery Neolithic A burials examines how removal, plastering and placement of skulls in a collective space was a method for focusing on group identity, and allowed for the masking of inequality in life that came with a transition to agriculture. Chesson (1999) examines Bronze Age charnel

houses in Jordan, and found that the differences in size of these houses likely related to differences in status. The ability to improve the final resting place of one's deceased ancestors was an indication of overall improved status within the living community. Over time, studies of social and political organization have improved. While once there was a focus on grave goods and burials, now it is recognized that this is only a small portion of the evidence needed to interpret the broader funerary behavior.

B. Death as a Process

One of the major critiques from New Archaeology's studies on mortuary behavior was that the full range of evidence available was not being utilized (Brown 1979, Braun 1981, Goldstein 1981). An important aspect of this is viewing funerary behavior as a process rather than a single act. This was not a new idea; since the early 20th century, anthropologists have recognized the importance of viewing death as part of a larger transition and process. The most influential on this topic was van Gennep's (1960 [1908]) rites of passage- a tripartite framework for analyzing major events within social groups. He proposes that following death, both the deceased and mourners go through a process of separation, liminality and re-incorporation. This process eases the trauma of the death and allows for a shift in identities. Hertz (1960 [1907]) also examines transition and change in death, and argues that by analyzing the changes that take place in the corpse, spirit and mourning community, one can better interpret beliefs and ideologies. Despite both of these articles being written in the 1900s and rediscovered the 1960s, the inclusion of process and transition in archaeological studies of death until the 1970s. Brown (1979) examines mortuary structures from the Middle Woodland period and notes that

the burial crypts and charnel houses found at these sites were used at different stages in the funerary process, rather than representing two different final burial options. The process of funerary behavior, from the preparation of the body, to burial, and to memorial, can be invisible in the archaeological record, but must be considered.

Modern studies recognize the importance of examining the funerary program, and how the dead and living move through the various stages of the funeral. Hill (1998) uses van Gennep's tripartite model to interpret Moche burial practices. She compares archaeological evidence against epigraphy in order to determine how the different stages of the Moche funeral took place. Weiss-Krejci (2005) examines variation in the treatment of the elite dead in Hapsburg Eastern Europe, and how the process of burial varied based on location of death. She found that there were three methods of preparing the dead who died away from their homeland: evisceration, excoriation and exhumation. These methods are usually considered desecration in this period and location, however, by interpreting the process of body treatment and burial, we see that these methods were used as a way to transport the deceased over long distances in order to give them a proper burial in their homeland. Robb et al. (2015) examines a Neolithic burial site in Southeastern Italy, and finds that a deposit of bones within a cave did not represent a burial site, but rather a location for the disposal of singular bones of long-deceased individuals. The cave site appears to be discard site, but rather it represents a location for disposal of bones into a communal ritual site, and may mark the end of the mourning period and completion of van Gennep's rite of passage.

This shift from a focus on the final deposit to one that examines the entire process of death and the behavior of the living is vey important (although many scholars today still tend to

focus on final deposits). Understanding the funerary process requires careful attention to the range of human behaviors from the death of the individual to their memorialization and beyond, as well as an examination of the broader social, political and economic context.

C. Gender, Life course and Ethnicity

The recognition of an androcentric perspective in archaeology during the 1980s has proven to be one of the most important shifts in the study of mortuary archaeology, especially given the presence of the physical remains of people. Conkey and Spector (1984) argue that the way we approached archaeology has been biased by our Western perceptions of gender roles and power relations. Often, gender was equated with specific artifacts and roles based on modern Western assumptions. Conkey and Spector (1984) stress the importance of making gender explicit, clearly stating relationships between gender and evidence, and recognizing the impact of the modern context on one's interpretations of the past. This led to a reassessment of many archaeological sites in order to reveal assumptions and clarify gender. Brush (1988) examined preconceived ideas of gender at Spong Hill, an early culturally Anglo-Saxon cemetery. The poor preservation of human remains meant that sex was equated with gender, and interpreted by whether artifacts were assumed more masculine (weapons) or feminine (brooches and jewelry). Her independent analysis finds that while there was an association between female sex and feminine artifacts, male sex and masculine artifacts, the majority of individuals at the site had no indication of gender, and therefore could not be assigned even when sex was clear. Brush (1988) argues that the strong expression of gender identity might relate more to status and role, rather than be a universal among all men and women. More

recent critiques of gender have also led to a discussion of whether binary divisions of sex and gender are appropriate, and how we need to be open to multiple forms of gender expression (Geller 2005).

Other examples of gender analysis are redefining women's roles and making them more visible. McLeod (2011) re-examined archaeological evidence from the Norse migration to England in the 9th and 10th centuries CE. According to archival evidence, the invasions were led by men who then intermarried with local women, and prior analysis of burials incorrectly used artifacts alone to determine the presence of females at these sites. McLeod (2011) argues that there is no feasible reason why a woman could not be buried with a sword. McLeod's (2011) reanalysis of the skeletal remains from Repton and Heath Wood show that it was more likely that the ratio of males to females was even, and that the mistakes in interpretation was more likely the fault of equating grave goods and gender with biological sex. Similar studies by Grassland (2001) and Stalsburg (2001) reanalyze burials and artifacts to create more nuanced interpretations of gender roles in the past, and show the importance of women.

The critique of gender led to the recognition of other social factors that do not necessarily have a biological association, including age and ethnicity. Life course analysis studies the relationship between biological age and cultural life stage. Stoodley (2000) examined burial practices of early medieval communities, and found that life stage may have been more important than biological age when determining one's identity. He finds that the first stage of age differentiation was gender, which was not expressed until age 10, and could occur as late as 14 in some individuals. The second stage took place between 18 and 25 years, and likely represented a change to adulthood, causing increasing emphasis on gender identity. By their

30s and 40s, most individuals began scaling back on the expression of their gender identity, and there is a declining focus on including grave goods. Stoodley (2000) proposes that these shifts in artifacts represent the importance of fulfilling cultural roles rather than biological ones. Studies of ethnicity are now examining social ties to ethnic groups, rather than relying on biological ancestry or racial assumptions to be made. As Hakenback (2011) found when examining ethnic identities in the Roman Empire, differences in biological indicators of migration such as cranial features or stable isotope ratios do not necessarily match to the differences in artifacts found with the individual. She studied a number of Bavarian cemeteries dating to the early medieval migration period and proposes that there is no association between biological distance and artifact similarity. This means that foreigners were just as likely to adopt local culture and ethnic customs, as the locals were to adopt theirs.

D. Belief and Memory

Funerary practices are intimately tied with beliefs, emotion, and memory, however it is only recently that these qualities have been recognized as an important factor when studying mortuary archaeology. Through funerary practices and commemorative activities, mourners are creating memories, and preparing the dead for the next stage. Graham (2009) proposes that during the Roman Empire, rather than fixing an identity in headstones and memorials, mourners created a continued relationship with the deceased and allowed for constant manipulation of memory. In death, the identity of the individual is subject to selective remembering and forgetting both to fit both with their new status in the deceased community and place them within the broader social memory. Williams (2004) notes a similar trend found

within Roman-Britain. From the 1st century BCE to the 1st century CE, the people of Southeast Britain adopted a new form of cremation that shared the traits of Iron Age and Roman traditions. During the process of cremation, urns and feasting vessels were used as part of a ritual process to selectively create and forget memories about the deceased. By feasting with the dead who were buried in domestic food related urns, solidarity is created between the living and the newly deceased in their new role among the dead. Another example of this behavior is discussed by Oakdale (2005), who focuses on the importance of forgetting. Oakdale (2005) discusses the rite of Jawosi in the Kayabi culture, which used metaphors of enemies and decomposition to forget the dead and aid in the reintegration of the mourners. It is an important reminder that funeral rituals and associated rites of passage are meant to serve the living, not the deceased.

Burial can also be used as way to manipulate and define the perception of the deceased. In her analysis of Mound 72 at the Mississippian site of Cahokia, Goldstein (2000) argues that the presence of secondary burial and grave good caches was meant to promote the perception of ancestors as part of a collective deceased group and reassert the community identity of the living. The bones of the deceased act as inalienable wealth by representing the connection of the living to the group, both past and present. Their continued interaction with the bones promotes the maintenance of this relationship. The creation of the deceased ancestors is also not necessarily just the turning of the recently dead into memory and collective spirit- it can also include the appropriation of ancient monuments. The reuse of tombs in Scotland has been interpreted as squatting behavior, but Hingley (1996) argues that the evidence shows that mourners were reimagining the individuals previously buried in these tomb as imagined

ancestors. They are creating a continuity that may not actually be present by using the space and imitating Neolithic designs. It is not desecration, but a creation of a narrative that involves the past in the present.

The history of mortuary archaeology reveals the development of a discipline from simple one-to-one associations between artifacts and status, to more detailed, multidimensional analyses that engage with the complexities of death. However, most of these aforementioned articles and the discipline have focused more on inhumation burials rather than address the wide variety of possible body treatments. This should not come as a surprise however, since completely articulated human remains provide the most biological evidence about the individual and are therefore analytically the easiest to assess. At the same time, it is important first to look at how cremation has developed within the broader shifts of the discipline as well.

II. History of Cremation Studies and Lack of Integration with Inhumation

Until recently, cremation burials did not receive the same attention as primary inhumation did, and this bias towards more complete forms of body treatment continues to persist today. As Williams notes, "Archaeologists often regard the wealth of data provided by primary or secondary inhumation burials… as superior to the fragmented evidence let behind from cremation ceremonies" (2008: 239). In this section, we will review the history of the study of cremation and why this form of burial has been understudied.

The lack of study of cremation and its disconnect with inhumation can likely be attributed to typological and normative approaches of the early 20th century, which presupposed that different burial practices could be directly attributed to different cultural phases. An exemplar

of this problematic approach comes from Childe's (1945) characterization of burial practices over 50,000 years, which assumes singular forms of burial for specific groups and eras, with co-occurrence appearing only as a transition between forms or 'curious exceptions'. This perception has caused the two treatments to be studied separately even when they appear at the same site, and when given a choice, inhumation was the preferred form to study. The early analysis of cremation took a normative view towards the practice, arguing that it was indicative of paganism, a thought that stemmed from 19th and early 20th century archaeologist's contemporary views on cremation. The rise in cremation during the turn of the 20th century was related to a push for hygiene and cheaper burial, whereas inhumation was portrayed as the proper religious form of burial. Regardless of the beliefs of the archaeologist, the strong relationship that existed between religion and burial type would have caused a perceived link between cremation to Paganism (Prothero 2001). Thus, in general, early studies of cremation were used as a way to track the migration of 'barbarian' groups, with the decline in the practice indicating a conversion of Christianity (Akerman 1855; Geake 2002; Kemble 1856). In Wylie's (1858) examination of the inhumation and cremation burial practices of pre-historic England, he notes that the interest in cremation lay in its "ancient oriental origin, its general heathen development, or its mystic associations". He clearly argues that cremation represents a pagan act, and its declining frequency can be used to track the rise of Christianity. Beyond such speculation, in the 19th and early 20th century, there was little analysis of the actual cremated remains. The urns that cremation remains were found in were often used in typological studies, but this led to the loss or separation of the remains of the deceased from their burial site. In the worst case scenarios, the remains were dumped out at the dig site (Brück 2014). With the lack

of focus on cremation, there was little engagement with the appearance of this practice when it was co-occurring with inhumation.

With the introduction of the New Archaeology came a renewed interest in cremation for answering questions about variation, economy, and social organization. Binford (1963) examined cremation burials from three prehistoric sites in Michigan, and proposes that they were cremated as whole individuals. He argues that this initial study showed the utility of analyzing cremation, and calls for a more formal comparative analysis of it as a burial practice needed to be done. Buikstra and Goldstein (1973) examined the cremation remains from the site of Perrins Ledge, and were able to determine the process of cremation burning at the site, as well as show the importance of examining cremation remains and revealing how much information was actually available. With the new approach of processualism, cremation was used to assess differences in social and economic status, as it may indicate potentially higher or lower status in different cultures. However, there still remained a focus on inhumation as a source of evidence, and there were little to no engagement with the presence of multiple burial forms at a single site. Buikstra and Goldstein (1973:15) note the disinclination to study cremation remains in this period and earlier, stating: “the aversion of archaeologists and physical anthropologists to excavation and analysis of cremation sites is legend in both disciplines“. Despite recognition of the importance of cremation remains from some of the top archaeologists working in this period, cremation remained a process that was viewed as obscuring the potential quantitative evidence.

Post-processualism entered as a critique of the more scientific approach of the ‘New Archaeology and for increased focus on burial practices as symbolic practices (Williams 2008).

Despite the post-processual focus on removing bias from the discipline, inhumation, both primary and secondary, remained the preferred type of burial to study. While studies like Richards (1987) demonstrate the utility of examining cremated remains in learning more about social organization, but he also noted that there continued to be a lack of study of cremation resulting in exclusion of this burial form from basic archaeological texts, which continued focus on quantitative variation (Williams 2008). Early attempts within post-processualism to address the symbolic meaning of cremation in past societies were primarily restricted to its perceived ability to mask inequalities among the deceased (Parker Pearson 1982). Sadly, this approach only further created a bias towards viewing cremation and inhumation as polar opposites, and studied continued to focus on unburned remains as a source of evidence. Thus, while the number of cremation studies did increase, it was within the realm of specialists rather than as an integral part of larger studies (Williams 2008).

III. Cremation Studies Today

It is only in the past decade or so that the independent study of cremation burial practices and the associated human remains has become more prevalent and has revealed the validity of this type of study. These have begun to correct the dearth of analysis that took place in the past (Williams 2008). There are a number of themes within the study of cremation today, including the study of cremation as a process, the act of cremation as a transformation, and the role of cremation in the production of memory. This rise in the study of cremation as equally important to inhumation is critical—however, due to the themes of study, it is argued here that the gap between inhumation and cremation is further exacerbated.

One of the important developments within mortuary archaeology broadly was the recognition that death and burial is a process, rather than a single act of burial. Archaeological studies of cremation have both benefited from this perspective and added to this literature by providing important information on the funerary process as associated with cremation. Cerezo-Roman and Williams (2014:248) note that the *rite de passage* approach has "done much to theorize cremation beyond an index of particular social attributes and it's misunderstanding as 'low status' or 'destruction'". By taking the focus away from the physical act of burning the body, and embedding it within a broader process of negotiating death, we move away from the normative approach that equates cremation with specific cultural attributes, and begin to look at the full range of possible meaning. Further, the study of cremation has allowed for more insight into the funerary process than in the case of inhumation due to the burned bone revealing evidence of pyre construction, body treatment, and different sites of funerary activity. At the forefront of this type of study is McKinley (2000, 2006, 2008). Her studies of cremation burials in Roman Britain demonstrate that the color of the bone and the remains of wood within the burial deposit can help to determine variation in the heat and construction of the pure, the placement of the body, and whether the individual was burned with or without clothing based on the color of the bone and the remains of wood within the burial deposit (McKinley 2000, 2006, 2008). By examining the final burial, McKinley (2008) interprets which bones and artifacts were selected for burial, and how the final deposit related to the pyre site. She demonstrates that we cannot assume cremation was the cheaper often; a perception that has been perpetuated by modern experience. Cremation in the past would have required increased time expenditure and required more commodities due to the need to collect wood,

maintain the fire, extract the remains, and then burial the individual (McKinley 2006). Others have also examined how cremated bones can be used to learn more about the funeral and the pyre, such as studies of thermal alteration of bone (ex. Buikstra and Swegle 1989; Gejvall 1969; Shipmen et al. 1984), expectations regarding bone weight after cremation (ex. Bass and Jantz 2004; McKinley and Bond 2001), and reconstruction of the possible position of the body on the pyre (ex. Harvig 2015).

Recent studies also address the symbolic use of fire, and its transformative capabilities. Sørenson and Bille (2008) examine how the process of the cremation may relate to broader conceptions and uses of fire in acts such as forging weapons or firing pottery. They note that in the past, fire acted as a positive force, allowing for change and transformation of objects and people. However, in more recent history, fire is often perceived as a negative, a destructive and cleansing force that has shaped more modern perceptions of cremation as a sinful or hygienic act (Sørenson and Bille 2008). Cerezo-Roman and Williams (2014: 250-1) argue that the symbolic use of fire could relate to a wide range of technologies, including smelting, metal-working, pottery production, glass production, food processing and cooking, brewing and baking. By examining the wide range of ways that heat and fire were used in the past, deeper metaphors can be constructed to aid in our understanding of cremation in antiquity. Oestigaard (2008) argues that the use of fire in cremation and pots used as urns may serve as a metaphor relating to food production. He argues that through fiery transformation there is survival and rebirth—raw food becomes cooked nourishment for the living, and the dead survive through fiery transformation into a new identity in the hereafter.

In addition to this, cremation provides a venue for changing, challenging, and negotiating concepts of personhood and community (Quinn et al. 2014). Brück (2014: 129) argues that examination of cremation in Early Bronze Age Britain hints at different conceptions of personhood and proposes that we move beyond the modern Western concept of individualism. Prehistoric conceptions of the self may have been based around relationships with people and places; therefore, cremation acts as a method of fragmenting the dead to allow for the body to be dispersed among those connections and maintain the social networks threatened at death. Cerezo-Roman (2014) offers a similar argument for the use of cremation among the Hohokam, a prehistoric group in Southwestern America. She proposes that cremation would have allowed the body of the deceased to be perceived as an object that could be transported, fragmented, divided and distributed. Their remains become inalienable wealth to the living, gaining meaning through their association with the living and circulation among the community. After a period of time, the remains may be buried in a secondary deposit as a symbolic sign that the social network has remained strong despite the loss of the deceased.

Cremation can also act as an important step in the production of memory and beliefs. Jones (2003) argues that memory is not purely mental; it can be physical and part of daily habit. Since we interact with the world through material culture, part of this physical memory is attached to objects. Technologies of remembrance are solutions to the problem of what to remember. Monuments, repetitive behavior, and specific forms of body transformation all aid in the creation of memory. Therefore, cremation can be a technology of remembrance. Williams (2006) argues for viewing cremation in this manner and uses mortuary behavior in early Anglo-Saxon England in an example. The transformation of the body through cremation,

careful construction of burial tableaus, placement next to mounds, and repetitive use of symbols all indicate the importance of creating and maintaining relationships with the deceased- both the real ancestors of the mourners and imagined ones. Further, Williams (2004) argues that the movement of the body itself during the cremation process can aid in the production of memory, and allows for unique interaction and manipulation of the remains following burning due to their fragmented state. Fowler (2014) proposes that cremation in the Early Bronze Age in Northumberland dramatized the transformation of the deceased and allowed for more immediate transition of the deceased into their new status as a deceased ancestor. The act of cremation as an act of transformation was further supported by the burial of the remains in communal barrows and the associated shared costs, reinforcing the deceased's new identity among a community of deceased ancestors in a manner that is not as salient in inhumation (Fowler 2014: 84)**.**

IV. The Problem with Studying Co-Occurrence

Investigation of the history of the development of mortuary archaeology has shown that since its earliest investigation, there has been a strong perception that cremation is dichotomous to inhumation. The reason for this perceived opposition is threefold. 1) Cremation remains are often misunderstood as consisting of ashes that lack interpretive value, or are ignored due to the difficulty of interpretation. 2) Due to the conscious and assumed division of these two burial treatments, cremation methods and theories lack the refinement and focus of those based on inhumation, a problem that has only recently been addressed. 3) The process of cremation is often discussed in modern studies as a process of symbolic transformation, which

causes it to be interpreted differently than inhumation. By exploring these issues further, we can determine the problem at hand, and propose a potential solution.

A. Lack of Attention to Cremation

The lack of attention to co-occurrence can primarily be attributed to a lack of attention to cremation. Cremation is often understated in site reports and understudied in general, hampered by the perceived absence of data due to the cremation process (Mays 1998: 216). It is true that cremation remains are more difficult to analyze due to fragmentation, cracking, and warping from the burning process but this does not excuse the lack of study. In 1973, Buikstra wrote that her work with Goldstein on Perrins Ledge Crematory was the first study of cremation within the Lower Illinois Valley. This was not due to lack of sites, but rather to "the misconception that the amount of information obtained from such a project is not commensurate with the effort involved" (Buikstra and Goldstein 1973:24). Thus, as Richards (1987) notes, it has often been the case that the actual remains were seldom kept or recorded during excavation. The result has been a near complete absence of cremated remains in the basic written references for mortuary archaeologists. Larsen's (1996) compendium on bioarchaeology, considered one of the standard texts for students of the field, makes no mention of cremation, nor does it consider how this lacuna may change interpretations of demography and paleopathology. While White and Folkens' (1998) manual on human remains does mention cremation, it is merely to note that the less prolonged the burning, the more complete the remains and therefore the greater amount of information that can be gained

through study. This lack of discussion in basic manuals only furthers the misconception that cremated remains have no academic value (Bass 2005; Larsen 1996; White and Folkens 1998).

This tendency to ignore cremation becomes even more detrimental when it causes the associated remains to be completely omitted from the archaeological reports. Field reports from sites with both inhumation and cremation excavations have a strong tendency to focus on inhumed burials instead of the burned ones. In some cases the cremation reports may only be found as part of the appendices or are left out altogether, as is the case with the Worthy-Park site in England (Chadwick-Hawks 2000), and the mortuary report from St. Catherine's Island (Larsen and Thomas 1982). This latter report discusses the various burials found within the prehistoric mounds at the island, and while there is a skeletal report, the cremation remains found are only mentioned briefly in the text and not included in the interpretation. In others, cremation is omitted from analysis, as seen in Brush's (1988) analysis of gender at the Spong Hill site, which is mainly a cremation site. Her analysis and interpretation focused solely on the inhumation burials, which comprise a small sample from what is a large and complex cemetery. This strong tendency to ignore cremation in co-occurrence sites cannot but lead to future silence on the subject when archaeologists attempt to re-use these data or interpretations.

While the burning process can result in breakage and cracking, cremated remains often consist of larger pieces of bone that can be informative about temperatures of heating, the process of burning, and can be used for determination of demography and paleopathology. Wahl (2008) demonstrates the ability to do complete bioarchaeological analyses of cremation remains despite the problems of fragmentation. Further, these remains contain important funerary evidence that can be learned- something absent from most inhumation burials. The

patterns of coloration and types of cracking can be used to interpret the heat of the pyre and conditions of the burning (McKinley2000). In some cases, such as many sites in Anglo-Saxon England where soil acidity is high and bone preservation is low, the cremated remains may actually be better preserved than the inhumation remains (Brush 1988). Recently, a new publication edited by Thompson (2015), The Archaeology of Cremation: Burned Human Remains in Funerary Studies, focused on the ways that burnt bone can be analyzed using new methods in order to add more to our understanding of mortuary behavior in the past.

B. Cremation Studies Lag Behind Inhumation

As was seen in the previous chapter- the developments occurring more broadly in mortuary archaeology did not occur within studies of cremation until much later, and it is only in the past two decades that our methods have really caught up with inhumation. Williams (2008) introduces a theory and approach to the study of cremation remains in archaeological contexts, which was updated in 2015. Ubelaker (2009) summarizes new cremation-related methods for reconstruction, trauma, individual identification, size reduction, thermal effects on histological structures, color variation, the determination of whether remains were burned with or without soft tissue, DNA recovery and residual weight. Transformation by Fire: The Archaeology of Cremation in Cultural Context edited by Kuijt et al. (2014), shows a wide range of cremation-related research that examines the cultural and social implications of this type of burial form.

Other types of co-occurrence, such as primary inhumation and secondary burial have been addressed in the past. Brown (1979) notes that the presence of both inhumation and

secondary burial in the Hopewell was not two different groups, but rather revealed a process of burial and reburial within one group. Similar engagement was seen with the work of Goldstein (2000), Naji (2005), Weiss-Krejci (2005) and Chesson (1999). While these works are able to show the both primary and secondary burial can be examined, their approaches do not help with the analysis of co-occurrence of inhumation and cremation as the burials are part of a larger process rather than separate acts.

C. Interpretative Issues Due to Different Foci and Modern Bias

Despite the rise in cremation studies there are interpretive issues when comparing cremation to inhumation burials that impede cohesive analyses from occurring. These include the transformative nature of cremation, the complications of the funerary process, and a modern bias regarding the meaning, cost and nature of the process. If we are not attentive to these issues, it could end up that the improvements to the study of cremation will in fact further divide cremation from inhumation and prevent the analysis of their co-existence. Studies of cremation tend to discuss it in a manner that assumes inhumation as the norm, even when the two do not occur within the same cultural group or space. We need to start looking at the ways that the two burial forms act on a continuum and focus on how they have similarities to one another, rather than portraying them as oppositional.

Cremation is generally discussed as a transformative or destructive act, where the burning of the body itself changes the social perception of the deceased individual (Williams 2004, Sørenson and Bille 2008). This transformation of the deceased from flesh to bone is seen as an important part of the decision to cremate (Rakita and Buikstra 2005). As discussed in the

previous chapter, it has been argued that cremation may have symbolic ties to other transformative acts like smelting, metal-working, pottery or glass production, and the cooking of food (Cerezo-Roman and Williams 2014: 250). The transformation of the deceased within the fire is seen as an important step in creating their new identity, reinforcing community identity, and allowing for the deceased to be divided into parts based on their relationships with the living (Brück 2014; Cerezo-Roman 2014; Quinn et al. 2014; Williams 2006). However, inhumation is not thought to have had similar symbolic connotations. The act of placing a body within the ground without treatment is seen as a norm within archaeology, despite the fact that there are societies whom view this type of behavior as disgraceful (Lindig 1964). The perceived lack of symbolism surrounding inhumation makes the study of co-occurrence difficult since there are not correlating behaviors that can easily be compared. While there may be a step in between death and burial in inhumation, it is not recorded in the archaeological record to the degree which cremation appears. The symbolic transformation of the dead on the pyre is not as clearly demonstrated in inhumation as it is in cremation.

Similarly, there is a focus on the process of the cremation and associated funerary rituals due to the information available from the remains of the pyre, burning patterns, and related evidence (McKinley 2000, 2006, 2008; Oestigaard 1999). Similar discussions of the funeral and ritual associated with inhumation are less discussed, and unburned burials are primarily examined as a final deposit, not as the result of a funerary process (Kuijt and Quinn 2013). There are a few examples that offer hope for improving our understanding of the funerary process in a manner that will allow for easier comparison, however, these are far and few-between, and often highlight unusual burial practices (Boyd 2014; Mizoguchi 2014). Brown's

(1979) analysis of Middle Woodland burial practices determined that different mortuary structures found during this period do not represent different sites of disposal for different groups or ranks. Rather, he proposes that burial crypt and charnel houses are different stages of the funeral process: the burial crypt was used for storage of the dead and grave goods, and once skeletonized the individual was reburied in the charnel house, which both shelters the deceased and is where mortuary activities are performed, including body preparation. The importance of this study is the recognition of funerary process in the practice of inhumation, which is usually an invisible part of the mortuary program. Studies of inhumation need to follow this example in an effort to determine how the funeral occurred- this is one area where cremation is more advanced.

Lastly, archaeological studies into cremation have had a tendency to be informed by a modern perception of cremation as a cheap and efficient method of burial. McKinley (2006) argues that the reintroduction of cremation in Victorian times was advocated for a number of practical reasons including saving space and decreased cost, which has now become the Western attitude. Cremation is stripped of ritual and was considered a more utilitarian method. Due to this, cremation in the past came to be perceived as burial for the poor, with pyre and grave goods often underestimated. However, McKinley's (2006) study of Ancient Greek cremation was that is was a complex process that required a large investment of time, wood, and manpower, and likely was more feasible for the elite.

D. Perception That Burial Forms are Fundamentally Different

Finally, there is an assumption that because cremation and inhumation are so fundamentally different, they do not need to (or can not) be compared against one another. In some ways, there is truth to this; it is the first type of burial form we see in the archaeological record, it is simpler and requires less effort than other methods, and the material remains of the body can be easier to interpret. Regardless, setting a 'normative' type of burial is an antiquated perception that speaks more to the historical development of the discipline than an inherent truth. The pervasiveness of this perception can be seen clearly in our approach towards cremation: 1) cremation in discussed in comparison to inhumation but not vice versa, and 2) study of cremated remains is done by specialists rather than being part of general bioarchaeological education.

Gibson (2007) presents early Anglo-Saxon cremation and inhumation as dichotomous burial forms, and provides a perfect example of how these burial practices have been perceived as oppositional (Table 1).

Table 1: Comparison of Cremation and Inhumation Burial Attributes, based on Gibson's (2007) comparison of early Anglo-Saxon burial and symbolic characteristics

CREMATION	INHUMATION
Burning	Interring
Body burns into the sky	Body buried in the earth
Gender and sex destroying	Gender preserving
Act of wet to dry: Quick process	Act of wet to dry: Slow process
Visually impressive with pyre	Visually impressive with body laid out
Broken up and disarticulated in urn	Complete in coffin
Few grave goods	Many grave goods
Double funerary ritual	Single funerary ritual

Cremation is interpreted as a destructive process, focused around the pyre, and ending with the deceased physically and spiritually fragmented, whereas inhumation is a slow process that allows for a grander final deposit for burial and preservation of the individual's identity. While this is rationally appealing, it is also prevents us from seeing the similarities between the two rites. First, this conceptual distinction assumes that the identity of the deceased is destroyed in the process of cremation, whereas it is preserved in inhumation. We do not know if this was the intent of the process, or the perception of the archaeologist. Second, unlike what is usually claimed, there is no evidence that the impressiveness of the burial scene was not perceived as equal for both burial forms, or, if it was, cremation may actually have been more impressive due to the fiery display (McKinley 2008). Third, the presence of many grave goods with inhumation, as opposed to cremation is a false dichotomy as it does not take into account the many inhumation burials with few or no grave goods, Furthermore, there is the possibility that large amounts of pyre goods were destroyed in the cremation fire, simply not collected or transferred to the site of final deposition. The simple fact that cremation required more steps does not mean it was perceived as either a more or less attractive alternative to inhumation. The variation may be attributed to different family traditions, circumstances of death or life, or special status. Thus, it is more appropriate to envision both practices as occupying places along a much larger spectrum of mortuary behaviors.

In addition to this, the study of cremated bones is often seen as a specialized sub-field of bioarchaeology, rather than an integral part of its study. As Williams (2008: 260) notes, "The low esteem in which cremated remains seem to be held in both academic and popular perceptions of mortuary archaeology is perpetuated by the assumption that cremation is

primarily a taphonomic and technical process requiting specialist analysis". As discussed above, many books that outline the approaches and methods towards human bone do not include cremation in their analysis (Bass 2005; Larsen 1996; White and Folkens 1998). Further, there is little discussion with those who study cremation about how to incorporate their work into the broader study of human bone. To be sure, specialists are needed to study the particulars of this unique process, but at the same time there needs to be a wider familiarity with the value of cremated remains in the broader study of bioarchaeology. The interpretation of the cremated bones is not unlike the interpretation of commingled or fragmented inhumed bones—it requires recognition of how pieces relate to whole bones, and some familiarity with how the bones can warp during burning.

This is not to say that inhumation and cremation should simply be studied together. While the lines between these two practices can be blurred, "cremations pose a unique set of social, economic, and archaeological circumstances " (Quinn et al. 2014: 5).

V. Current Approaches to Co-occurrence of Cremation and Inhumation

Co-occurrence of burial forms is found throughout Western history from Mesolithic and Neolithic Europe to Ancient Rome and Greece through the Early Medieval Europe and today (Brück 2009; Crubézy et al. 2006; Rebay-Salisbury 2012; Toynbee 1996), and the manner in which this variation is dealt with demonstrates the challenge of approaching co-occurrence and the obstacles we face in this pursuit. As argued by Oestigaard (2013: 499):

Throughout history a challenging question is how cremation relates to other funeral practices, and in particular inhumation, since different funeral practices often exist at the same time in a given community, which implies that variation in mortuary treatment sometimes relates to religion, ethnicity, gender, age, or other status categories, where in other cases it does not.

A. Ignore One Burial Type or the Other

Sadly, for much of archaeology's history, when multiple forms of burial appeared at the same site, one form of burial was often ignored at the sake of the other. Primarily, this has taken the form of inhumation being studied, and cremation being relegated to the appendices. Isola Sacra is a good example of the omission of cremation from the archaeological record. Despite the burned population making up a large proportion of the cemetery, including the majority of the poor population that was buried there, the focus has primarily been on the inhumed remains (Killgrove 2005). The lack of attention to cremation remains at Isola Sacra led to the bones being dumped from the urns, and either completed disassociated from their context or placed back in the urn after all the artifacts had been removed (Meyers 2012). Another example concerns St. Catherine's Island, Georgia, which was continuously used as a burial and domestic site from the 2200 BCE to 1550 CE, and offers direct insight into the changes within a population that occur with agricultural adaptation (Larsen and Thomas 1982). The report discusses the various burials found within the mounds at the island, which were used to interpret changes in health, population and life ways of the prehistoric population (Larsen and Thomas 1982). While cremated remains were found as part of this investigation,

they only appear as a footnote in the actual investigation and are omitted from the broader interpretation about life and death on the island.

Fortunately, many archaeologists have begun to note the omission of cremation from mixed cemeteries, and are now attempting to remedy this oversight. Larsson and Nilsson Stutz (2014) discuss the excavations of Pitted Ware sites in Scandinavia that often had scattered burnt bone found during the excavations. They note that:

> Traditionally, these finds were simply interpreted as partial remains of destroyed Iron Age buildings or were simply ignored by archaeologists, as they represent a difficult category to deal with. These cremated remains, however, can no longer be ignored, and archaeologists need to acknowledge the variation of practices that created the archaeological record [Larsson and Nilsson Stutz 2014:63].

Hills noticed a similar trend among antiquarians in England: "Until quite recently, archaeologists did not believe that any useful evidence could be gained from the study of cremated human bone, an attitude which very often led to the picking out of any obvious grave goods from the urn, and then the disposal of the bones" (Hills 1980:197). Recent work by Tanko and Tanko (2012) has revealed similar problems within the study of the Late Iron Age in Eastern Hungary, where despite cremation being the majority burial rite practiced, inhumation was the sole focus of mortuary archaeology studies. This issue was only finally corrected in the late 1990s after decades of misrepresentation of burial rituals in this period.

B. Co-occurrence as a Transitional Process

The most common interpretation of dealing with co-occurrence of inhumation and cremation is such that their co-existence merely represents an overlap between two different burial trends rather than a unique period when multiple options for disposal were given equal consideration. A great example of this is Childe's (1950) discussion of burial trends from the Paleolithic to modern times, discussed earlier. In Imperial Rome, cremation became very popular in the 1st century CE, however by the 3rd century CE, inhumation was the primary form of burial. The two centuries between these major shifts in burial, there was co-occurrence of both cremation and inhumation in many cemeteries (Toynbee 1996).

There are numerous studies that address the transition from inhumation to cremation or vice versa (Capuzzo-Barcelo 2015; Rebay-Salisbury 2012; Sørenson and Rebay 2008, Wickholm 2008), and while establishing the temporality of the transition is important, such efforts overshadow the more important fact that two different types of disposal were used in the same period, by the same community, and perhaps, even within the same families. Co-occurrence, not transition, was a reality to the individuals experiencing it and our interpretations need to account for the diversity of forms. By focusing on the broader trends, rather than individual experience and perceptions, we run the risk of overlooking potentially valuable evidence. Co-occurrence is more than just a transition between trends—it shows variation in practice that must be addressed in terms of broader social, economic, religious and political processes.

In distinction to the studies of cremation and inhumation, which examined them separately or interpreted the behavior as transitional, this study proposes that there are more productive ways to assess this relationship. These six possible relationships of co-occurrence

are not mutually exclusive interpretations, nor does this cover the full range of possible behavior. However, these examples provide a starting point for opening discussion for interpretation of co-occurrence of cremation and inhumation, and demonstrate that it is possible to create productive and informative interpretations of sites with co-occurrence of inhumation and cremation.

C. Complementary Practice

The presence of a complementary relationship between cremation and inhumation means that the two forms of burial serve two different roles for different individuals within the same community. In general, behavior is complementary when cremation and inhumation are part of the same mortuary program but meant to convey binary meanings or maintain different parts of the social or religious system. This is symbolized in different ways through the treatment, deposition and location of artifacts or individuals. This term is taken from the work of Brück (2009). In discussing the overlapping practices of cremation and inhumation in the Early Bronze Age, Brück (2009) notes that females are statistically more likely in this period to be cremated than males. In addition, their burials are often found on the peripheries of the settlement whereas the males were inhumed in central locations. This has led to previous interpretations arguing that females were lower status. Yet, Brück (2009) points out that women within this culture were often the individuals who joined other groups for marriage, but maintained their ties with their group of origin. As a result, she proposes that cremation was a way of fragmenting and dispersing the female body, so that women's divided identities were symbolized in death. Further, the lower weight of cremation suggests that the remains

themselves may have been divided between the marriage and origin community, creating ties between them even after death. In this way, cremation may have been seen as complementary to inhumation, and as a way to reproduce social bonds.

Another example, by means of an examination of the commemorative practices surrounding the burial of infants in Roman Italy Carroll (2012) finds that infants were more likely to be buried without burning, despite cremation being popular during this period. Moreover, they were buried within the town or city, an act that was forbidden among adults. Thus, the burial of infants in this period may be said to complement that of adults as a reflection of different social status. His research builds on that of Soren and Soren (1999: 478) who argue that those who had 'cut their teeth' were cremated and buried outside the city walls, whereas infants were protected since they had not fully achieved personhood, and were inhumed within the walls and near homes.

D. Relational Practice

A relational practice means that they have similarities in their process and purpose, but are simply different methods. Modern day Western funerals may be considered relational based on the fact that often the funeral and procedures are the same, but the choice to inhume or cremate may lead to differences in choice of container and burial location or reflect differences in the beliefs of the mourning population or deceased. An example of this is can be found with the cremation burials at the Anglo-Saxon site of Spong Hill, which, according to Williams (2014) exhibits similarities with inhumations that need to be addressed, and for which he coins the term 'relational' to describe them. He argues that in both types of burials the use

of pottery served to ‘rehydrate’ and ‘nourish’ the corpse whether found in the burial or on the pyre. This shows a similar need to take care of the deceased regardless of treatment of the corpse and that both burial practices are based on the same ideological beliefs. There are also similarities in the presence of fire, as inhumation burials often containing burnt materials in the backfill. It is thought that the difference between cremation and inhumation in the Anglo-Saxon period may be related to the different strategies of various family groups for negotiating the identity of the deceased and maintaining solidarity with them. However, cremation and inhumation do not complement each other and are not binary; rather they are different methods to achieve similar results.

A similar argument has been made among in the case of the Neolithic barrow tombs found in Ireland, where Cooney (2014) proposes that the differences in mortuary treatment are alternative methods of remembering deceased and creating ancestral ties. Ravn (2003) argues a similar point, stating that:

> The difference between cremation and inhumation may not have changed the inherent meaning of the funeral, in that it was the act of burial itself that may have been essential for transferring the body to a new state, whether this involved the body’s consumption by earth or flame... Thus, the two rituals may have different meaning in relation to the means by which the body travelled to the other side, but the end destination and the social meaning may be the same, although communicated in different ways [Ravn 2003: 131-2].

Sørenson and Rebay (2008) discuss the overlap of inhumation and cremation burials during the Bronze Age in Austria, finding that there were similarities in the way cremated remains were positioned in burials to mimic the more traditional style of inhumation. They argue that, "there seems to be no radical shift or revolution in the performance of funerary rites despite the essential difference between inhumation and cremation" (2008:62). They conclude that the transition to cremation was not an abrupt rupture with past practices, but rather part of a slow process, the end result of which is archaeologically similar aside from the burning of the remains. Therefore, this type of relationship indicates that while there is an inherent difference in the treatment of the body, the population may not have viewed this as part of a completely different program of behavior.

E. Status Differentiation

Cremation and inhumation may have also been used to differentiate people by status or rank, either in terms of horizontal group affiliation or vertical social status. Both cremation and inhumation have been used in the past as a way to signal the wealth of the family. Rife et al. (2007) examined cremation and inhumation burials found in Roman Imperial tombs near Kenchreai, Greece. Inhumations were primarily found in loculi cut into the lower portion of the chamber walls. Cremation remains were primarily found within urns placed in niches cut into the upper portion of the chamber walls. Artifacts were found with many of the inhumations, however cremation remains usually only had an associated urn or container. Rife et al. (2007) conclude that the variation in burial rite could be a sign of status, with inhumation for family members and cremation for freed-persons and slaves. Similar to this, Spruce, Williamson and

Dawkins (1978) argue that cremation was used to differentiate lower status individuals from the inhumed high status burials. Their analysis of Early Woodland burials from Southern Ontario found that both inhumation and cremation were used within the same period and space, but that cremation burials had lower amounts or no artifacts at all. Another example of using different burial practices to differentiate status is the analysis of the prehistoric Mixtec by Duncan et al. (2008). Documents from the porto-historic period and evidence dating to approximately 1000 BCE demonstrates that the Mixtec had a long history of using cremation as a way to show the elite status of the deceased. The presence of canine bones, and various artifacts within these burials indicates that they were meant as a form of veneration, rather than violation. An important aspect to consider when analyzing multiple burial treatments within the same time and space, is that one does not make assumptions- both cremation and inhumation could indicate a lower or higher status.

Alternatively, differences in burial can signal ethnic, group, religious, political or other differences beyond economic status. Oestigaard (2013) examined the burial practices in Northern Europe at the turn of the 10th century. During this period, inhumation was the primary form of disposal, although some still practiced the older form of Viking cremation. There was a political push by Harald I to unite with the Norwegian kingdom during this period, and as part of this, conversion to Christianity and a change to complete inhumation was a necessary aspect of demonstrating loyalty. As a way to assert their ethnicity and identity, a number of Viking groups returned to cremation in opposition, but also as a return to their traditional roots. Burial method provided a way for groups to identify themselves.

F. Oppositional Practice

As can be seen in this example, cremation or inhumation could also serve as symbolically and physically oppositional burial forms. Unlike the binary relationship of complementary practices, where the two forms do different things, in this case, the binary relationship is meant to emphasize their difference and deviation.

In Europe, the burning of witches and heretics was done as a symbolic and physical statement of their violation of religious principles (Sørenson 2009: 115). As noted by Larsson and Nilsson Stutz (2014: 64), "incineration was meant to destroy a potentially dangerous individual and to punish even in the afterlife, as the body would not be able to rise on Judgment Day". For much of the Christian medieval period, cremation was seen as opposing inhumation—destructive versus preservative, heretical versus orthodox, and there were clear symbolic associations between the fire that was associated with hell and a simple burial that was associated with resurrection. Conversely, cremation is the primary form of body treatment in the Hindu religion. It is perceived as the best form of funeral because it allows for the individual to be reborn and perpetuates regeneration. In this cultural setting, the deceased is only seen as completely dead once they are symbolically killed by the cremation fire (Kaliff and Oestigaard 2004). It is an important ritual for restoring and maintaining social order. In contrast, holy men are considered to by already dead in that they have abandoned their worldly possessions, family ties and obligations. Therefore, when they die, their soul does not need to be released through cremation and the body can simply be returned to the earth through inhumation (Larsson and Nilsson Stutz 2014: 64).

G. Secondary Practice

In some cases, the cremation may take place as part of a secondary ritual where the act relates not to the death itself, but is an act of commemoration and memory production. Larsson and Nilsson Stutz (2014) propose that the appearance of cremation in Mesolithic and Neolithic Scandinavia is simply one means among many of reducing a body to bone during commemoration of the deceased. Analysis of burials in this period shows that while inhumation is the primary form of burial, there are a range of other activities including cremation, exhumation, defleshing and excarnation that occur after a period of burial. The processing of the body from flesh to bone may have been an important act to perform for certain individuals, and these various secondary burial practices may act as methods of transforming the dead from an individual into part of a communal burial. Larsson and Nilsson Stutz (2014) argue that fire may have been one means of manipulating the body to speed decomposition and produce more portable bodies, and therefore may not have been seen as a competing or inherently different method from defleshing or excarnation.

Another example of cremation occurring after burial is presented by de Becdelievre et al. (2015), who examined a large communal burial in Truie Pendue, France dating from the Middle to Late Neolithic period. This site contained the remains of 65 individuals, 52 of which showed evidence of burning. By carefully examining the color, fracture patterns and locations of burning on the bones, they determined that the cremation of these individuals was part of a closing ceremony of a mortuary structure. With the communal grave full, they burned the structure above it causing the uppermost layers of bodies to ignite and become cremated. Therefore, the cremation is part of a secondary ritual that ends the mourning period.

H. Situational Practice

Situational practice describes a situation when both cremation and inhumation were seen within normal variation, but one or the other may be reserved for specific situations or people. This has similarities to the oppositional and relational practices, however, situational practices are not necessarily done to emphasize binary differences and do not always mark a group identity. A particularly good examples concerns the burial rituals of the Mongols in the Egyin Gol valley that included cremation and inhumation, both of which could be primary or secondary. Using the ethnographic record from this period, Crubézy et al. (2006) argue that the act of cremation seems to have been used during specific moments such as the death of a chief or following battle. They argue that, "the choice of burial rite was neither ethnic nor cultural, nor even a question of rank or social identity, but may have reflected the circumstances of death" (Crubézy et al. 2006: 904).

Another example is the study of the Buddhists of Manang by Oestigaard (2004), who found that while open-air burials were the most common form of body disposal, the lama also appointed two people outside of the family to dismember the corpse, which would then be fed to birds. By doing this, the gods would be appeased because the body was returned to the earth, creating more rain and a successful harvest. Cremation was seen as negative because the smoke would pollute the atmosphere and anger the gods, causing them to not give rain to the community. However, during the winter, when snow replaced rain, cremation would be purposefully used as a way to make the gods angry and prevent any form of precipitation (Oestigaard 2004: 84). Thus, the uses of cremation or open-air burial were two methods for protecting society depending on the situation and weather.

VI. Analyzing Cremation and Inhumation Together

As we can see from the broader discussion of the ways that cremation and inhumation potentially relate to one another, co-occurrence is a diverse practice found in a wide range of periods and places. The benefit of these approaches is that they allow for analysis of the full burial population unlike when the two are assessed separately from one another. We need an approach to co-existence of burial practices that allows all characteristics of the funeral and burial to be compared equally with an understanding of how the process of cremation will alter the body and pyre goods. By comparing the bodies, the types of grave and pyre goods, the grave form, furniture and location, and the potential broader connotations of the behavior, we can approach co-occurrence in a manner that allows for more fruitful interpretation and does not fall prey to the downfalls of prior studies. In order to do this, we need to start from the evidence- recording cremation and inhumation in the same format with all the same variables under consideration, examine them as part of a single mortuary program and as separate behaviors, compare all attributes of the burials equally, and avoid the assumption that the two forms are diametrically opposed to one another.

CHAPTER 3: RESEARCH QUESTIONS

With this problem in mind, the goal is to develop an approach to co-occurrence that minimizes differences in interpretation, avoids sample bias, looks beyond explanations of transition between forms, and thereby removes the motivation to omit cremation burials from mortuary studies. This is an important and necessary step for the development of mortuary archaeology in general, and Anglo-Saxon archaeology in particular. Three research questions will be addressed:

1) Equalizing analysis of co-occurrence of cremation and inhumation: Can cremation and inhumation be integrated in an objective and equal manner that allows for equivalent comparison and avoids falling prey to current disciplinary divides between these two forms as they occur in early Anglo-Saxon England?

2) Interpreting relationships between cremation and inhumation: When found within the same spatial and temporal locations, can we infer patterning and relationships between cremation and inhumation, specifically within early Anglo-Saxon England?

3) Changes in the patterns of co-occurrence at different scales: Was patterning and variation between cremation and inhumation determined locally or at a regional level?

I. Equalizing Analysis of Co-occurrence of Cremation and Inhumation

In order to address more evenly the co-occurrence of cremation and inhumation, disciplinary differences in perception and approach to the studies of these two burial

treatments need to be recognized and remedied. This study elaborates on the dimensions of mortuary behavior as laid out by Goldstein (1981) in order to create a general framework for equal interpretation of cremation and inhumation. Her dimensions of mortuary behavior were deemed appropriate for expansion and application to co-occurrence due to the focus of the framework on funerary behavior rather than final burial deposits. The expanded framework presented here (Table 3) builds upon Goldstein's seventeen dimensions of mortuary behavior and biological factors that may structure behavior by adding the cremation burial correlates of inhumation burial dimensions. Moreover new dimensions have been created to account for new questions to address when dealing with cremation. While the framework has been developed for Anglo-Saxon England burials, the secondary objective of this dissertation is to develop a broadly applicable approach for interpreting co-occurrence and therefore it is generalized to be more broadly applicable.

The addition of cremation burial dimensions should prove an effective framework for examining co-occurrence in early medieval England, as well as more broadly. This framework does not imply that cremation and inhumation will represent unique and separate types; variation within these burial treatments is often present and certain burials may crosscut both forms. Rather, the framework should be used to focus on behavior rather than final burial deposition and provide a starting point for assessing inhumation and cremation in comparable ways. This comparison of dimensions of mortuary behavior relies primarily on demographic and artifact data collected during archival and collections analysis. However, for questions of proximity, location and clustering, spatial and statistical tools will be employed. Spatial and statistical patterns will be assessed using GIS, and methods are described more fully below.

A. Comparing inhumation and cremation within the multivariate dimensions of funerary behavior

Goldstein's (1981) original framework was developed in response to the rising popularity of spatial analysis within archaeology. She notes that despite this interest, there was little analysis of cemetery sites due to an assumption that there was an intra-cultural uniformity of burial customs, and that grave goods had the same symbolic meaning and significance from one culture to another (1981: 53). Thus she proposes a framework for the analysis of mortuary practices based on the evidence that could be collected in a mortuary setting:

Table 2: Goldstein's Dimensions of Mortuary Behavior, taken from Goldstein 1981

CATEGORY	DIMENSION
1. Treatment of the body itself	A. Degree of articulation B. Disposition of the burial C. Number of individuals per burial D. Mutilations and anatomical modifications
2. Preparation of the disposal facility	A. Form of the facility B. Orientation of the facility and the body within the facility C. Location of the facility in relation to the community D. Location of the facility within the disposal area E. Form of the disposal area
3. Burial context within grave	A. Arrangement within grave of specific bones with relation to grave furniture and facility B. Form of furniture C. Quantity and Types of Grave Goods
4. Population profile and biological dimensions	A. Age B. Sex C. Disease states and/or circumstances of death D. Nutritional evidence and environmental stress E. Genetic relationships

This framework has served as an important structure for spatial and statistical analysis of mortuary sites, and is therefore an appropriate starting point for developing a framework for the analysis of co-occurrence of cremation and inhumation.

For the first dimension, the treatment of the body, we need to take into account the differences in how this occurs for cremation and inhumation, specifically with respect to the degree of burning and completeness of the remains. While cremation today takes place in a high intensity oven that can completely incinerate a body at high temperatures, in the past, this process was primarily done on open air pyres that had to be consistently tended to and fed more fuel to maintain burning (McKinley 2006). The color of the burnt bone would be highly varied based on the heat of the pyre, the position of the body, the presence of other objects on the pyre, the duration of the cremation, and environmental factors such as the type of wood used and weather (Deforce and Haneca 2011; Moskal-del Hoyo 2012; Shipman 1984; Walker et al. 2008). In some cases, the individual may not be completely burned, either due to accidental burning, death by fire, or incomplete cremation. In this case, it is important to note the amount of burning as this can represent a continuum from inhumed to cremated where slight burning may lead to the individual being classified as an inhumation (Harvig, Kveiborg and Lynnerup 2013; Noy 2000).

It is also the case that most cremation burials that involve transportation of the body from the pyre site to the burial cause a decline in weight due to bones being left behind or dispersed in some manner. Unless the cremation is a *bustum* style, the weight of the remains rarely represents a complete individual. Taking weight of the bone into account can be important for determining whether the bones represent a single individual, whether the

collection of bones following the cremation was selective, or whether some bone may have been kept by survivors or dispersed. Studies of modern cremated remains exhibit a large range or weights, but also demonstrate that often there was a loss of bone in the past (McKinley 1993). Based on this, the first category of dimensions has been altered to take burning and completeness into account. Not only does this help cover cremation variables, but it may reveal insight into inhumation practices such as removal of individual body parts following death, or accidental or token burning. Thus the following additions are suggested:

1. Treatment of the body itself
    A. Degree of articulation
    B. Degree of burning
    C. Disposition of the burial
    D. Number of individuals per burial
    E. Mutilations and anatomical modifications
    F. Completeness of remains

The second set of dimensions concern the preparation of the disposal facility. By expanding this to include cremation, we are left with an important question regarding the role of the pyre and facilities used prior to disposal. While cremation can take place in situ, such as *bustum* burials, many are done at a separate pyre location and then transported to a grave for final burial, also known as an *ustrinum* burial (McKinley 2000). This brings up an important consideration for inhumation style burials, which also may take multiple pathways to burial and may be prepared for burial in a second location (Brown 1979). In order to account for both the presence of multiple places for staging the funeral, dimension 2 has been adapted to include both pre-disposal and disposal facilities. By doing this, we take into account that the funerary process can have multiple stages occurring within the same or different space. Thus the following alterations are suggested:

2a. Preparation of the pre-disposal facility or pyre
    A. Form of the facility
    B. Location of the facility in relation to the disposal facility
    C. Location of the facility within the disposal area

2b. Preparation of the disposal facility
    A. Form of the facility
    B. Orientation of the facility and the body within the facility
    C. Location of the facility in relation to the community
    D. Location of the facility within the disposal area
    E. Form of the disposal area

Next, we need to consider the burial context within the grave. For the most part, cremation and inhumation have similar attributes. Both can be considered by how the bones are arranged in relationship to the grave furniture or the disposal facility. We can examine the shape of the grave, whether and how the bones are located within a specific container and how they are placed within it, and how the grave goods are placed around the bones or within the container. The internal structure of the cremation urn has been increasingly recognized as important to the investigation, as the bones and grave goods may be placed within the urn at specific levels, or some objects may be left out of the urn but placed within the grave to emphasize certain significance or meaning (Brickley and McKinley 2004). However, we do need to add a consideration of the quality of artifacts found within the burial in order to determine whether they represent grave or pyre goods. As noted earlier, pyre goods consist of objects that have been cremated along with the body, where grave goods are those placed with the human remains at the time of disposal (McKinley 1997; Quinn et al. 2014: 29-30; Williams 2008). Noting whether artifacts are burnt or unburnt is important when determining the funerary process and differential significance of artifacts at different stages. In addition to this, we also want to address the quality of the artifacts in terms of whether the objects had been

broken prior to disposal. The intentional breaking of grave goods has been noted for both inhumation and cremation, and may have specific significance for understanding the relationships between these types (Härke 1997; Williams 2005). For this dimension, the term grave good has also been changed to artifact to allow for the inclusion of both grave and pyre goods—an important change since in some cases it can be difficult to determine whether the object came from the pyre or grave. Thus, the following changes are suggested:

3. Burial context within grave
    A. Arrangement within grave of specific bones with relation to grave furniture and facility
    B. Form of furniture
    C. Quantity and Types of Artifacts
    D. Quality of Artifacts

Finally, the last dimensions under consideration are those relating to the biological identity of the individual. As noted by Goldstein (1981: 59), while these dimensions "are not part of the disposal domain in a formal sense, in that they are given and cannot be changed by funerary behavior, the treatment of the categories included may be differential, and thus the culture at least controls the differential treatment of these categories". Often the biological dimensions of cremated individuals cannot be determined due to fragmentation, burning, and lack of training to deal with this type of skeletal material. However, it is important that these dimensions are considered when dealing with both inhumation and cremation to emphasize that the interpretive difficulty of the latter body treatment does not excuse its omission. Careful examination of cracking, bending and breaking in cremated bone can allow for differentiation between heat-induced dimensional changes and those relating to paleopathology, nutrition or trauma (Mayne Correia 1990; Thompson 2005). Biological dimensions are important, not only for understanding the general population, but for noting if

there are possible preferences for cremation and inhumation for specific demographic groups or if it is related to health or trauma, as in the case of burning those who died of certain diseases or during warfare.

4. Population profile and biological dimensions
    A. Age
    B. Sex
    C. Disease states and/or circumstances of death
    D. Nutritional evidence and environmental stress
    E. Genetic relationships

This method will be used for the cataloging of individuals at each cemetery to allow for direct comparison, and for a general discussion of trends at each cemetery. Table 3 displays the final expanded dimensions of mortuary behavior that will be used for the study.

Table 3: Expanded Dimensions of Mortuary Behavior (additions noted in italics)

CATEGORY	DIMENSION
1. Treatment of the body itself	A. Degree of articulation B. Disposition of the burial C. Number of individuals per burial D. Mutilations and anatomical modifications *E. Completeness of the remains*
2a. Preparation of the pre-disposal facility	*A. Form of the facility* *B. Location of the facility*
2b. Preparation of the disposal facility	A. Form of the facility B. Orientation of the facility and the body within the facility C. Location of the facility in relation to the community D. Location of the facility within the disposal area E. Form of the disposal area
3. Burial context within grave	A. Arrangement within grave of specific bones with relation to grave furniture and facility B. Form of furniture C. Quantity and Types of Grave Goods *D. Quality of the grave goods (burnt/unburnt)*
4. Population profile and biological dimensions	A. Age B. Sex C. Disease states and/or circumstances of death D. Nutritional evidence and environmental stress E. Genetic relationships

II. Interpreting Relationships Between Cremation and Inhumation

Based on prior analyses of co-occurring burial treatments, there are a number of potential relationships that the presence of two burial forms could signal. All models assume that all burials are spatially and temporally co-occurring, excluding cemetery re-use or non-association as potential reasons for presence of both cremation and inhumation. Determining the appropriateness of fit of the different models relies on spatial and statistical analysis of the

burials, and demographic and artifact data collected during the archival and collections analysis. Spatial patterns will be assessed using GIS, and methods are described more fully below. While different regions and time periods have been selected as examples of potential relationships between cremation and inhumation, the proposed approach was designed to work for Anglo-Saxon England. However, the hope is that this approach can be broadly applicable to other cases of co-occurrence.

As mentioned previously, there are three approaches to co-occurrence that while popular, will not be used or assessed during this study. These include:

1) Ignoring one burial type: Sadly, for much of archaeology's history, when multiple forms of burial appeared at the same site, one form of burial was often ignored at the sake of the other. Primarily, this has taken the form of careful study of inhumation while cremation is relegated to the appendices.

2) Note presence of multiple forms but do not engage with potential meaning: Numerous other studies have highlighted the co-presence of inhumation and cremation around the world, however often these studies simply note presence rather than engaging with the potential meaning behind their co-occurrence.

3) Co-Occurrence as Transitional Process Alone: When determining transition as a reason for co-occurrence, the most important element is time, with one burial form more prominent early and the other more prominent later. The problem with this type of argument is that it ignores the period of co-occurrence, and focuses more on the broad shift between them. The relationship between and perception of these two burial forms must be examined not only as part of change, but from the perspective where overlap represents a third type of burial

program where co-occurrence of both burial forms was on par with cemeteries containing only cremation or inhumation.

Instead we will examine the possible relationships discussed previously that have explanatory power and could represent possible reasons for the presence of both cremation and inhumation. It is not assumed a priori that one relationship will be definitive for all burials from this period, so each site will be compared against the archaeological evidence of each. We will look at the type of evidence we would expect from this type of relationship based on studies that have previously examined these, and how we could interpret this using the statistical, spatial and demographic evidence, as well as broader knowledge of the social, political, economic and religious conditions of each site.

A. Complementary Practice

A complementary relationship means that the two burial forms are serving two different roles for different individuals or groups within the same community, that they do different things for different people. This type of relationship would reveal two opposing but balanced practices within the past community. Using Brück's (2009) example as a model, there are a number of expectations we would have for how this type of behavior may manifest in the archaeological record, and how we might interpret it. In her 2009 analysis, Brück was able to interpret complementarity based on statistical difference in weights of burial and types of grave goods, spatial separation and burial in differing locations based on community ties, difference in prevalence of male and female burials per each body treatment, and the important role that fire played in regeneration of objects. Extending this, we may expect these kinds of evidence:

1) Statistical analysis: The grave goods found with different burials will show that there are two patterns that align with specific burial treatments, but there are enough similarities to demonstrate that these different burial types are within the same mortuary program.

2) Spatial analysis: The burials may be spatially distinct in order to communicate the different roles of the individuals in life or death. The specific placement of the burials and their relationship to the broader landscape may be significant for interpreting their complementary roles.

3) Demographic variables: Specific demographic groups may receive one type of treatment based on their different role in the community. In Brück's (2009) example, females were cremated so that they could be dispersed between communities. We may find something similar with specific age or sex groups.

4) Broader significance: The differential treatment of those cremated and those inhumed would be supported by symbolic differences in their overall ideological system. The varying importance and symbolism of fire, for example, would inform the difference in meaning behind cremation and we would expect that it would be used only for individuals who needed that type of symbolic transformation.

B. Relational Practice

Relational practices mean that cremation and inhumation exhibit similarities in their methods but are doing different things for different sub-groups of people. Unlike complementary practices where the two practices are part of the same mortuary program but complement one another, in a relational practice there are parallels between them but they are

not reciprocal nor do they balance each other. Rather, they are simply different options within the same complex suggesting slightly different perceptions of the deceased following death. Taking Williams' (2014) analysis as the exemplar for this type of relationship, there are a number of expectations. His study found that relational practices manifested in statistical similarities in types of grave goods but differences in how they were employed, as well as some unique items for specific burials based on transformation occurring, spatially there is a limited spatial separation between the two burial types, although there may be clustering due to certain families or household groups adhering more closely to one form, and the broader social and ideological system supports both types of burial treatments.

1) Statistical analysis: We would expect to find similarities and parallels of treatment and artifacts within both burial treatments, although there may be minor differences.

2) Spatial analysis: There is limited spatial separation between the two burial types, although there may be clustering due to certain families or household groups adhering more closely to one form and choosing burial near one another.

3) Demographic variables: Since both burial forms are considered to be within the acceptable range of behavior, there will not be any clear demographic differences in body treatment.

4) Broader significance: While the deceased may be treated differently physically, inhumation and cremation deposits will have similarities in process and symbolic meaning that demonstrate a broader connection.

C. Status Differentiation

The archaeological evidence of horizontal or vertical differentiation would reveal differences in treatment of individuals based on status. Determining this is difficult, and it is important neither to confuse vertical with horizontal status, nor to assume that artifacts found in the final burial are representative of the grave offerings since in cremation burials it is possible such items were burned. Rife et al. (2007) argue that there were differences in vertical status between cremation and inhumation based on the presence of grave goods and better location within the tomb of the latter practice.

1) Statistical analysis: In general, higher status individuals receive higher number and more exotic grave goods, and lower status receives fewer (Binford 1971), and it is possible that different horizontal groups have clear patterns of artifacts to reinforce their separate identity. In addition to this, there may be artifacts with group significance that would be unevenly distributed between the different burial types to suggest potential group, ethnic, or religious differences.

2) Spatial analysis: While the two forms may be located within the same cemetery or tomb, higher ranked individuals could receive more prominent placement near monuments or higher ground. Horizontal differentiation may appear in spatial segregation, with certain groups wanting to reinforce identity in space and bodily treatment.

3) Demographic variables: Demographic differences will depend on whether status is acquired or innate, though higher status individuals may in general be healthier.

4) Broader significance: Examining the domestic sites and understanding the broader social, political, economic and religious contexts is important for determining if the variation is representative of either horizontal or vertical status differentiation.

D. Oppositional Practice

In cases where the relationship between cremation and inhumation is oppositional, one of the forms is clearly dominant and the other is does on rare occasions as a statement. As is seen in the two examples discussed by Larsson and Nilsson Stutz (2014), the archaeological evidence for oppositional burial is seen in a small number of one type of burial reserved for a specific type of person, as opposed to some other, dominant burial treatment. The non-dominant burial form is a statement that is in conflict with the normal mortuary program.

1) Statistical analysis: Most of the population would fall under a single mortuary program, with a minority of burials having a different set of practices and artifacts.

2) Spatial analysis: Spatial separation would depend on the circumstances, but is highly likely since this form represents deviance, whether it is seen as positive or negative.

3) Demographic variables: It may be reserved for a specific type of individual, such as females primarily being identified as witches, and males being identified as holy men in the Larsson and Nilsson Stutz (2014) example.

4) Broader significance: The presence of this type of relationship means that it is being done as an act of violation or veneration that fits with the broader social, political, economic and religious context of the period. The symbolic meaning behind the act would be opposite to the normal mortuary program.

E. Secondary Practice

Using Larsson and Nilsson Stutz (2014) as an exemplar, we would expect a number of specific archaeological outcomes. They found that the burials of the deceased could either be inhumed, or subject to a number of secondary processes, among which is cremation. Here, cremation is not a form of funerary process for the deceased, but rather a method of transforming the dead after a period of burial has ended to potentially signal the end of mourning period. In this case, the remains of each method appears differently in the archaeological record with inhumations having more formal burials, and cremated remains scattered or collected in different contexts. These types of evidence are expected if cremation is used as a secondary practice.

1) Statistical analysis: There may be clear differences in types of grave goods and conditions of the burials since they are doing dramatically different things- one is memorializing the dead, the other is transforming the dead.

2) Spatial analysis: Since cemeteries are locations for funerals, the cremated remains may be used in different contexts- spatial separation is expected, and remains may be found in domestic contexts.

3) Demographic variables: Likely occurred for specific individuals, so there may be demographic patterning depending on political and social structures.

4) Broader significance: Symbolic importance of transforming the identity of the deceased to the broader society may be important, as well as examining how this played into the negotiation and maintenance political, economic and social structures.

F. Situational Practice

A situational relationship means that both practices are within normal variation, but may be reserved for specific situations or people. As seen from the examples (Crubézy et al. 2006, Oestigaard 2004), cremation may be used in particular deaths, such as that of an enemy or high ranking individual, or particular situations, like during winter or in times of plague. In these cases, interpreting the presence of a situational practice may be difficult without ethnographic or historic data.

1) Statistical analysis: Most of the population would fall under a single mortuary program, with a minority of burials having a different set of practices and artifacts.

2) Spatial analysis: Spatial separation would depend on the circumstances, as issues relating to disease or warfare may result in different use of space, white weather related changes may not .

3) Demographic variables: A specific burial type may be reserved for a specific type of individual, such as male leaders or wives, however in the case of weather or disease this would not be a factor.

4) Broader significance: The presence of this type of relationship means that it is being done in response to a specific set of circumstances. Understanding the broader cultural context of the group would be key to understanding this, as well as other social, political, economic or natural events occurring.

III. Changes in the Patterns of Co-occurrence at Different Scales

Increasingly, early medieval archaeologists studying in this region are making broad interpretations based on large datasets created from multiple cemeteries. Due to this, it needs to be determined whether this type of aggregation is appropriate; while it may improve sample size, it could also hide important local variation. Therefore, the sites will be analyzed both individually, and as a single dataset. This period has been characterized by its diversity of practices and internal variation; so that examining differences between sites is an important step in understanding the broader patterns of co-occurrence (Williams 2010). Previous spatial analysis by Sayer and Weinhold (2013) has shown that there is variation in clustering and spatial patterns at different early Anglo-Saxon cemeteries. Surveys of burial practices reveal differences in the prevalence of cremation, inhumation, reuse of monuments and percentage of deviant burials (Lucy 2000; Reynolds 2009; Williams in press). Further, the broad surveys of cemeteries and burial practices has shown that there are some regional preferences of burial type. Cremation is more frequently found within Eastern England, with some cremation in Central and Southern England, while inhumation cemeteries found more dispersed throughout England but are less frequent in the East (Arnold 2005).

An important addition to this argument is the recent analysis of Spong Hill. There Hills and Lucy (2013) argue that the cremation burials should be associated with one of the earliest Germanic migrant burial sites in England, which, in turn, likely had a major impact on other cremation and co-occurrence sites around Britain. They note that the patterns of cremation occurring at Spong Hill are more closely related to those on the continent than those from the rest of England (Hills and Lucy 2013). Therefore, they propose that at other cremation and co-

occurrence sites, the ideas behind cremation were not as strongly transmitted and more prone to acculturation, resistance and hybridization with local and continental inhumation patterns. They argue that cremation was a way of showing one's shared group identity with other communities, but that the specific details of the process may vary locally depending on one's context. This is an important argument because it means that when we are looking at variation in cremation, we should be comparing the sites actively against Spong Hill to determine whether the behavior was brought from the continent or adapted once in England.

Each case study will be individually assessed to determine the relationship between cremation and inhumation, as well as the broader spatial patterns of the mortuary program. Then, the patterns at each cemetery will be compared against one another to look for possible regional similarities. Additionally, the statistical analysis will include examining each site individually, as well as all five case studies as a single dataset to determine if broad-scale studies are appropriate.

CHAPTER 4: EARLY MEDIEVAL ARCHAEOLOGY

Early medieval England (Early-5th to early 7th centuries CE) is an appropriate era to address the research questions. First, cremation and inhumation burial practices occur simultaneously within the same cemeteries from the mid-5th to late-6th/early 7th centuries throughout England, with blending of practices at the regional and local levels. Co-occurrence at these sites cannot be reduced to a transitional phase between practices, nor can it be simply attributed to religious conversion. It was a product of immigration, hybridization, regional variation and ideological exchange (O'Brien 1999). Understanding this variation has the potential to improve our understanding of the broader social, economic, religious and political processes in this period.

Next, burial practices in this period are highly variable within and between sites, which is ideal for employing a statistical and spatial based analysis of co-occurrence. It has been posited that the choice between cremation and inhumation may have been employed to distinguish different household or familial groups (Härke 2001, Williams 2002), and statistical and GIS-based analysis has shown that these groups can be identified (Evison 1987, Ravn 2003). Recent analysis by Sayer and Weinhold (2013) offered a more nuanced approach towards identifying these households, using a combination of statistical and spatial analysis. While the interpretations of these researchers have demonstrated that a spatial approach within early medieval cemeteries can be highly revealing, none have done this using both the cremation and inhumation evidence. By selecting sites from different regions in England, and examining both

cremation and inhumation, this gap in research can be properly addressed to determine whether the patterns seen in singular types of burials holds true when examining both.

Third, numerous unexamined archival and archaeological collections exist for this period, providing ample evidence and material for this study. Early medieval cemeteries have been a focus of study since the 17th century, and more formal and systematic excavations of material from this period have increased dramatically over the 18th and 19th centuries (Arnold 2005, Lucy 2000). It is important that we utilize these excavated materials prior to any continued field work, as interpretation of historic collections may lead to alterations in methods and approaches. These collections are an untapped resource that needs to be digitized, utilized and shared more broadly. Further, as will be documented in the history of early medieval archaeology, many sites featuring co-occurrence of cremation and inhumation have yet to fully address their relationship, and in some cases omit the cremation altogether.

Finally, despite the renewed interest in early medieval mortuary behavior, the potential meaning behind co-occurrence of cremation and inhumation burials at a single site remains unexplored. To date, only a single paper has explicitly addressed the relationship between inhumation and cremation burials in the early medieval period. This work by Williams (2014) demonstrates not only the importance of doing this type of study for furthering our understanding and interpretation of this period, but also that this era offers a prime opportunity to address a number of interesting early medieval issues regarding migration, hybridization, relationships between different social and ethnic groups, and changing identities.

This chapter introduces the study of early medieval England. First, the history of the archaeological study of the period, which plays an important role in how our interpretations

have been shaped, will be discussed. Next, a brief history of the period from the exodus of the Roman Empire to the rise of the porto-kingdoms will be reviewed, with a specific focus on what is currently known regarding the burial practices.

I. History of Early Medieval Archaeology

As was briefly mentioned in the chapter on terminology, the study of the early medieval period has been plagued with Victorian notions of race and antiquated assumptions regarding ethnicity and religion, and cremation in particular bore the brunt of this bias. It is important that the development and changes in the discipline are acknowledged prior to exploring the history of this period and the contemporary texts that stem from it in order to recognize possible issues and misconceptions.

A. Early Medieval Archaeology in the 19th Century

The first definitive evidence we have of archaeological inquiry into the Anglo-Saxon culture in England comes in the form of a 1658 pamphlet in which Sir Thomas Browne published his analysis of a series of urns found in Norfolk. In this work, Hydrotaphia, Urn Buriall, Browne speculates on the history of death and mortality in England. Browne writes that he had found "between forty and fifty urnes, deposited in a dry and sandy soil, not a yard deep, not far from one another" (Browne 1658, cited in Lucy 2000:6). Despite his assurance that these were 'pagan' Roman urns, re-analysis of his original works and the drawings he produced has shown that they are culturally Anglo-Saxon (Williams 2000). It was not until the late 18th century that basic archaeological work began on this period of history, and this recognition can be attributed

to Reverend Bryan Faussett and Captain James Douglas, who carried out excavations of cemetery sites from 1759 to 1793 across the Kentish countryside. These excavations, as Faussett notes, were often done haphazardly as other work was being completed. At the site of Gilton, Faussett records that the cemetery was uncovered during the extraction of sand from a barrow, and that burials were being hastily removed without concern for their context or manner (Lucy 2000:6). In the following year, Faussett returned to conduct more formal excavations, the proceedings of which were carefully documented in his posthumously published book, Inventorium Sepulchrale: An Account of Some Antiquities Dug Up At Gilton, Kingston, Sibertswold, Barfriston, Beakesbourne, Chartham, and Cundale, In The County of Kent, From A.D. 1757 to A.D. 1773. Over the course of the two decades, Faussett would come to excavate over 750 graves from barrow cemeteries found in Kent. However, he continued to proceed with the mistaken belief that these burials belonged to those who could be identified as 'Romans Britonized' or 'Britons Romanized'.

Captain James Douglas is recorded as the first individual to identify these types of burial as Anglo-Saxon, and published his interpretations of his own excavations of Kentish cemeteries in his book, Nenia Britannica. He argues that these could be identified as Saxon based on the locations in which these types of artifacts were found: "They are scattered all over Britain in places which the Saxons occupied, and are not discovered in the parts of Wales which they had not subdued" (Douglas 1973: 177, cited by Lucy 2000:8). Douglas' work was revolutionary in a number of ways. First, unlike his predecessors, Douglas includes topographic plans and illustrations of sections of the barrows; details which were unheard of for this era, but which have now become standard in the field. Second, Douglas was the first to identify properly these

types of cemeteries as belonging to individuals who were culturally Anglo-Saxon, although his pioneering interpretation would not be fully accepted for another half century. Finally, Douglas' work would be one of the last times, until the late 20th century, that cremation was discussed in a manner equal to inhumation (Williams 2000:5). While interest in this period would dramatically increase over the next century, inhumation burials would become the main focus of inquiry and interpretation.

It would not be until the mid-19th century that the systematic excavation and recording of cremation burials would be actively encouraged, and often concern was more for the price the urns rather than the knowledge of the early medieval period that could be gained. During this period, industrialization, railroad expansion and improvements in roadways led to a widespread destruction of archaeological sites across Great Britain. In response to the Society of Antiquaries' lack of initiative to save the archaeological materials lost in this construction, Roach Smith and Thomas Wright formed the British Archaeological Association (BAA) in order to promote excavation prior to building in 1843. Anglo-Saxon artifacts were featured prominently in the BAA's push to save archaeological material. As part of their first congress in 1844, eight early Medieval barrows were opened for public viewing, and Faussett's artifacts were put on display. Over the next decade, members of the BAA fought to demonstrate the national value of Faussett's, and others', collections of Anglo-Saxon artifacts, as well as the importance of preserving the archaeological record. Their efforts led to archaeology becoming widely appealing to the public, and from the 1840s to 1870s, public excavations of Anglo-Saxon barrows became a popular activity (Williams 2008:50). This did lead to some unfortunate practices in this period. Many antiquarians focused their excavation efforts on large visible

mounds, some of which, such as Snape, were left open and subsequently looted with no record of the individuals involved or the artifacts taken (Penn and Burgmann 2007:1). In addition to this, there was an emphasis on the more dramatic and complete inhumation burials, rather than the burnt remains of those who had been cremated. This bias towards inhumation was only strengthened as the field evolved.

One of the major developments over the 19th century was the attempt to connect burial types to identities based on comparisons with continental cemeteries and contemporary texts. The work of medieval authors like the Venerable Bede inspired archaeologists to search for evidence of their narrative, thus relegating their discoveries to the status of 'handmaiden to history' rather than an independent source of evidence to confirm or contradict the historic record (Williams 2007, Williams 2000:9, Fleming 2011, Arnold 2005).

The Venerable Bede was a British monk living in Yorkshire during the 8th century. His series of five books outlines the history of Britain from the earliest inhabitants, through the time of the Roman occupation, and down to the time of the works' composition, in 731 CE. His writing is important for its influence on interpretations of the early medieval period, and this famous passage has come to structure much of what was written about the arrival of the Anglo-Saxons:

> Those who came over were of the three most powerful nations of Germany—Saxons, Angles, and Jutes. From the Jutes are descended the people of Kent, and of the Isle of Wight, including those in the province of the West-Saxons who are to this day called Jutes, seated opposite to the Isle of Wight. From the Saxons,

> that is, the country which is now called Old Saxony, came the East-Saxons, the South-Saxons, and the West-Saxons. From the Angles, that is, the country which is called Angulus, 87 and which is said, from that time, to have remained desert to this day, between the provinces of the Jutes and the Saxons, are descended the East-Angles, the Midland-Angles, the Mercians, all the race of the Northumbrians, that is, of those nations that dwell on the north side of the river Humber, and the other nations of the Angles [Sellar 2011[1907]:30].

It is due to this work, that the term *Anglo-Saxon* began its use to define both a chronological period and cultural group. All of these developments served to support a growing sense of nationalism in an era of imperialism- the *Anglo-Saxon* period defined the origin of 'Englishness', and supported a historical legacy of colonialism and displacement of indigenous peoples (Frantzen and Niles 1997; Higham 2007; Williams 2008). Much of this speculation focused on the use of archaeological evidence to track the *Adventus Saxonum,* the great migration of the Angles, Jutes and Saxons into England as described by Bede, and how this could be tracked using archaeological evidence. The concept of ethnicity in this period was essentialist: ethnic groups were static, mutually exclusive groups that could be distinguished from one another by their language, material culture and customs. Hakenback (2007:19) argues that during this period, the "historical narrative was the structure into which archaeological evidence fit" (2007:20).

In 1855, John Yonge Ackerman published Remains of Pagan Saxondom, a book reviewing the current status of studies of the Anglo-Saxon period, the identification of these groups, and

the cultural variations across the country. Ackerman speculates that the presence of cremation likely points to an ancient pagan and native Teutonic group's presence, and attributes co-occurrence with inhumation to mingling of the natives with Saxon colonists. Beyond these comments, most of his work is focused on the rituals associated with paganism, and the more sensational objects found in these burials. Following this work was that of William Michael Wylie (1858) titled Burning and Burial of the Dead. Within its third chapter, Wylie reveals his broader belief that cremation was an old, Germanic and pagan ritual when he writes that, "Cremation, whether from its ancient origin, its general heathen development, or its mystic associations, is a rite which most thinking men agree in regarding with attention." He attributes the decline in cremation among the Anglo-Saxons to the rise of Christianity, further supporting the pagan associations of the rite. Wylie is unique in that he does compare cremation and inhumation. However given their religious connotations he assumes they were in conflict: "Cremation and the antagonistic rite [inhumation] must have carried on a slow contention, and the plains of the dead have long received into a joint occupancy the remains both of those who had and those who had not passed through the fire" (Wyle 1858: 456). He support this assertion by means of a review of historical texts from Europe that also document the co-occurrence of inhumation and cremation with similar connotations to religious affiliation as those found in Britain: "It is clear enough that urn-burial is purely a rite of heathenism. But I cannot understand by what reasoning we are justified in assuming the converse" (Wylie 1858:465). He concludes by arguing that both cremated and inhumed burials found in Anglo-Saxon England can be attributed to Germanic migrants.

John M. Kemble's research is often credited with being the most influential in shaping Victorian, as well as some modern, perceptions of the Anglo-Saxon period. He is the first to compare burials from this period in England, to those of the same period in the European continent, specifically Normandy and the valleys of the Rhine and Danube (1855:309). Working from the history of Bede, Kemble argues that there are only three races that make up the Anglo-Saxons, and that both cremation and inhumation were practiced among them. He hypothesizes that the appearance of two different body treatment methods may indicate different races, a notion he disproves based on Bede's accounts and the spatial distribution of cemeteries, or change in practice over time, which he believes to be the correct answer. Kemble then concludes that "contemporaneous or not, on the same spot or not, the urn-burials are Pagan; the burials without cremation, in England, - are Christian… The rite of burning was heathen, and could only be given up when heathendom itself was shaken to its foundations" (1855: 330).

What is problematic about these 19th century writings is that they connected specific burial rites to ethnic races and religions, and in turn, accepted uncritically the validity of historical texts. Cremation was recognized as being an older, barbaric, Germanic and pagan ritual. In contrast, inhumation was perceived as the civilized rite for burial (Myres 1969:334). The arrival of cremation during the mid-5th century is seen as the moment of Germanic invasion and domination over the Britons. In regions where cremation dominates, the Germanic settlers were understood to have been free to settle on their own, whereas in areas where cremation and inhumation are mixed within the same cemetery hybridized communities of migrants and natives were hypothesized.

B. Early Medieval Archaeology in the 20th Century and Now

Even to this day, over 150 years later, we are still fighting the misconceptions perpetuated by the conclusions of Kemble and others. Even into the 20th century, cremation continued to be perceived as the older and pagan ritual. Chronological studies by E.T. Leeds' (1931), and many who followed him, were based on the presumed antiquity of cremation. The presence of cremation indicated a depth of time. Studies of urns by Myres followed this logic and therefore placed the antiquity of these vessels as far back as the 4th century, going so far as to propose that it may have been a continuation of ancient Roman rituals (1942). These early 20th century articles continued to perpetuate the assumption that cremation was a 5th century phenomenon brought over by the Germanic immigrant, that was replaced by inhumation, with cemeteries displaying co-occurrence as a sign of transition only.

Along with this continued focus on burials, came an increasing (albeit, slowly) interest into the domestic sites of the early medieval period during the 20th century. Thus, even though Leeds' 1936 investigation into culturally Anglo-Saxon settlements called attention to non-mortuary sites of this period, it is only in the past couple decades that the study of the domestic has become emphasized. Blinkhorn (1999) uses distribution of pottery as a way to measure economic complexity, arguing that trading networks did decline in the early medieval period, but then increased with Christianization. Crabtree's (2010) study of changes in faunal assemblage at early medieval settlements reveals shifts in frequencies of skeletal elements between the 6th and 7th centuries, likely indicative of increasing specialization, trade, and social stratification. Hamerow (2008) uses evidence of changes in the size of domestic structures and standardization of pottery to argue for increased trade and the rise of an elite

class in the late 6th century. The rise of non-mortuary studies of this period is important, not just for improving our understanding of the period, but for contextualizing the burial evidence. Mortuary archaeology interpretations are improved when evidence from funerary contexts can be directly compared against the domestic, and the mortuary rites can be put into the broader context of life in this period.

In addition to this, the reliability of historical text and literary sources also came to be critiqued, and the use of archaeology as merely an illustrative tool has been highly criticized (Härke 2011). Historical texts always have a bias, whether it is simply the unconscious and subjective lens of the author, or a purposeful shifting of events to fit with the author's motives and goals. Bede ever claims that their account of the past is a faithful and objective recording of events, and it is clear that he had motives when writing; Bede's aim was to demonstrate the piety and righteousness of York, raising the city above all others, so that it would be appointed as an archbishopric. Bede in particular had become the primary source of information for early medieval history, and there is very little evidence to corroborate his narrative (Hoggett 2007). Archaeologists now use the texts carefully as a separate source of evidence from the archaeology, which can then be compared and contrasted against one another.

This has led to a move away from the myopic focus on migration and ethnic identity, and toward a more sensitive interpretation of local expressions of variation. Hills and Lucy (2013:298) note that "one of the underlying precepts of much early medieval archaeology, at least until fairly recently, has been the assumption that there is a more or less direct link between material culture used by a population and the ethnic identity of the group". However, increasingly since the 1960s, new theories of migration involving smaller family groups and an

extended period of migration rather than single event invasion have replaced the earlier interpretations, and the important role of the native population has been recognized (Härke 2011). It has been clearly demonstrated within anthropology more broadly that identities are complex and fluid, and we cannot simply assign tags like *Angle* or *Saxon* to groups based on material culture and historical text alone (Effros 2003, Hills 2003, Fehr 2002, Härke 2004, Hackenback 2007). While debates over origins and identities continue, there is recognition that there is a wide range of other cultural processes, such as trade and exchange that can also affect identity and burial expression in this period (Hines 1984, Lucy 1998).

Increasingly, cemeteries are analyzed at a local and contextual scale as distinct entities, with a greater recognition of small-scale regional variability (Penn and Brugmann 2007, Hills and Lucy 2013). Lucy (1998, 2002) has been critical in promoting a 'bottom up' approach to early medieval cemeteries, arguing that the validity of large-scale interpretations rests on an awareness and understanding of local identities, which shaped supra-regional ones. However, it is also been argued recently that while these local studies are complicated, larger regional analysis is required to answer questions regarding broad social, economic and political change (Penn and Brugman 2007, Harke 1992, Stoodley 1999).

A great example of these recent changes in early medieval studies can be seen in the synthesis of Spong Hill (Hills and Lucy 2013), which was first recognized as an important archaeological site in 1711, but was not excavated until 1972. After ten field seasons, ending in 1981, archaeologists had excavated the largest cremation cemetery in Britain, with 2323 cremation and 57 inhumation burials. Publications regarding the finds, analyses and interpretations began being published in 1977, but it was only in 2013 that the final synthetic

volume was released. Over this period, as noted by Hills and Lucy (2013: 1), there have been major advances in analytical methods, such as GIS and computer-based statistical analysis, and also theories of the period. Early interpretations from Spong Hill focused on using typological variation to determine chronological and tribal groups, while newer studies are focusing on my localized questions of economic, technological and social aspects of the society under examination. Changes in the conclusions and approaches towards this single site are a good representation of how archaeological studies of this period have shifted dramatically in the last half century alone.

Additionally, technological improvements mean that questions of migration and movement can be analyzed more directly. Recently, strontium stable isotope analysis has been employed at cemeteries in England to address the question of the existence and possible origins of a mass immigration of Germanic tribal groups into Britain (Montgomery et al. 2005, Groves et al. 2013, Anthony 1997). These include the cemetery at West Heslerton (Montgomery et al. 2005), and the Bowl Hole Anglian cemetery at Bamburgh, Northumberland (Groves et al. 2013). The West Heslerton Cemetery was in use from the late 5th to early 7th centuries, and has over 100 burials, of which 33 were selected for stable isotope analysis based on the presence of Germanic artifacts that may indicate they were a migrant community. The Bowl Hole cemetery has a total of 91 discrete burials and 78 individuals were selected for isotopic analysis. The analysis of the cemetery at West Heslerton reveals that there were two different groups of strontium isotopes suggestive of either different origins or different sources of food. The first group was reflective of the local geology, and would be more likely to consist of the native group. The second had ratios outside the normal range of the area, which can

mean that either these individuals were immigrants or that they imported their food. Since the strontium range found could potentially be located in England, this second group is not necessarily Germanic, but there is a higher likelihood that this is the case. They also found that when comparing grave goods to strontium ratios, those individuals with non-native strontium levels were more likely to have wrist-clasps and cruciform brooches, which are artifacts typically associated with Anglian groups. There was not however differences in other grave goods or burial attributes. At the Bowl Hole cemetery, it is determined that the majority of individuals found at the site were non-local, and the strontium levels are highly suggestive of immigration from Germanic and Scandinavian countries. A comparison of grave goods and burial patterns, however, revealed no clear association between the immigrants and natives. Immigration does not necessarily mean that one is going to appear culturally different in the archaeological record. It also does not mean that the native peoples cannot quickly adopt an immigrant culture. The ways people are buried are reflective of their beliefs, ideologies, histories, and understandings of the body. All of these can change with migration, exposure to new ideas, and change in situation (Anthony 1997). While strontium ratios allows us to determine who was local or non-local, it does not necessarily mean that they were culturally different.

An important aspect of the critique of Anglo-Saxon archaeology is the addition of gender and life course analysis to these studies. As mentioned in a previous chapter, over the last few decades there has been increasing recognition that modern perceptions of gender and age were being projected onto the past rather than critically interpreted from the evidence. This is especially true for the early medieval period in England, where preservation is fairly poor and

sex was typically determined on the basis of artifacts rather than the skeletal material (Brush 1988). Karen Brush (1988) was the first to critique this behavior and set out to do an independent gender analysis of the cremation and inhumation burials from Spong Hill. She found that inhumation burials tended to follow the modern stereotype of females having more jewelry and brooches, and males being placed with weaponry- however many of the inhumed individuals were unaccompanied by grave goods and cannot be given a gender. The cremation burials, conversely, do not seem to have clear gender-based patterning when artifacts are compared against sex, and it may be that for this burial rite, gender was not an important expression. Brush (1988) concludes that the expression of gender in this period is more varied and diverse, and it cannot simply be assumed that certain artifacts are representative of one's sex.

Stoodley's (2000) analysis of life course and age organization has also been an important study in helping to examine gender and social structure in early medieval communities. She found that gender was not expressed in burials until the individuals reached an age around 10-14 years, and that there is a clear increase in numbers of artifacts once an individual has past 18-20 years. Finally, individuals who had reached older adulthood tended to have fewer grave goods and different ones than younger adults. These patterns suggest that instead of moving through life stages at specific biological ages, different individuals went through life stages at different paces based on maturity and ability to fulfill the role of that stage.

As we can see from examining the historical development of the study of early medieval England, there was a strong focus on using burials as a method for interpreting social, political and economic processes occurring in this period, as well as a more recent shift to examining

individual ethnic, age and gender identities at local and regional levels. The role played by inhumation has been increasingly debated over the last few decades and is a major source of critique for shifting our focus in study. Despite the prominent role that cremation plays in this new emerging narrative, especially when interpreting migration and identity, it is under-theorized, neglected, and has not been privy to the same critical eye as inhumation. As noted by Hills and Lucy in their volume on Spong Hill, despite the advances in analysis and theory, "Much work in the last twenty years on the study of early medieval burial rites and chronology has used inhumation burials, rather than cremations" (2013:7). Until recently, cremation's designation as pagan and Germanic remained consistent, and variability of the rite within different regions was often downplayed to emphasize its 'barbarism' (Williams 2000:22).

It is only in the last two decades that cremation has been examined on its own from more than just a quantitative approach (Ex. McKinley, Richards, Myres, etc). In his dissertation Williams (2000) finds that for the most part, cremation as a burial form was ignored, unacknowledged, or subject to superficial interpretation even in the recent studies that begin with a critical examination of the study of early medieval burials. As he states, "Indeed, we can suggest a crude contrast between the intellectual stagnation of the subject in which cremation continues to be regarded in terms of 19th century terminology" (Williams 2000:5). References to cremation as 'Germanic' and 'pagan' illustrate the nationalistic and cultural values and bias of researchers in the Victorian period, rather than being useful interpretive labels to help explain archaeological patterns (Williams 2005: 7). Even as archaeology gained its independence from historically generated interpretations in the early 20th century, the biased terms associated with cremation remained and even persist into the present day.

C. Addressing Co-occurrence in Early Medieval England

The importance of cremation in early medieval England has been recognized, and it is now being given the same critical eye to detail as inhumation in site reports. Despite this, there is still much to be done. Studies continue to separate the two burial forms into different chapters, not comparing frequencies of artifacts or spatial relationships. This is a common method of dealing with co-occurrence within early medieval England, and is especially found in site reports (Boyle et al. 2011, Carver et al. 2009, Chadwick Hawkes and Grainger 2003, Gibson 2007, Hirst and Clark 2009). This division simply encourages a perspective that the differences between the two rites are either irreparable or negligible. While the two forms are frequently described and contrasted, there is little in the way of interpretation.

In other studies, the cremation burials continue to be omitted, leading the entire study to be biased towards an unknown sample of the population (Harke 1989, 1990, 1992a & b, Huggett 1996; Lucy 1998; Pader 1982). Sayer and Weinhold (2013) examine spatial distribution of burials within four different early medieval cemeteries. Three of these sites have both cremation and inhumation burials present, however the exclusion of the cremation burials from the analysis is not mentioned anywhere in the text. One of these sites is Lechlade, where the 29 cremation burials are mixed into the 199 inhumation graves. By omitting what is essentially 13% of their subjects, Sayer and Weinhold (2013) are skewing their sample and leaving out a large segment of the deceased population. Both Stoodley's examination of gender (1999) and life course (2000) at cemeteries where both cremation and inhumation co-occurred, used only the inhumation burials in his analysis. He notes (2000: 457) that this was a purposeful choice, and argues that his gender and life course designations should not be applied to cremation as

they are likely different from inhumation. However, I would argue that this statement assumes that there is indeed a difference; one should first assesse whether a division of the two burial forms is warranted and proceed from there. Further, the majority of the text simply refers to Anglo-Saxon society broadly, and fails to note throughout that the cemetery under study is merely representative of a small portion of the population. Penn and Brugmann (2007) treat co-occurrence cemeteries in a similar method by omitting the cremation burials from the sample. Their stated goal is, "an analysis of the material culture and inhumation burial practice at the four cemeteries as a source of information on Anglo-Saxon social structure" (2007:ix). However, this decision, which results in the omission of over half the buried population, receives no discussion, which is especially problematic due to the inclusion of Spong Hill as a case study, a site where inhumation makes up less than 3% of the total deceased population. These studies fall short in that they make the assumption that cremation and inhumation are different enough that they do not require unified analysis.

Anglo-Saxon England represents an ideal location to develop and test an approach to co-occurrence. As has been argued, cremation has long been ignored and under theorized here, leading to it being described rather than analyzed or omitted altogether. Recent studies have shown that not only is a comparison of cremation and inhumation in this period possible, it is critical for moving forward in our broader studies of mortuary behavior in this period. As Gibson notes: "although Anglo-Saxon burial theory has been developed substantially in recent years, there has as yet been relatively little dialogue concerning the reasons behind mixed-rite cemeteries, where cremation and inhumation were undoubtedly contemporary" (2007: 291).

CHAPTER 5: LIFE AND DEATH IN EARLY MEDIEVAL ENGLAND

Early medieval England is a period of change and instability- over the course of two centuries, its inhabitants would go from being part of the Roman Empire to developing their own proto-kingdoms. It is this context of changing political, economic and social structures that frames our discussion of burial practices. First, I will document the broad historical narrative of change and development from the beginnings of Roman rule to the end of the rise of the Anglo-Saxon kings. Second, I will discuss the current state of archaeological knowledge for burial practices during this period, including a review of the types of burials, burial containers, grave goods, the reuse of monuments and possible funerary structures. Finally, the five case study sites will be introduced.

I. The Broader Historical Context

The focus of this dissertation is on the period between the end of the Roman Empire in the British Isles around the mid-5th century until just prior to the beginnings of kingdom formation and conversion in the early 7th century (Table 4). This period is often referred to as the Dark Ages for its lack of historical and archaeological evidence, however, we have abundant cemetery evidence that we can use to help create more nuanced interpretations of this era. There are many debates about identity and migration during this period: we do not know to what extent the native Britons were present or absent within what is considered Anglo-Saxon, we do not know to what extent ethnic and group identities aligned with biological ancestry, and we do not know the true nature of the migration and integration of Germanic tribal groups into

England and how they interacted with the natives. Because burial evidence has figured prominently in these arguments, improving our interpretations of co-occurrence cemeteries can make a significant contribution.

Table 4: Important Events from Chapter 5, based on Arnold (2005)

EVENT	YEARS
First Roman Invasion by Augustus Caesar	55 BCE
Conquest of Britannia by the Roman Empire	43 to 77 CE
Britannia gains independence from the Roman Empire	410 CE
Germanic and Northern European tribes begin migration	Mid-5th c. CE
Rise of proto-kingdoms and formation of coherent groups	Early-7th c. CE

A. Beginning and End of Roman Imperial Rule

In 55 and 54 BCE, Roman General Julius Caesar led the first two military expeditions into Britain. While both ended without conquest of territory or any Roman troops remaining on Britain, it was considered a political success due to the replacement of a disagreeable king with a more Roman-friendly rival in the region of Kent (Mattingly 2006). However, in the early 1st century CE, the Emperor Claudius received a plea from Verica, leader of the British kingdom of the Atrebates, for help in order to maintain his control of Southern England. This was the excuse used to lead a full-scale invasion into Britain in order to conquer this resource rich region once and for all (Mattingly 2006). Over the next century, Roman Imperial troops spread throughout England and Wales, establishing forts and setting up garrisons of troops to maintain control. They established the territory as Britannia, and divided it into governing regions.

Throughout the next two centuries, Roman rulers had to contend with consistent fighting, uprisings, and mutinies from those within the Romano-British provinces, and along the Northern borders of the England and Southern Scotland. During the late 4th and early 5th centuries, Rome itself became endangered by internal rebellion and external threats as various tribal groups from Northeastern Europe moved westwards (Dark 2000). By the end of the 4th century, Britannia was increasingly under threat from the Saxons, Picts and Scoti of Ireland, who began raiding more intensively as the Roman Empire focused its attention on more pressing matters within the continent.

Debate continues regarding exactly how Roman rule ended in Britain. The Byzantine historian Zosimus records that the native Britons expelled the Roman civilian administration in 409 CE, causing the Romano-British population to appeal to Emperor Honorius for aid in 410 CE. The emperor informed them that they needed to look after their own defenses, and no aid would be given (Halsall 2007). The traditional interpretation, as presented by Mommsen (1885: 211) is that "It was not Britain that gave up Rome, but Rome that gave up Britain". They posit that with the rise of the 'barbarian' kingdoms in Western Europe, the Roman Empire's priorities shifted and they no longer saw the benefits of maintaining the island territory. However, more recent research, by individuals like Jones (1998) and Dark (2000), propose that the native and Roman Britons chose to expel the empire from their nation due to poor administration and the lack of protection. Further, as noted by Edmond Cleary (2011: 13), "what we know as 'Roman Britain' was not a monolithic entity and it did not come to a single clear-cut stop on a particular date and for a particular cause… there were multiple experiences of a whole range of changes taking place."

The end result was that in the early 5th century, Britain was no longer under Roman Imperial authority. Yet this does not mean that Roman influence and culture ended so abruptly. Archaeologically, we can clearly see that there is a change from deposits of the late 4th century, when Britain was under Roman rule, to the late 5th century, where control is attributed to the incoming Germanic migrants and British natives. As of the late 4th century, the archaeological record is plentiful in Britain, with variable and visible indicators of Romano-British rule. There is evidence of considerable vertical and horizontal differentiation, as well as clear signs of a complex civilization manifested in structures and material culture. However, by the late 5th century, this evidence is lacking, and the archaeological record is harder to detect beyond cemetery data. Esmonde Cleary (2011) notes that economic, social and cultural complexity declines, there is reduced mobility, flattening of vertical and horizontal hierarchy, and overall, low visibility of the general population to archaeologists. Examination of Roman style material shows that the native and Romano-British influence did continue into the mid-5th century, but it is difficult to determine from archaeological evidence exactly what became of the native population. Esmonde Cleary (2011) suggests that the natives also adopted Anglo-Saxon culture or hybridized with these immigrants as a way of surviving and gaining power (See also Fleming 2011; Hingham 2007; Loveluck and Laing 2011 for evidence of continuity between Romano-British and Anglo-Saxon populations).

B. Migration and Change

The entry of Germanic and Northern European migrants into Britain does not begin, nor is it limited to, a specific single event as portrayed by Bede, and it was likely a complex process

involving a diverse range of people. Various theories have been put forth to explain the migration and behavior that occurred during the mid-5th century, including elite dominance theory (Hingham 2007), apartheid (Thomas and Härke 2000, Wolf 2007), hybridization (Loveluck and Laing 2011, Fleming 2011) or assimilation (Heather 2010, Hamerow 2008). While it is likely some of the migrants were *foederati*, Germanic tribal peoples who were drafted into the Roman Imperial military who may have been migrating into Britannia prior to this period, there is also evidence of families and non-military migrants making the move to Britain as part of household or familial groups (Hills 1979). The reactions to the migration of these Northern European groups into England, as evidenced by archaeological material, ranged from warfare to hybridization to continuity (Brugmann 2011; Fleming 2011; Heather 2010; Hingham 2007; Loveluck and Laing 2011). It is unlikely that the migrants saw themselves as part of a larger *Anglo-Saxon* identity, and is more likely they associated themselves with smaller, localized groups. The same can even be said of the native Britons and Post-Roman Britons who had their own allegiances and backgrounds (Hills 2003; Loveluck and Laing 2011; Perkins 2000).

During the 5th and 6th centuries, power and status was primarily based within households and small communities (Hamerow 2008). Crabtree's (2010) study of animal bones from domestic sites revealed that prior to the early 7th century, farmsteads were primarily self-reliant and there was little differentiation in roles. These communities engaged in a diverse range of ritualistic and religious beliefs and practices; Christianity was not widely present until the 7th century (Pluskowski 2011). Beyond this, we know little about what daily life was like due to a lack of archaeological sites relating to domestic, political and economic sites; our primary form of evidence for this period comes from mortuary sites.

However, our archaeological material increases by the early 7th century, including evidence of craft and role specialization, new architecture, standardization of pottery, and rise of trading networks. These changes indicate the beginnings of horizontal and vertical social differentiation; a new elite emerged by increasing control over surplus and maintaining followers. Through competition and conquest, these small communities were able to gain control over increasingly large groups (Hamerow 2008). Gradually into the 7th and 8th centuries, there was a transition to organized kingships, which led to a change in obligation from family to lord. As a form of control and way to maintain loyalty, these groups developed coherent regional identities, with both real and imagined histories to legitimize their power (Semple 2013: 2). By the 7th century, there are distinct kingdoms with clear identities and historical narratives to legitimize their power (Fleming 2011; Ulmschneider 2011).

By the late 7th century, England has become of realm of Christian Anglo-Saxon kings ruling over large kingdoms, trading with the continent, creating written laws, issuing coins, and copying their continental counter-parts (Dark 2000). While we know Christian monasteries had an impact on improving and expanding trade networks of the 7th century, actually documenting the spread of religious conversion is more complicated (Crabtree 2010). Christian conversion among the kings and elites, who benefitted politically from the new religion, began during the 7th century (Dunn 2009). However, due to the focus on political power rather than the religion itself, the kingdoms often reverted to paganism after the death of a baptized king. In order to improve conversion, Christian missionaries promoted syncretism of pagan and Christian values, morals and even sacred sites (Effros 2001). Therefore, Christianity was highly varied within

England, due to regional variation and the provincial nature of religious communities that lacked of contact with the continent (Pluskowski and Patrick 2003).

II. Burial Practices in Early Medieval England

Mortuary behavior during the early medieval period clearly demonstrates the changes that occurred with the loss of the Roman Imperial infrastructure, immigration of Northern European tribal groups into the country, and the diverse range of relationships that occurred between the migrants, post-Roman Britons and native population. Burial in England just prior to the mid-5th century was primarily supine and extended, with the remains contained in wooden coffins, stone or tile cists, or, towards the end of the 4th century, more complex lead coffins. Regional traditions were present throughout Britannia during Roman occupation, although it is most obvious in the choices of grave goods rather than the treatment of the body (Philpott 1991). As dictated by Roman custom, cemeteries were found outside of the city walls, and were primarily located along roadways (O'Brien 1999).

The most archaeologically significant change tied to the settlement of Germanic and Northern European migrants in England was the increase of cremation burials and a shift to more heavily furnished burials. Cremation only cemeteries populated the Eastern coast, inhumation only cemeteries were scattered throughout Central, Western and Southern England, and cemeteries with both were found throughout. (Geake 2002; Härke 1997; Lucy 2000; Philpott 1991). As Semple argues, the "lack of fixed sense of national or even regional identity, mingled with a loss of roots and stability…seems to have led to a remarkable burgeoning of funerary rites and traditions" (2013: 59). However, the increase in cremation

associated with migration does not mean that this burial treatment was only practiced by individuals of Germanic or Northern European descent; it was likely adopted and used by native Britons and hybridized communities as well (Lucy 2000; Williams 2010). Here, we will look more specifically at the broad trends in funerary behavior from the mid-5th to early 7th centuries.

A. Inhumation Burials

Inhumation refers to burials that did not undergo the cremation process and are therefore not burnt. The information we are able to extract from this type of burial varies depending on the preservation of the skeletal material, grave goods and grave furnishings, which can vary with depth of the burial, ground temperature, water, acidity of the soil and other factors (Mays 1998). Many cemeteries in early medieval England have been subject to highly acidic soils, leading to preservation of few artifacts and only outlines of where the skeleton once was (Carver et al. 2009). If the skeletal material is reasonably well preserved, demographic variables including sex, age, working conditions and paleopathology can be inferred from the remains. In some cases, DNA extraction, stable isotope analysis and other scientific procedures can be completed on unburnt bone to reveal genetic connections, migratory patterns, diet, and more (Bass 2005; Buikstra and Ubelaker 1994; Mays 1998; Roberts and Manchester 2005).

Beyond biological data, inhumation burials can be highly revealing about the funerary rituals and identity of the deceased. There are a number of variations in body position possible with inhumation burials. The most common is the extended supine burial in which the individual is laid on their back with their legs either straight or, in many cases, slightly flexed.

This position accounts for 50-75% of all inhumation body positions in this period. Less common is burial of the individual on their side with their legs either semi-flexed or flexed, while crouched positions are the most rare (Brush 1993; Lucy 2000). Variations in body position are typically regionally determined and it is possible to detect changes in frequency of a given position over time. However, this diversity may relate more to size of the grave or burial container, or the circumstances of death, rather than any particular ideological or individual meaning. Multiple burials, that is, any burial with more than one individual per grave, were also common in this period. In most instances, the multiple burials contained two individuals, however there are some examples of up to six individuals in a single grave (Austin 1928; Boyle et al. 1998; Smith 1909). Individuals are usually side-by-side or one interred on top of the other. The most common use of a multiple burial is to place a child with an adult. These are often assumed to represent burials of mother and child, or other close household relationship based on the fact that the two individuals are no usually no more than a generation apart (Ludemann 1994: 522). However, there has been little DNA testing to prove this, and the commonality of this form of multiple burial at certain cemeteries suggests that they may be unrelated (see Empingham II by Timby 1995, where ten double burials excavated).

The dead in early medieval England were often inhumed in clothing, and while the fabric rarely survives, the extant metal clasps, buckles and clips offer an indication of what once was there. By examining these fasteners, the remaining fabric, location of clothing items on the body, and patterns of wear, reconstructions of the garments have been possible and allow us further insight into what these individuals were wearing in life and death (Owen-Crocker 1986). Women are thought to have worn tubular style gowns that were gathered to the body using

single or double brooches, sleeve clasps and belts. These garments would be embellished with jewelry and girdle hangers. Some minor variation in costume is seen across the country and differences in number and placement of brooches may have been used to signal different regional or ethnic identities. There is little evidence of men's clothing, although evidence may point to a tunic and pants being the primary form of dress (Owen-Crocker 1986). Occasionally, evidence of cloaks or furs have been found, which Owen-Crocker (1986) argues may indicate the beginning of social differentiation signaled by dress. However, their lack of presence in other burials may simply be due to poor preservation.

Another important feature to discuss is the grave itself, presence of containers and the other furnishings within it, commonly referred to as grave furniture. The body could be buried without protection on the floor of the grave, or placed within some type of container like a wooden casket or hollowed log. Other types of grave furnishing included slabs of stone placed on the bottom or sides of the burial trench, wooden planks, mattresses of straw or grass, pillows, full size beds, wood or animal skins, or in the unique case of Sutton Hoo, an entire ship (Lucy 2000, Hirst and Clark 2009). Inhumation graves were primarily ovoid, sub-rectangular or rectangular in shape, and could vary in depth from a shallow burial that is just below the surface to over one meter deep. The variation in the minimum and maximums for the size and depth of the burial varied by size of the individual and cemetery site (Penn and Brugmann 2007: 76). There are a number of possible grave structures found during this period, including internal sockets and ledges, for erecting structures, lowering the corpse or placing objects with the body, and external structures such as post holes, ditches, kern-slots, and mounds placed around and over the burial (Hogarth 1974). While there is little evidence for grave markers,

many of the cemeteries in this period were used over the course of two centuries, and a lack of overlapping or interrupting graves suggests there was some type of marker to denote where people were buried (Penn and Brugmann 2007: 83).

B. Cremation Burials

Cremation refers to burials where the physical body of the deceased has been burnt. In the early medieval period, this primarily took place on a pyre, and after the burning was complete, the body would be transferred to an urn, and then buried. The cremation process produces dried skeletal material that can be identified and studied in a fashion similar to the examination of an inhumed skeleton. While it is admittedly a more difficult process due to the lack of complete bone, demographic variables like sex, age, working habits and paleopathology can still be estimated on cremated bone. Furthermore, due to England's acidic soils and poor preservation of bone, in some cases, cremated remains actually survive in a better state of preservation than unburnt human skeletal material.

It is possible to determine the funerary process in the early medieval period based on the burning patterns that can be observed on cremated bone. Thus it is now known that the temperature for early medieval cremations ranged from 400 to 1,200 degrees Celsius. Funerary pyres were likely constructed of a crisscross framework of timbers that would be filled with brushwood and other flammable material. The deceased would have been laid on top of the pyre until it collapsed, so that during the cremation it was possible for extremities to avoid complete cremation due to their distance from the central flame (McKinley 1994). When the fire ceased and the body was generally reduced to bone, the skeletal fragments would be

collected, along with pieces of pyre goods, ash, animal bone and other offerings. An analysis of the weight of cremated bone found in urns indicates that not every bone was collected following the fire, and some may have been distributed elsewhere, kept by mourners or left at the pyre site. The average weight of a cremated individual has been determined to be 3,075 g (3,375 g for men, 2,625 g for women) (Oestigaard 2013) However, the average weight of the cremated remains collected from early medieval sites can range from small token amounts under 10 grams to almost complete remains above 3,000 grams. In the present case, the average weight at the five different cemeteries selected for study ranged between 45 to 600 grams.

Once collected, cremated remains could be interred in a number of ways. Most frequently, the cremated bone was deposited in a ceramic urn. While many urns were plain undecorated pots, some could be highly decorated with bossing, stamps, linear incised marks, or freehand designs such as animals, runes, or mythological creatures (Lucy 2000). The shape of the pot itself was also varied, ranging from large vases to shallow bowls. Research by Richards (1987) demonstrates that the size and shape of the urn relates to age and sex of the individual. Infants were found in be in shorter vessels, whereas adults were found in the tallest, and females were more likely to have wider mouthed vessels. At the same time, Richards (1987) found no association between decoration and biological identity, and argues instead that such embellishments may relate to other identities. These observations were reaffirmed by Hills and Lucy (2013) in their study of the full Spong Hill collection of urns. Many urned cremations may also have other features: some have evidence of lids placed over the top and other have glass inserted into the sides to serve as windows (Nugent and Williams 2012). There have been few

examples of unurned cremations at early medieval sites too, but this may be attributed to a lack of careful excavation techniques to recover this type of deposit. More recent excavations have begun to reveal unurned cremation burials, including Alwalton (Gibson 2007), Portway (Cook and Dacre 1985), Thurmaston (Williams 1983), Apple Down (Down and Welch 1990) and others.

The internments of cremation burials are fairly simple, consisting of shallow circular or semi-circular holes. In most cases the urns were deposited upright, though a number of inverted examples exist (King's Newton excavation, Briggs 1869). Multiple cremation burials have been found, with two individuals in separate urns but a single grave, or multiple individuals represented in a single urn. Like inhumation, the presence of multiple individuals in one grave or urn has been interpreted as presence of a child or infant and adult, though further analysis of this is needed (Lucy 2000, McKinley 1994). Some cremation graves have external structures. At Apple Down (Down and Welch 1990) and Alwalton (Gibson 2007), four postholes were found around cremation burials suggesting that there had once been a structure over the grave. At Portway (Cook and Dacre 1985), Springfield and Stifford Clays (Tyler 1996), ring-ditches have been found surrounding cremation burials, suggesting purposeful burial around these monuments.

C. Deviant Burials

An important subsection of these types of burials are those who were buried in unique or rare circumstances, usually referred to as deviant burials. Reynolds (1999) work on these unusual patterns of burial has revealed a number of possible types of deviant burial and

possible circumstances of these practices. While they are widespread throughout England, deviant burials make up less than 1% of the deceased population. There are four primary types of deviant inhumation burials: prone, stoned, decapitation and amputee. Prone burials have always excited excavators, and led to speculation regarding possible witchcraft or live burial. A case from Sewerby of a prone burial revealed that the woman's legs were bent and arms pressed underneath her- as if she had been thrown into the burial alive and was attempting to raise herself up before she was buried, though a large rock on her back would have prevented this (Hirst 1985: 39). Prone burial has been interpreted as a signifier of shame, although it could just as likely be due to accidents during the lowering of the corpse. Of the 115 examples of prone burial from early medieval England, 36 are male, 52 are female and 26 were indeterminate. Also, 67 of these were furnished with grave goods or furniture. Prone burials have been found across the country, demonstrating no regional trends, and were likely applied to a wide range of individuals and circumstances (Reynolds 2009: 68-75).

The second form of deviant burial is decapitation, the removal of the head from the body either pre- or post-mortem. The skull may be displaced within the burial or removed altogether. There are 54 potential cases for decapitation burial in the early medieval period, 27 are male, 6 are female, and the remaining are indeterminate. Approximately half of the decapitated individuals were buried in unfurnished graves. The distribution of these types of burials is sparse, and there is little clustering to reveal regional trends in the practice. Decapitation is most often interpreted as a form of execution or punishment, although the removal and placement of skull seem to give little indication for the specific motive (Reynolds 2009: 76-81).

Stoning is a rare burial practice found during this period, and consists of the body of the dead being covered with either large block or a great quantity of smaller stones. Some 65 examples of the practice have been identified, although there may be more or less given that an interpretation of stoning can to some extent be subjective. After all, the presence of stones in the back fill may be natural. Of those identified, 24 were male, 19 were female, and 22 were indeterminate, with only a quarter of the burials being completely unfurnished. Unlike other deviant mortuary treatments, stoning does cluster in specific cemeteries, with more cases occurring in central England. This may have been practiced as a way to prevent a spirit from rising, pin the body down into the grave, or merely provide a form of grave furniture (Reynolds 2009: 81-85).

The last form of deviant burial concerns amputation, or the deliberate removal of specific body parts, most commonly the hands or feet. Only 14 examples are known, though it can be difficult to determine in many cases whether the removal of these appendages is deliberate or due to a lack of good preservation. There is little interpretation about this rite due to its rarity, however it can potentially indicate punishment, surgery or accident. There are no regional patterns, although such burials have been known to occur in combination with other deviant rites, including missing limbs and prone burials (Reynolds 2009: 85-88).

One of the problems with understanding these types of burials is that they do not display a full suite of evidence to demonstrate that their deviance in burial is equal to social deviance, as many are located amongst family and community, are furnished and are given elaborate ceremonies. Further, there is variation in how the deviant burial appears, indicating that these rites were done based on different motivations. Reynolds argues that there was

likely a common outcome sought in these deviant practices- prevention of the dead haunting the living (2009:91). However, we need to be careful of interpretations like this.

Finally, there has been no investigation into the possibility of deviant cremation burials, although it is possible that those buried without urns or in a separate location away from the group may indicate some social difference or unusual circumstance of death. Inverted urns found at King's Newton (Briggs 1869) may represent a form of deviant cremation, and unurned burials found in low percentages among many cemeteries in this period may be another form of deviant burial. Another possibility is that the deviant portion of the funerary ritual occurred with burning, not burial, so the particular deviance of the act may not be archaeologically visible.

D. Grave Goods

Both inhumation and cremation burials can be left unfurnished or provided with a range of artifacts. While this study and previous ones (Lucy 2000; Squires 2013; Williams 2003, 2005, 2007) have found that certain types of grave goods that can be unique to one form of disposal, this section provides a general review of the range of the types of artifacts found in early medieval graves.

i. Clothing and Jewelry

Brooches are one of the most common artifacts found in graves and are primarily associated with females. Women used brooches to pin their dresses into specific shapes, and they could require between one and three brooches to pin the fabric into specific

configurations (Owen-Crocker 1986). While they are found in cremation burials, the majority would have been on the body during burning and are often fragmented and unrecognizable in the urn. Historically, brooches have been one of the primary artifacts in interpreting ethnic identities, with certain brooches being indicative of certain groups (Lucy 2000:26). However, it is now recognized that it is more complicated than this, and now brooches are more used as a chronological rather than ancestral guide. Brooches are divided into two broad categories: long form or round. Long form brooches consist of all those with a straight body, bow near the head, head-plate and foot-plate. This type includes cruciform, square-headed, small-long, equal arm, and supporting-arm brooches (Åberg 1926; Dickinson 1976; Leeds 1945; Leeds and Pocock 1971; Mortimer 1990). Round form brooches are those with circular bodies, and includes disc, applied saucer, cast saucer, button, annular, quoit and penannular brooches. (Ager 1985; Fowler 1960; Leeds 1945).

Other dress fastenings found with the female costume include sleeve/wrist clasps, pins, beads, and objects hung from the belt. Sleeve or wrist clasps are made of coils of wire or cast metal, and were used to hook together the sleeve of a dress. Occasionally, these are also found in male graves, but were used for gathering fabric at the knees or ankles (Hines 1993). Glass beads can vary widely in shapes and colors, including discs, spheres, cylinders, cubes, lobes and segmented, as as well being clear or opaque in a rainbow of color. Many are also decorated with dots, zig zags, lines, spots or polychrome trails. Other beads include amber, amethyst, rock crystal, metals, and more. When found in cremation burials, glass beads may appear simply melted glass due to having gone through the fire, and some types like amber do not survive the heating process. Beads were worn in necklaces or festoons, strings of beads hung between two

brooches at the shoulders or from the belt. Some beads are found with men as jewelry, but also are present hanging from the sword- although these are usually single beads that are much larger.

For men and women, the most common types of clothing accessories were those associated with belts or straps. Many women had objects hanging from their belts including bags or purses, small boxes, or girdle hangers. The bags and boxes would be used to carry various items, such as spindle whorls or amulets, although sometimes more utilitarian tools like needles and weaving picks may be included. These are often identified by the ring that the bag hung from or the presence of a purse-mount (Lucy 2000). Girdle hangers or chatelaines consist of keys or other tools that would hang from the waist, and could be items of symbolic or practical value. Buckles are a common find, and can consist of the entire buckle, the kidney or d-shaped loop or the back plate. They were used as part of the costume or for securing bags, girdles, baldrics or sheaths to the body (Brush 1993). Decorative metal fittings placed at the end of the belt or strap to make buckling easier are also common.

ii. Weapons and Utilitarian Objects

Weapons can be divided into two categories: utilitarian knives carried by both males and females, and other forms of weaponry carried primarily by males. No comprehensive study has assessed the variation in knives, but they can be broadly divided into those with straight or curved backs. Knives were hung or tucked into the belt and occasionally are found hanging from the girdle. Many would have been sheathed in leather (Drinkall and Foreman 1998; Lucy 2000). Weaponry has primarily been found with males who died during the 5th and 6th centuries, and a

combination of weapons is common. These can include spears, shields and swords, but also arrows, seaxes and axes. Since wood rarely survives, we are often left with the metal on the basis of which we can identify these weapons. Spears are identified by the presence of a spearhead and/or ferrule, the tip at the foot-end of the spear, and were usually placed along the left or right side of the body (Swanton 1973). Shields can be identified by the presence of the central boss, metal grip, and rivets, although sometimes leather handles and covering survives. They are often found lying on the chest of the deceased (Evison 1963). Swords are primarily double-edged and were made to be used one-handed. They can be made from multiple pieces of metal that would be welded together, with a metal hilt, guards and pommel added to the handle. Their scarcity suggests they are prestige goods (Bone 1989). The seax is a single edged sword that became popular in the 7th century, and were decorated with grooves and inlaid designs (Evison 1961). Arrowheads and axes are less common, so little analysis has been done of these.

Other utilitarian items include tools, textile tools, and toilet implements. Awls, hones and chisels are found only in deposits from the 7th and 8th centuries in graves, and are thought to have been included with specialist burials (Geake 1997). Weaving battens, spindle whorls and weaving picks have also been found, indicating fabric making on a loom (Chadwick Hawkes 1958). Combs have been found in both inhumation and cremation burials as a grave good, but some must have held some symbolic meaning inasmuch as they are rarely burnt, even in the context of cremations (Williams 2003). Another item associated with appearance are the toilet implements, which were hung together or as separate items, and may include tweezers, ear-scoops, brushes, scrapers, shears, files or knives. While not utilitarian, gaming pieces and

amulets, such as fossils, crystals or animal teeth have also been found in graves (Meaney 1981; Smith 1907).

Within both inhumation and cremation graves, certain vessels may also be found. Both plain and decorated pots and bowls of metal or wood, often with food or drink inside, may have been deposited at the grave or pyre as a form of offering (Lucy 2000). Glass vessels, particularly in the shape of beakers, have been found in a number of inhumation and cremation burials. They were produced using Roman techniques, and primarily came in greens, yellows, browns and deep blues. Beaker shapes included stemmed, claw, cone, bell, pouch, bag, squat or palm, and it is likely that they were imported (Harden 1972, 1977). When they are found in cremation burials, they have usually been burnt and are represented by melted masses. Buckets, wooden cups and bowls, and boxes are usually interpreted based on the presence of the metal bindings, hinges and hoops used to hold them together or repair them (Geake 1997). The presence of wood is rare, but has been found on occasion to support the inference.

iii. Pyre vs. Grave Goods

An important consideration in any study of cremation and inhumation is the division of artifacts into those that were placed within the burial and those that were placed on the pyre (McKinley 2013). Pyre goods refers to objects that were placed with the body while on the cremation pyre, whereas grave goods refers to those deposited in the burial following the burning or within inhumation burials (Williams 2008). Williams (2013) notes the high probability that pyre goods had very different meaning than those included at the burial. Pyre goods are objects to help form and shape memory. Because they aid in the construction of a tableau that

symbolizes aspects of who the deceased was and what they meant to the community (Squires 2013) pyre goods likely served a similar role as the grave goods found with inhumations. Furthermore, the objects added to the cremated remains after burning and included in the cremation grave may have aided in the formation of the deceased's new identity as an ancestor. As a result, to the extent that it is possible, it is necessary to determine whether artifacts from cremation burials were burned or not

F. Size, Location, and Monuments

Burial sites in this period can vary greatly in their size and composition, from a solitary inhumation grave, as is the case with many later elite barrow burials, to cemeteries with thousands of cremation burials, like Spong Hill (Lucy 2000). The occurrence of inhumation is far more prevalent in the early medieval period in England: as of Lucy's (2000) study of Anglo-Saxon burial practices, 692 cemeteries have only inhumation burials, while 70 cemeteries have only cremation and were largely confined to East Anglia, Yorkshire and the Midlands. There are also 175 cemeteries that have both cremation and inhumation, though there is high variation in the proportion of each, ranging from a single burial of one type to an equal distribution of both. It is not known whether there was a standard or common size of cemetery in this period, though those containing 100 to 200 burials are the most common. Sites like Spong Hill with 2380 burials likely served multiple communities or a single region of communities, whereas sites like Lechlade with a few hundred burials are more likely to have served one community alone (Boyle et al. 2011).

Earthen monuments are a common feature to cemeteries in this period, and could either be constructed anew by the mourning population, as was the case with many of the 'princely' or elite barrow burials from the 7th and 8th centuries, or they could be reused structures that were originally created in the Roman, Iron or Bronze ages. Between one fifth and one fourth of all early medieval cemeteries re-used a prehistoric or Roman monument as part of their layout or design (Semple 2013; Williams 1997). The most common type of reuse was of Bronze Age barrows, potentially as a result of their high visibility on the landscape. There are 140 examples of Bronze Age monuments being reused as part of cemeteries, and their use during the 5th and 6th centuries is fairly widespread in England. Second in popularity for reuse was wide variety of Roman structures, including road ways, enclosures, temples, villas, and ditches. While there are only 13 examples of Neolithic monuments, and 14 from the Iron Age, including hill forts, stone circles, hinges, and barrows, some 53 examples date primarily to the 5th and 6th centuries (Lucy 2000).

There are many theories as to why the natives and migrants chose to reuse monuments. The traditional argument has been that prehistoric and Roman monuments were more convenient and an easier option to exploit in terms of energy expenditure. However, this does not account for the variation in use of these structures and why the later examples of Anglo-Saxon constructed mound are so different. Williams argues that "the respect shown for the pre-existing monument and the use of the mound as a focus for an entire cemetery rather than simply the burial of one grave suggest that expediency cannot be the only or principle reason for reuse" (2006: 183). Instead, it is more plausible that the monuments played an important

role in the negotiation and construction of identities of the living and dead. Semple proposes that:

> At one level, recycling of prehistoric and Roman monuments for burial can be interpreted as an expression of the interest by populations—migrants or indigenous—in forging links to the landscape and signaling legitimate ownership of land and resource. With further interrogation it is clear that these actions can be interpreted as expressions of emergent and competing regional and local community identities…. Looking to secure their power and status for the future by manipulating monuments that were visible physical reminders of an earlier time [Semple 2013: 58-59].

Reuse of monuments forged a relationship between the living, dead and the landscape, whereby the past was reimagined and the future secured.

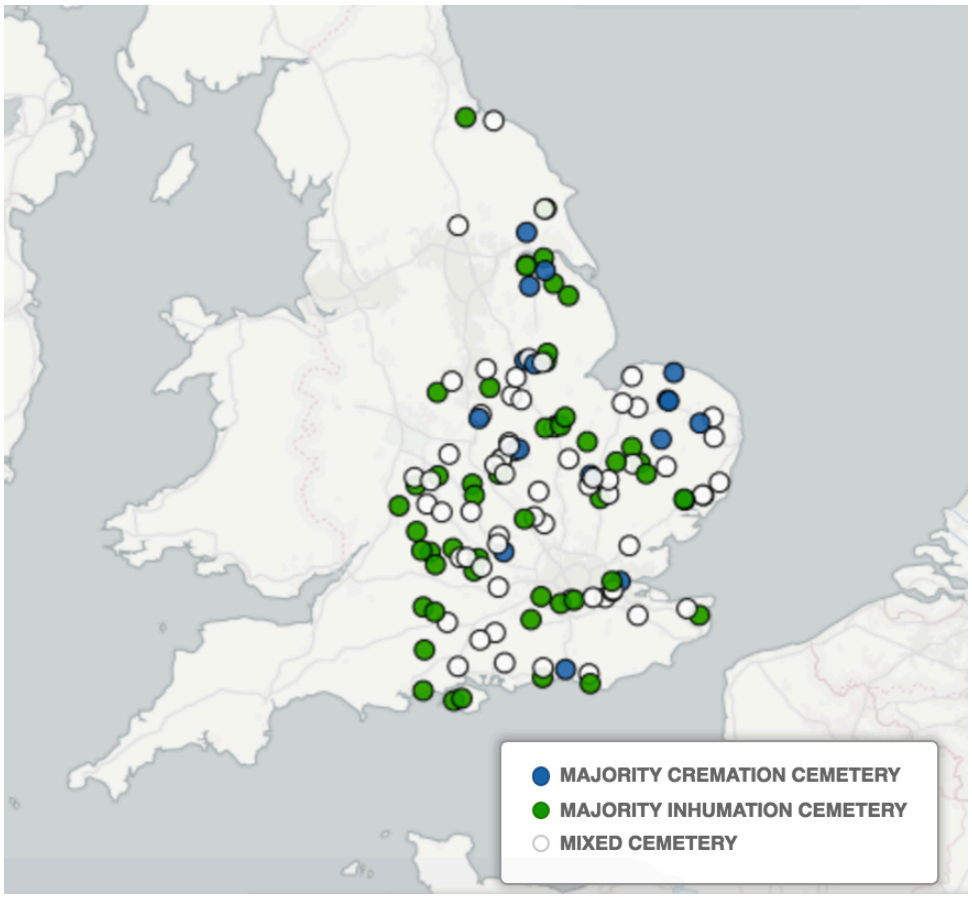
Monuments can be extremely important for studying the dead in this period as they can dictate things like the spatial layout or proper use. For example, Roman enclosures have been used at Mucking and Wasperton as boundaries for the extent of the cemetery, changing the possible number of burials and limiting use (Carver et al. 2009; Hirst and Clark 2009). At other sites like Lechlade, the prehistoric mounds act as a reference point, and burials are oriented in accordance with the monuments (Boyle et al. 2011). Studies of orientation of burials, for example, could be completely mislead regarding their results if the locations of monuments was not known.

III. Co-Occurrence of Cremation and Inhumation in Early Medieval England

Finally, we will examine the range of co-occurrence sites and their attributes. Lucy's study of burial rituals in early medieval England is by far the most comprehensive to date, and offers a glimpse into the broader trend of co-occurrence of cremation and inhumation. Lucy identified 175 cemetery sites dating from the mid-5th to early 7th century that have both cremation and inhumation practices occurring simultaneously in the same time and space. Sadly, her database is not freely available for use, so there is no published list of her 175 sites. However, with the help of Matthew Austin I have produced a fairly comparable list of 126 sites that includes full information on location, number of burials, and citations. Based on this database, we can note some general characteristics about these cemeteries.

Of the 126 cemeteries with co-occurrence, there is a range of ratios of cremation to inhumation, from sites with a single inhumation (n = 8) to a single cremation (n = 12), and everywhere between. In terms of amount of cremation burials at each site, 27 sites are 65% cremation burials or more, ranging from sites with only 4 burials total to Spong Hill, with over 2,000 cremation burials and only 57 inhumation burials. There are 33 cemeteries with between 64 to 34% cremation burials, with the majority having an even split between inhumation and cremation. Finally, of the remaining 66 sites with 33% and below cremation burials, almost half have 10% cremation burials or fewer. Much like the rest of the country, even when burials are mixed there does tend to be more inhumation burials.

Figure 1: Map of Known Co-occurrence Sites in Early Medieval England, created by author using CartoDB



Looking at the map (Figure 1), there are no clear visual groupings of co-occurrence cemeteries, and they are fairly spread out within the region traditionally assigned to Anglo-Saxon cultural influence. The majority of co-occurrence cemeteries are found within the East, Midlands, South, and the southeastern portions of the North. There are no co-occurrence cemeteries in the West or Cornwall, as inhumation dominates. There are no clear clusters based on the proportion of cremation to inhumation either, although those with cremation as the majority are found more in the Eastern portion of the country, and those with inhumation as the majority are the most Westerly of all the cemeteries—a pattern which is not unexpected

given that inhumation or cremation only cemeteries tend to appear more in those corresponding areas.

IV. Case Study Sites

Five case studies have been selected for examination. Each cemetery has both cremation and inhumation present during the same period; each is located within a different sub-region in England; each has clear variation from the others in proportion of burial types, patterns of containers and artifacts, demography, and spatial layout; and each has extensive and accessible high quality archaeological and archival collections. The case study sites will be briefly introduced, along with a review of prior interpretations.

Figure 2: Map of the Five Case Study Sites, created by the author using CartoDB

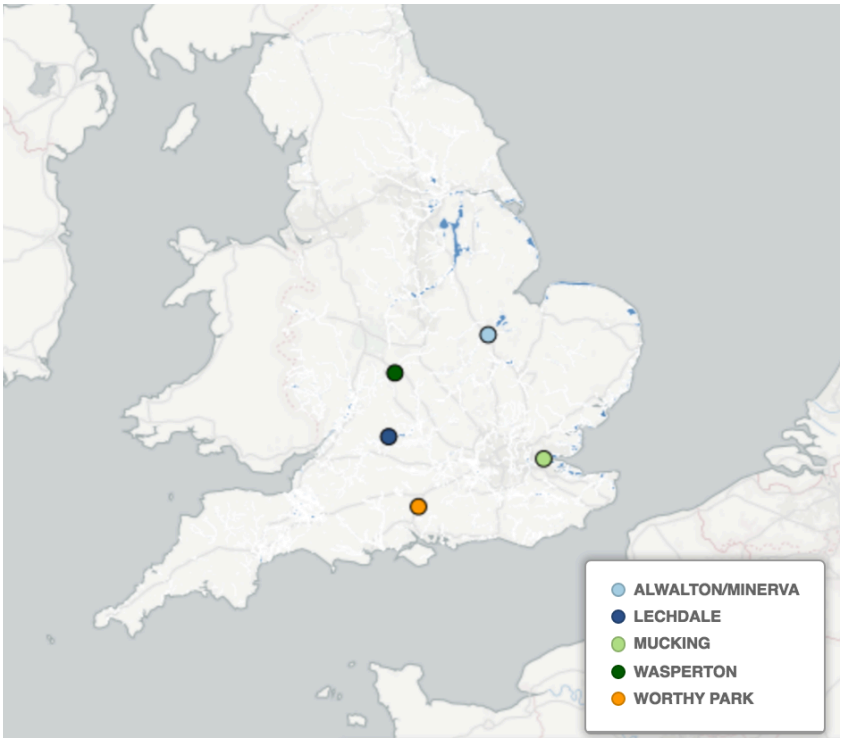


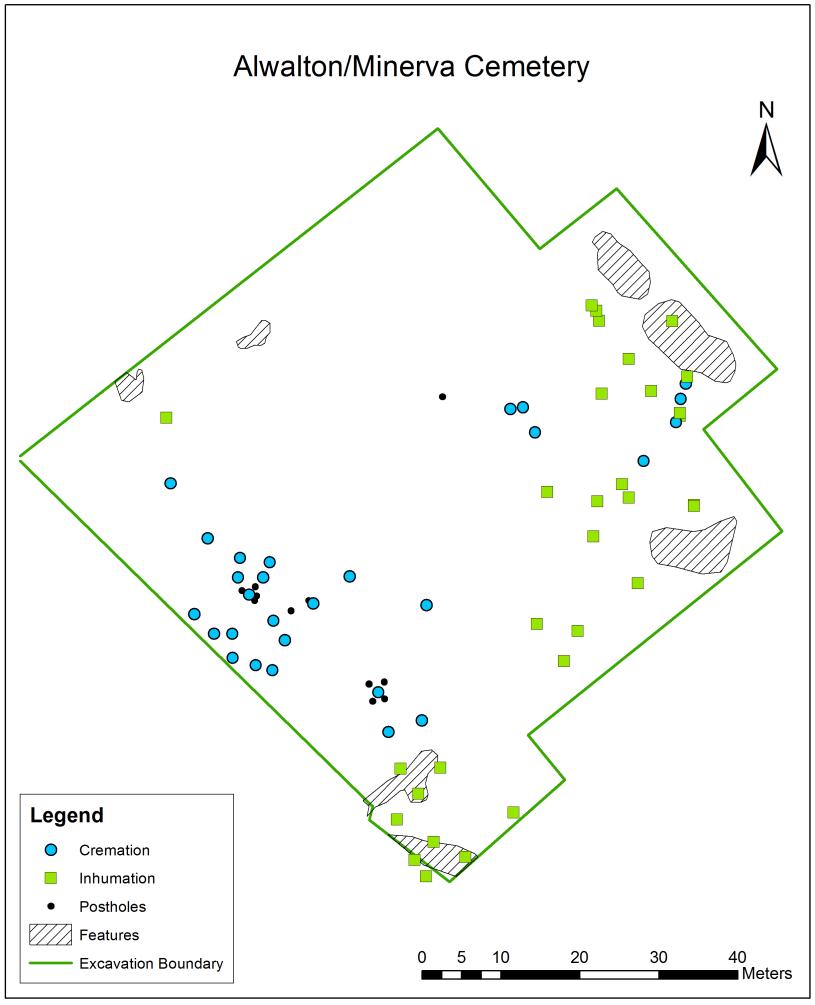
Table 5: Summary of Case Studies

Cemetery	Location	Cremation	Inhumation	Monuments/Structure
Alwalton	Cambridgeshire	28	32	Possible External Structure
Lechlade	Oxforshire	48	224	Circular Roman Ditch
Mucking	Essex	461	277	Two Roman enclosures, Bronze Age barrow, and Four penannular features
Wasperton	Warwickshire	27	179	Two Roman enclosures
Worthy Park	Hampshire	45	105	None

A. Alwalton

The cemetery at Alwalton, also known as Minerva, is located 6km southwest of Peterborough, Cambridgeshire, between Oundle Road and the River Nene. It was excavated in 1999 prior to site development for the Minerva Business Park. Two areas were excavated as part of the survey, including an Iron Age structure, and the early medieval cemetery that this study will focus on. The cemetery contained 28 urned cremation burials, 2 unurned cremation burials, and 34 inhumation burials. The cremated remains date from the 5th to 6th centuries CE and the inhumed remains date from the late 5th to early 7th centuries CE. The cremated burials are found primarily in the southern and eastern quadrants of the site, and were heavily damaged due to medieval farming.

Figure 3: Alwalton Cemetery Map, created by author using ArcGIS 10.1



Examination of the cemetery revealed a number of grave structures and features. Five postholes were found clustered around the cremation burials. They may have been grave markers for cremations 1293, 1257 and 1266 or dividers for 1266, and were dated by the presence of Saxon pottery within one. Further, grave 1297 has a series of postholes (4) around it, which may indicate the presence of a structure or fence. In addition to the burials, Feature 1326 was likely a possible pyre site, a large burning pit with large quantities of charcoal and ash

with burnt human bone. This is a rare find and has only ever been found at Snape, another Anglo-Saxon mixed-rite cemetery (Filmer-Sankey and Pestell 2001). While there are no clear associations with prehistoric or Roman monuments, Gibson (2007: 294) proposes that the cemetery may have been established in this location to be visible to those boating down the River Nene. This is further supported by the orientation of the inhumations, suggesting that their placement was in reference to the river. Artifacts found within the graves follow the normal range seen in early medieval cemeteries although there are clear differences between the cremation and inhumation assemblages, and the gender division of artifacts as proposed by Stoodley and others holds true for this site.

Gibson (2007) proposes both the inhumed and cremated population were culturally Anglo-Saxon, but may have had some interaction with post-Roman peoples. She bases this on the types of artifacts found at the site, as well as manner of the burials. In her conclusion, Gibson (2007) explores possible relationships between cremation and inhumation at Alwalton. She proposes two possible interpretations based on the evidence:

1) A single community allowed two separate burial rites, with cremation for younger individuals and inhumation for the older population

2) A single cemetery was used by two different communities, possible since it may be that the two different areas were segregated

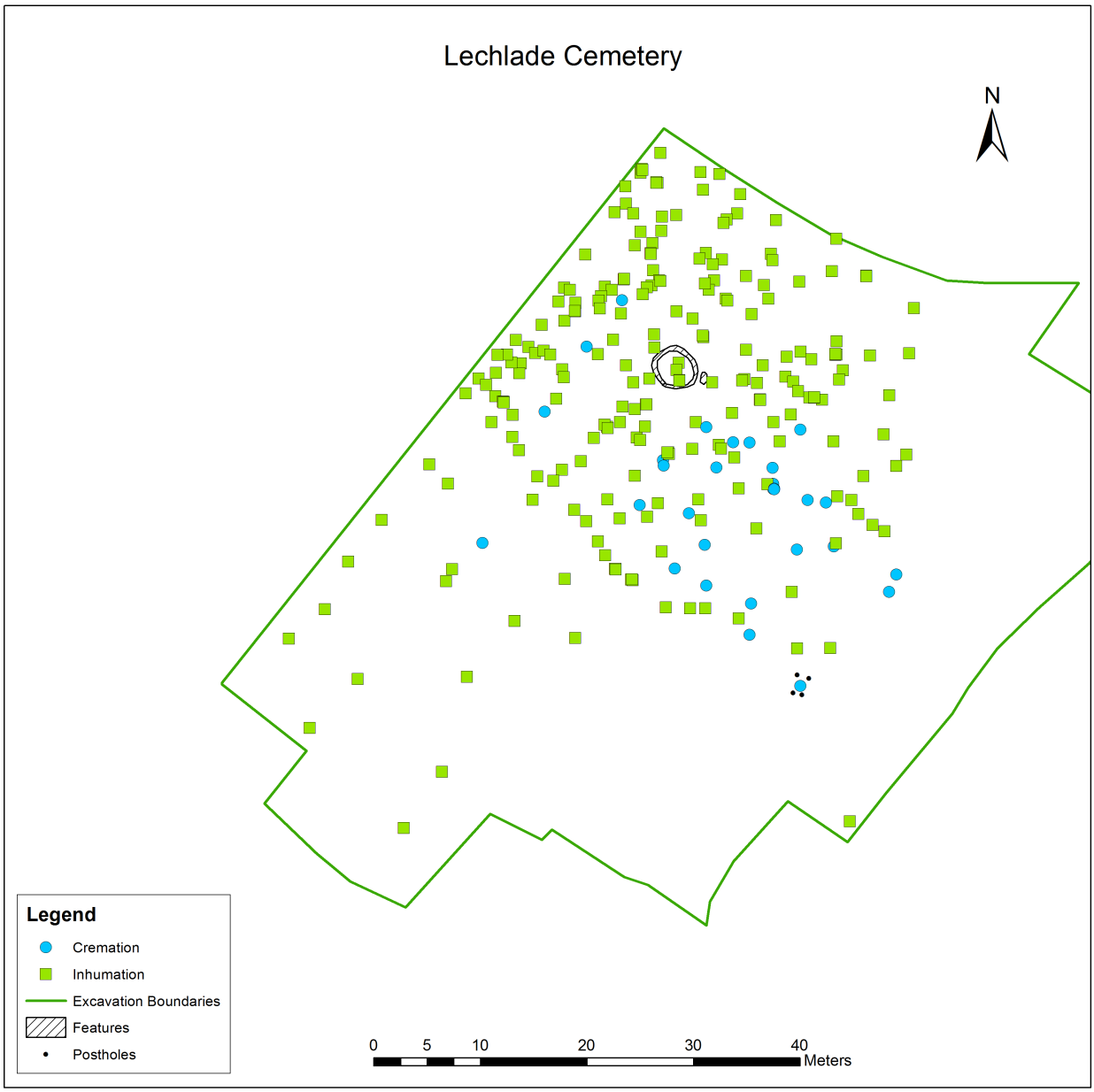
She also recognizes that there may be three different rites going on here: isolated wealthy cremations, isolated and wealthy inhumations, and a mixed population in the middle. While Gibson (2007) does not make any attempt to come to a specific conclusion regarding the

meaning behind the relationships between cremation and inhumation, her speculation is notable as it is the only site under investigation where the relationship is explicitly discussed.

B. Lechlade

The Lechlade cemetery is located 30 km west of Oxford on the north bank of the river Thames. It was excavated during the summer of 1985 prior to development of the site for a housing development as part of a larger project to investigate known prehistoric and Roman features in this area. The cemetery contained 219 inhumed individuals from 199 graves, and 29 cremation burials, as well as three probable charnel deposits and an empty grave. The associated grave goods were used to date the site from the mid-5th to late 7th centuries CE. The cemetery is one of the wealthiest from the region, has many rare and unique finds that are not found elsewhere in England. In addition to this, the preservation was exceptional, allowing for a more complete interpretation of the skeletal material and grave furnishings. They note that many cremation graves were truncated during the mechanical stripping of the site, many more would have been removed through medieval ploughing, and based on the amount of burnt human bone found in backfill, the later inhumations may have disturbed cremation burials.

Figure 4: Lechlade Cemetery Map, created by author using ArcGIS 10.1



Examination of the cemetery revealed only one possible grave marker, but there were a number of other external structures that would have been in use at the site. A four post structure was identified over a cremation grave (226) which is set slightly to the southeast away from the other burials. The size or nature of this structure is unknown. In addition to this, there

was a rectangular ditched enclosure around two cremation burials and a ring-ditch around an adult female inhumation, both are centrally located within the cemetery. The cemetery is located in an area that was heavily used by prehistoric and Roman peoples as a burial site and farm. Within the cemetery, the southeastern limits were defined by a Roman ditch, which was also used as a topographical features for the alignment of burials, and the Bronze age barrow would have been visible from the cemetery. The artifacts recovered fit with the normal range of variation seen for culturally Anglo-Saxon sites, however there were a number of unique artifacts, including four large seaxes, a silver cross pendant, an imitation of a Roman coin, a balance pan and bells.

Boyle et al. (2011) argue that the cemetery was likely in use for two periods, the first period was a small settlement of migrants practicing both cremation and inhumation from the mid-5th to mid-6th centuries. Based on the high amount of intercutting, they propose a brief hiatus or declined use of the cemetery between the late 6th and mid-7th centuries. The second phase of use consisted of inhumation graves with artifacts dating to the late 7th century that were organized into rows that went over and around earlier graves that could be identified, or intercut into them. Boyle et al. (2011) conclude that the cemetery was most likely used by a small community, which arranged itself into familial or household groups over a large space. Some of the burials are aligned against a Roman ditch, and others seemed to be aligned to unknown features. They argue that this population likely was part of the Migration age movement of culturally Anglo-Saxon groups, however there is not discussion about whether they interacted or hybridized with locals.

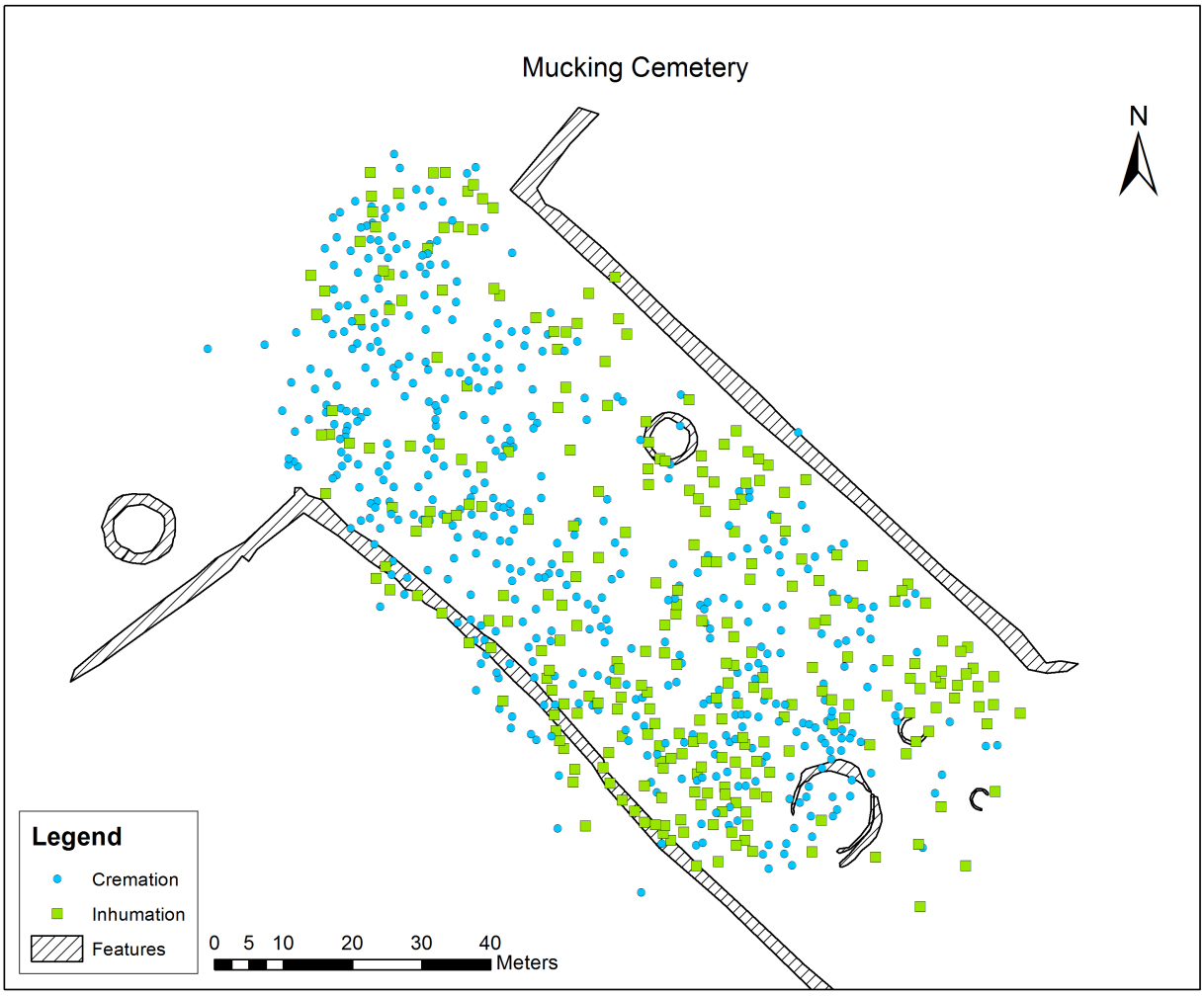
There is no discussion regarding the relationship between the inhumation and cremation burials by Boyle et al. (1998, 2011). In general, there is very little information regarding the cremated individuals at Lechlade. The catalogue of burials only includes brief descriptions of the cremation burials, and there are no illustrations of the artifacts, urns or graves associated with cremation. Boyle et al. (1998) note that the lack of information on the cremation burials is primarily due to the poor preservation and loss of material, which led them to mostly omit them from the broader discussions and base their interpretations off the inhumation burials. While they do explicitly note the omission, at no point is there a discussion as to why there may be multiple body treatments or how these two relate to one another.

C. Mucking

The Mucking site consists of two Anglo-Saxon cemeteries located in south Essex on the north bank of the lower Thames. The excavation took place between 1965 and 1978 over a 45-acre parcel as part of a rescue excavation. Portions of cemetery I were identified after part of it had been destroyed by mechanical quarrying, and cemetery II was located and excavated in advance of the expansion of the quarrying. Due to the destruction of cemetery I, which included 64 inhumations, only cemetery II will be analyzed and is referred to here as the Mucking cemetery. This cemetery in particular is significant because it is one of the largest and most complete early medieval cemeteries. Cemetery II has a burial population including 282 inhumation and 463 cremation burials, and was in use from the early to mid-5th century through to the early 7th century. The inhumation and cremation burials are spatially mixed, and are located between two Roman enclosures (Hirst and Clark 2009).

The cemetery is located within a rich palimpsest of prehistoric and Roman features, including a large Bronze Age double ditched enclosure, Iron age settlement and multivalllate earthwork, and Roman farmstead, enclosures, and cemeteries. An Anglo-Saxon settlement made up of 53 post-built structures and 203 sunken featured buildings was identified to the North of the cemetery, and were likely used at the same time (Hirst and Clark 2009). There is no continuity of use between the Roman and Anglo-Saxon settlements and cemeteries. Within the boundaries of the cemetery itself, there are also a number of monuments. The boundaries of the cemetery were defined by two Roman enclosures, and also included a Bronze Age barrow, and four penannular features that may be attributed to the Iron Age. Three pit-houses were found within and around the cemetery, and are contemporaneous in use. These may represent mortuary houses to temporarily store the deceased. There may also have been a short-lived palisade fence alone the eastern edge of the cemetery (Hirst and Clark 2009).

Figure 5: Mucking Cemetery Map, created by author using ArcGIS 10.1



Post-holes were found near 17 inhumation burials, but it is not clear whether there is a direct relationship between the post and grave as they do not intersect. Another line of post-holes was found near a row of cremation burials, and may indicate a fence or markers. In addition to this, there were four posts around MI964 suggesting that it may have had an external structure above it, like a canopy or cover. A number of burials were located with the Bronze Age barrow, including three inhumations and one cremation, although these were only

placed at the edges of the mound. The other penannular features in the cemetery were used for burials, burying the dead in the center or along the edges of these features. Artifacts found within the graves follow the normal range seen in early medieval cemeteries although there are some unique Roman and Frankish artifacts that indicate a connection to the *fedoerati* and trading across the continent.

Hirst and Clark (2009) propose that the cemetery of Mucking has mixed cultural affinities including late Romano-Germanic and tribal Germanic, and by the 6th century, the community is part of a Saxon cultural tradition taking place along the Thames, with access to trade goods from the North Sea and Franks. Mucking was first established as a cemetery in the second quarter of the 5th century as a small mixed cemetery within the eastern end of an area defined by two Roman enclosures. By the second half of the 5th century, both cremation and inhumation burials became dispersed over the rectangular defined space, and over the next century more burials filled in the gaps between them. While the site may have begun with inhumation as the majority, cremation came to dominate in the late 5th and early 6th centuries. Based on the distribution of age, sex and wealth, Hirst and Clark (2009) argue that the cemetery was likely clustered based on household or familial groups.

Hirst and Clark (2009) suggest that the difference between cremation and inhumation can be attributed to religious and cultural, rather than social, differences within the population. They argue that:

> The presence of both cremation and inhumation burials in one cemetery is thus not to be attributed to different periods, or sections of the population. Nor is

> there any suggestion of the difference of status, as the cremation burials include the same range of object types, mainly dress fittings, as the inhumations. It seems most likely, here as elsewhere, that the difference in burial practice reflects differences in religious belief and/or differences in cultural influence [Hirst and Clark 2009: 759].

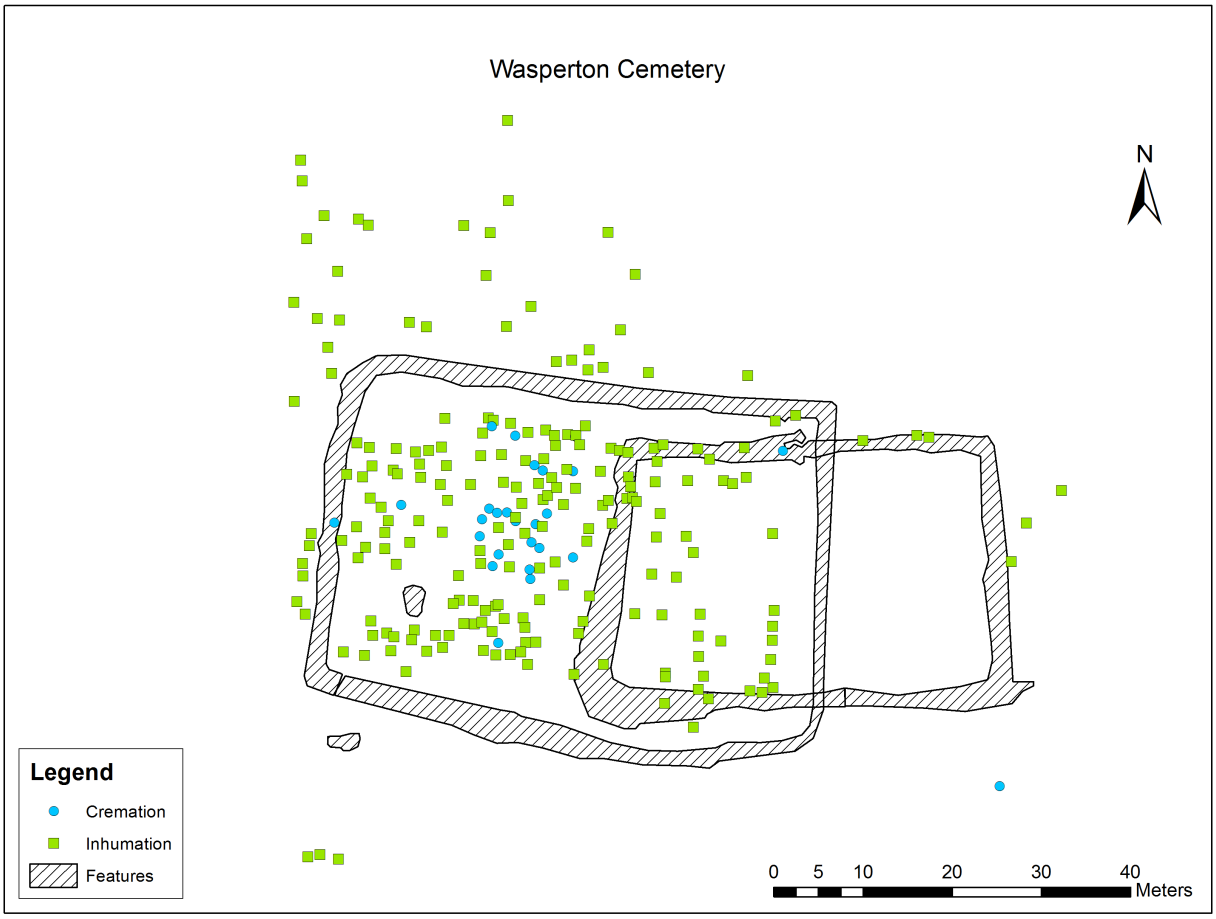
They propose that those cremating may have been holding on to their culturally Anglo-Saxon tradition, whereas those inhuming may have adopted a more localized Roman style practice (Hirst and Clark 2009). While they do have an explicit discussion regarding the relationship between inhumation and cremation, it is lacking because the volume is mainly focused on the inhumation. Further exploration, beyond their hypotheses is needed.

D. Wasperton

The Wasperton Cemetery is located just south of the city for which it is named, and sits along the bank of the River Avon in Warwickshire. The site was found in 1980, and work there continued until 1985 as areas were slowly revealed and opened by a gravel extraction company, and was just one part of a broader prehistoric and Roman complex with thousands of archaeological features. The cemetery had 241 burials, including 214 inhumation and 26 cremation burials. This site is unique because it contains burials dating from the 4th to 7th centuries, with both culturally Roman and Anglo-Saxon material remains. The majority of the burials are located within a Roman enclosure, and cremation and inhumation are spatially mixed within the central area of the cemetery. The cemetery itself was located within a Roman

enclosure, and nearby were a number of Neolithic monuments, Bronze age ring ditch and barrow, Iron Age fort, and portions of a Roman industrial farming complex that included a ritual area (Carver et al. 2009). The cemetery is unique given its long-term use, and Roman and Anglo-Saxon cultural affiliations.

Figure 6: Wasperton Cemetery Map, created by author using ArcGIS 10.1



Only three clear structures were identified within the limits of the Roman enclosure. The first is a d-shaped Roman ditch which separates three inhumation burials from the rest within

the enclosure. The second, is a series of post-holes and sockets that likely made a timber structure, and is concentrated around the central cluster of cremation graves. Finally, there was a sunken floored building located in the southwestern portion of the enclosure that may possibly be a building relating to the cemetery. Given that no burials intercut the structure and seem to respect its space, it may have been used during the same period as the cemetery, though there is little physical evidence to specifically determine its phase of use. While many of the artifacts recovered fit with the normal range of variation seen for culturally Anglo-Saxon sites, there are a number of culturally Roman artifacts suggesting that the site may have been used by both populations, including hobnails, bracelets, lead scrolls and neck-rings.

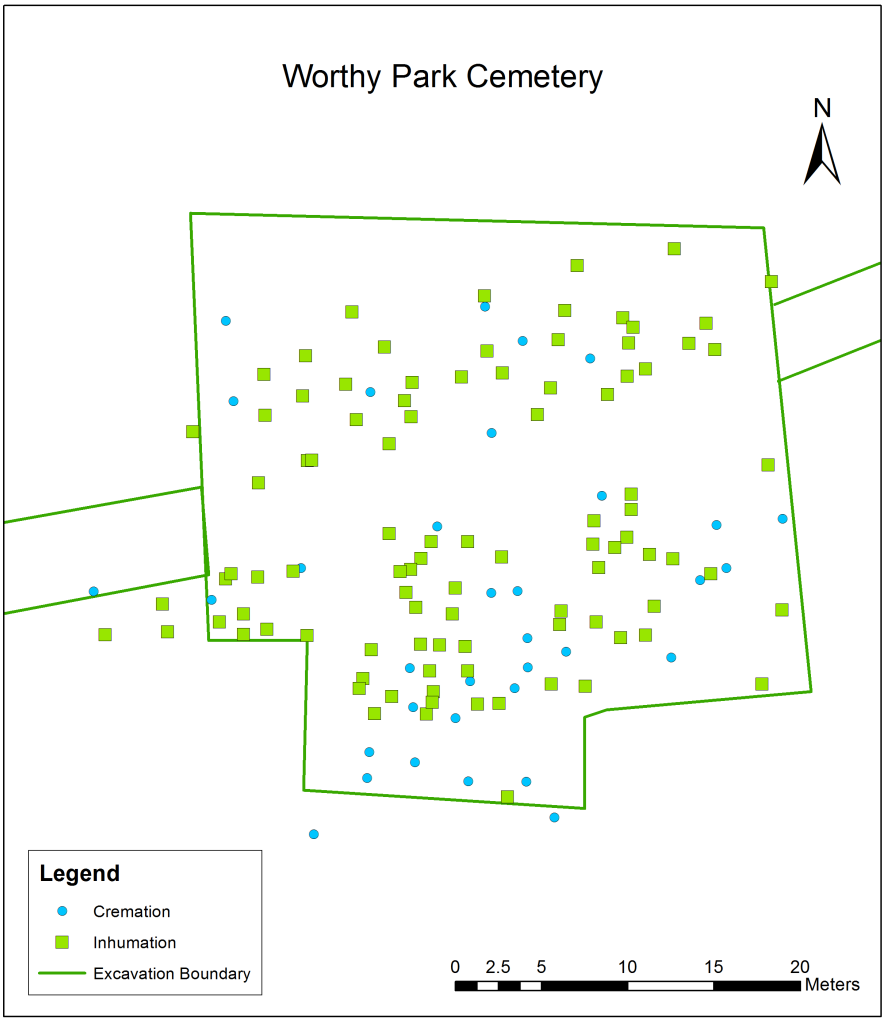
Carver et al. (2009) argue that Wasperton was situated in a historic landscape that was defined by prehistoric population, redefined by Romans, and reused by Germanic migrants (possibly from East Anglia). They propose a narrative of change and development: In the 4th century, the cemetery was established by a post-Roman Briton community within a Roman enclosure, and the rites practiced included barrow burial, decapitation, unurned cremation and hobnail boots. During the end of the 5th century, there is a new group within the cemetery of cremated individuals who set their burials apart using a timber structure or type of fence. In this period, furnished inhumation burials became more common. Around the turn of the 6th century, there is increased blending of furnished inhumation and cremation burials within the cemetery; possibly indicating the absorption of the migrants into the community. In the mid-6th century, some families begin to asset their dominance by reusing burial mounds outside of the enclosure, and a number of well-furnished burials appear around the turn of the 7th century. The cemetery was used by both post-Roman and Germanic populations, and was a site of

continuity and coexistence between the two populations rather than replacement. Carver et al. (2009) conclude that Wasperton was located on a frontier between populations where diversity and creativity was allowed. While they do discuss the possibility that diversity was allowed in this community, and that they freely blended the different ethnic communities- however, there is no explicit discussion about how the body treatments relate to one another, both the Roman use of multiple forms and the migrant use of multiple forms.

E. Worthy Park

The Worthy Park cemetery is located in Kingsworthy, Hampshire, about 5 km north of Winchester. The site was excavated in 1961 and 1962 by Sonia Chadwick Hawkes. Excavations recovered 94 inhumation and 46 cremation graves within 900 square meters. However, the actual population of the site is likely larger, since many of the burials were inaccessible to the excavators and loss of burials due to installation of a modern water pipe through the middle of the cemetery in 1944. The cemetery was in use for two centuries from the mid-5th to mid-7th. Worthy Park's monograph was published in a unfinished form due to the death of two of its primary archaeologists, including Chadwick Hawkes herself and Calvin Wells, who completed the skeletal analysis. Edward Biddulph and Anne Dodd of Oxford Archaeology assembled what had been completed into the present published monograph, although two chapters were excluded due to their unfinished state.

Figure 7: Worthy Park Cemetery Map, created by author using ArcGIS 10.1



While there were no clear structures or external features associated with the cemetery, there was a single post-hole associated with WPi22 that may represent a grave marker. Nor was there any evidence of the cemetery being directly associated with any prehistoric or Roman monuments. Artifacts found within the graves follow the normal variation seen in culturally Anglo-Saxon cemeteries, and the gender division of artifacts as proposed by Stoodley and others holds true for this site.

While the monograph that was published posthumously (Chadwick Hawkes and Grainger 2003) does not include any conclusions regarding the population or makeup of the site, Chadwick Hawkes and Wells' (1983) article on the inhumed material does include a brief interpretation. They propose that the earliest burials from the site are likely from a "small pioneering group of moderately well-to-do men and women who had come, not direct from North Germany or the Continent, but from further east along the south coast, perhaps Sussex" (Chadwick Hawkes and Wells 1983: 5). They argue that based on the mixture of grave goods and different burial rites, they were a mixed community of possibly Saxons, Britons, Franks and others of North German origin. The high amount of intercutting of burials suggests that the cemetery usage or community may have been disrupted, causing them to forget the location of the previous burials, or newcomers ousted the older community but continued to use the cemetery. The low quality and quantity of grave goods led Chadwick Hawkes and Wells to conclude that the community was not prosperous, possibly due to its isolation from other early medieval settlements, and they likely moved location with the rise of Winchester as a major city in the mid-7th century (Chadwick Hawkes and Wells 1983: 6). Worthy Park does not have equal analysis of both cremation and inhumation, and makes no mention of the possible different meanings in body treatment. Cremation is given only a cursory overview, a fact that cannot be attributed to the incomplete publication or missing chapters as these explicitly note that they are focused on the inhumation burials.

CHAPTER 6: METHODS

In order to address research questions and assess the relationship between cremation and inhumation in the early medieval period, I will be using both spatial and statistical methods. First, I present a short summary of the methods being used, followed by more detailed explanations regarding their use in archaeology, why they are appropriate to the questions being investigated, and how they will be employed to aid in the research questions.

1) Equalizing analysis of co-occurrence of cremation and inhumation: In order to integrate cremation and inhumation in an objective and equal manner that allows for complete comparison, we need to organize the data in a more easily comparable format. This method is laid out in section I, results will be summarized in Chapter 7 and the complete table used for analysis is in Appendix B.

2) Interpreting relationships between cremation and inhumation: In order to determine the relationship between cremation and inhumation, we will use statistical, spatial, demographic, and broader contextual information. The statistical methods include Correspondence Analysis and Chi-Square, which will enable us to determine whether there are clear patterns in the mortuary evidence relating to burial type, containers, artifacts and more. The spatial analysis will use a three part method involving Ripley's K-Function, Kernel Density Estimation and Hot Spot (Getis-Ord Gi) to determine whether clustering exists and to examine the makeup of the clustering based on artifacts, demography and burial types. This evidence will be placed within the broader context of the period, as well as the local context, in order to determine the types of relationships present between cremation and inhumation.

3) Changes in the patterns of co-occurrence at different spatial scales: Finally, in order to determine whether any patterns exist at different spatial scales, we will compare the cemeteries against one another and in the broader landscape. By comparing broader spatial features, the relative location of the cemeteries, and the relationships occurring locally at each site, we can determine whether there is a more widespread pattern occurring within Britain or if the variation is determined at a more local scale. This question will be addressed by comparing the Correspondence and Chi-Square data for all five sites against each cemetery, and visually comparing the spatial layouts and clustering at each site.

I. Organizational Methods

A. Data Collection and Production

The collection and creation of the data for this research varied based on the case study site due to differences in publication, availability and quality of the collections. The database of all burials, based on the expanded framework (see below), was created in Excel.

To incorporate the spatial data into the investigation, all five case study maps were digitized and georeferenced using ArcGIS 10.1. In order to complete this georeferencing, a number of methods were required, and varied by the amount of information available for each site's specific location. In general, the georeferenced map was placed into its proper spatial location and rectified using known markers or features on the landscape. Then, shapefiles were created for the burial locations, features, post-holes and boundaries of the excavation. The latter three were not always available due to makeup of the site or report, however they were added when included. Features were represented by polygons and excavation boundaries were

marked with pollens. Burials and post-holes were designated using point values rather than polygons because the latter type of representation is not amenable to the chosen spatial methods . For inhumation graves, this meant that the point was in the center of the grave. The Excel database was then joined with the shapefiles based on assigned grave numbers. The attributes selected for spatial analysis were those that were found to have significant associations with either cremation or inhumation according to the statistical analysis. This data was also simplified to allow for more meaningful comparison. This process is explained further in the appendix, but follows standard practices established in previous studies (Sayer and Weinhold 2013).

B. Expanded Multidimensional Framework for Mortuary Behavior

Here, the expanded framework and individual dimensions under analysis are explained in detail. In particular, the framework below has been annotated with early medieval burials in mind, so certain parts of the framework were not utilized due to a lack of data. The organization of the database is available in Appendix B. In addition to the multidimensional analysis, a number of other attributes were recorded including the number of the individual, cemetery and period. For periods, general phases of time were used in order to allow for comparison between sites and improved analysis of each segment of time. This includes:

- Pre: Prior to the mid-5th c. CE
- Early: Mid-5th to Early 6th c.
- Mid: Mid-6th to Early 7th c. CE
- Late: Early 7th c. CE and later

These period terms will be used throughout to refer to the above specific time ranges.

1. Treatment of the body itself

A. Degree of articulation: amount that the body is articulated in the burial, which demonstrates whether the burial was placed into the grave as a complete body or if at some point certain elements were excluded. For this study, articulation examined primarily if the body was disturbed following burial, which typically only applies well to inhumation since there is no correlating measure for cremation. This element was recorded for the following criteria. This includes:

- Complete: skeleton is fully articulated or no obvious signs of disturbance
- Poor Preservation: unknown whether skeleton is articulated due to preservation
- No Preservation: only staining or slight amounts of bone are available
- Intercut: skeleton is not fully articulated due to intercutting of new graves or construction
- Disturbed: disturbed means that the articulation was disturbed by natural or human means, including decapitation, animal disturbance, grave robbing or unknown disturbance indicating moved skeletal elements.

B. Degree of burning: whether the bone was burned as indicated by color. This measure is important because it allows us to determine whether fire was involved in the inhumation process and provides details about the cremation. Color and burn patterns are important for interpreting the heat and duration of the fire. Color is one of the most important factors when analyzing cremated bone as temperature causes different colors to appear:

- 0 to 200/300 °C = orange, yellow, yellowish, tan, ivory, white
- 200/300 °C to 550 °C = dark brown and black
- 300 to 700 °C = grey, light grey to blue grey
- 600 to over 1000 °C = white, pale yellow white, white to light grey

Of course, the range of colors can also be affected by duration of the fire, how deep the bones are buried in the coals, and whether the body had flesh present at the time of burning. Another important factor to consider is how the bone shape and size changed with the fire as warping and cracking can occur. This factor is highly affected by the presence of soft tissue, different

fuel sources on the fire, handling of bones and the manner in which the fire was extinguished. Degree of burning and the color were noted whether burning was complete or partial. Color was scored as white, white-grey, white-black, white-blue, cream-brown or unknown.

C. Disposition of the burial: this includes the position of the body and the legs in the burial. Body position was scored as unknown, supine, side, sitting or prone. Leg position included variables such as unknown, extended, semi-flexed, or flexed. Cremation was scored as commingled since further details cannot be determined. Remains are defined as commingled when they are disarticulated and placed together out of anatomical order (Osterholtz et al. 2015).

D. Number of individuals per burial: Minimum number of individuals was noted for each grave. The presence of multiple individuals in a single grave is not common, but it has been noted for this period. The total number of burials was noted and then the number of individuals found per each burial.

E. Mutilations and anatomical modifications: Since early medieval burial practices commonly included deviant burials, interpreting these within the space is important. Mutilation and modification includes all deviant burials, as they are modifications from the normal range of practices. The presence and type of the modification was noted according to Reynolds' classification (2009). Deviance in cremation burials needs to be explored further before it can be classified as such.

F. Completeness of remains: this measures the amount of remains present due to preservation, mutilation or choice. Inhumation burials are measured in percentage of the burial

present, and cremation burials are measured by the weight of the bone. These are classified into broad categories:

- None: no remains were found
- Stains: only staining of the soil was found
- Poor: below 30% of the expected skeleton
- Partial: from 30 to 70% of the individual skeleton
- Almost complete: from 70 to 99% of the skeleton
- Complete: if the skeleton appeared to be intact. While there may be small fragments absent, the majority of the individual was present.
- Cremation: noted if cremated, cremation burials are measured by the weight of the bone since fragmentation makes completeness unlikely, so these were measured separately

2a. Preparation of the pre-disposal facility or pyre

Due to the lack of evidence for this type of structure, we are unable to assess pre-disposal facilities within this analysis. While a possible structure was found at Alwalton, there is not enough detail to determine its relationship to the other burials and whether it represents a true pyre site (Gibson 2007). Further, we do not know if other structures found within the cemetery represent some type of arrangement room or preparation area (see Meyers Emery and Williams 2016). However, these are important variables that should be considered if possible.

2b. Preparation of the disposal facility

A. Form of the facility: This includes the space for the final disposal of the body, artifacts and grave furniture. It also examines the type of container if present, other types of grave furniture, the shape of the grave, and the presence or absence of external structures. Presence and absence of these features, as well as their details, were noted.

B. Orientation of the facility and the body within the facility: orientation is important as it can show potential religious or ideological connections in space. Both the orientation of the

grave and the body within the grave are noted. This is not readily possible for cremation given the circular shape and lack of our ability to perceive if there was an intended orientation.

C. Location of the facility in relation to the community: while is information is not always possible, it is important to determine for understanding funerary rituals and who was using the cemetery. When possible, location of the facility in relationship to the community should be noted.

D. Location of the facility within the disposal area: the specific location of the individual within the cemetery and its relationship to other burials should be noted. This is recorded in the spatial analysis to denote location within the cemetery and relationship to other burials.

E. Form of the disposal area: note the type of disposal that the individual received, whether burial was in a formal cemetery or in a different location, and whether the individual is near any important features, either natural or man-made. This is especially relevant for early medieval burials where prehistoric and Roman features on the landscape were often reused for cemeteries.

3. Burial context within grave

A. Arrangement within grave of specific bones with relation to grave furniture and facility: where the body is in relationship to the grave goods, grave furniture and other features of the disposal site should be noted. For purposes of this analysis, each individual artifact had its location noted based on broad divisions of the grave. Based on directions of the body one would use for osteology (individual's right and left, not the researchers), these included:

- Top Right, Top Center, Top Left
- Mid Right, Mid Center, Mid Left

- Lower Right, Lower Center, Lower Left

Cremation artifacts were noted as either within the urn or outside of it in the burial since further details could not be noted. However, when possible, researchers should note where within the urn the artifacts were recovered, as placement above or below the remains may be indicative of important behaviors.

B. Form of furniture: this includes details about the types of containers and other grave furniture found within the burial. Presence or absence of a container was noted, as well as details about the type of container. The preservation and material of the container was also noted. Matting and pillows or headrests were also noted when found with details about their makeup.

C. Quantity and Types of Artifacts

D. Quality of Artifacts

For each artifact found with the body, a number of variables were recorded. First, the item was noted as present or absent, and the number of that type of artifact was recorded. Next, a detailed description of the artifact was given including material, quality, type and decoration. The location on the body was also noted as stated above. Finally, whether the item was burnt or unburnt was noted. This is particularly important given that distinguishing pyre from grave goods is important to understand how the burial types differ.

4. Population profile and biological dimensions

A. Age: age was determined based on prior identification and organized according to broad categories of perinate, infant, child, juvenile, unknown sub-adult, adolescent, young

adult, adult, middle adult and old adult based on Buikstra and Ubelaker's (1994) Standards. For purposes of the statistical study, these categories have been reduced to more general ones based on Stoodley's (2000) analysis of the life course to infant, sub-adult, young adult, adult, middle adult and old adult.

B. Sex/Gender: sex and gender was based on the prior identifications of the researchers, so the method varies by team. Sex was determined using the human remains, and based primarily on the shape of the crania and pelvic bones (McKinley and Roberts 1993). Gender was determined primarily using the guidelines laid out by Brush (1988) and Stoodley (1999). While there was come conflation of the two within site reports, they were divided out by the author for the catalog used in this investigation.

C. Disease states and/or circumstances of death

D. Nutritional evidence and environmental stress

E. Genetic relationships

Investigation of paleopathology, nutrition, stress, and genetic relationship was not feasibly for this study due to poor preservation, a lack of analysis of the cremated remains for these factors and limitations for complete re-study of the remains. However, when possible, these attributes were noted, and where possible, future investigations should make an effort to include these in their research.

II. Spatial Methods

Mortuary landscapes provide important information regarding relationships within communities both between the living and dead, perceptions of the afterlife, and aid in

interpreting the funerary behavior and beliefs. A general presentation of the broader use and applicability of spatial analysis within mortuary archaeology, and early medieval archaeology will precede a discussion of the specific methods to be employed.

A. Spatial Analysis and Mortuary Archaeology

Over the last three decades, there has been increasing recognition that landscapes are constructed and play an important role in shaping social behavior. This is especially true for funerary sites, where the landscape is a location for the negotiation of relationships and identities between the living, dead, and nature.

Early studies like Saxe (1970) note the importance of using burial sites to understand social organization and group identity in relationship to the use of space. He argues that the construction of bounded formal cemeteries was indicative of corporate groups making territorial claims over space, as explained in his Hypothesis 8. Goldstein (1981) critiques this conclusion, and expanded on the importance of assessing space within the broader context. She argues that while formal burial space does indicate corporate groups, corporate groups do not necessarily all use bounded and formal burial grounds. She proposes that more nuanced interpretations can be made by taking a multi-dimensional approach, and uses the Late Woodland sites of Schild and Moss as examples. Analysis of the locations of the burials along with grave goods and demographic features indicates that these cemeteries were likely organized into kin-groups. Goldstein (1995) expands on the importance of viewing diverse evidence within mortuary spaces, and emphasizes the importance of viewing the data from multiple scales. Her analysis of effigy mounds and burial sites across the midwestern landscape

revealed that they were usually found near natural resources and may have acted as an indicator of ancestral claims to these recourses. Since her early groundbreaking work, spatial analysis of cemeteries has continued to be an integral part of the broader interpretation.

Modern studies have incorporated the importance of examining symbolism, concepts of ancestry, and memory formation into studies of the landscape and use of space. For example, Ashmore and Geller (2005) look at the symbolic landscapes of mortuary space at different scales with respect to the Maya Formative period. By comparing the location of interments, the location of burials on the landscape and the location of descendants at multiple scales, they are able to interpret the meaning of changing burial practices through the formative period. Charles and Buikstra (2002) also use spatial analysis to better interpret how the dead were placed, seen and referenced by the living in the prehistoric Illinois Valley. The early burial sites are on bluffs and knolls, which are highly visible and allow reference to the deceased ancestors. When group identity becomes more important with increased competition and expanding interaction spheres, and burials are located in centrally constructed mounds where there is active engagement with the dead, instead of distant reference. The way the dead are perceived changes the location of burial, and through analysis of these changes in place, Charles and Buikstra (2002) can better interpret how mortuary sites act as a medium for the negotiation of social and political spheres.

Analysis of space is not always straightforward, and Silverman's (2002) study of variation in cemeteries in historic Peru is a good warning against interpretive leaps and assumptions. By comparing changes in the placement of burials within Peruvian cemeteries against historical records she found that changes in the mortuary landscape were directly related to broader

social, political, religious and economic changes. Yet, without this archival evidence, such changes would not have been immediately apparent on the landscape. Thus, in this case, a careful contextual approach was needed.

A major change in the study of archaeological space was the introduction of Geographic Information Systems (GIS), which are defined as "computer systems whose main purpose is to store, manipulate, analyze, and present information about geographic space" (Wheatley and Gillings 2002: 9). GIS provides archaeologists with the ability to engage in statistical and spatial analyses of large amounts of data both at the regional and local level. While traditional paper maps allow for analysis of location, GIS can facilitate analysis between spatially located individuals and attribute data, such as demographic, artifactual, and environmental variables. By using GIS, we can create predictive models, quantify spatial relationships, and assess visibility in a much faster and intuitive fashion.

Bongers et al. (2011) use GIS to examine relationships between mortuary monuments around Lake Titicaca. Working from the topography of the landscape and an assessment of random spatial points, they argue that they these monuments were placed in higher areas in order to mark territory and reinforce group identity. Risbøl et al. (2013) use GIS in order to better interpret the locations of Bronze Age grave cairns along the coast in Southeast Norway. By comparing archaeologically identified sea trade routes along the coast with locations of grave cairns, they argue that the grave cairns were placed along the skyline in areas that would have stood out more clearly to individuals sailing along the coast. Both of these GIS-based studies used digital elevation models (DEMs) and viewshed analysis in order to examine the location of funerary monuments on the landscapes. A digital elevation model provides the user

with information on differences in topography, and a viewshed analysis uses the elevation values of the DEM to determine visibility of certain cells.

While this method works for regional studies, different approaches are needed when examining single burial sites or cemeteries. Herrmann (2002) uses GIS to analyze cave burials at the Mayan site of Cueva de las Arañas in Honduras. Understanding the deposition of bodies within caves can be difficult, and interpretations range from acts of convenience to symbolic gestures. Digital images of the cave and an overall map of the site was used to create a GIS with every bone assigned attribute data about its element type (axial, appendicular, cranial), side (left or right), and type of bone. Using a cluster analysis, a GIS function that identifies relative closeness of different or similar elements, to determine the relative locations of different types of bones, he concluded that it was likely that individuals were placed as bundles within the cave after already having decomposed and were placed as bundles within the cave. In another study, Hermann, Devlin and Stanton (2014) use GIS to examine mortuary patterns and site formation of the Walker-Noe site, a Middle Woodland crematory in central Kentucky. By comparing the color of burned bones, types of bones and their relative locations, they argue that this crematory was being reused without removal of older remains, and that bony elements left near the central burn area would be frequently returned. Further, they found that there were an unusually high amount of well-burned cranial elements, suggesting that the skulls may have been re-burned during the site's final cremation (Hermann, Devlin and Stanton 2014: 64).

Prior work by the author (Meyers 2013) employs GIS to analyze placement of burials within a historic cemetery in Geneseo, NY. Using the nearest neighbor analysis, which calculates average distance between points, and Moran's I, a statistical function that measures rates of

clustering or dispersion, she concludes that the cemetery plot was based around family divisions that had been obscured over time due to overpopulation and the loss of dividing markers.

Analysis of space within a cemetery is important, although we must also be careful not to read too much into statistical and spatial analyses. Individual variations in placement, position and alignment may not be representative of broader cemetery trends, and over generations, there may be shifts in burial methods due to loss of collective memories or new fashions (Huggett 1996; Sayer 2010). We need to consider the range of possible meanings.

B. Spatial Analysis, Mortuary Archaeology and Early Medieval England

For early Medieval England, there is a special consideration regarding space that we need to be aware of, and prior studies that will greatly inform this dissertation. The early Medieval English landscape is multifaceted and layered with history, so an analysis of cemeteries at that time also requires one to acknowledge the historic landscape. Many culturally Anglo-Saxon cemeteries are located within or near by Bronze, Iron and Roman age monuments, while some go so far as to reuse these features. Williams (1997) argues that this may be a deliberate way of appropriating the past for power. Placement of a cemetery is important and can serve to associate the living with the dead or the dead with an ancient past. Williams (1997) found that a quarter of all culturally Anglo-Saxon cemeteries were found in or near a prehistoric monument. This type of behavior is noted in studies of reuse of other monuments. Hingley (1996) identifies behavior that involves appropriation of an ancient past in prehistoric Scotland. The reuse of tombs in Scotland had previously been interpreted as squatting behavior, but

Hingley (1996) argues that the evidence shows that they viewed the previous inhabitants of the tombs as ancestors. They are creating a continuity that may not actually be present by using the space and imitating Neolithic designs.

Prior spatial analyses within early Medieval cemeteries have been completed before, and require exploration. The earliest work to assess space within this period were by Wells and Green (1973), and Chadwick Hawkes (1976), who both attempt to associate spatial orientation of graves to seasonal changes in the rising sun. Wells and Green (1973) examine burial orientation from two early Medieval English sites: Caister-on-Sea in Norfolk and Burgh Castle in Suffolk. They argue that if the purpose were to orient the burials so that the deceased would face the rising sun, they would find that graves originally dug during the summer would point just north of east, and those dug in the winter would face just south of east. They find that most of the burials from Caister-on-Sea and Burgh Castle were oriented between a northeast and southeast extreme, with the exception of a few individuals whose misalignments are attributed to a lack of visibility (Wells and Green 1973). Chadwick Hawkes (1976) examine the orientation of graves from the site of Finglesham, a culturally Anglo-Saxon inhumation cemetery. Each burial was checked for head to foot alignments with cardinal directions. With the exception of three burials, most of the deceased lay with their feet towards the east, with variation on exact degree of alignment from Southeast to Northeast. Chadwick Hawkes (1976) argues that the variation in alignment is due to differences in season when the individual was buried. Although these conclusions have been largely discredited, such pioneering works demonstrated the value of paying closer attention to spatial context.

In 1987, Evison includes an analysis of spatial groups from the early Medieval site of Dover Buckland, and divided up burials based on physical characteristics, proximity, and sex of adults. She argues that the segregation of varying shapes, sizes and orientation of graves were due to the existence of separate burial plots. She proposes that some 170 burials could be divided into 14 different plots, according to the presence of different artifacts, such as specific types of weapons or brooches, as well as demographic variables including age and sex. Based on this analysis, Evison (1987) argues that these represent 14 different family units who used the cemetery over a period of two centuries, and emphasized their familial identity in space and artifacts. This conclusion of dividing cemetery space into familial groups was further supported by her research into the early medieval site of Great Chesterford (1994).

The practice of comparing space, artifacts and individuals was uncommon during the 1980s for early Medieval studies, and Evison's research set the standard for all site reports to include information on spatial layout and maps. However, the integration of GIS into early Medieval studies has not progressed as quickly, and many are not taking advantage of this powerful tool to improve their analyses.

C. Sayer and Weinhold's 2013 Approach to Cluster Analysis

Despite the increasing availability of GIS, and its ability to do complex spatial and statistical analysis, it is primarily used within early Medieval archaeology as a tool for display rather than analysis. An exception to this is the work by Sayer and Weinhold (2013), who use GIS in order to determine whether there was any spatial differentiation within culturally Anglo-Saxon cemeteries. As the methods from this study will be replicated in this dissertation, a

longer discussion of their methods and results is warranted. Sayer and Weinhold (2013) examine four early Medieval cemeteries in England, based on their size and differences in layout. These sites include Wakerly, Norton, Berinsfield and Lechlade. For their analysis, the cemeteries are divided into two temporal phases: the late 5th to 6th century, and the 7th century (Sayer and Weinhold 2013). Individuals within the cemeteries were given attribute data regarding their temporal phase, and whether they had potentially elite grave assemblages (multiple weapons for males and two or more brooches for females).

Their method for identifying clusters was two-fold. First, Ripley's K-function analysis was used to measure the distance at which statistically significant clustering appears. Second, kernel density estimation was used in order to allow for visualization of the clustering within space. From the kernel density visualizations, Sayer and Weinhold (2013) are able to identify a number of visible clusters within each cemetery. They conclude that at the four sites analyzed:

> Clustering does occur but can manifest in a number of different ways; close groups of graves tightly knitted together like at Berinsfield or Lechlade, or as lose groups of graves up to 8 m apart as we saw at Norton. They can be visually identifiable units with the cemetery landscape, as at Wakerley, or they can require a little further analysis because they are hidden by later graves [Sayer and Weinhold 2013: 81].

They also found that both Berinsfield and Lechlade demonstrate clear clusters during the 5th and 6th centuries that are then obscured by 7th century burials interspersed between them. Judging from the artifacts and furnishings within, they argue that these clusters do not contain

nuclear families, but are more likely to represent large multi vocational households. While the analysis employs a unique method for identifying and visualizing clusters, it omits the cremation burials from the sites leading.

D. Spatial Methods

Three major spatial methods will be employed as part of this analysis: Ripley's K, kernel density and hot-spot analysis. By combining these methods, we can locate and visualize clusters of both individuals and artifacts within each cemetery.

i. Ripley's K-Function

The Ripley's K-function determines whether features, or the values associated with these features, demonstrate statistically significant clustering over a range of distances. The results of this are displayed graphically to show at which distance clustering or dispersion occurs. The K-function is illustrated by the presence of the observed K value, dispersion or clustering of the points under analysis, and the expected K value, a line denoting random distribution. When the observed K value is larger than the expected at a specific distance, it means that the distributions of the features under investigation are more clustered than a random distribution. Conversely, an observed K value that is lower than the expected denotes that the features are more dispersed than a random sample at that distance (ArcGIS 2015).

This particular function is useful for archaeologists for a number of reasons. First, it allows for spatial aggregation to be measured over a range of distances, rather than having to set a specific distance for measurement, as is required for Distance Band or Threshold Distance

analyses. Second, the shape and size of the area under investigation does not affect the analysis, which, in turn, allows for simulation of outer boundaries and inferences about possible limits (Bevan and Conolly 2006, Conolly and Lake 2006). This works well for archaeology since the area being excavated does not always represent the full extent of the cemetery.

Scholars have developed a series of recommended best practices for the use of this tool for archaeological analysis. Bevan and Conolly (2006), as well as Sayer and Weinhold (2013), suggest that data be split into temporal groups to avoid problems with heterogeneous data that result from certain underlying processes such as change over time. Next, in order to account for the extent of the cemetery not necessarily matching the boundaries of the excavation, they recommend employing the Simulate Outer Boundary Values method (Sayer and Weinhold 2013), which creates points outside the boundary of the study area that will mirror those within it to correct for underestimation near the edges. This produces more accurate results when total cemetery extent is unknown.

ii. Kernel Density Estimation

The Kernel Density Estimation tool calculates the density of features found within a neighborhood, in this case within the cemetery, and produces a raster visualization of those densities (Conolly and Lake 2006). The output provides a simple visualization for assessing changes in the frequency and distribution of point data over the cemetery (Sayer and Weinhold 2013). In order to produce more accurate Kernel Density Estimation visuals, the values found using the Ripley's K-function are applied to determine the distance at which the Kernel Density Estimation would represent clustering.

This particular tool is useful for archaeologists because it provides a clear visualization of where clustering and dispersion are occurring, allowing for more accurate interpretation of locations of clusters, determining which individuals fall into which clusters and which individuals are outliers, and assessing potential gaps. In the study by Sayer and Weinhold (2013), this tool proves especially useful when the visualization is compared against non-burial features in the landscape. Their analysis of inhumation burials at Lechlade showed that there was a gap between two clusters that aligned with a Bronze Age barrow, possibly demonstrating that this prehistoric monument was kept and used as a divider in the early Medieval cemetery.

iii. Hot Spot (Getis-Ord Gi)

In order to improve understanding of the makeup of clusters identified using Ripley's K-function and the Kernel Density tool, Hot Spot or Getis-Ord Gi will be employed to visualize areas where attributes of specific points are clustering. Kernel Density Estimation focuses specifically on locations of individuals, and while it can be weighted by specific attributes, the Hot Spot tool better represents the clustering of the latter visually. Hot Spot identifies statistically significant spatial clusters of high attribute values (hot spots) and low attribute values within a population (ArcGIS 2015). Each individual within the population is given a z-score and a p-value to indicating level of clustering, and this is displayed visually. These scores indicate whether or not a null hypothesis of random distribution of attributes is present.

This is especially useful for archaeological work when one wants to identify areas of high and low artifact frequency. For example, an individual with a high z-score and low p-value for presence of weapons would indicate that they were in a hot spot, an area where presence of

weapons was very high. If an individual had a low negative z-score with a small p-value, it indicates that they are in a cold spot, an area with few weapons. A high p-value and a low z-score mean that the distribution of artifacts is random, neither hot nor cold.

When Hot Spot is used in conjunction with Kernel Density Estimation, it provides a visualization of both the spatial clustering of individuals and the distribution of specific artifacts. This is of particular importance for studying cremation and inhumation, as it can demonstrate differences between overall distribution of individuals, versus distribution of specific types of disposal or artifacts.

III. Statistical Methods

In order to examine the relationships between cremation and inhumation, statistical analysis will be completed. Quantitative methods play an important role in minimizing self-deception and bias, and doing this type of analysis can help us recognize patterning and specify its nature in a manner that is not possible through visual analysis alone (Shennan 1997). Further, quantification provides a common language for sharing results and providing evidence of our conclusions beyond a mere reference to an 'expert' opinion (VanPool and Leonard 2011). Two principle methods will be employed for analyzing the data from the five test sites: Two-Way Contingency Tables using Chi-Square, Correspondence Analysis (CA) and Corrgrams. Each method will be discussed further, and its applicability to the study will be demonstrated. The analysis was completed using R, an open access statistical software.

CA is appropriate for this study as it will allow for clear comparison between different disposal types and the presence/absence of different artifacts, as well as reveal underlying

structure in artifact frequencies across burial types that may be otherwise unobservable. As noted by Falconer (2014: 81) “CA does not produce the expected structure but rather produces the structure as it exists in the data”. However, CA is not typically used on its own since it does not reveal significance of the relationships or clusters found. Baxter (1994:128) suggests that this method be used in conjunction with Chi-Square in order to demonstrate the statistical significance of the hypotheses. Following this advice, Chi-Square and CA were used together to produce more reliable results.

A. Chi-Square

Chi-Square has long been used as a measurement for determining significance of relationships between nominal data. The measurement is performed by comparing observed values, those found within the study sample, against expected values, those that would be expected if the distribution among the variables under examination did not change (Shennan 1997). This method calculates the departure of the observed value from the expected. There are two methods for analyzing Chi-Square, l-sample test and contingency tables. The l-sample test is not used as frequently by archaeologists as it compares single variables against a theorized population (Falconer 2014: 83). Contingency tables, which will be used in the present study and are more frequently employed for archaeological analysis, compare data that has been classified under two different categories, such as disposal type and presence of weapons. Chi-Square contingency tables assess whether the two types of data are independent or dependent on one another, and then calculates the significance of these findings.

Chi-Square test will be used in this study in order to determine the significance of relationships between artifacts and disposal types. One of the limitations of the Chi-Square test is that it does not reveal the manner in which variables are related. Rather, this method simply measures the departure from the expected values and calculated the significance of the difference. A second limitation is that while Chi-Square can demonstrate that a relationship is significant, it cannot tell us the manner of the relationship (Shennan 1997:113). When CA and Chi-Square test are used in conjunction, each can minimize the limitations of the other. CA demonstrates relationships and how strong they are, but cannot show the statistical strength of them; whereas Chi-Square reveals presence and significance of correspondence, but not which variables are related or the strength of the relationship.

B. Correspondence Analysis (CA)

Previous archaeological analyses, which began appearing in archaeological literature during the 1970s, have shown the utility of using CA (Baxter 1994: 133; Bølviken et al. 1982). CA has proven effective in finding clusters of artifacts or variables that correspond to social identities or groups, such as those relating to gender, age, or status specific groups (Jensen and Nielsen 1997:31). CA is used by Jensen and Nielsen (1997) to analyze social relationships within an early Medieval cemetery collection from Gotland, Sweden dating from the 6^{th} to 7^{th} centuries CE. The results of their analysis shows that there were five different clusters of individuals: females with well furnished graves, females with fewer furnishings, males with weapons, males with few weapons and males without weapons (Jensen and Nielsen 1997:55). The results of this CA demonstrate differences not only between sexes, but also within them.

Falconer (2014) uses CA in order to assess the relationship between tombs and artifacts from Mycenae in order to determine whether different behaviors or rituals were occurring in different burials. The results of her analysis provided important information on which items can be interpreted as part of the standard Mycenaean mortuary ritual, such as pottery and personal ornaments, and which items were idiosyncratic, such as weapons, figurines, toiletries or manufacturing tools. These less common artifacts have more potential to reveal insight into social status, wealth, time period and region. While Falconer (2014: 146) was unable to connect these objects to specific rituals or identities, her identification of them as related to broader trends or idiosyncrasies is an important step in furthering the study of funerary behavior in this period.

Wallin (2010) employs CA for his analysis of Neolithic Pitted Ware Culture burials from two sites in Scandinavia in order to better interpret the differences funerary behavior at the regional level. Each unit (burial) was assigned variables relating to the position of the body, orientation, presence of grave furniture, presence of red ochre, biological characteristics and artifacts found with the individual. CA demonstrated that at the local level there were three clusters of variables at both sites: 1) adult females and sub-adults below seven years, 2) adult males, and 3) sub-adults and juveniles between 7 and 20 years of age. However, at the regional level, sex of the individuals did not have as much of an impact, with three clusters including 1) adult males and females, 2) sub-adults, and 3) mature adults. From this, Wallin (2010: 74) concludes that age differentiation was an important regional factor, whereas gender and identity was expressed more locally and varied by site.

In another study, Ravn (2003) argues that CA could be used to determine the symbolic language patterned within material culture of burials in an attempt to understand the development of social structure of Germanic society from 200-600 CE. CA of the inhumation and cremation burials (analyzed as separate groups) revealed clusters of groups that may be tied to meaningful social divisions. The scatterplot of the inhumation revealed a relatively homogenous female group, with brooches, wrist clasps, beads, girdle hangers and bronze straps, and two heterogeneous male groups, including one with spears, shields, buckles and faunal bone, and the other with uniquely decorated pots. The results of the cremation CA showed some similarity with females being more alike than males, but differences in groups. Cremation burials were divided into four groups: 1) males and females of various ages with miniature artifacts, 2) adult males with a diverse mix with different stamps, 3) adult males with weapons, bronze tweezers, hone stones, glass vessels, and sheep, and 4) adult females with coins, glass beads, ivory, spindle whorls, crystal, brooch, and needles. Ravn (2003) argues that men were more divided and differentiated within the local community, whereas females were more divided at a regional level, perhaps because they were playing the role of 'ethnic markers'. However, Ravn's study of Spong Hill has been shown to be slightly flawed as more recent synthesis of the site has improved interpretation and identification of artifacts. Of course, this issue was no fault of the author as he made use of best data available at the time (Hackenback 2013:202).

CA was employed in the most recent published study of Spong Hill in order to develop a chronology for the cremation cemetery (Hackenback 2013). 1,333 vessels, including both cremation urns and those found with inhumations, were analyzed based on presence or

absence of certain decorative elements. Judging from the CA scatterplot, it is possible to see trends in decorations, both in the long-term as in the case of bosses or chevrons, and over a brief period of use, as with arched cordons. Hackenback (2013: 187) is able to assign different decorative types to three groups, based on the patterning, These groups were then compared against previously identified spatial burial groups found at Spong Hill. While CA produced fairly good agreement in phasing of the almost 300 identified groups, there were 19 that produced phasing contradictions require further assessment. Further CA was done to assess whether female-associated grave/pyre-goods such as brooches, wrist-clasps, higher quantities of beads, glass, chatelaines and bags, could be used as chronological indicators. What is unique about this portion of the study is that unlike most analyses, both cremation and inhumation burials are studied together rather than dividing and analyzing them as separate entities. From this scatterplot, they identify three chronological groups, two of which include all the cremation burials, and the third having the majority of inhumation burials. Using all of the data from CA, including the chronological analysis of decorations on urns and grave goods from both inhumation and cremation type burials, Hackenback (2013) is able to divide the site into three phases of use: Phase A from the first quarter to middle third of the 5th century CE, Phase B dates from the end of A to the last quarter of the 5th century CE, and C begins from there, ending in the mid-6th century CE.

Correspondence Analysis (CA) allows for the graphical representation of the relationship between the rows and columns of a table, which enables interpretation of the association between them (Baxter 2003: 137). This is particularly useful for seriation and chronological applications, however it has also been used more frequently in order to identify patterns, sub-

groups and outliers. As aptly described by Bølviken et al. (1982: 56), the goal of CA is to "uncover some general structure which is not observed by mere inspection"; it creates a visual representation of the inherent structure in a dataset (Hackenback 2013: 168). CA is particularly well-suited to archaeology, because unlike Principle Components Analysis, CA is designed to deal with nominal or presence/absence type tabular data. The rows and columns of this data are displayed as a set of points that can be compared to determine whether there are relationships or underlying structure between the units and variables (Greenacre 1984:55). As noted by Hackenback (2010:169), the resulting graphic displays average similarity: "those graves that are most different from each other will therefore be farthest away from each other on the perimeter of the data cloud, while graves that come closest to containing an average assemblage of grave-goods will be positioned at the center of the cloud".

CA evaluates the correspondence between frequencies of artifacts and their contexts, and the distance between points on the graph is representative of their relative association. Due to this, it will be helpful in determining the relationship of significant artifacts to either cremation or inhumation, and will aid in the development of testable hypotheses (Falconer 2014). In order to use archaeological data in CA, each entry must be a bounded entity with clearly defined incidences, often represented as presence or absence. In this manner, CA will be used to examine how artifacts with significant associations as demonstrated by the Chi-Square relate to the different disposal types.

C. Corrgrams

Corrgrams provide an alternative graphical model of relationships between variables that is similar to CA. As noted by Friendly (2002: 1), corrgrams "have the goal of reducing high dimensional multivariate structure to a smaller number of dimensions, so that the relationships among the variables may be more readily apprehended." One of the issues with CA is that when examining large numbers of variables, the patterns become incomprehensible. Corrgrams provide a way to explore visually the patterns of relationships, trends and anomalies in the data. Surprisingly, there has been little use of this in archaeology as a way to display data, as it provides a good complement to the spatial and other statistical methods.

CHAPTER 7: RESULTS

This chapter discusses the results of the statistical and spatial analysis of the five cemeteries. The cemeteries were studied as a complete sample and as separate sites to allow for comparison at both the regional and local levels.

I. Organizational Results

This section presents the results of using the expanded multidimensional analysis of human remains for organizing and conducting cursory analysis of the five cemeteries. For each of the categories and sub-categories, data was organized in order to see whether cremation and inhumation have different or similar patterns in the dimensions of their funerary treatment. While not included in the multidimensional analysis, period was an important part of this investigation, and results are included in Table 6. Cemeteries vary dramatically in the periods of their use. Alwalton, Mucking and Worthy Park have their highest period of activity in the mid. Wasperton has periods of high use in the early and mid, whereas Lechlade has high activity in the early and then late.

Table 6: Periods

	Pre (Before mid-5th c)	Early (Mid-5th - Early 6th c.)	Mid (Mid-6th - Early 7th c. CE)	Late (After Early 7th c.)	Unknown
Alwalton	0	20	40	0	0
Lechlade	0	132	45	70	25
Mucking	1	112	408	13	204
Wasperton	23	83	91	5	3
Worthy Park	0	15	53	27	55

A. Expanded Multidimensional Analysis

1. Treatment of the body itself

A. Degree of articulation: Degree of articulation was highly varied at each site, and speaks to differences in how earlier burials were respected by later burials, how well previous burials were labeled, the amount of grave robbing, or the presence of medieval and modern disturbances. Only inhumation burials could be assessed for articulation. Each site had some level of grave disturbance, with the highest occurring at Lechlade and Wasperton, and may indicate post-burial ritual or theft. For Wasperton, the removal of ten skulls from burials speaks to ritual or possibly deviant behavior. Lechlade had the highest amount of intercutting, suggesting either a break in use of the site or loss of grave markers. Worthy Park's high amount of intercutting is also attributed to a break in use of the site. In general, determining articulation was difficult due to the poor preservation of the remains, with the exception of Lechlade where preservation was high.

Table 7: Degree of Articulation

	Disturbed	Skull	Robbed	Intercut	Poor Preservation	No Preservation	Complete
Alwalton	3	2	1	2	16	0	11
Lechlade	10	3	0	31	36	0	147
Mucking	1	0	0	5	113	0	158
Wasperton	10	10	0	8	121	17	23
Worthy Park	2	0	1	26	31	7	39

B. Degree of burning: As discussed previously, the degree of burning can be important for understanding the act of cremation as part of the broader funerary process. Color of the bone varied by cemetery, indicating that there was a common ritual at each location, but not

necessarily a broader pattern of burning. All cremains were fully burned, and no inhumation burials showed evidence of burning. Colors of the bone ranged from yellows and browns of lower temperatures, to the white and grey of higher temperatures. The most common color of bone at Alwalton was white and black, suggesting moderate temperatures. At Lechlade, the white and grey coloring suggests slightly higher temperatures. Mucking had similar coloring as Lechlade, with white, grey, and blue coloring present to suggest high temperatures. At Wasperton, there is a range of colors from white to yellow-brown. Unlike other sites, Wasperton may have had lower temperatures for burning. Sadly this data was not available for Worthy Park as it was not recorded at any point and the physical remains were not present.

Table 8: Degree of Burning

	Complete	None
Alwalton	28	32
Lechlade	29	224
Mucking	461	277
Wasperton	27	179
Worthy Park	45	105

Table 9: Color of Burning

	No Burning	Unknown	White-Black	White-Grey	White	White-Blue	White-Yellow-Brown
Alwalton	32	0	28	0	0	0	0
Lechlade	224	0	1	22	6	0	0
Mucking	277	57	5	41	333	24	1
Wasperton	179	8	0	3	8	0	8
Worthy Park	105	45	N/A	N/A	N/A	N/A	N/A

C. Disposition of the burial: Disposition of the burial is only available for inhumation since specific locations of bones within the cremation burials were not recorded. The majority of burials at all sites were supine with legs extended as clear in Figure 8 and 9. The second most common position at all sites was with the individual lying on their side with legs either semi-flexed or flexed. Only one burial was found in a sitting position, and this unique position was found at Lechlade.

Figure 8: Body Position, created by author in Excel

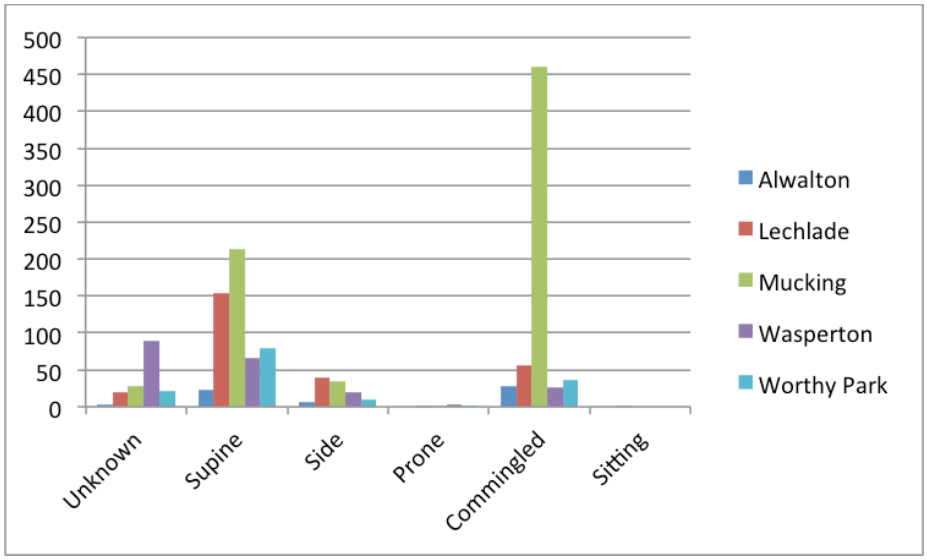
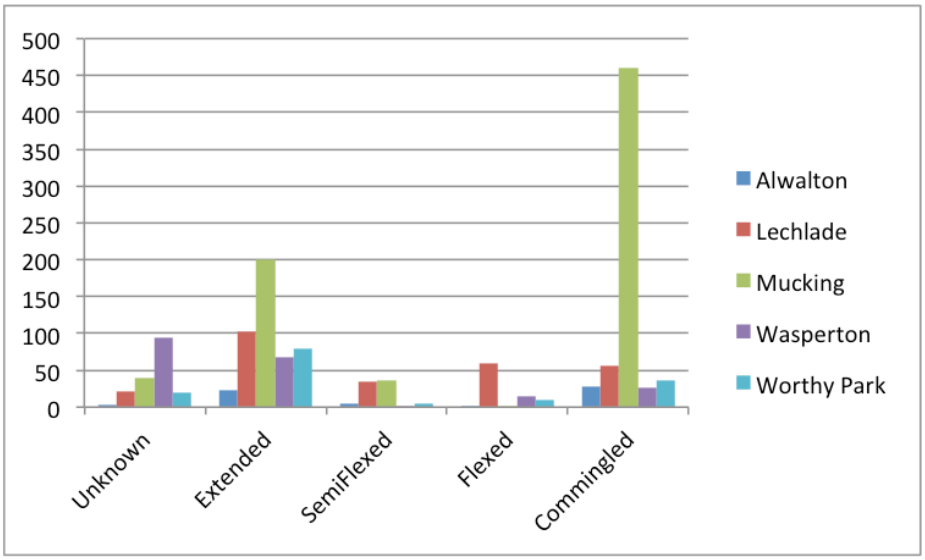


Figure 9: Leg Position, created by author in Excel



D. Number of individuals per burial: The majority of burials, both cremation and inhumation, contained only one individual. However, at least one double burial was found at each site with a triple and five individual burial at Lechlade (Table 10). No cremation burials showed an MNI of more than one, and only one cremation burial from Wasperton (1a and 1b) contained two individuals, but they were in separate urns.

Table 10: Minimum Number of Individuals per Grave

	Total Individuals	Total Graves	Double Burials	Triple Burials	Burials of 4+	Graves W/O Individuals
Alwalton	60	59	1	0	0	0
Lechlade	252	229	10	1	1	0
Mucking	738	737	1	0	0	0
Wasperton	206	241	1	0	0	36
Worthy Park	150	148	2	0	0	0

E. Mutilations and anatomical modifications: Deviant burials have long been a subject of study and debate in early medieval cemeteries, and these sites are no exception. Decapitation burials were found at Lechlade and Wasperton, and prone burials were found at Lechlade, Mucking, Wasperton and Worthy Park. For cremation burials, it is unknown if there was any mutilation or modification since the bone often is not all present and modifications may not survive the process.

Table 11: Mutilations and Anatomical Modifications

	Absent	Present	Decapitation	Prone
Alwalton	60	0	0	0
Lechlade	268	4	1	3
Mucking	736	2	0	2
Wasperton	192	13	10	3
Worthy Park	149	1	0	1

F. Completeness of remains: Completeness of the remains was collected in two ways: for inhumation, percentage of the bone present was recorded, and for cremation, the weight of the bone was recorded. Completeness of the bones varied by each site due to preservation and protection of the burials over time. At Alwalton, the majority of inhumations were partial to almost complete (30-99%) and cremation weights were an average of 607.25 grams with a median weight of 485.5 grams. For Lechlade, inhumations were primarily almost complete or complete (70-100%), and cremations weighed a mean of 259.03 grams and a median of 125 grams. Inhumation burials at Mucking were all either poor or represented by stains only (30% or below), and cremation burials weighed an average of 130.56 grams and a median of 43.1 grams. Wasperton inhumations ran the gamut from poor to partial (1-70%), with a few almost

complete burials, and cremation burials weighed a mean of 218.9 grams with a median of 104.3 grams. Finally, Worthy Park burials were a range from poor to complete (0-100%) with the highest number at the almost complete level, and cremation burials were the lowest weights of all sites, with an average of 45.98 grams with a median of 9.45 grams.

Table 12: Completeness of Inhumation Remains

	None (0)	Poor (Below 30)	Partial (30-70)	Almost Complete (70-99)	Complete (100)
Alwalton	0	2	13	13	4
Lechlade	2	23	38	83	78
Mucking	160	117	0	0	0
Wasperton	86	60	28	5	0
Worthy Park	6	24	28	30	17

Table 13: Weight of Cremation Remains

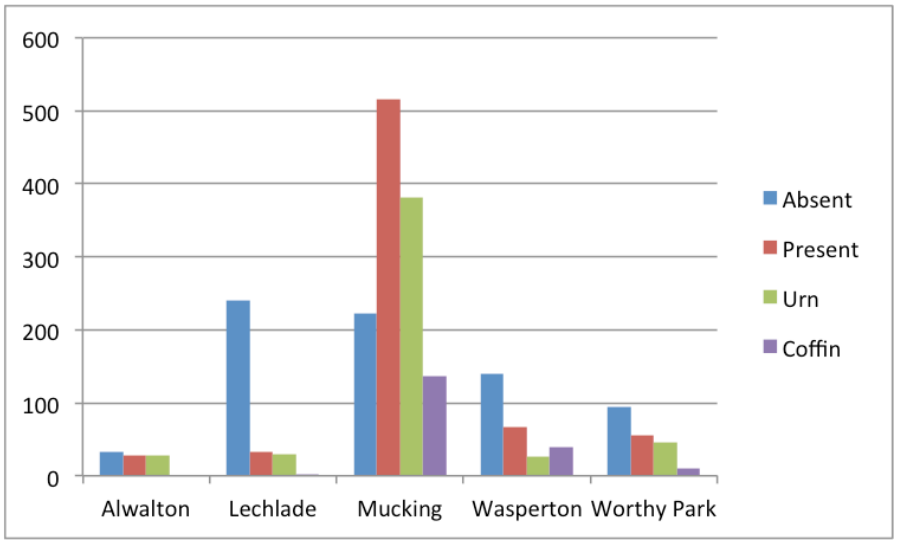
	0	0-300	300-700	700-1000	1000+	Mean Weight	Median Weight
Alwalton	3	6	8	4	7	607.25	485.5
Lechlade	1	20	7	0	2	259.03	125
Mucking	46	352	50	12	1	130.56	43.1
Wasperton	7	7	12	1	0	218.9	104.3
Worthy Park	10	34	1	0	0	45.98	9.45

2b. Preparation of the disposal facility

A. Form of the facility: All burials from the five case study sites were found in formal graves within the cemetery. However, there is some diversity as to whether they were contained within the cemetery boundaries such as at Wasperton and Mucking where Roman features were used to constrain the cemetery.

The majority of cremation burials were found within a container, with only 17% at Mucking and 4% at Wasperton being buried without an urn. Whether they were buried in an organic container such as leather bag or wooden container is unknown. Conversely, the presence of containers for inhumation burials varies depending on the cemetery. Alwalton has no coffins and only 4 burials have evidence of a grave lining of stone. At Lechlade, 2 individuals have coffins, and 14 individuals have lining within the burials, consisting of stone or burnt material. Mucking has 136 individuals with coffins, and 24 with grave liners ranging from burnt material, straw mattresses, or wood biers. At Wasperton, 40 individuals have coffins and 14 have grave linings, primarily of stone. Finally, at Worthy Park, 10 individuals have coffins and 7 have grave liners of stone or an organic pillow present. The inhumation graves were primarily excavated in a rectangular to ovoid shape, although there are a number of idiosyncratic and irregular burials found at Lechlade and Mucking. Circular or ovoid graves were most common for cremation burials.

Figure 10: Containers, created by author in Excel

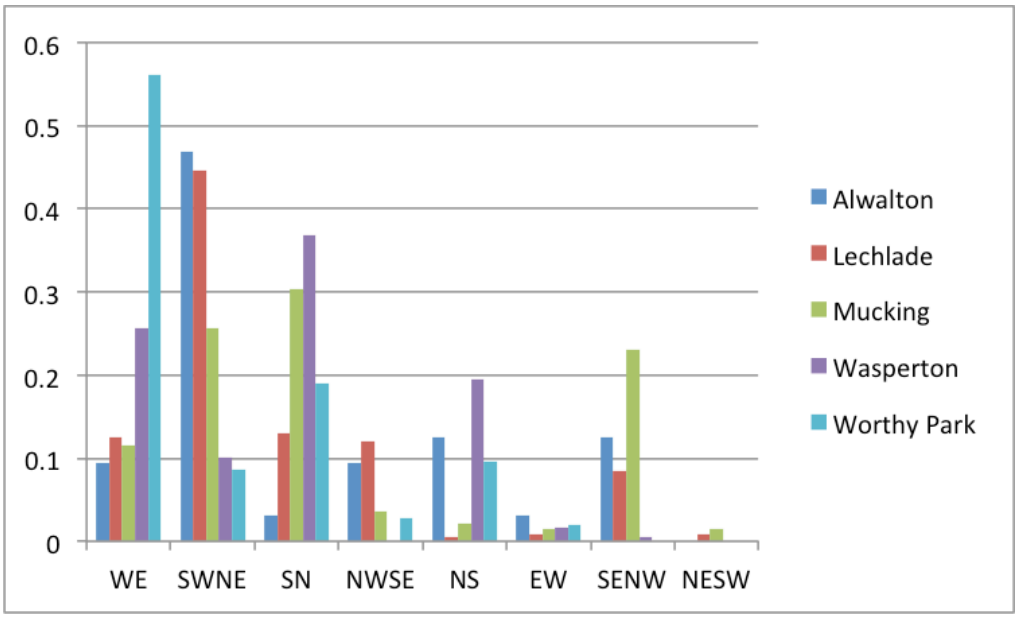


Some of the burials show evidence for above-ground structures or post-holes indicating that at one point in time, there was more than just a excavated grave. These features were found at all cemeteries except Worthy Park. At Alwalton, there were three cremation burials (1293, 1257, 1266) associated with five post-holes, which may represent grave markers or a fence, and a single four-post structure over a cremation burial (1297). At Lechlade, there was only one possible grave marker found at the site, but there was a four-post structure was identified over a cremation grave (226), which is set slightly to the southeast away from the other burials. In addition to this, there was a rectangular ditched enclosure around two cremation burials and a ring-ditch around an adult female inhumation, both are centrally located within the cemetery. At Mucking, post-holes were found near 17 inhumation burials, but it is not clear whether there is a direct relationship between the post and grave as they do not directly associate in space. Another line of post-holes was found near a row of cremation burials, and may indicate a fence or markers. In addition to this, there were four posts around an inhumation burial (964) suggesting that it may have had an external structure above it, like a canopy or cover. A number of burials were located with the Bronze Age barrow, including three inhumations and one cremation, although these were only placed at the edges of the mound. Wasperton had three clear structures that were identified within the limits of the Roman enclosure. The first is a D-shaped Roman ditch which separates three inhumation burials from the rest within the enclosure. The second is a series of post-holes and sockets that likely made a timber structure, and is concentrated around the central cluster of cremation graves. Finally, there was a sunken floored building located in the southwestern portion of the enclosure that may possibly be a building relating to the cemetery. Given that no burials intercut the structure

and seem to respect its space, it may have been used during the same period as the cemetery, though there is little physical evidence to more specifically determine its phase of use. Finally, at Worthy Park there is only a single post-hole associated with an inhumation (22) that may be a grave marker.

B. Orientation of the facility and the body within the facility: Orientation was only possible for the inhumation burials due to the circular shape of cremation urns and graves. All individuals were oriented in the same direction of the grave, which is expected given the supine and extended layout of the body and rectangular structure of the grave. All orientations were represented at most sites, and there were few clear patterns. The majority of individuals at all sites were oriented either west to east, southwest to northeast or south to north (Figure 11).

Figure 11: Orientation, created by author in Excel



C. Location of the facility in relation to the community: Sadly, no site under investigation has a clear relationship with a domestic site, so this dimension cannot be discussed for these sites.

D. Location of the facility within the disposal area: Location of specific graves within the cemeteries is best represented by the maps, however there are some trends that should be noted. These are discussed more fully in the spatial analysis section.

E. Form of the disposal area: All burials were located within the boundaries of the cemetery.

3. Burial context within grave

A. Arrangement within grave of specific bones with relation to grave furniture and facility: In general, inhumation burials (with the exception of the decapitation burials) were laid out extended on their backs within coffins, grave liners, or directly upon the earth. They were laid at the center of the grave trench, and had grave goods either placed on them as part of their apparel, or around them as offerings. Cremation burials were more likely to be kept in a container and many had grave goods deposited into the urn for the final burial. Urns were placed at the center of the grave trench in the majority of cases, and only a small number had artifacts found outside of the urn.

B. Form of furniture: Grave furniture could take a number of forms, though the primary types were urns and coffins. Urns were common for cremation burials at most sites, with the exception of Mucking where 79 cremated remains were found without urns and may have been placed in more perishable containers like a cloth or leather bag. Coffins ranged from multicomponent nailed boxes to hollowed out logs, and their use varied widely by site. No

coffins were present at Alwalton, and only 2 were found at Lechlade. Mucking has the highest number of furnished graves, with almost half the inhumation burials in containers. Wasperton had 40 inhumation burials with coffins, and Worthy Park had 10.

Additionally, in a number of inhumation burials there were other types of grave furniture that did not fall under the guidelines of a container. At all four sites, there were a minority of burials with some type of lining or additional material in the grave, ranging from biers made of straw or wood, to simple lining of stone, metal or grass, to pillows of various materials placed under the head.

C. Quantity and Types of Artifacts: In general, when we compare cremation and inhumation, there is considerable overlap in the types of artifacts found with each burial type, suggesting similarities in the ritual associated with them. As seen in Tables 14 and 15, out of the 61 artifact categories, 40 are present in both cremation and inhumation graves. Artifacts unique to cremation graves include miniature combs, gaming pieces, miniature and full-size razors, and needles. Among inhumation graves, artifacts unique to this disposal include jewelry like armlets, bracelets, earrings, wrist clasps and pendants, awls, box fittings, cosmetic brushes, Roman coins, spokeshaves, spoons, axes, scabbards, seaxes, and swords. Further discussion of these associations will be offered during the spatial and statistical analysis.

Table 14: Grave Goods A-P (Green = inhumation only, Blue = cremation only, Black = both)

All Sites	Alwalton	Lechlade	Mucking	Wasperton	Worthy Park
Armlet			Armlet	Armlet	Armlet
Awl			Awl		
Beads	Beads	Beads	Beads	Beads	Beads
Bowls	Bowls	Bowls	Bowls	Bowls	Bowls
Box Fittings		Box Fittings	Box Fittings		
Bracelet			Bracelet	Bracelet	
Brooch	Brooch	Brooch	Brooch	Brooch	Brooch
Bucket		Bucket	Bucket	Bucket	Bucket
Buckles	Buckles	Buckles	Buckles	Buckles	Buckles
Chatelaines	Chatelaines	Chatelaines	Chatelaines		Chatelaines
Combs	Combs	Combs	Combs		Combs
Miniature Comb					Mini Comb
Container	Container	Container	Container	Container	Container
Cosmetic Brush		Cosmetic B	Cosmetic B	Cosmetic B	
Cowrie		Cowrie			
Curse				Curse	
Earrings	Earrings				
Ext Structure	Structure	Structure	Structure	Structure	
Faunal	Faunal	Faunal	Faunal		Faunal
Flint		Flint			
Fossil		Fossil	Fossil	Fossil	
Fragment	Fragment	Fragment	Fragment	Fragment	Fragment
Gaming Pieces			Gaming		
Glass Unknown		Glass Unknown	Glass Unknown	Glass Unknown	
Glass Vessel		Glass Vessel	Glass Vessel		
Honestone	Honestone	Honestone	Honestone		
Key	Key	Key	Key	Key	Key
Miniature Razor			Mini Razor		Mini Razor
Hobnail			Hobnail	Hobnail	
Nail Scraper		Nail Scraper	Nail Scraper		
Needle		Needle	Needle		
Pendant		Pendant	Pendant	Pendant	Pendant
Pin	Pin	Pin	Pin	Pin	Pin
Pursemount	Pursemount	Pursemount	Pursemount	Pursemount	Pursemount
Pots	Pots	Pots	Pots	Pots	Pots

Table 15: Grave Goods R-W (Green = inhumation only, Blue = cremation only, Black = both)

All Sites	Alwalton	Lechlade	Mucking	Wasperton	Worthy Park
Razor	Razor				
Roman Coin		Roman Coin	Roman Coin		Roman Coin
Ring	Ring	Ring	Ring	Ring	Ring
Scoop/Spatulate	Scoop	Scoop	Scoop	Scoop	Scoop
Shears	Shears	Shears	Shears		Shears
Sickle			Sickle		
Spindlewhorl	Spindlewhorl	Spindlewhorl	Spindlewhorl	Spindlewhorl	
Spokeshave		Spokeshave			
Spoon					Spoon
Strapend	Strapend	Strapend	Strapend	Strapend	Strapend
Textile Tools	Textile Tools	Textile Tools	Textile Tools	Textile Tools	
Toilet Implement	Toilet	Toilet	Toilet	Toilet	Toilet
Miniature Toilet		Mini Toilet	Mini Toilet		Mini Toilet
Miniature Tools					Mini Tool
Tools	Tools	Tools	Tools		Tools
Tweezers	Tweezers	Tweezers	Tweezers	Tweezers	Tweezers
Arrow		Arrow	Arrow		
Axe			Axe		
Knife	Knife	Knife	Knife	Knife	Knife
Scabbard		Scabbard			Scabbard
Seax		Seax	Seax		Seax
Shield	Shield	Shield	Shield	Shield	Shield
Spear	Spear	Spear	Spear	Spear	Spear
Sword		Sword	Sword		Sword
Weapon	Weapon	Weapon	Weapon	Weapon	Weapon
Wristclasp	Wristclasp				Wristclasp

D. Quality of Artifacts: In particular when examining quality of artifacts, we are concerned with whether artifacts have been burnt or not. There were no burnt artifacts found in the inhumation burials, although some of the grave furniture suggested that burning may have

occurred during construction of the coffin or digging of the grave. In cremation burials, there were certain patterns of burnt and unburnt artifacts that varied by cemetery. Table 16 illustrates these differences. Lechlade could not be included in this discussion due to a lack of information regarding whether materials were burnt or not. At Wasperton and Worthy Park there is a fairly even distribution of burnt and unburnt grave goods included with the burials. At Mucking there are double the number of grave goods that are burnt in contrast to those that are unburnt. However, this pattern is reverse for Alwalton, where unburnt grave goods are more than triple the burnt artifacts found in the graves. No burnt grave goods were found in inhumation burials, however a small percentage of the graves at Mucking and Wasperton had a small percentage had evidence of burnt material in the grave. At Alwalton, artifacts found in cremation burials are more likely to be unburnt, with the majority having unburnt combs. Other items found only in an unburnt state were nails, tweezers, honestone, razor, shears, and an iron fragment. There is a similar pattern at Worthy Park, with combs and toilet implements making up the majority of unburnt artifacts. The converse is found at Mucking, where the majority of artifacts with cremation are burnt. The toilet implements found unburnt at Alwalton are primarily burnt and in miniature version at Mucking. Only pins, needles, knives and shield accessories were entirely unburnt. At Wasperton, very few items are found unburnt, and may be accidental inclusions rather than purposeful additions.

Table 16: Burnt and Unburnt Grave Goods, Artifact categories with burning noted. (Black = found both burnt and unburnt, red = burnt only, blue = unburnt only)

ALL SITES	ALWALTON	MUCKING	WASPERTON	WORTHY PARK
Beads	Beads	Beads		Beads
Brooch	Brooch	Brooch	Brooch	
Buckles		Buckles		
Combs	Comb*	Comb		Comb
Mini Combs				Mini Combs
Faunal		Faunal		
Gaming Pieces		Gaming pieces		
Glass Unknown		Glass Unknown		
Glass Vessel		Glass Vessel		
Hobnail			Hobnail	
Honestone	Honestone			
Key		Key		
Metal	Metal	Metal	Metal	Metal
Mini Razor		Mini Razor		
Needle		Needle		
Pin		Pin		Pin
Pursemount	Purse	Pursemount		
Pots		Pots**		
Razor	Razor			Razor
Shears	Shears	Shears		
Sickle		Sickle		
Spindlewhorl	Spindlewhorl	Spindlewhorl		
Toilet Implement		Toilet		Toilet
Miniature Toilet		Mini Toilet		
Miniature Tools				Mini Tools
Tweezers	Tweezers	Tweezers		
Arrow		Arrow		
Knife		Knife		
Shield		Shield		
Spear		Spear		

At both Mucking and Wasperton, there were burials with charcoal staining or charred material in the grave that may indicate that fire played an important role in part of the funeral or burial preparation. Nine individuals from Mucking had evidence of charred wood planks or

fragments making up part of the grave furniture. One individual from Mucking and one from Wasperton had burnt material in the grave fill. Two individuals from Mucking had burnt or melted material as the grave cover. Finally, three individuals from Mucking and two from Wasperton had charcoal stains or burnt material at the bottom of the grave. Only one inhumation burial (grave 628) had a burnt artifact had a burnt copper alloy sheet in addition to the burnt material found in the grave fill.

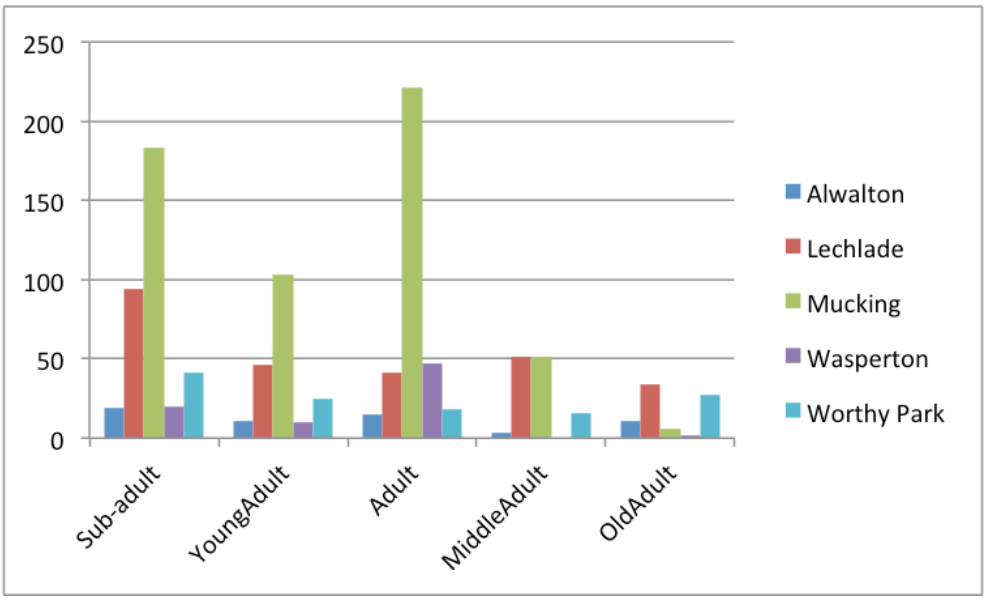
When we compare the artifacts found in cremation with those in inhumation burials, we gain additional information regarding the quality of the artifacts. The presence of accessory pots, beads, brooches, and buckles are very common in inhumation burials and are usually burnt in cremation burials. Fragments of metal and nails are found both burnt and unburnt in cremation burials, as well as being common in inhumation burials. Pins, tweezers and toilet implements were found primarily unburnt in cremation burials, and were also found in inhumation burials. The only artifact that is prominent in cremation burials and not found in high numbers of inhumation burials is combs, although there are small numbers of burnt combs in cremation burials as well as inhumed combs. The items that were unique to cremation, regardless of burning, include all miniature items, gaming pieces, shears, and silver. Table 14 and 15 illustrates the differences.

4. Population profile and biological dimensions

A. Age: All age groups were found to be present at each of the sites and for each disposal type with the exception of cremated perinate remains. In general, there was a fairly

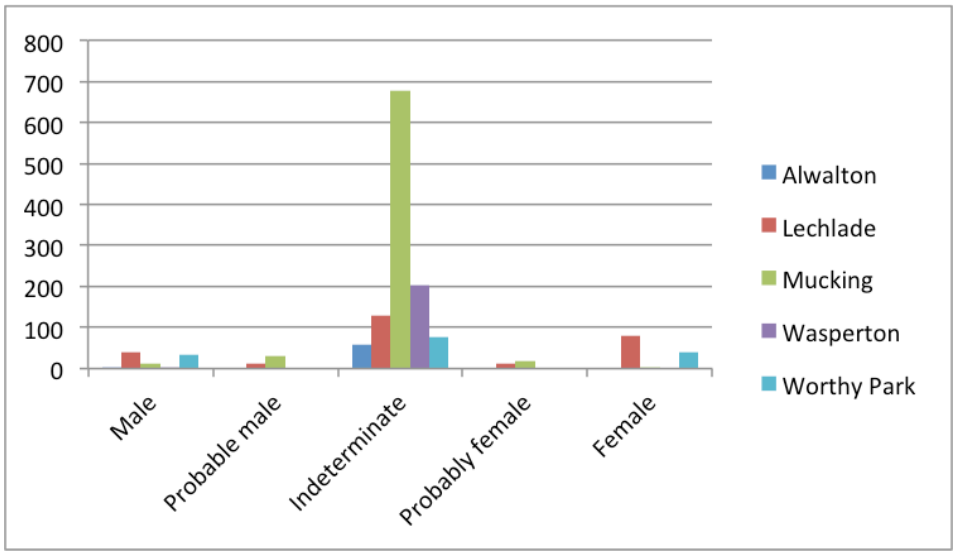
representative sample by ages, suggesting that the entire population had been buried here, and all ages were allowed to be buried or cremated.

Figure 12: Age, created by author in Excel



B. Sex: Due to the poor preservation of the remains, based on either the highly acidic soils or cremation process, it was often difficult to determine sex. The majority of individuals were classified as indeterminate due to preservation or age. However, there does seem to be a fairly representative sample of both sexes, suggesting that there was not a preference for one to be given a certain type of disposal over the other as seen in Figure 13.

Figure 13: Sex, created by author in Excel



II. Statistical Analysis

The first step in comparing cremation and inhumation, is to determine which variables are more strongly associated with specific forms of burial using Chi square, CA and corrgrams. Statistical analysis was completed for each site individually and as a total sample in order to determine whether the local patterns could be established from a regional perspective. Provided below in Table 17 is a key to CA and corrgam figures. For corrgrams, blue indicates stronger association with inhumation and red indicates stronger relationship with cremation; darker colors equal strong relationships, whereas light colors indicate a lack of relationship.

Table 17: Statistical Analysis Guide

NAME	CODE
Disposal	DIS
Container	CON
External Structure	EXT
Brooch	BRO
Weapons- All	WEA
Knife	WK
Shield	WSH
Spear	WSP
Beads	BEA
Bucket	BKT
Toilet Implement	TOI
Miniature Toilet Implement	MTO
Scoop/Spatulate	SS
Miniature Razor	MRA
Shears	SHR
Nail	NAI
Buckle	BKL
Comb	CMB
Miniature Comb	MCB
Chatelaine	CHA
Tools	TLS

A. Individual Sites

Chi-Square was completed for each site, and results are compiled in Table 18. As we can see, there are differences between cremation and inhumation, and among sites with respect to what artifacts are most significant. These are further illustrated by the Correspondence Analysis, which provides an illustration of the relationship and strength in these.

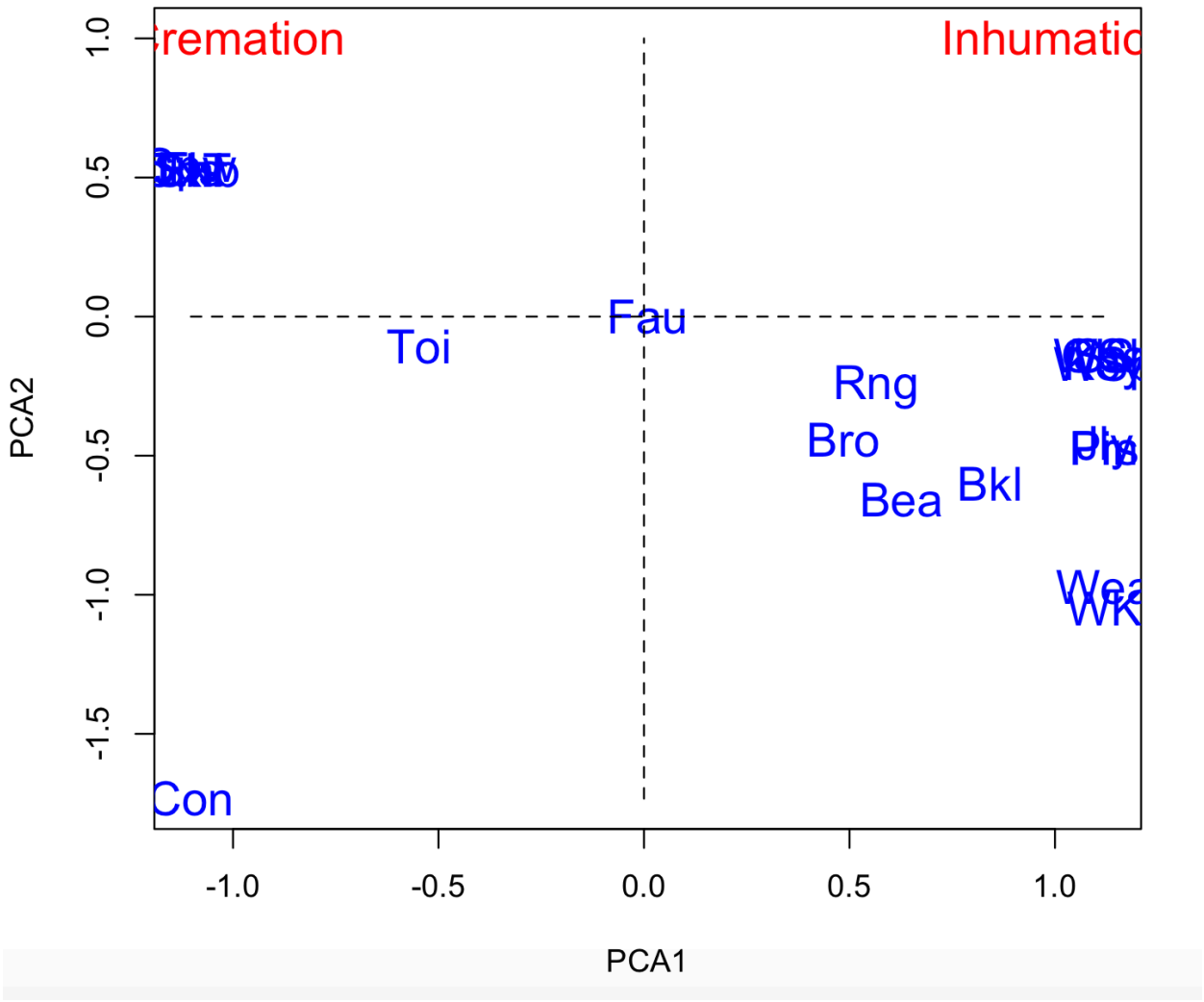
Table 18: Chi-Square Results for Statistically Significant Artifacts (green = significant for inhumation, blue = significant for cremation, black = not significant, blank = not present

Alwalton	Lechlade	Mucking	Wasperton	Worthy Park
Beads	Beads	Beads	Beads	Beads
Bowls	Bowls	Bowls	Bowls	Bowls
		Bracelet	Bracelet	
Brooch	Brooch	Brooch	Brooch	Brooch
Buckles	Buckles	Buckles	Buckles	Buckles
Chatelaines	Chatelaines	Chatelaines		Chatelaines
Combs	Combs	Combs		Combs
				Mini Comb
Container	Container	Container	Container	Container
Faunal	Faunal	Faunal		Faunal
Key	Key	Key	Key	Key
		Mini Razor		Mini Razor
		Hobnail	Hobnail	
Pin	Pin	Pin	Pin	Pin
	Roman Coin	Roman Coin		Roman Coin
Shears	Shears	Shears		Shears
	Mini Toilet	Mini Toilet		Mini Toilet
Knife	Knife	Knife	Knife	Knife
Shield	Shield	Shield	Shield	Shield
Spear	Spear	Spear	Spear	Spear
	Sword	Sword		Sword
Weapon	Weapon	Weapon	Weapon	Weapon

i. Alwalton

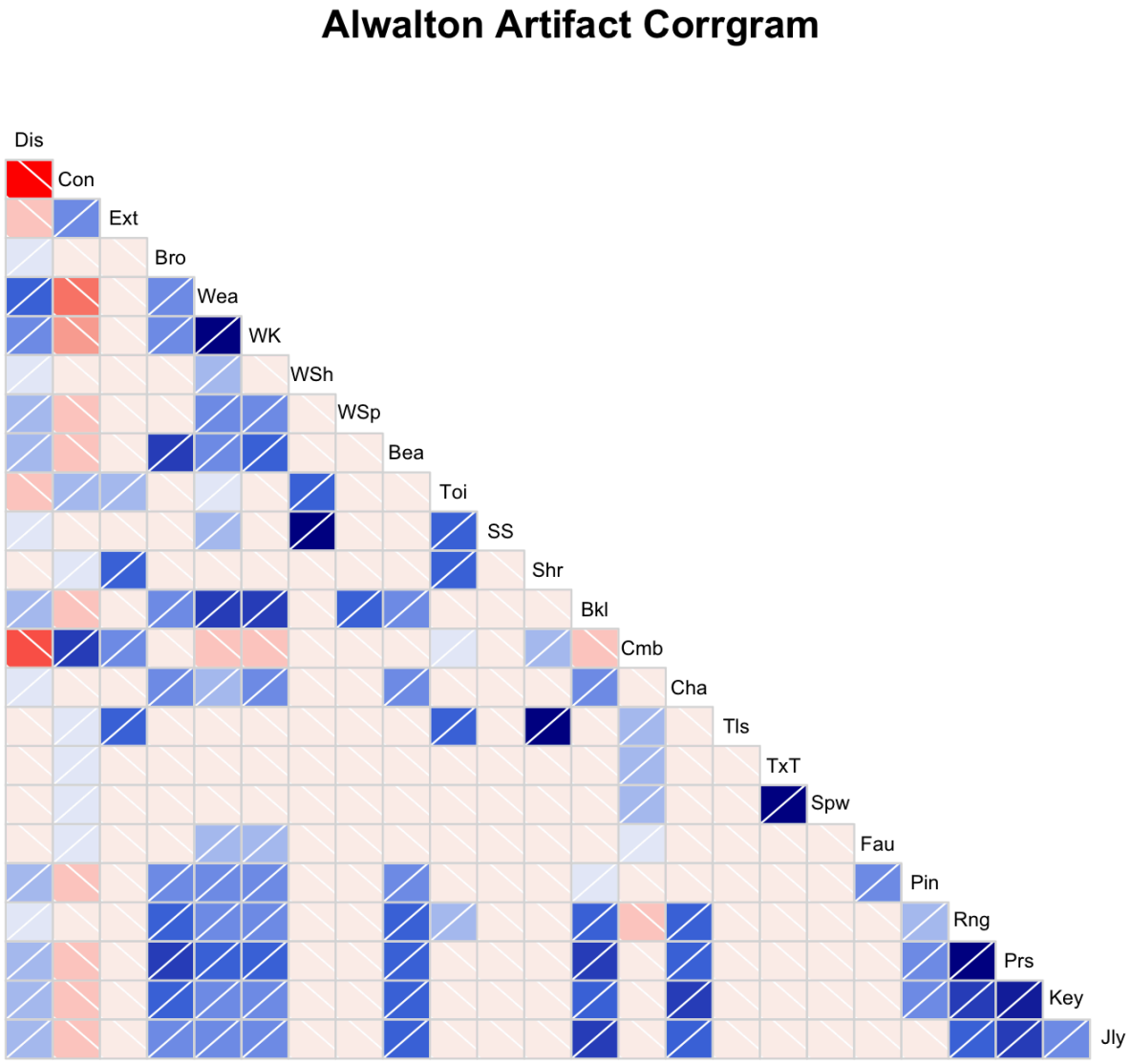
The correspondence analysis supports the findings of the Chi-Square, but also demonstrates other less significant associations. Cremation was strongly associated with containers, external structures, shears, combs, tools, textile tools and spindle whorls. Inhumation was more associated with brooches, weapons, beads, buckles, chatelaines, pins, rings, purses, keys and jewelry. Toilet implements and faunal remains were not strongly associated with either.

Figure 14: Alwalton Correspondence Analysis for All Burials, created by author in R



The corrgram further supports these relationships and refines them. The graphic demonstrates a strong connection between cremation and combs, with weaker connections to external structures and toilet implements. Inhumation shows a strong connection to weapons, with slightly less strong associations with beads, buckles, pins, purses, keys and jewelry.

Figure 15: Alwalton Corrgram for All Burials, created by author in R



ii. Lechlade

The spatial analysis of Lechlade revealed that the cemetery was truly only a co-occurrence burial site during its earliest period of use. To examine the impact of this, Lechlade's statistical analysis was done as a complete sample and also for the early period only. The correspondence analysis of Lechlade revealed two major patterns: external structures and containers dispersed

towards inhumation, and the remaining variables closely clustered towards inhumation (Figure 16). While the pattern is similar for the early period as well, containers are more strongly associated with cremation, and there is less association of textile tools, faunal remains and magic with inhumation (Figure 16).

Figure 16: Lechlade Correspondence Analysis for All Burials, created by author in R

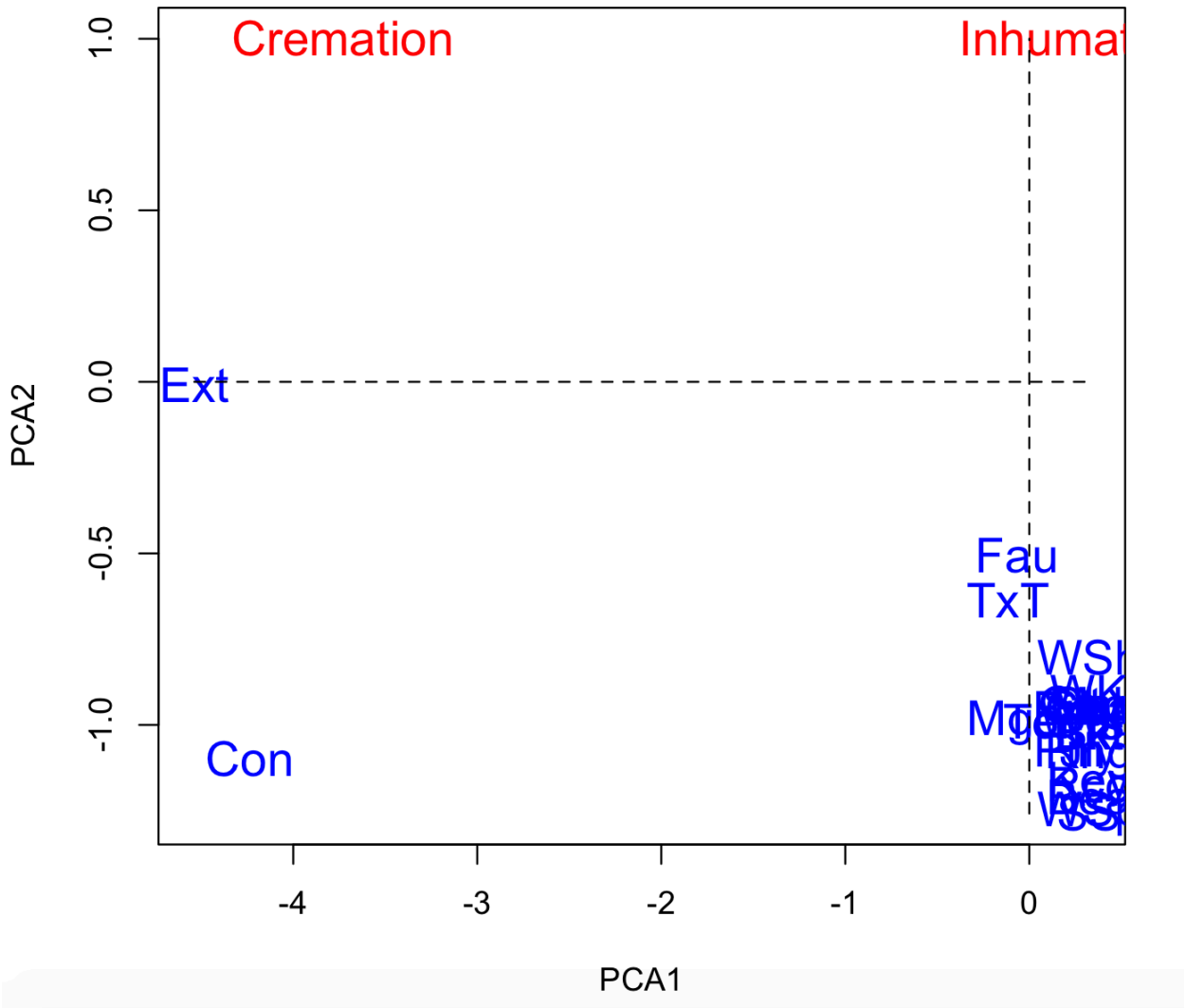
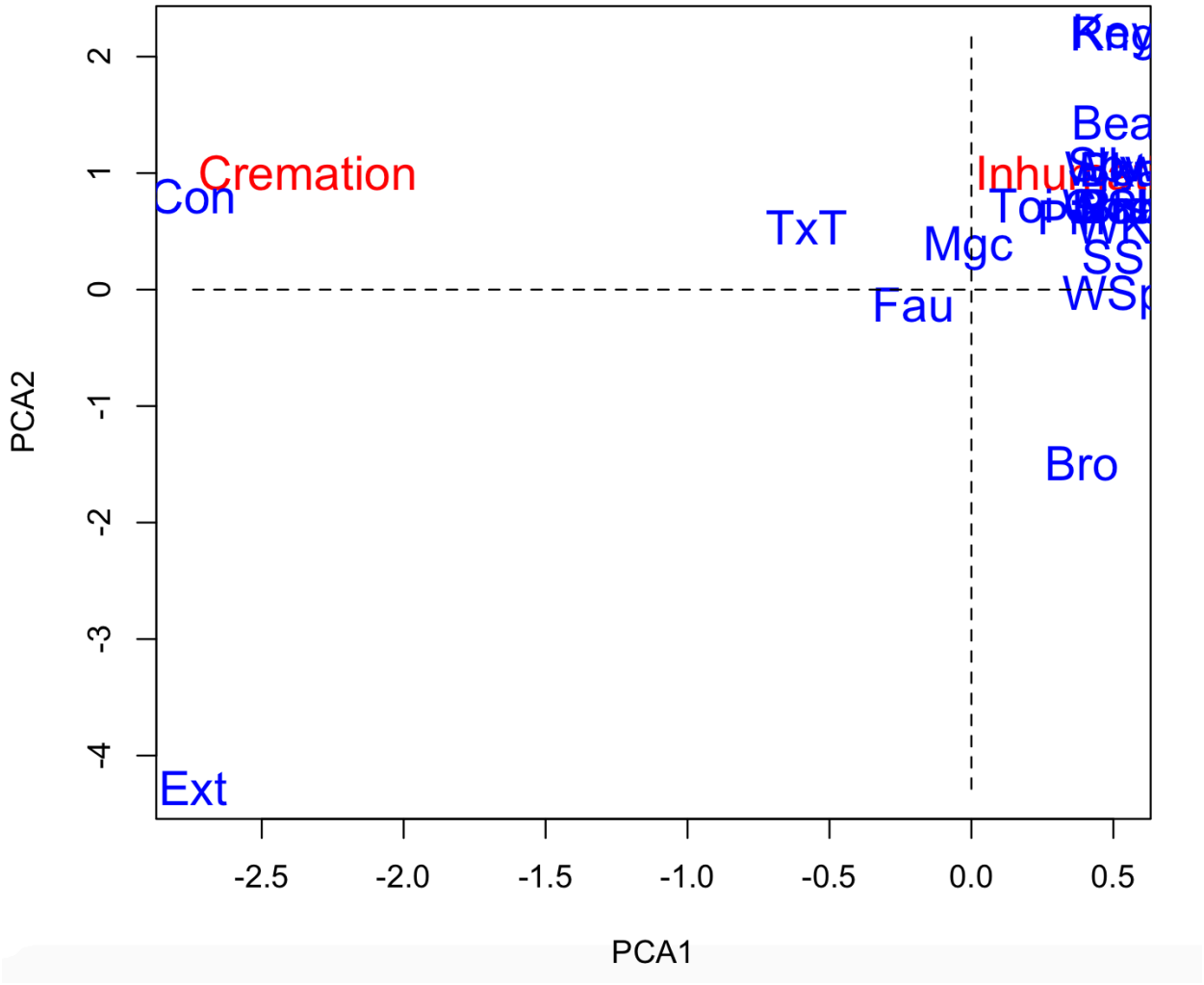


Figure 17: Lechlade Correspondence Analysis for Early Burials, created by author in R



The corrgrams provide similar information, but show a difference in types of artifacts present and associations with inhumation. When considering both the complete and early period corrgrams, cremation is only strongly associated with containers, with a very small connection to external structures (Figures 18 and 19). For the early period (Figure 18), inhumation is not strongly associated with any artifact, but has medium association with brooches, weapons, beads, and pins, and light associations with toilet implements, buckles,

rings and magic. These relationships lessen further when the entire sample is considered (Figure 19), and only weapons have a medium association, with brooches, beads, buckles and pins to a lesser extent.

Figure 18: Lechlade Corrgram for All Burials, created by author in R.

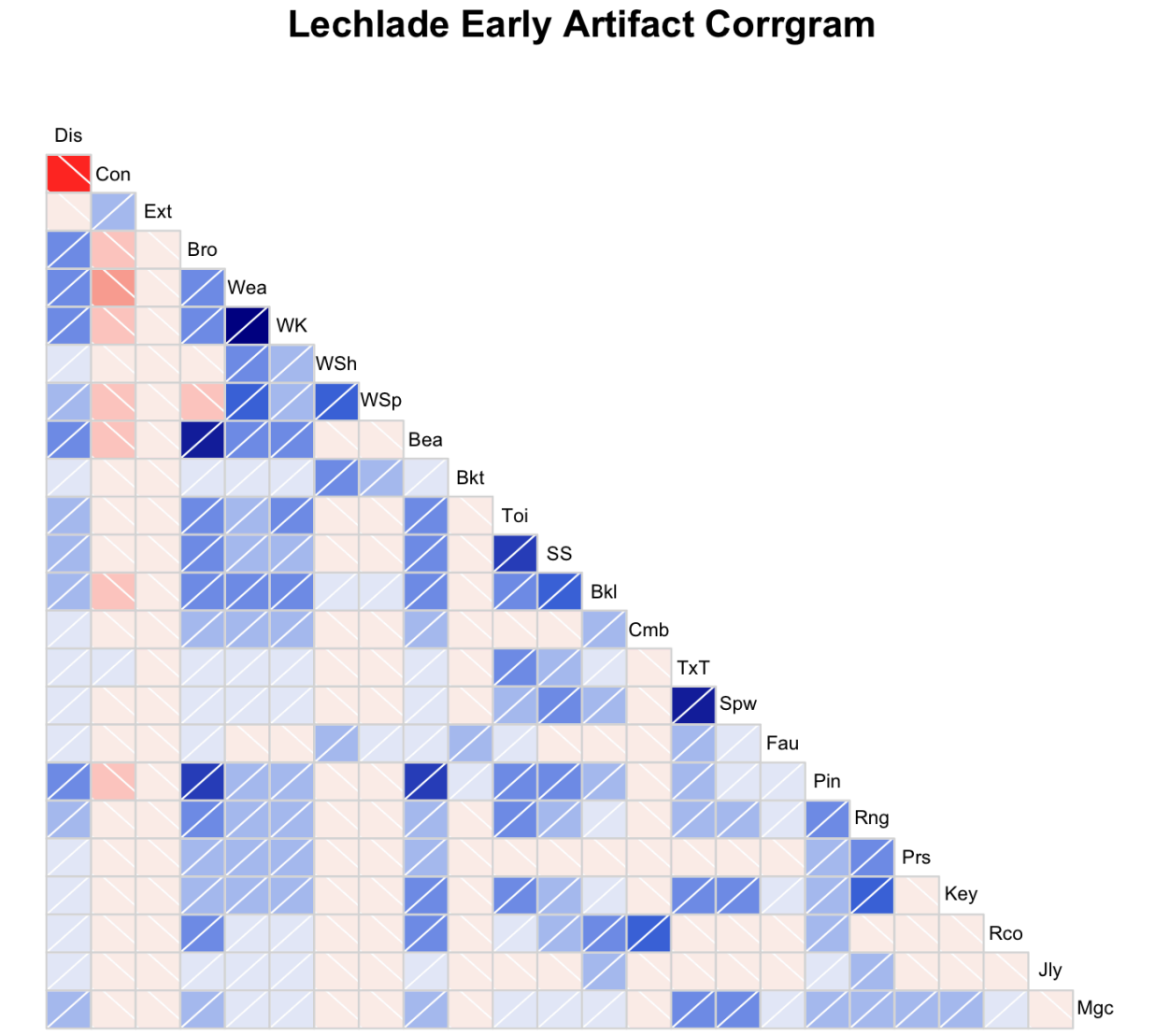
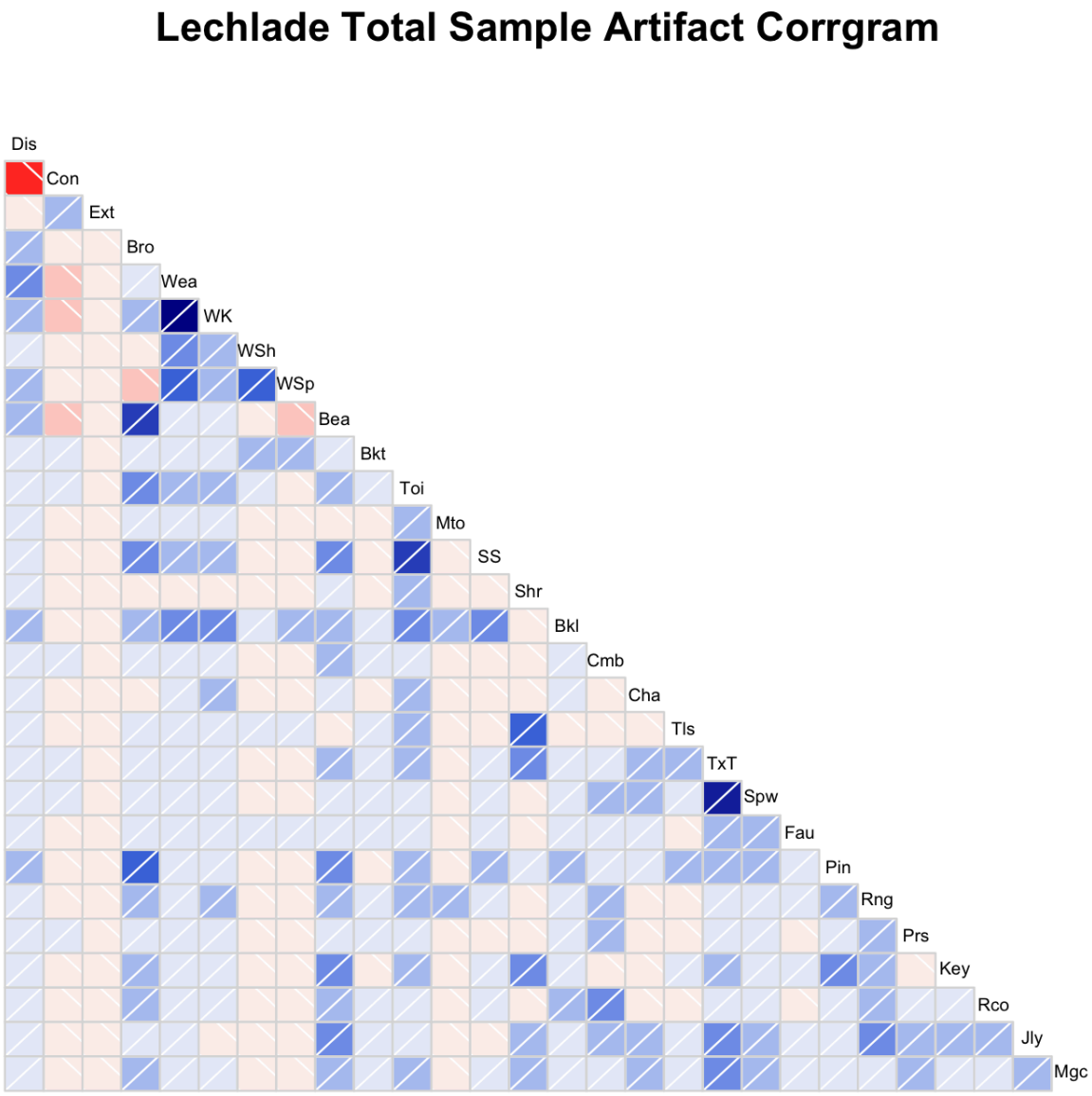


Figure 19: Lechlade Corrgram Analysis for Early Burials, created by author in R



iii. Mucking

Due to the size of Mucking, there were few interpretations that could be made from the statistical analysis due to the strong association with inhumation. When this was divided into an early and middle period though, patterns became more clear. During the early period, cremation is associated with containers, beads, chatelaines, miniature toilet implements,

shears, shields, textile tools, gaming pieces, combs, and keys. Inhumation was more associated with toilet implements, rings, weapons, brooches, rings, tools, faunal remains, spindle whorls, and external structures (Figure 20). During the mid period, there is a slight change in associations. Inhumation becomes more associated with beads, keys, and shields, and cremation now has spindle whorls and all types of toilet implements.

Figure 20: Mucking Correspondence Analysis for Early Burials, created by author in R

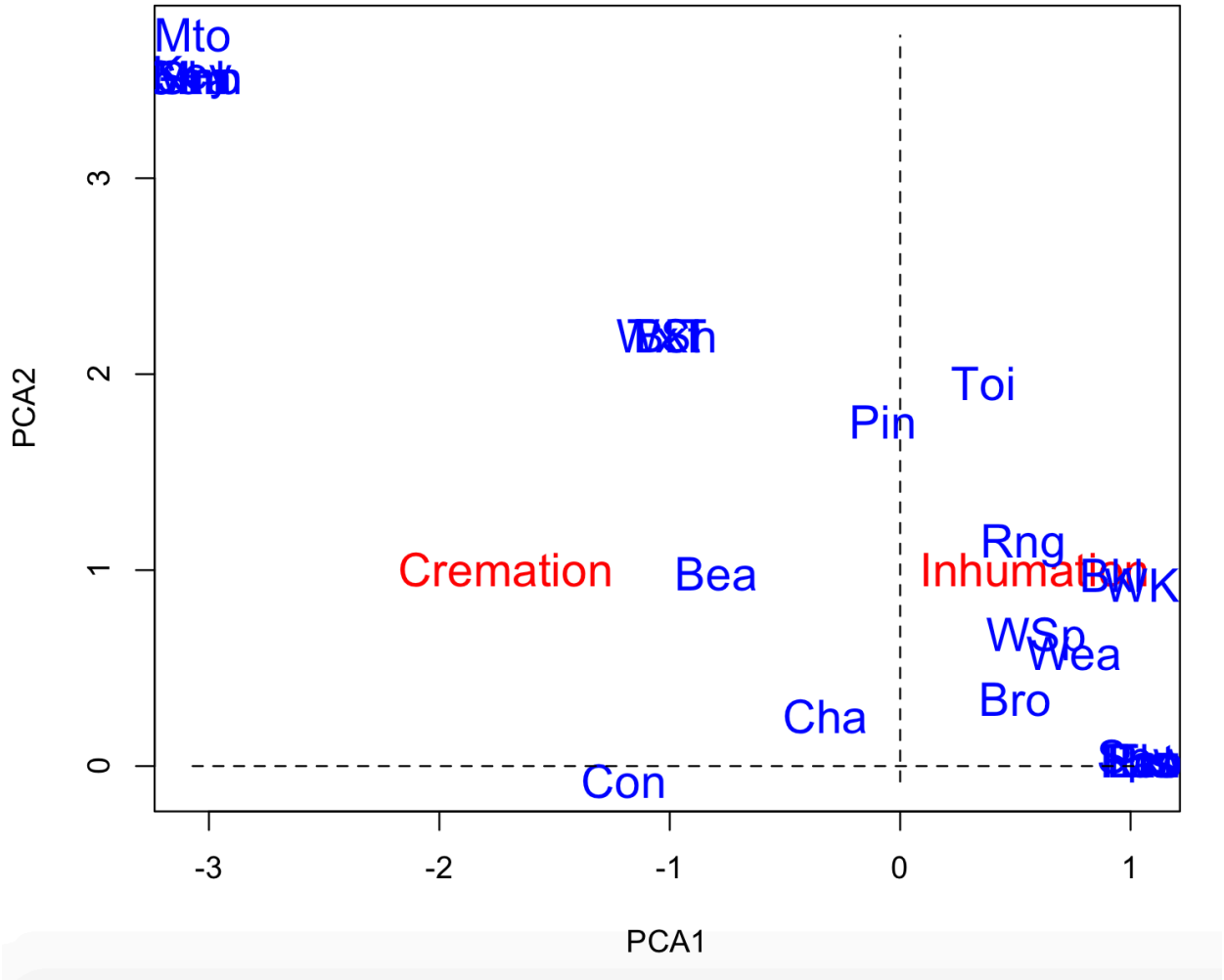
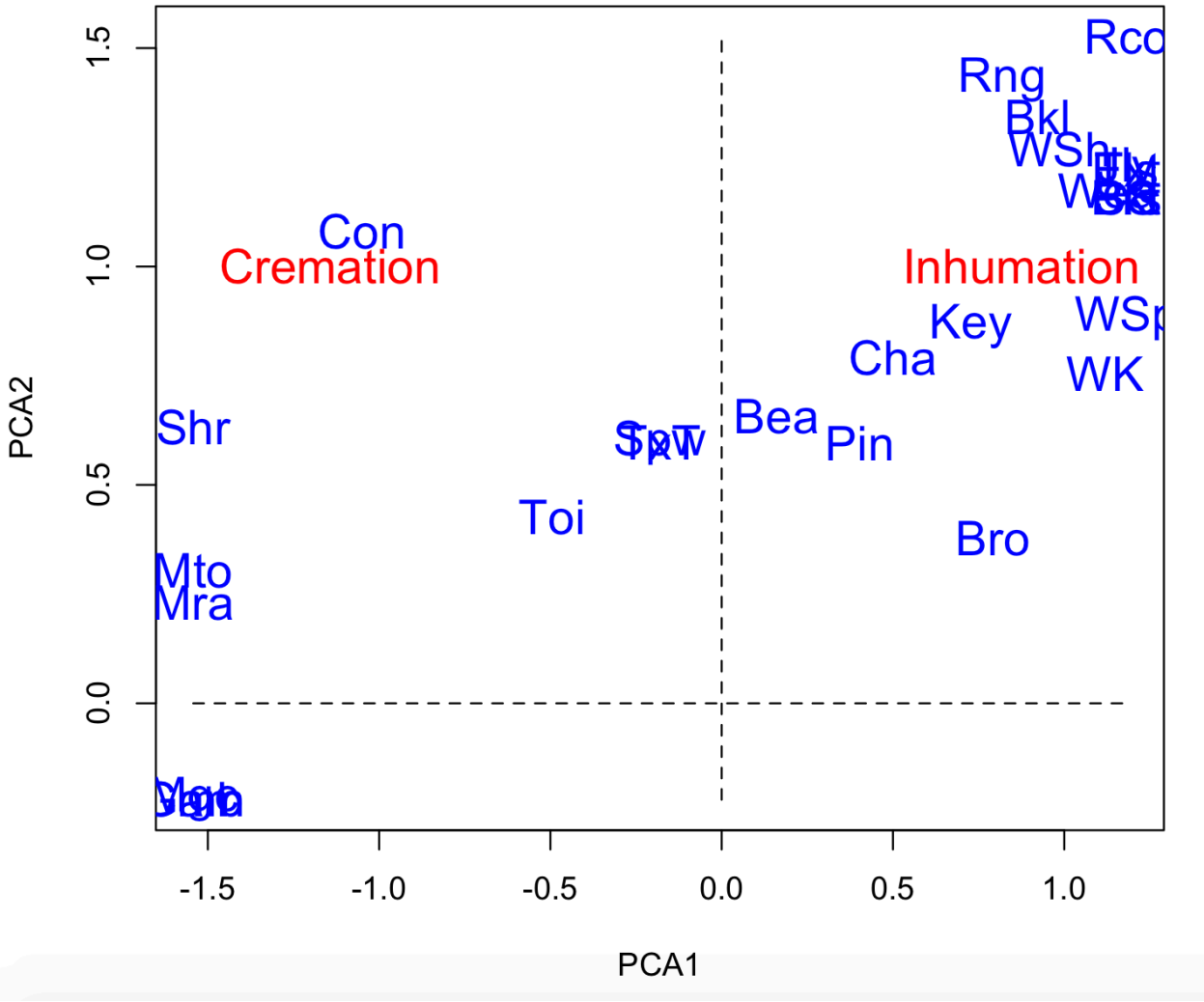


Figure 21: Mucking Correspondence Analysis for Mid Burials, created by author in R



Corrgrams also show some differences between the periods. During the early period, cremation is not as strongly associated with containers as it is in the mid period, but there is also a light association with miniature toilet implements (Figures 22 and 23). During the mid period for cremation, there are no other strong associations such as containers. Inhumation during the early period is strongly associated with weapons, with mid associations to brooches

and buckles (Figure 22). During the mid period, inhumation maintains its strong associations, but becomes more associated with nails and less associated to buckles (Figure 23).

Figure 22: Mucking Corrgram for Early Burials, created by author in R

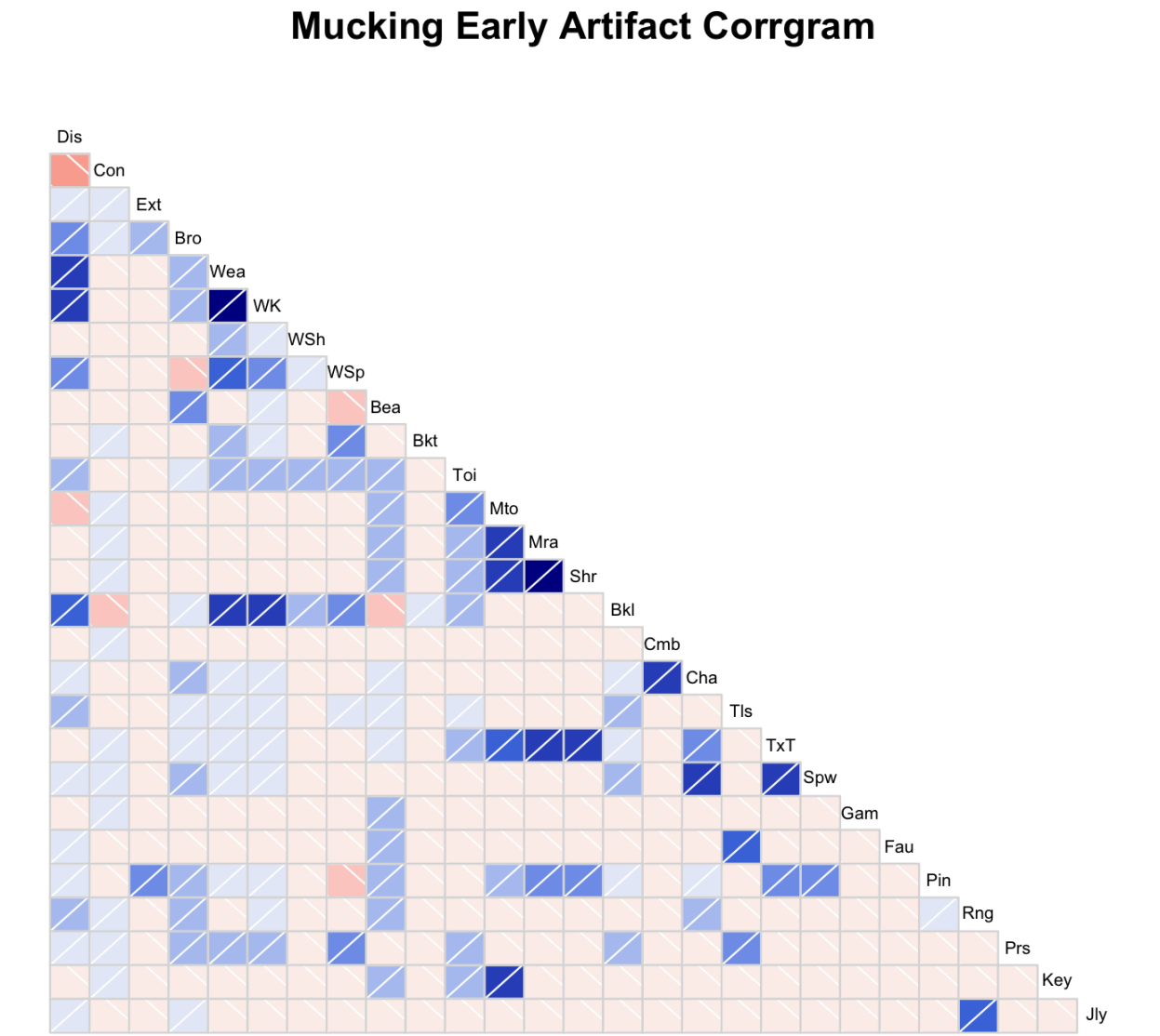
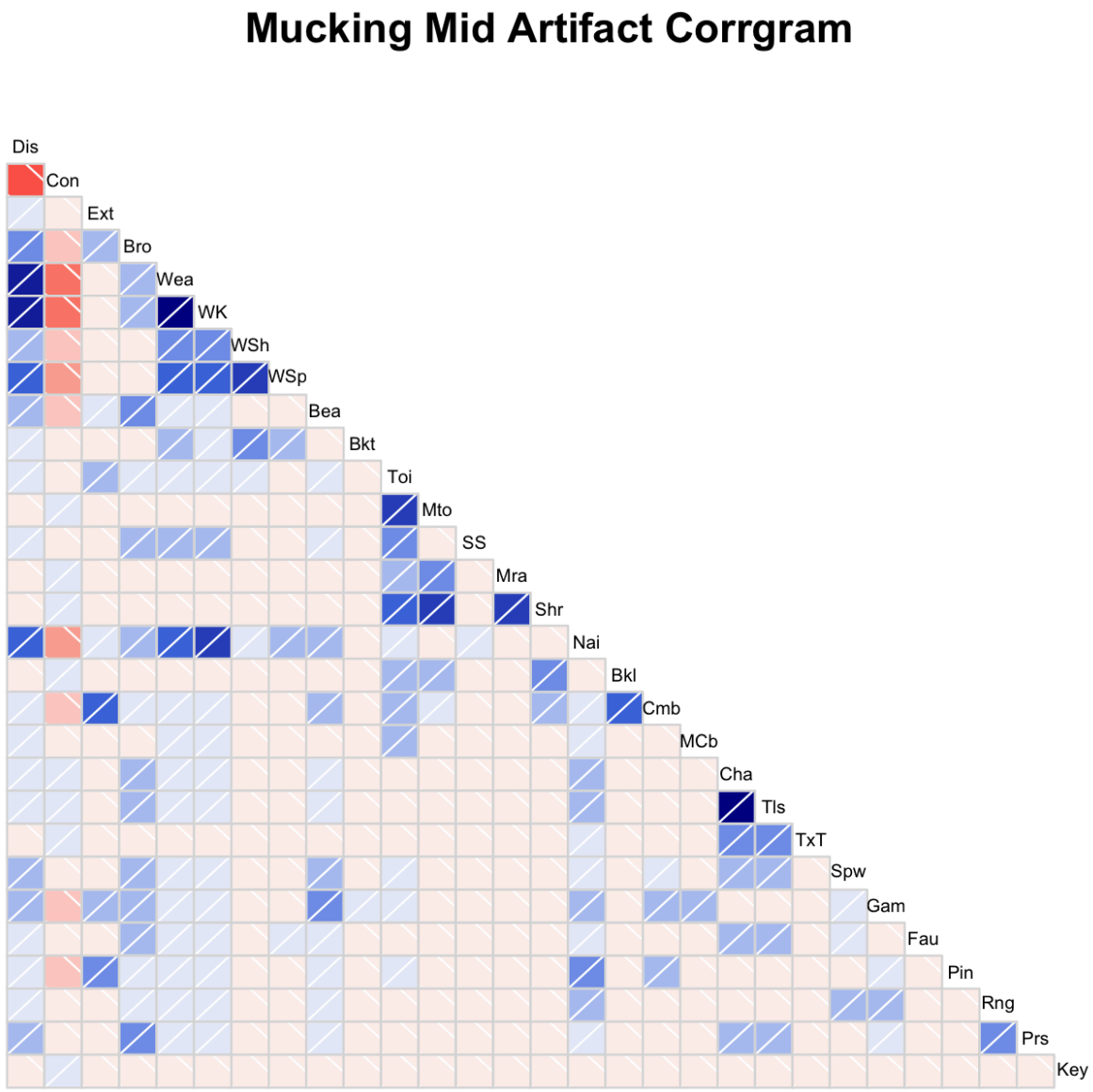


Figure 23: Mucking Corrgram for Mid Burials, created by author in R



iv. Wasperton

Similar to Lechlade, it was determined during spatial analysis that Wasperton was only a true co-occurrence cemetery during the early period of occupation, and the statistical analysis supports this division. The correspondence analysis of the entire cemetery and all periods

shows that only containers are associated with cremation, and the remaining variables are found with inhumation (Figure 24). However, during the early period, we can see that cremation is associated with containers, beads and brooches, and inhumation is associated with weapons, buckets, buckles, rings, nails and external structures. The association between external structures and inhumation also hides the fact that there was a major fence or structure likely associated with the cremation burials, but not with any single instance.

Figure 24: Wasperton Correspondence Analysis for All Burials, created by author in R

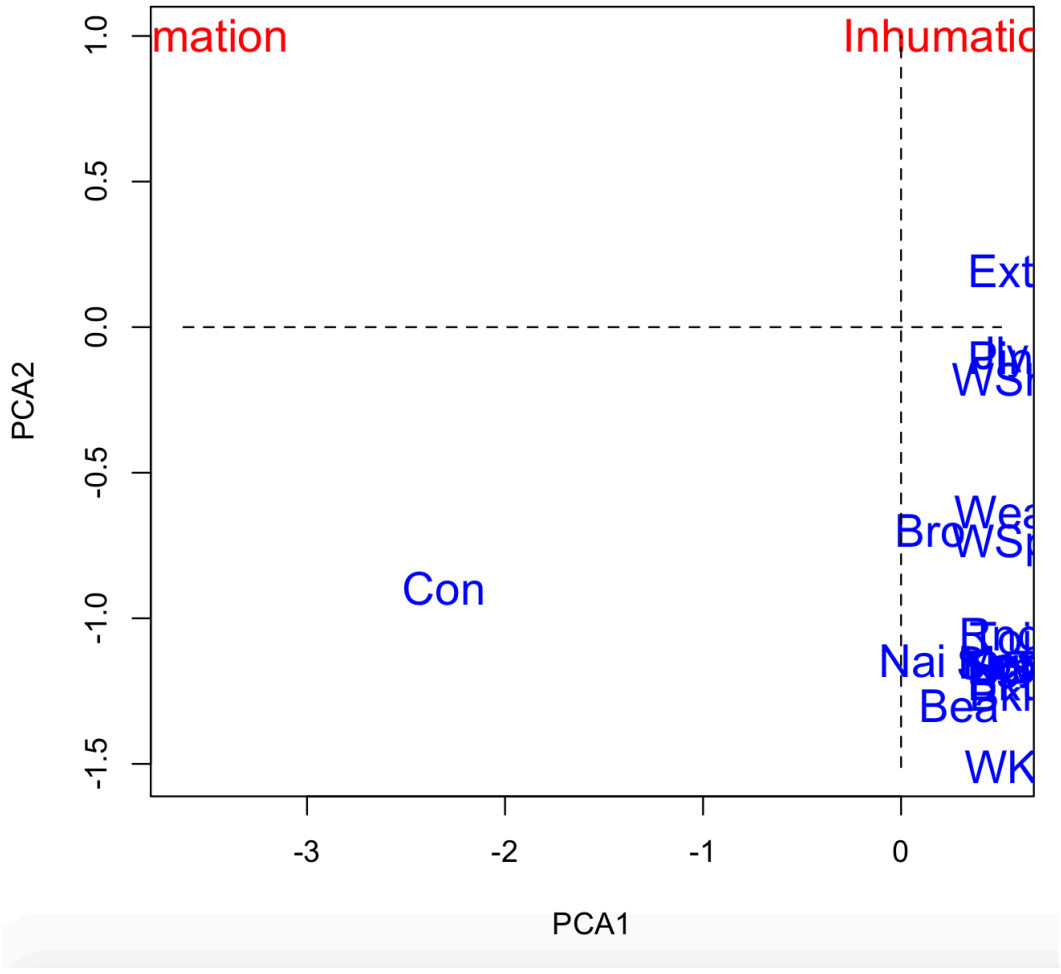
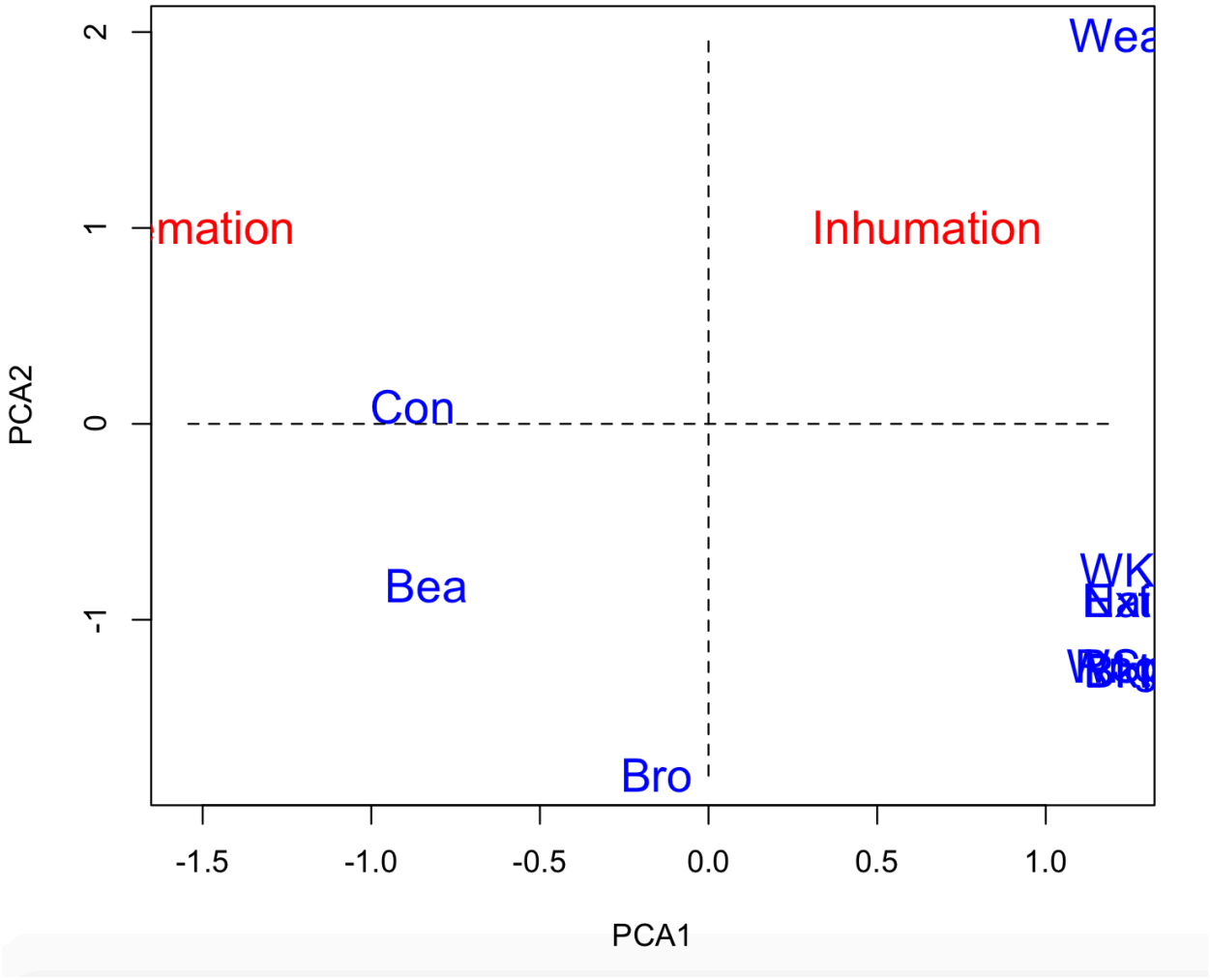


Figure 25: Wasperton Correspondence Analysis for Early Burials, created by author in R



The corrgram for all periods of Wasperton shows that cremation is only associated with containers, but that there is not a strong association with inhumation for any artifact. Inhumation has only a light association with weapons and buckles (Figure 26). However, the corrgram for the early period demonstrates a similar set of associations with some new ones. Cremation is still associated with containers, although there is an extremely slight association

with brooches and beads. Inhumation associations remain the same, but shows a stronger relationship to weapons (Figure 27).

Figure 26: Wasperton Corrgram for All Burials, created by author in R

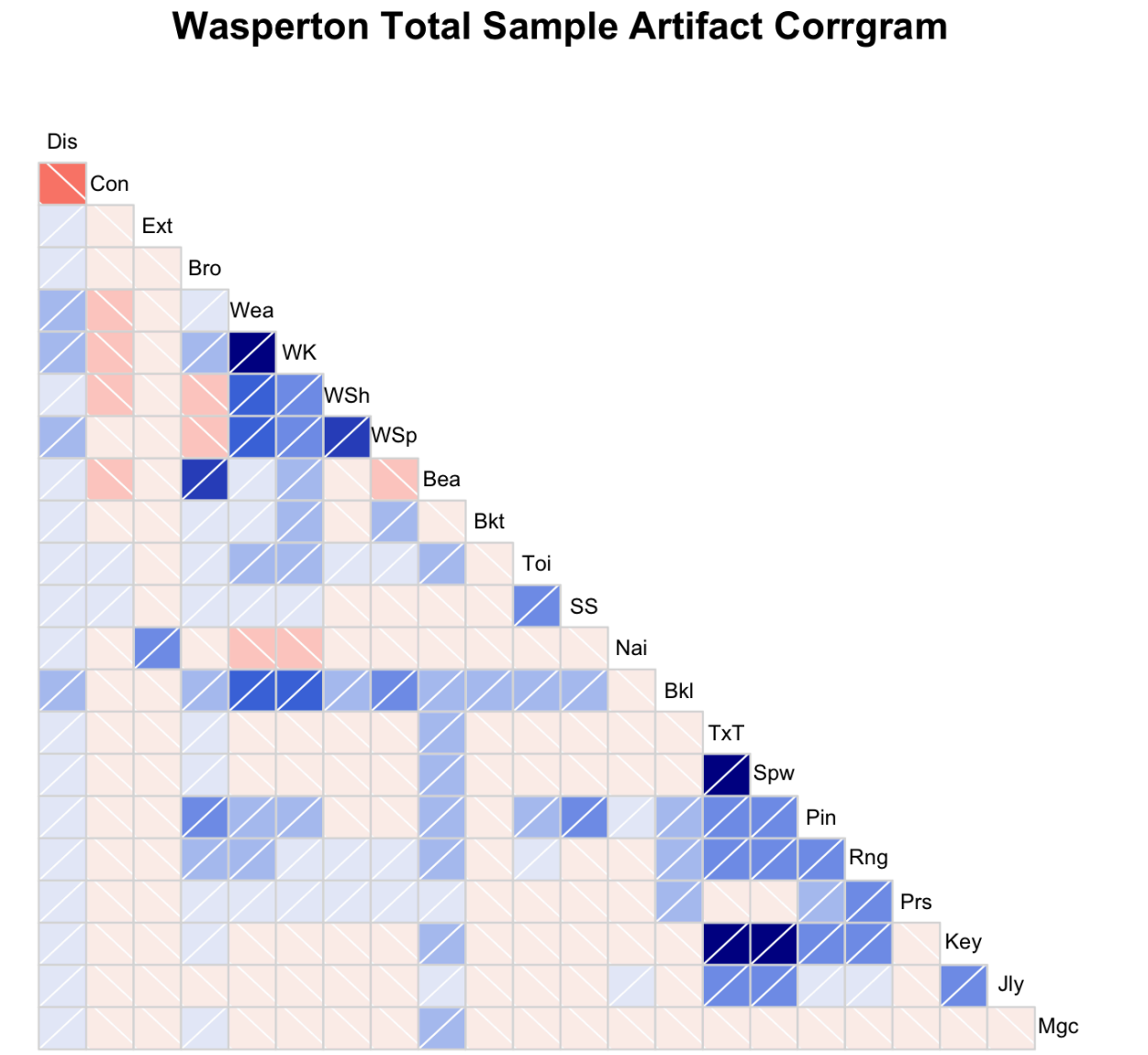
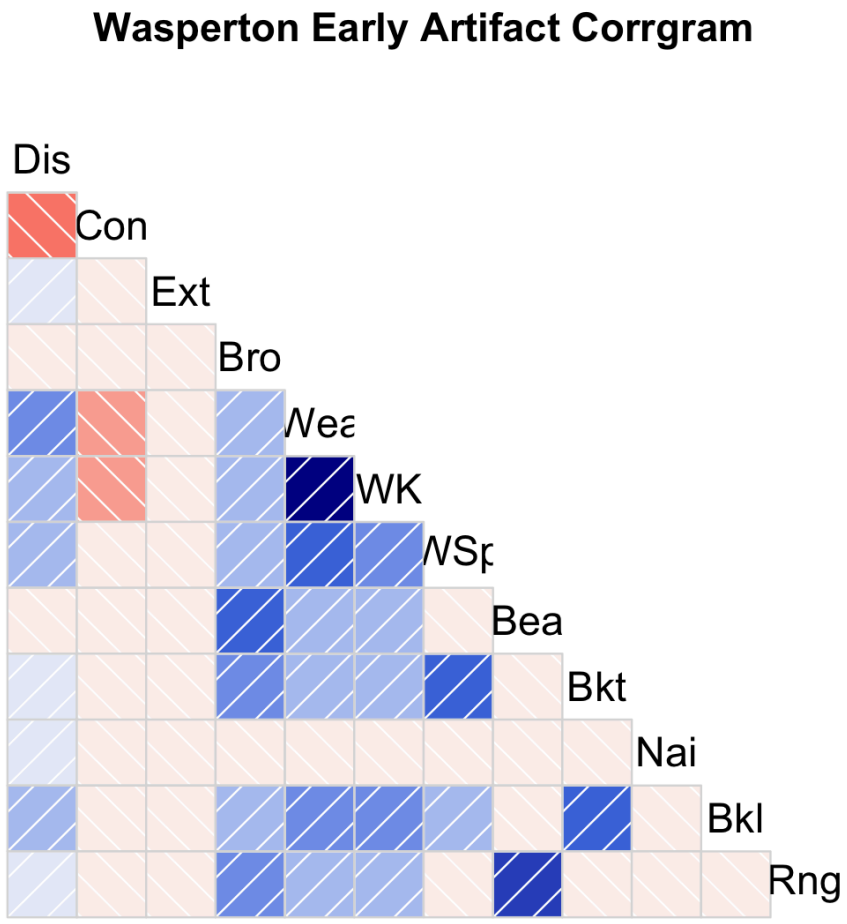


Figure 27: Wasperton Corrgram for Early Burials, created by author in R

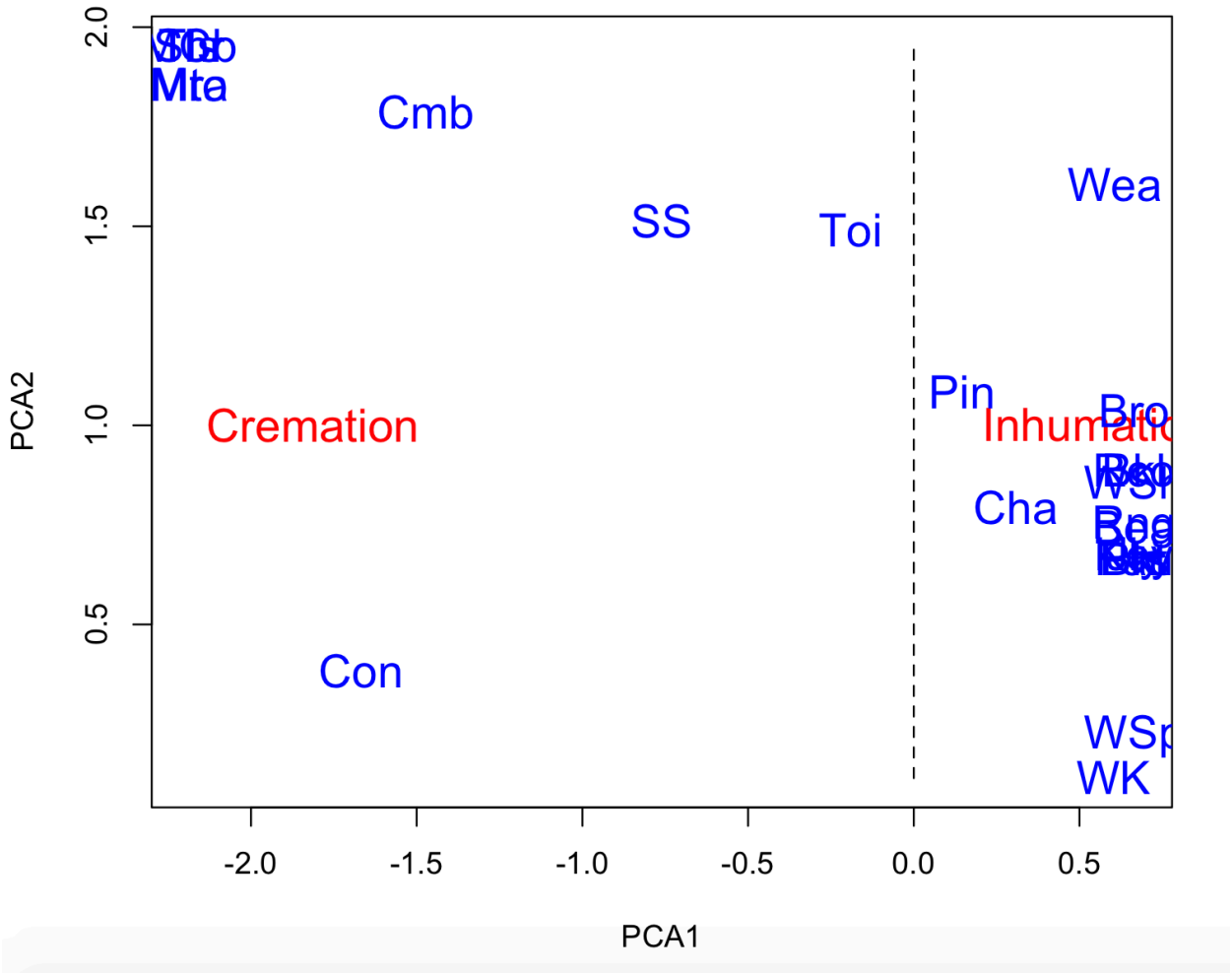


v. Worthy Park

Worthy Park was analyzed as a full sample for all statistical measures since the sample would be too small if divided into periods, and there is no evidence to support it should be. In the correspondence analysis, cremation is associated with combs, toilet implements, miniature items, containers, shears, and tools. Inhumation shows a association with pins, chatelaines,

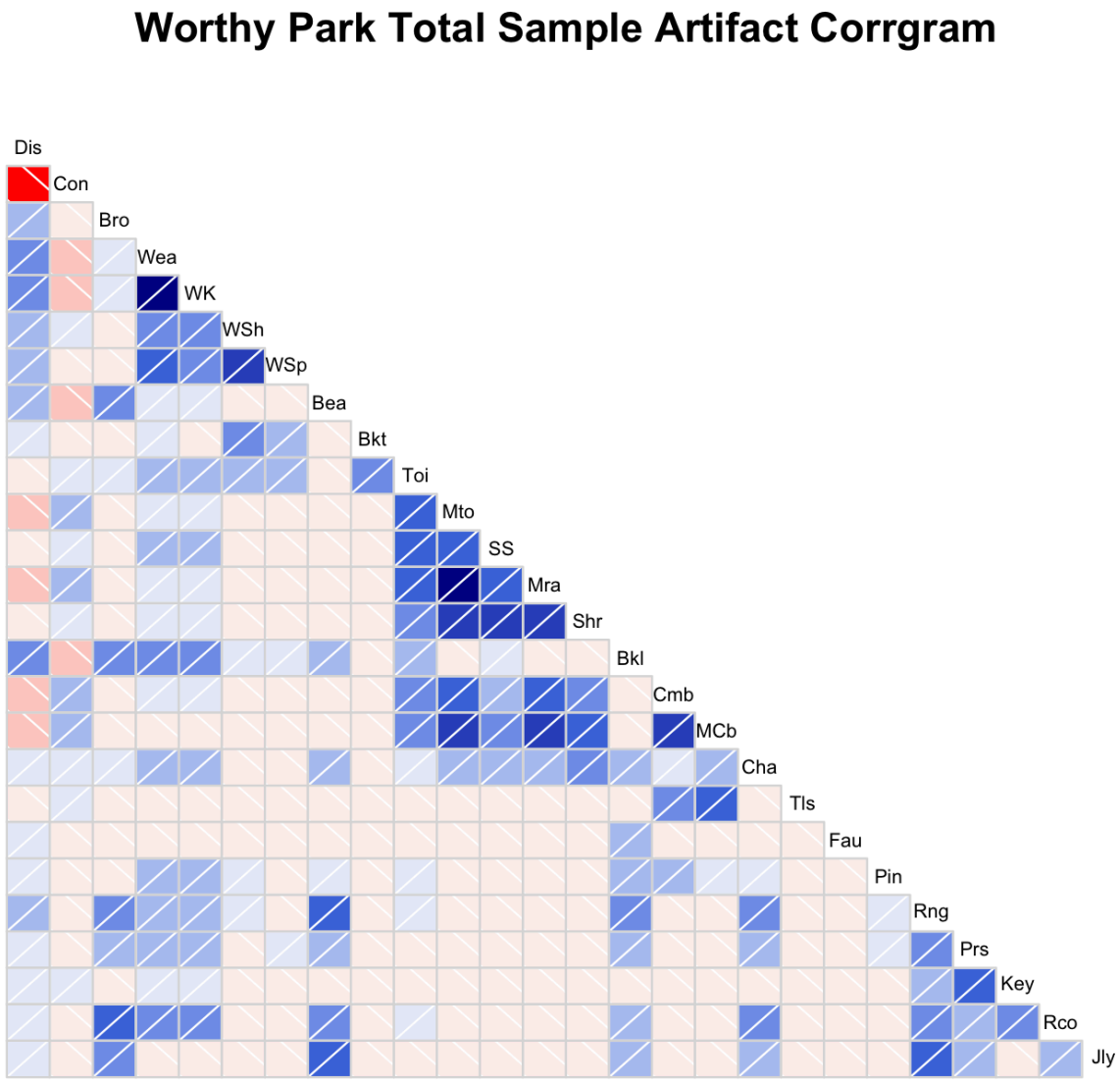
brooches, weapons, beads, buckles, buckets, pins, faunal remains, rings, keys, roman coins and jewelry (Figure 28).

Figure 28: Worthy Park Correspondence Analysis for All Burials, created by author in R



The corrgram shows similar relationships. Cremation is closely associated with containers, with low associations to miniature objects and combs. Inhumation is fairly strongly associated with weapons and buckles, with slighter associations to brooches, beads, and rings (Figure 29).

Figure 29: Worthy Park Corrgram for All Burials, created by author in R



B. Total Sample

Table 19 shows the difference in artifacts found at each site and which associations are statistically significant for a disposal type based on chi square. In general, cremation is statistically significantly associated with the presence of combs, burial containers, and miniature items. For inhumation, there are statistically significant associations with bracelets,

brooches, buckles, faunal remains, keys, hobnails, pins, roman coins, knives, shields, spears and weapons in general.

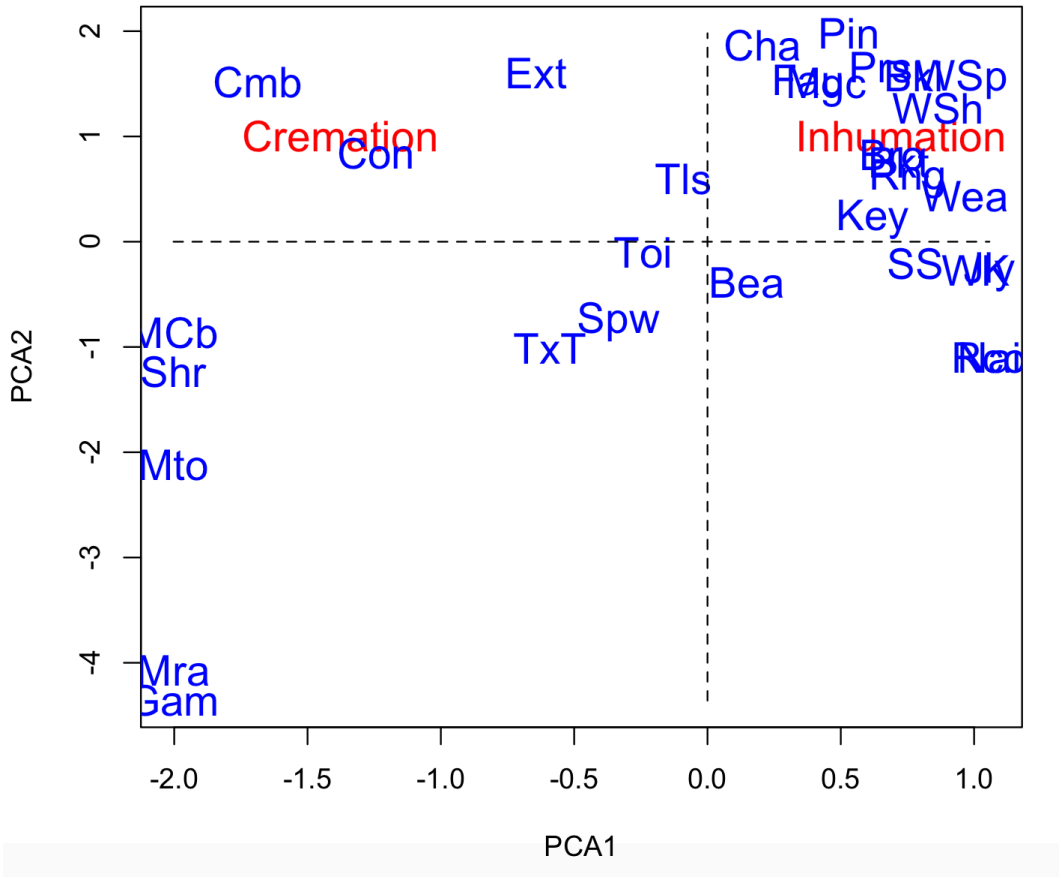
Table 19: Chi-Square of Grave Goods for All Sites, Statistically significant artifacts associated with each site compared against overall analysis (green = significant for inhumation, blue = significant for cremation, black = not significant, blank = not present

All Sites	Alwalton	Lechlade	Mucking	Wasperton	Worthy Park
Beads	Beads	Beads	Beads	Beads	Beads
Bowls	Bowls	Bowls	Bowls	Bowls	Bowls
Bracelet			Bracelet	Bracelet	
Brooch	Brooch	Brooch	Brooch	Brooch	Brooch
Buckles	Buckles	Buckles	Buckles	Buckles	Buckles
Chatelaines	Chatelaines	Chatelaines	Chatelaines		Chatelaines
Combs	Combs	Combs	Combs		Combs
Miniature Comb					Mini Comb
Container	Container	Container	Container	Container	Container
Faunal	Faunal	Faunal	Faunal		Faunal
Key	Key	Key	Key	Key	Key
Miniature Razor			Mini Razor		Mini Razor
Hobnail			Hobnail	Hobnail	
Pin	Pin	Pin	Pin	Pin	Pin
Roman Coin		Roman Coin	Roman Coin		Roman Coin
Shears	Shears	Shears	Shears		Shears
Miniature Toilet		Mini Toilet	Mini Toilet		Mini Toilet
Knife	Knife	Knife	Knife	Knife	Knife
Shield	Shield	Shield	Shield	Shield	Shield
Spear	Spear	Spear	Spear	Spear	Spear
Sword		Sword	Sword		Sword
Weapon	Weapon	Weapon	Weapon	Weapon	Weapon

The correspondence analysis further supports the statistical patterns, and demonstrates the relationships between artifact categories and disposal type as seen in Figure 30. Proximity of attributes to disposal types indicates stronger relationships between them. Cremation burial has strong associations with miniature toilet implements and razors, containers, shears and

combs. Toilet implements and monochrome beads fall towards the middle between the two disposal types, suggesting relationships with both. The remaining items tested, including all brooch types, weapons and other artifacts, were more associated with inhumation burials.

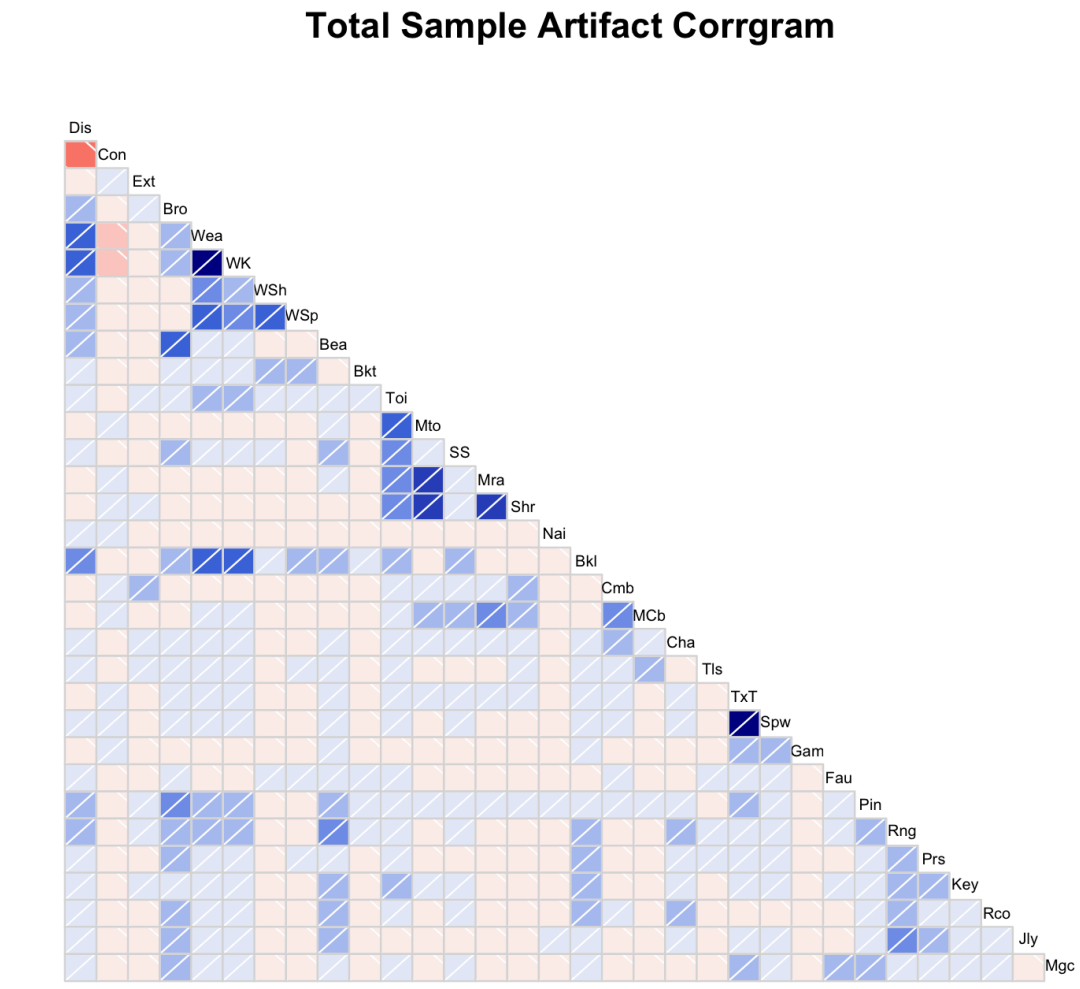
Figure 30: All Sites Correspondence Analysis, created by author in R



A corrgram was used to better visualize the relationships seen in the correspondence analysis. The corrgram displays that there are strong relationships between cremation and the presence of containers, miniature toilet implements and razors, shears, and combs. Inhumation was most strongly associated with weapons, beads, buckles, faunal remains, pins, and jewelry.

The corrgram also displays relationships between types of artifacts. Brooches had strong association with pins, beads, ear scoops, buckles, pins and keys, but negative associations with shields, spears, combs and miniature items. Weapons were strongly associated with beads and buckles, but not toilet implements. Toilet implements had an association with knives, buckles, and brooches. Combs were associated with shears only, and miniature toilet implements had no strong associations, but were more associated with beads, containers, combs, and keys.

Figure 31: All Sites Corrgram, created by author in R



III. Spatial Analysis

From visual analysis only, it is clear that each early medieval cemetery is different, which suggests there was no predetermined pattern governing the organization of burials. However, use of the method proposed by Sayer and Weinhold (2013) allows for more detailed analysis of clustering, and with the addition of Hot-Spot analysis, can elucidate some interesting patterns.

A. Results of Ripley's K and Kernel Density

All Results for Ripley's K are included in Appendix C for reference. All kernel density maps including maps displaying results for all burials, inhumation only and cremation only, and all time periods are in Appendix D.

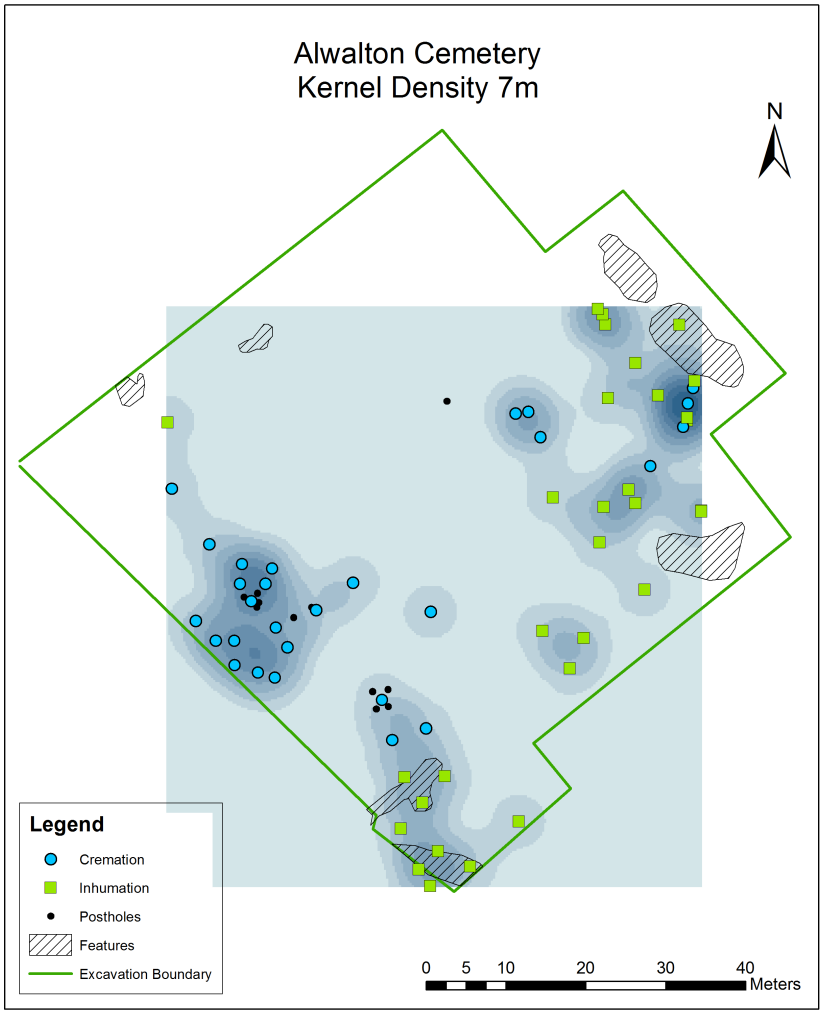
i. Alwalton

Alwalton showed significant clustering for Ripley's K-function after 4.5 meters when both cremation and inhumation burials are considered. The clustering continues to be significant for all burials up to 13 meters, although it is most highly significant between 5 and 7 meters. At this range, there are a number of different types of clusters that can be identified: 1) western cremation cluster, 2) southern inhumation cluster with some cremation to north, 3) eastern mixed cluster of cremation and inhumation, and 4) small groups of either inhumation or cremation burials mixed in the center and eastern portions of the cemetery.

For inhumation alone, there is significant clustering based on Ripley's K-function from 5-7 meters, and then increasing significance after 9.5 meters. On the map, we can clearly see that except for a single burial to the north, the inhumation burials are all found clustered together

either in the south or east. When cremation is analyzed using Ripley's K, there is significant clustering between 4 and 13 meters, with 7.5 meters at the highest point of significance. Similar to the inhumation only density analysis, the cremations tend to cluster either in the large group to the west, or in smaller groups of 3-4 individuals in the south and east. There is segregation between the cremation and inhumation burials at Alwalton, and there is definite clustering of similar types of burial with each other even when blending of the two forms occurs spatially.

Figure 32: Alwalton Cemetery at Kernel Density 7 meters, created by author in ArcGIS 10.1



When we divide the burials by early (mid-5th to mid-6th) and late (late 6th to 8th) time periods, there is little difference in the clustering since the majority of burials are from the early period. Only one burial dates to the later period, and it is a single inhumation found clustered among the southwest inhumation burials.

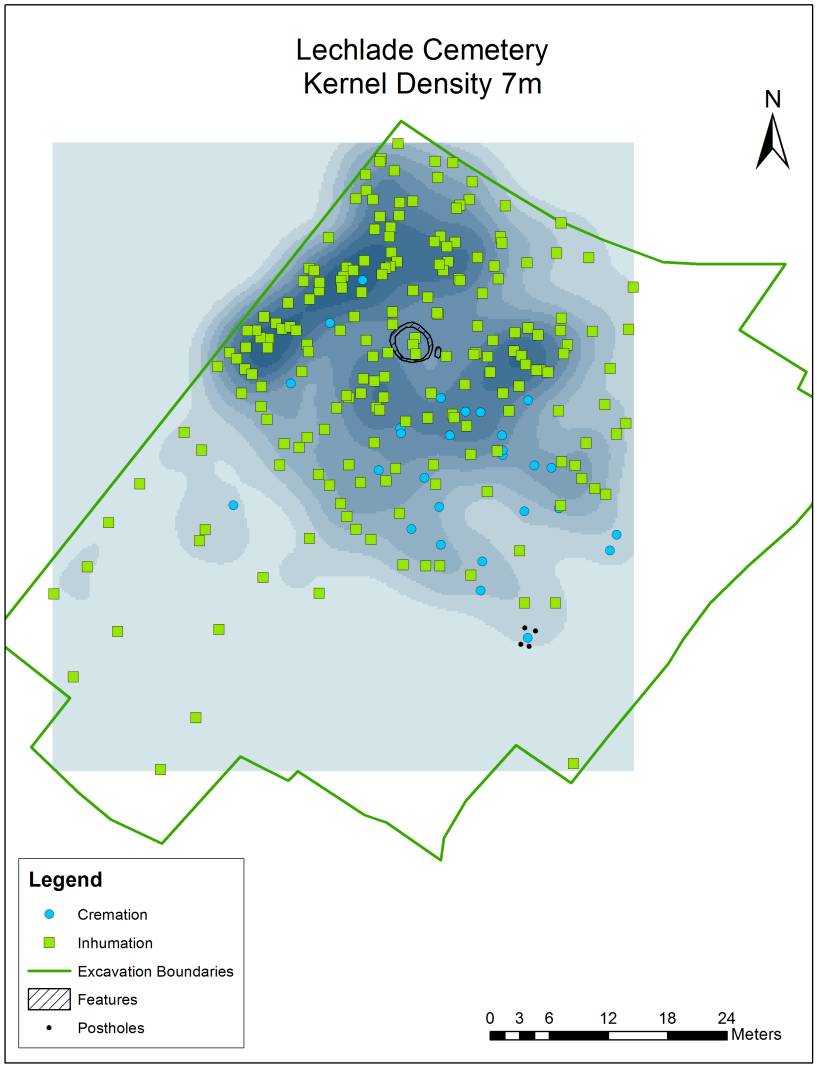
ii. Lechlade

The clustering for Lechlade becomes significant for Ripley's K-function around 1.5 meters, and increases in significance from there when both cremation and inhumation burials are considered. The kernel density map shows that there is clearly a large clustering of both inhumation and cremation burials in the northernmost corner of the site, with some rows of burials that are less clustered coming off this main group.

The inhumation burials alone follow a similar trend as the combined burials, with significance at 1.5 meters and increasingly significant from there. The map does however show a slight shift in the center of the major cluster from consisting of two centroids to the west and east when all burials considered, and only a single western centroid when inhumation alone is considered. Cremation never reaches a level of high significance in clustering, and only shows a peak at 5.75 meters. However, the cluster of cremation by itself shows a different pattern then when inhumation or both burials are considered. There is a horseshoe like clustering of cremation burials in the southern portion of the cluster, and this explains the presence of two centroids for the combined kernel density map. When we compare the three different kernel densities, it is clear that while all the burials tend to cluster in the northern corner of the

excavated area, cremation and inhumation burials tend to cluster with one another despite blending of the two forms. There is no clear segregation occurring, but clustering is apparent.

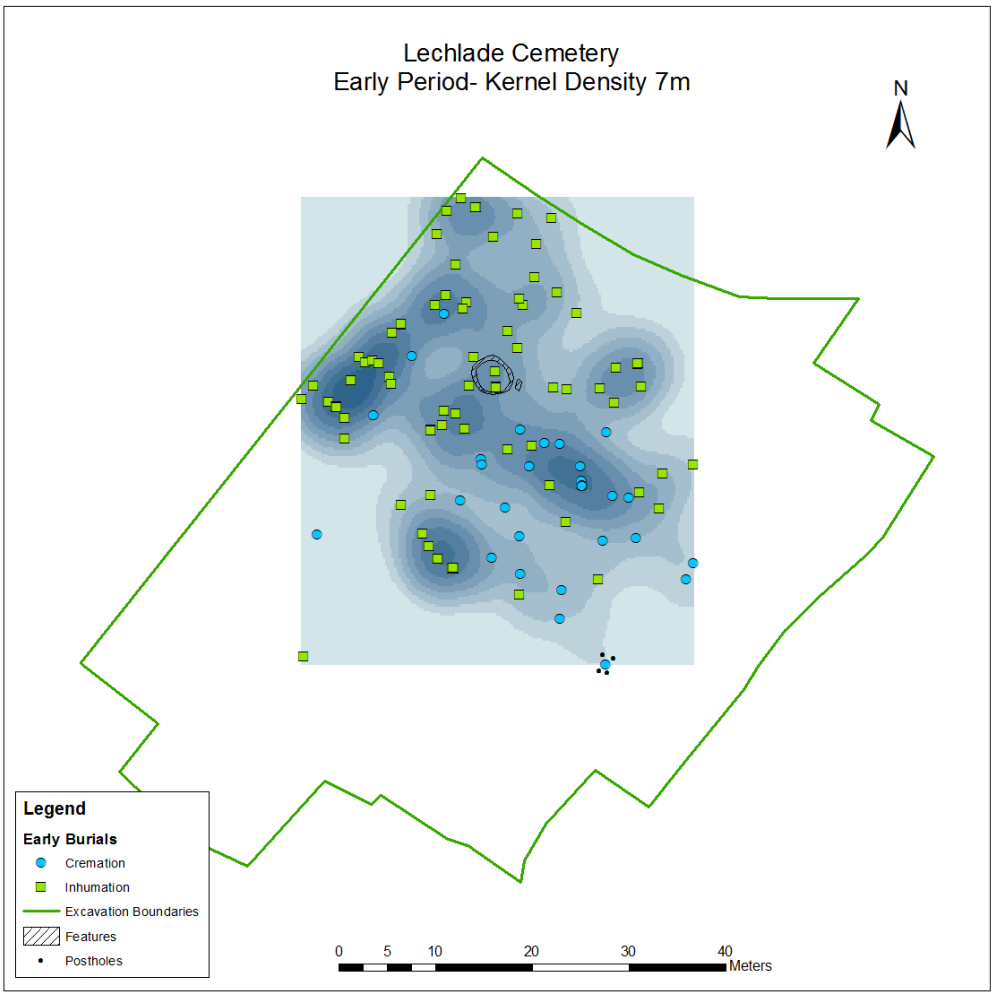
Figure 33: Lechlade Cemetery at Kernel Density 7 meters, created by author in ArcGIS 10.1



Burials were then divided by time period into early (mid-5th to mid-6th), mid (mid-6th to early 7th) and late (early 7th to 8th) periods in order to see how time affected the development of the cemetery and clustering. In general, the cremation burials and the majority of centralized

inhumation burials date to the early period, and are found clustered to the southeast of the monument. The late period includes only inhumation burials, and primarily consists of those that are on the perimeter of the cemetery and spaced out in lines. Due to this, inhumation will be considered for the early period only, as it is no longer a co-occurrence cemetery after this. Ripley's K for the early period only, including both inhumation and cremation, has significant clustering around 7 meters, and likely represents a better representation of the cemetery during co-occurrence.

Figure 34: Early Lechlade Cemetery at Kernel Density 7 meters, created by author in ArcGIS 10.1

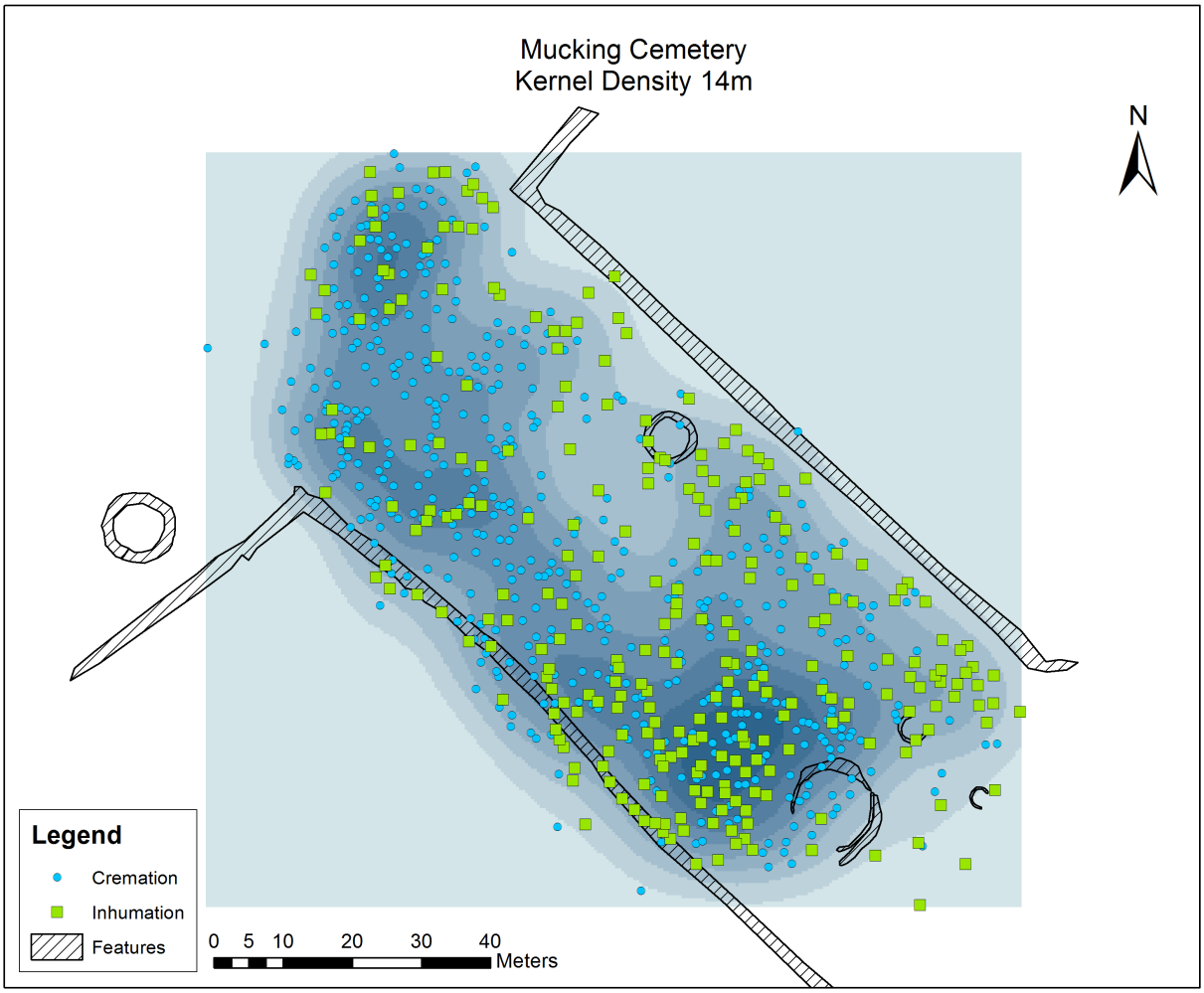


iii. Mucking

At Mucking, Ripley's K-function displayed significant clustering after 3 meters and remains significant until around 28 meters when all burials are clustered together as one. The highest point of clustering occurs around 14 to 15 meters. There is one very clear cluster of burials to the south that includes both cremation and inhumation, with a lower amount of clustering of the western, northern and eastern edges of this grouping. Beyond this, the significant clustering of mixed burials is seen at the northwest and northernmost portions of the site.

For inhumation only, the Ripley's K analysis showed significance of clustering from 4 meters and onwards, but with the highest points in the low teens. The density map shows, again, a major clustering in the south, and two smaller mixed clusters in the west and north. However, there are also a number of other clusters that are primarily concerned with inhumation graves, including one southeastern cluster, a central eastern cluster, and one cluster in the northeastern portion of the cemetery. When cremation is analyzed alone, there was significance at 2.5 meters as well, although significance peaked from 11 to 20 meters, and continued onwards. The density map shows similar clustering in the south, west and north, but also demonstrates a clear preference for cremation burial in the western half of the cemetery. There are two areas that appear more cremation heavy, including the northwest and central western portions of the cemetery. While there is clear intermixing between cremation and inhumation at Mucking, there are also some preferences for burial types. Inhumation occurs slightly more to the eastern portion of the cemetery, and appears to have clustered groupings of burials. Cremation however, is found more to the west, and is more dispersed throughout the space rather than clustered in the way that inhumation is.

Figure 35: Mucking Cemetery at Kernel Density 14 meters, created by author in ArcGIS 10.1



At Mucking, division of the site into three broad time periods, early (mid-5th to mid-6th), mid (mid-6th to early 7th) and late (early 7th to 8th), shows that there is a change in spatial use of the cemetery over time. In general there is a shift from burial in the southwest, to burial in the northeast from the early to mid period. However, there is little difference in spatial layout and clustering during the later period. There are few later burials, and these tend to be scattered among the existing clusters rather than showing a unique pattern. The categorization of time

periods for this site is inhibited by the lack of data for most of the burials. Time period could not be accurately determined for 28% of the burials, and only 13 could be securely dated to the later period. Ripley's K showed that Mucking had significant clustering at 12 meters, and this increased to 14 meters during mid period. Regardless, cremation and inhumation are significantly overlapping in these periods, though groups may have preferences.

Figure 36: Early Mucking Cemetery at Kernel Density 12 meters, created by author in ArcGIS 10.1

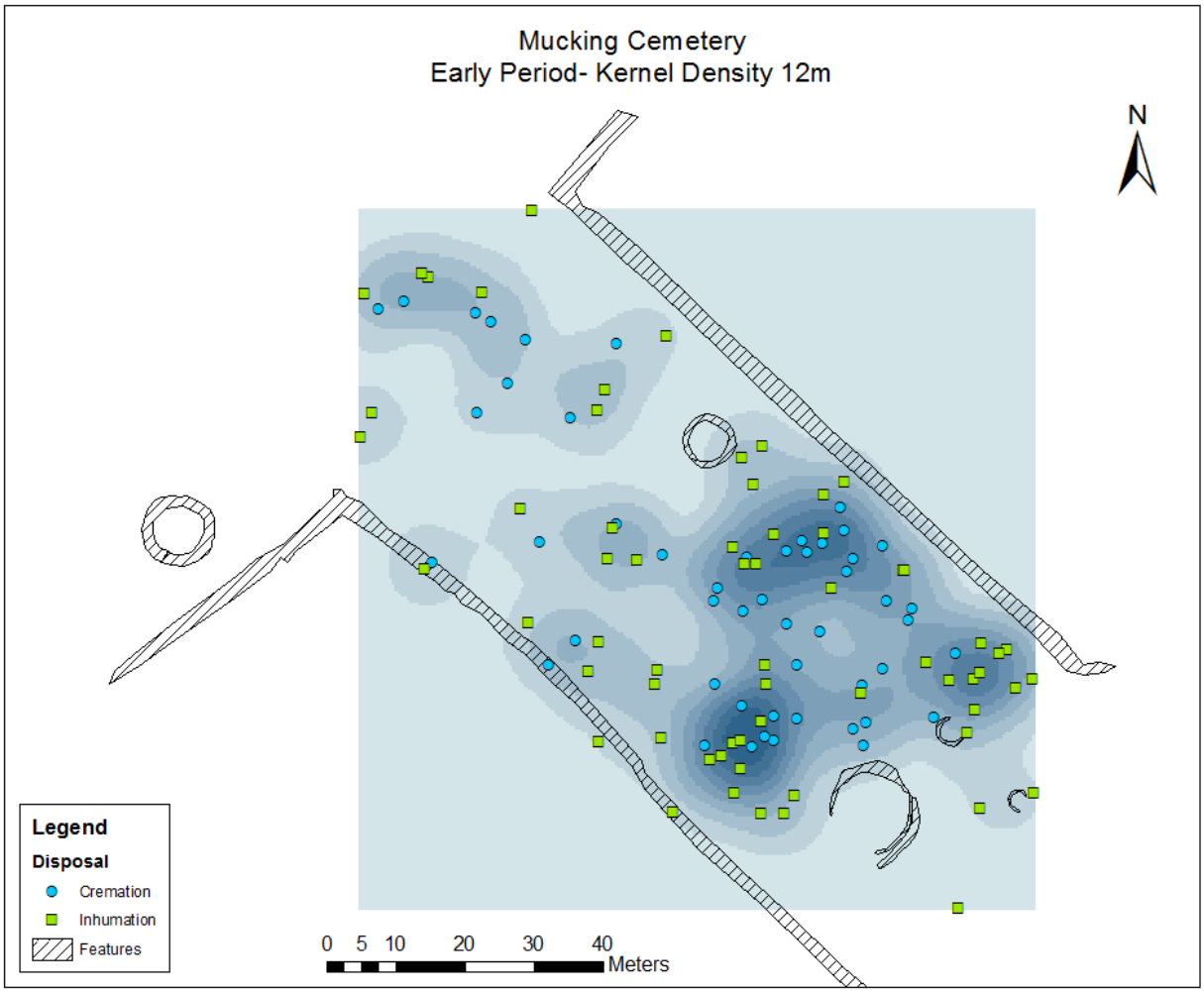
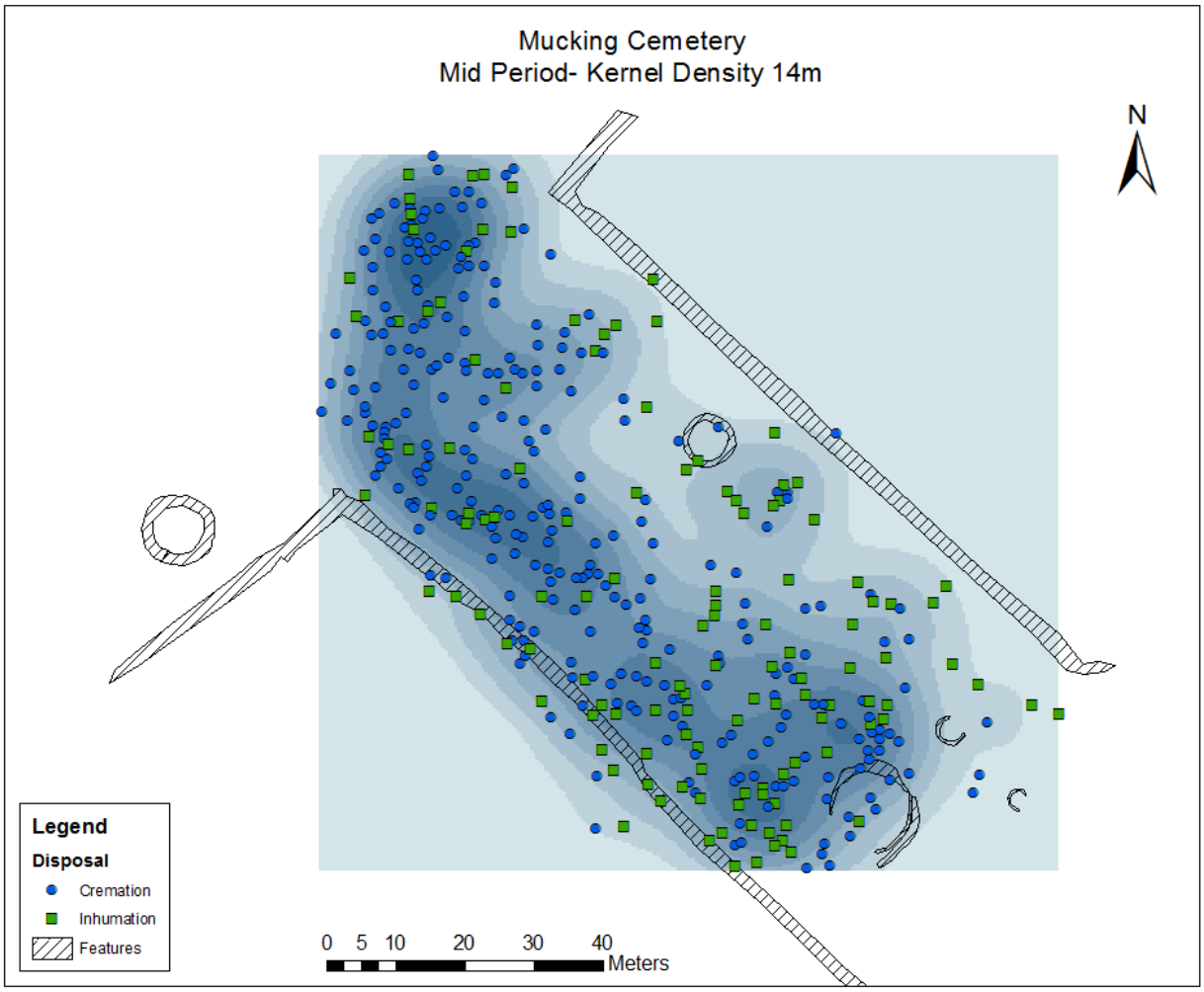


Figure 37: Mid Mucking Cemetery at Kernel Density 14 meters, created by author in ArcGIS 10.1



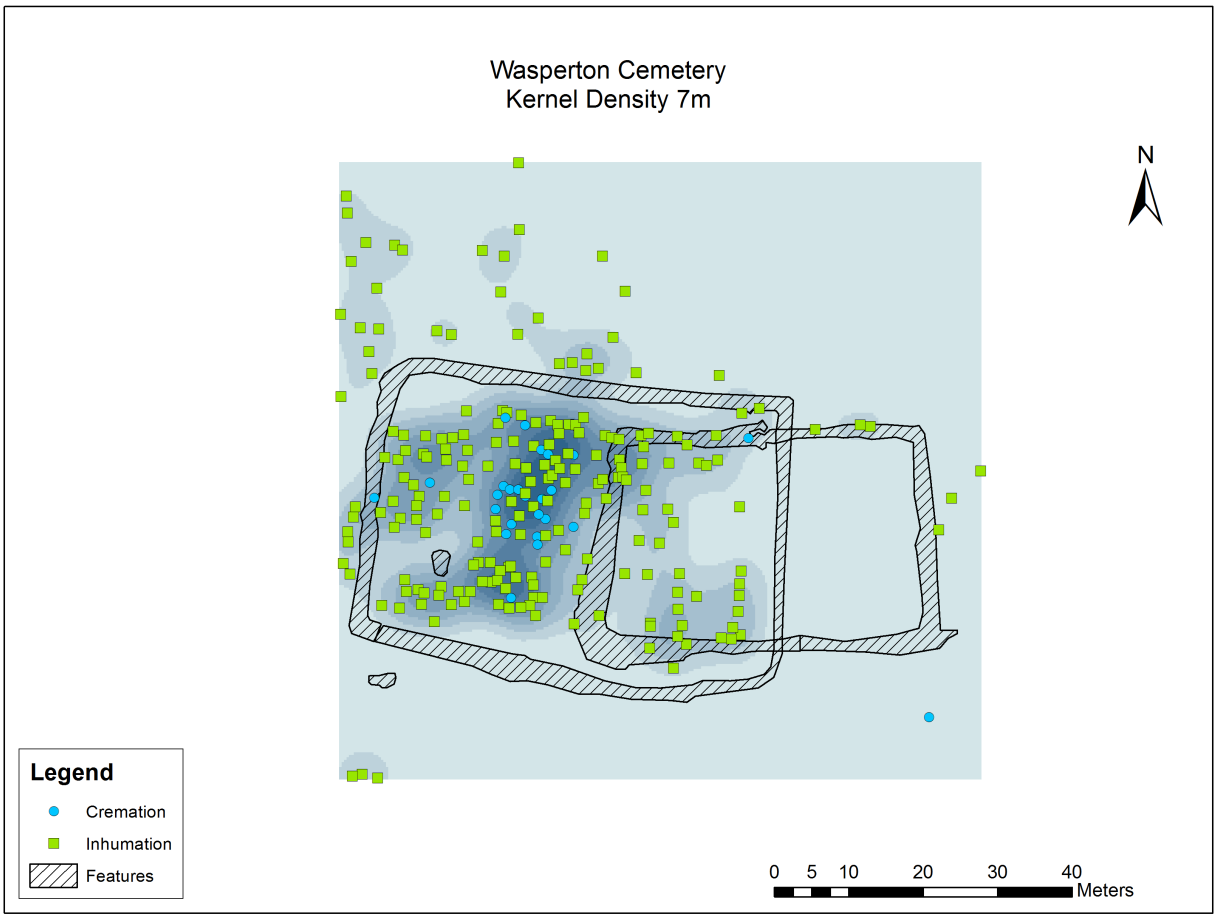
iv. Wasperton

The clustering at Wasperton as calculated through Ripley's K-function begins at slightly less than 2 meters, and increases dramatically from there when both cremation and inhumation are compared. Based on the map, we can see that there is some segregation of inhumation, with a number of inhumation only groups appearing outside the primary rectangular feature. Within the center of the site, there is a main cluster of burials that includes

both cremation and inhumation. To the west of this, there is a cluster of primarily inhumation with a couple cremation burials, and a similar pattern is to the south.

The pattern for inhumation clustering closely follows the pattern for both burial forms, with clustering beginning to be significant around 2 meters, and increasing from there, especially after 3.75 meters. The inhumation density map shows different patterning than the combined map. There are dispersed burials outside of the main rectangular feature, and within, there are three main clusters of inhumation burials, including 1) northwestern cluster, 2) north central cluster, and 3) south central cluster. In addition to these, there is a clustering of Romano-British inhumation burials in lines to the southeast. For cremation alone, there is significant clustering around 1.5 meters, but a dramatic increase in amount of clustering from 6 to 14 meters. The cremation density map reveals one major cluster of burials in the central area of the main rectangular feature. Beyond this, there are only scattered burials found within the features and at the edge of the study site. While the segregation of inhumation and cremation is not as dramatic as Alwalton, there is some clear division in different groups, and there does seem to be some spatial division between the inhumation and cremation burials.

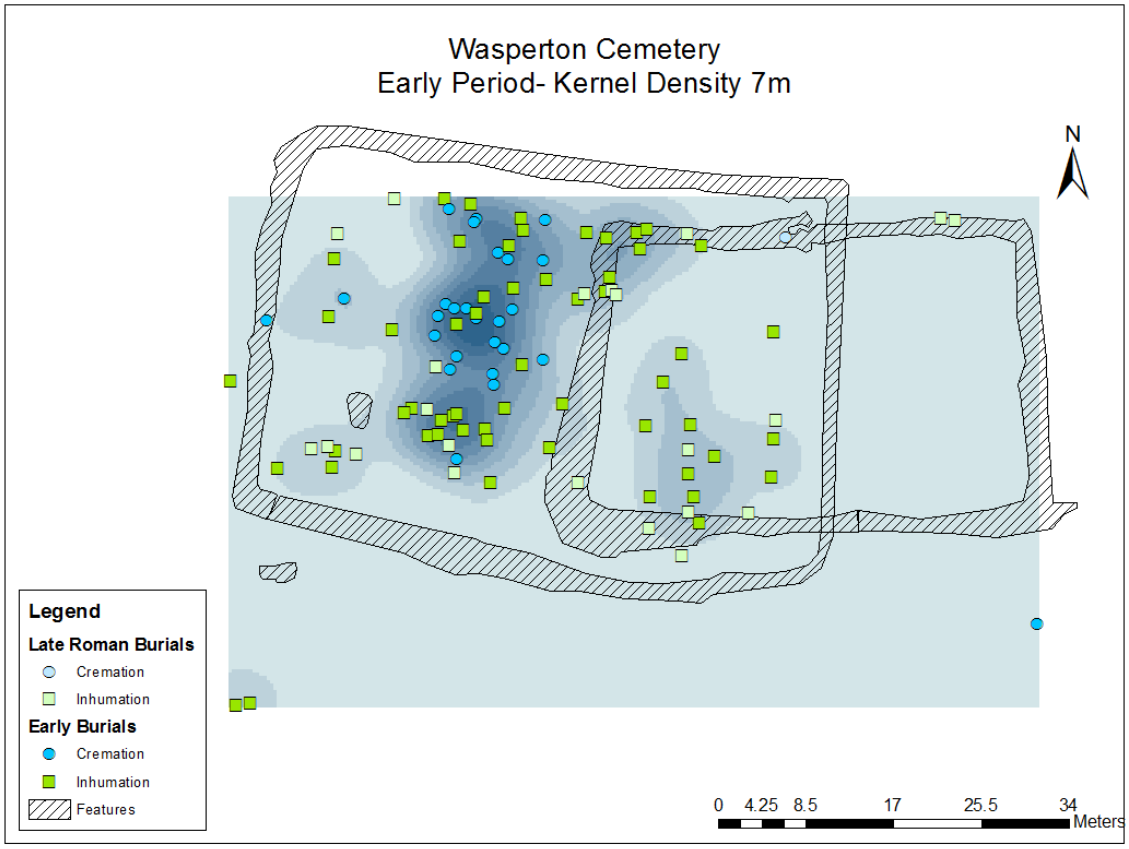
Figure 38: Wasperton Cemetery at Kernel Density 7 meters, created by author in ArcGIS 10.1



When we consider Wasperton by broad periods, pre (4th to mid-5th), early (mid-5th to mid-6th), mid (mid-6th to early 7th) and late (early 7th to 8th), there is an important factor- the presence of culturally Roman burials. The late Roman and early burials tend to cluster within the two Roman boundary walls, whereas the late burials are outside of these boundaries with only a couple scattered within the central cluster. The presence of this clear difference may demonstrate a break in belief or association between the early and late periods. Further, we can see that co-occurrence is only found during the early period, and therefore, should be

assessed separately. We can see from this perspective, that both cremation and inhumation are within the limits of the cemetery, and may overlap less than when we view the complete cemetery with all periods.

Figure 39: Early Wasperton Cemetery at Kernel Density 7 meters, created by author in ArcGIS 10.1



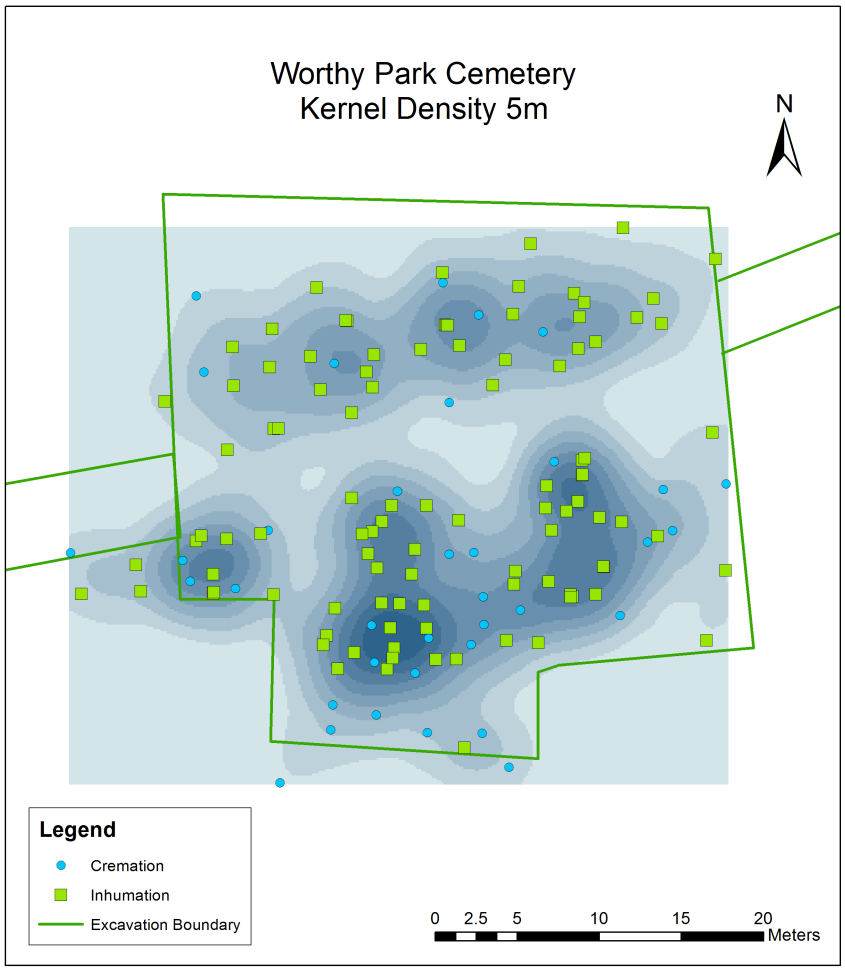
v. Worthy Park

At Worthy Park there was clustering after 2.5 meters that becomes highly significant around 5 meters, and decline around 8 meters when both cremation and inhumation burials are considered. There are four clusters that can be identified that include both cremation and

inhumation: 1) northern ovoid cluster, 2) southwestern small cluster, 3) southeastern cluster with a high amount of inhumation that blends into 4) the largest cluster at the southernmost central area of the cemetery.

When inhumation alone is considered, the only significant clustering occurs between 4 and 6 meters, with the highest peak at 5 meters. The density map for inhumation reveals a similar pattern to the map of both burial types, with two large clusters in the south and southeast. These are slightly smaller than the combined map, and show that there does seem to be a preference in these groups for inhumation at the center of each cluster. The clusters in the north and west still have blending. For cremation, there is significant clustering from 2.5 to 9.75 meters, with two peaks in significance at 3.75 and 6.25 meters. The map shows a slightly different pattern of clustering than the combined or inhumation maps. The largest cluster in the south central portion of the cemetery is more skewed to the south than when both burials or inhumations are considered. There are two small clusters of cremation to the west and east, and two small clusters in the northwest and central northern portions of the cemetery. Inhumation and cremation do tend to cluster together into groups. However, within these groups, there is a preference for stronger clustering with similar burial types. This is especially apparent within the largest cluster in the south central portion of the cemetery, which shows that within this cluster there is a grouping of inhumation to the northeast and clustering of cremation to the southwest.

Figure 40: Worthy Park Cemetery at Kernel Density 5 meters, created by author in ArcGIS 10.1



Finally, at Worthy Park, there are interesting patterns when the cemetery is divided into early (mid-5th to mid-6th), mid (mid-6th to early 7th) and late (early 7th to 8th) time periods. Unlike most sites, there are a number of later cremation burials present. When each period is viewed individually, the larger cremation cluster does not seem to appear as much since it develops slowly over time, rather than being focused on one period like Wasperton or Lechlade. Rather, there are clusters of mixed burials that develop and change locations through time.

Figure 41: Early Worthy Park Cemetery at Kernel Density 3.5 meters, created by author in ArcGIS 10.1

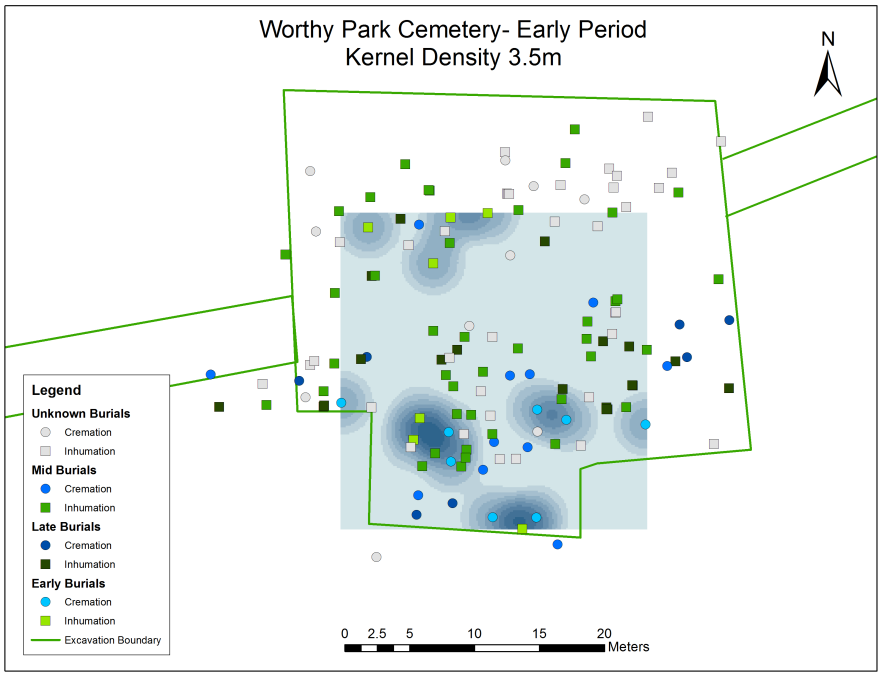


Figure 42: Mid Worthy Park Cemetery at Kernel Density 4 meters, created by author in ArcGIS 10.1

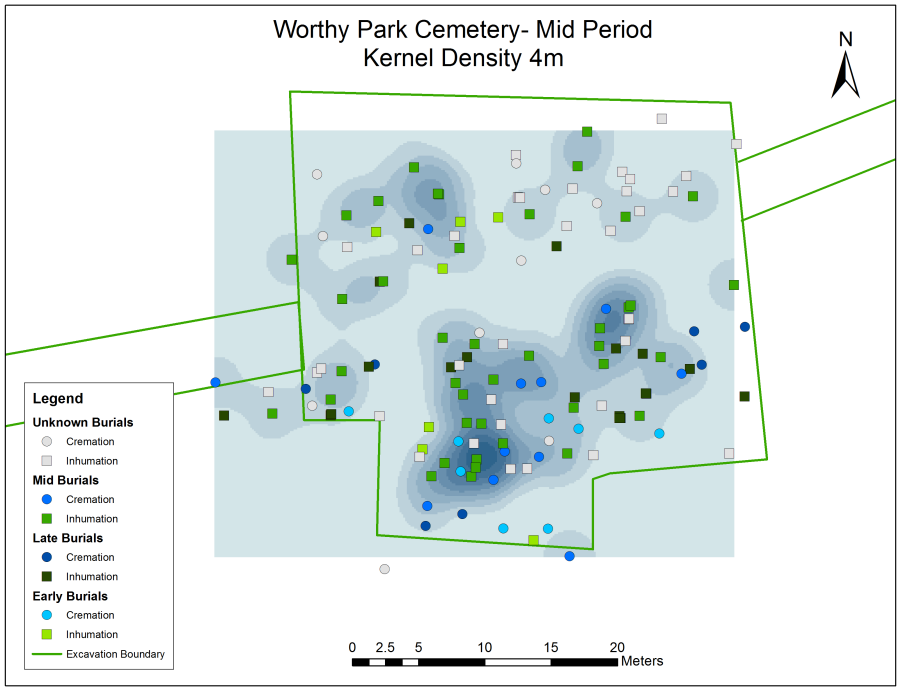
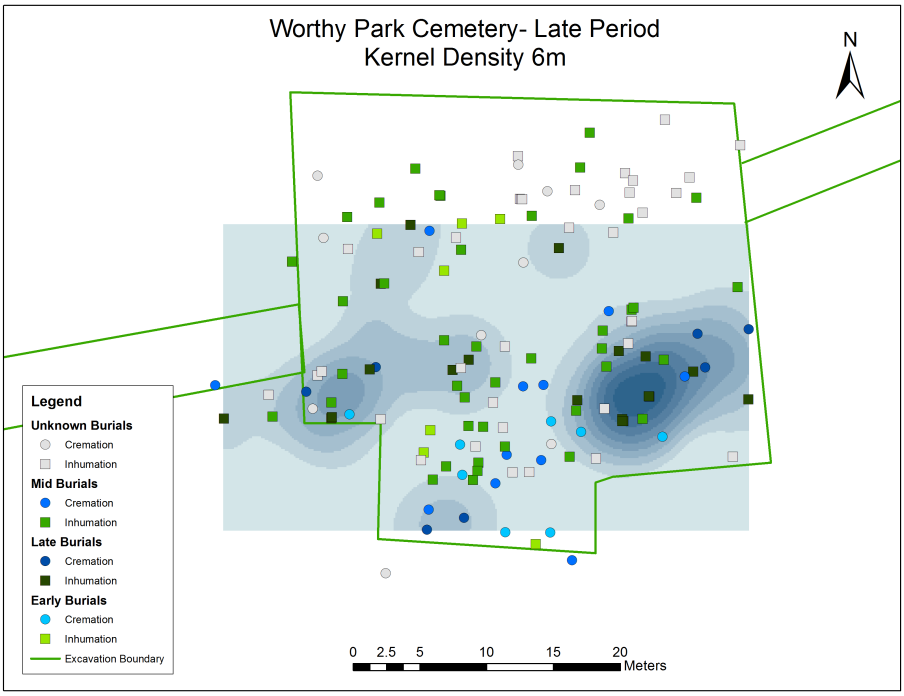


Figure 43: Late Worthy Park Cemetery at Kernel Density 6 meters, created by author in ArcGIS 10.1



B. Results of Hot Spot Analysis

Hot Spot Analysis was done for all artifacts that had significant associations and may be indicative of a deeper meaning for cremation or inhumation. Additionally, some general artifacts that are common among early medieval graves were considered. All Hot Spot Analysis figures are included in Appendix E.

Along with the clear spatial division between inhumation and cremation at Alwalton, there are also divisions in the artifacts based on their association with disposal type. Statistically, combs and burial containers were strongly associated with cremation, whereas knives and weapons in general were associated with inhumation. Another association found was that chatelaines, keys, jewelry, pins, purse mounts and scoops were only found with

inhumation. Artifacts found with cremation only include textile tools, tools, spindle whorls, shears, razors, and external structures. When these are compared on the map, the associations are clearly visible in space and correspond to the divisions between the two disposal types. Weapons and pins are more found in the southern group of inhumation burials, with other inhumation associated artifacts showing only minor hot spot clustering and some association with the eastern inhumation group. Containers and combs show a strong hot spot in the primary cremation cluster to the west.

At Lechlade, the spatial division between cremation and inhumation is less clear-however, we do see some patterns when looking at artifact distributions. Statistical significance in associations with disposal were found for a number of artifacts. Inhumations associated with beads, brooches, buckles, pins, and weapons, whereas cremation associated with only the presence of burial containers. The only artifact unique to cremation was the presence of needles. The hot spot analysis confirms these associations to some extent. Containers are positively associated with the cluster of cremation burials. Weapons in general tend to cluster to the south and west, given that these are the burials dating to the later period, this may show an increased emphasis on weapons over time, however spears are more clustered to the northeast. Toilet implements had no clear spatial divisions. Keys and pins are found at the perimeter of the cemetery, and brooches, beads and buckles are found in small clusters within the central area. Beyond the presence of containers, there are no clear areas of high-density artifacts that may suggest specific association with certain objects with spatial groups. However, when we examine this cemetery for the early period only, there is a change in clustering for inhumation-based artifacts. Weapons become only negatively associated with the

cremation cluster and broader area to the southeast, and other items are not found to cluster in any manner. Containers continue to cluster for cremation regardless of period.

Mucking cemetery has the least obvious spatial association due to high burial concentration. Despite this, there are some patterns with cremation more highly clustered in the north and west, and inhumation more found in the east and south. Artifact associations demonstrated that at Mucking, inhumation was strongly associated with beads, jewelry, brooches, buckles, pins, and weapons. Cremation burials' only significant association was with containers, although unique artifacts found with cremation include shears, miniature toilet implements, combs, needles and gaming pieces. Weapons were strongly associated with the southwest of the cemetery where knives were highly prevalent, although spears were more found in the southeast. Both full-size and miniature toilet implements were found in a variety of clusters throughout the west and south, and are associated spatially with one another. Containers were primarily associated with the north, with a negative association in the center. Combs associated with two clusters in the northwest and southeast. Buckles and brooches were most strongly associated with the south.

At Wasperton, the cemetery's earliest occupation is defined by clustering of both inhumation and cremation within the Roman wall boundaries. Within this, there are few patterns of artifact clustering evident with the hot spot, although this is due more to the general lack of artifacts. Artifacts significantly associated with inhumation include weapons, primarily knives. While many others are found with inhumation only, they are not in high enough numbers to be statistically significant. Cremation was only significant for containers, although they also had more glass and bowls present. Similar to Lechlade, weapons are more

common in areas outside of the Roman boundary of the cemetery, although spears break this pattern and cluster at the western portion. Toilet implements are found on the western and southern perimeters of the primary cluster of burials. Jewelry has a higher clustering in the eastern edges and a low clustering in the southern portion of the primary cluster. Containers are primarily found in the main cluster of burials in the Roman boundary. Buckles, beads and brooches all cluster in the northwest, outside of the cemetery's primary cluster. When the early period only is considered, there is a strong negative association to burials in the western portion of the main cluster, and other associations with artifacts disappear.

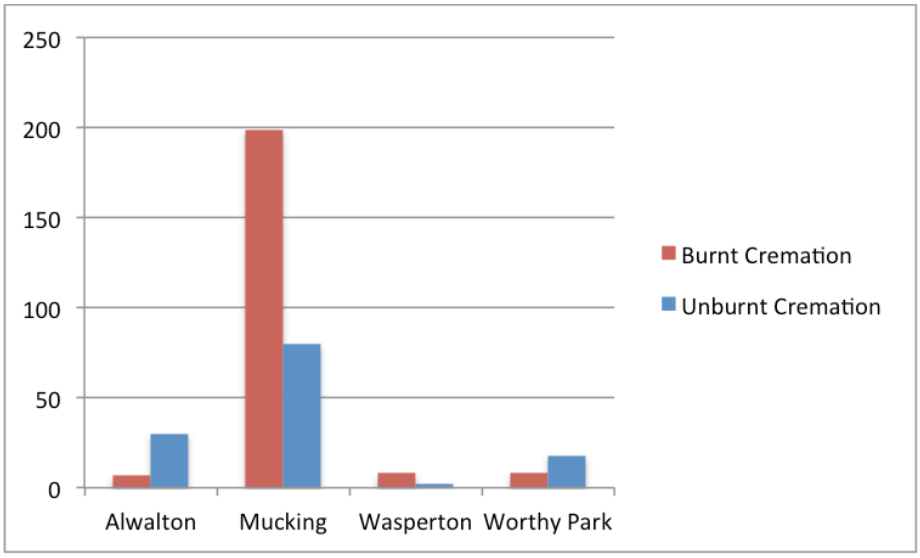
Worthy Park has no clear clustering by disposal, although cremation predominates in the south. Cremation was statistically associated with miniature items and shears, whereas inhumation was significantly associated with personal objects and weapons. Hot spot analysis revealed some minor spatial associations. Toilet implements were clustered towards the southwest. Pins were also found towards this area, but slightly more centrally. Containers cluster at the edges of the cemetery towards the southern portion. Combs cluster in the primary cluster of burials at the center. Brooches and beads are clustered in the northern half of the cemetery, the former to the east and latter to the west.

C. Comparison by Presence of Burnt Materials

In order to determine whether the presence of burnt or unburnt materials with inhumation and cremation burials had potential group meaning, their spatial organization was investigated. It has been previously argued that early Anglo-Saxon households would bury their dead within the same spaces in cemeteries, and that these groups could be recognized in space

by their clustered nature (Sayer and Weinhold 2013). By examining how fire appears in space, we can determine whether the use of fire was based on household traditions. Unburnt material was most frequently found at Alwalton and Worthy Park where there were also clear statistical artifact associations. At Mucking, while unburnt material was found, there were no clear patterns of specific artifacts being burnt or unburnt, and the unburnt items were not unique to the disposal type suggesting it was not a separate ritual.

Figure 48: Comparison of Burnt and Unburnt Grave Goods Overall, created by author in Excel



Alwalton has a clear division of disposal types, with inhumation burials located in the south and east, and cremation found primarily clustered together in the west (Figure 44). Cremation burials with burnt material were limited to the western cluster, and those located outside of that cluster had primarily unburnt materials. The highest proportion of cremation burials without grave goods at all were found near the eastern inhumation cluster of burials.

There was no evidence of burnt material in inhumation burials, and only one inhumation grave had a toilet implement and was located in the southern inhumation cluster.

At Mucking, there is no clear spatial division between disposal types, although there is a stronger clustering of inhumation burials in the south and eastern portions of the cemetery, and a stronger association of cremation burials in the north and western portions, particularly associated with burnt or no artifacts (Figure 45). Few cremation burials were found with only unburnt materials, and those tend to be located at the edges of the cemetery, though not segregated by any means. Cremation burials with both burnt and unburnt materials are more frequently found in the southeast where inhumation is more strongly clustered, whereas when only burnt materials were found they are scattered throughout the cemetery. Inhumation burials with burnt materials were found scattered throughout the cemetery and do not seem to cluster in any apparent manner. Miniature toilet implements, found only with cremation and primarily burnt, are more common in the cremation heavy cluster to the northwest. However, full-size toilet implements are found throughout the cemetery, and tend to cluster in areas where inhumation is equal to or greater than cremation.

Wasperton's primary overlap of cremation and inhumation burials during the 5th to 6th century, however there is no division of space between the burials and they are found together in the same centralized cluster (Figure 46). During this period, the cremation burials with burnt or unburnt material are all found at the center of the group except for Cremation 23, which dates to the post-Roman, pre-Anglo-Saxon occupation of the site. The toilet implements at this site were only found in inhumation burials and these were located outside the primary cluster associated with cremation. Additionally, the inhumation burials that had burnt materials within

them date to the middle period of occupation from the 6th to 7th centuries: one is located within the central cluster of earlier cremation and inhumation burials, one is to the southwest of this cluster, and the last is to the west and is outside the boundary feature of the cemetery.

At Worthy Park, there is no clear clustering by disposal type regardless of time period (Figure 47). However, cremation burials with unburnt artifacts are found more centrally clustered in the primary group, whereas those with burnt artifacts only are on the peripheries. Additionally, combs and toilet implements are most common within both cremation and inhumation burials that are located in this central group.

Figure 44: Alwalton Cemetery, presence of burnt material, created by author in ArcGIS 10.1

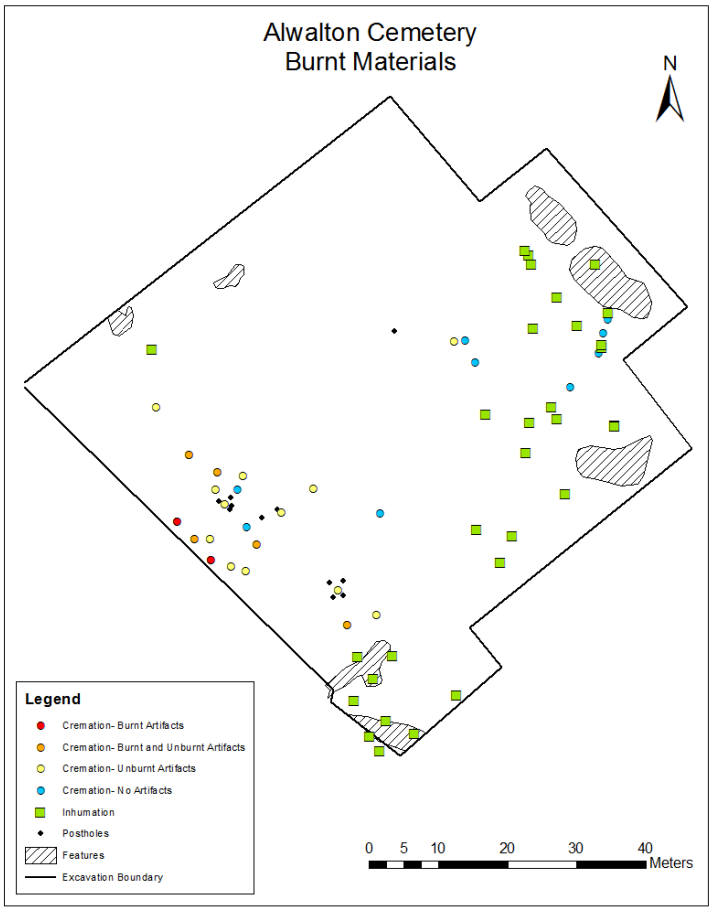


Figure 45: Mucking Cemetery, presence of burnt material, created by author in ArcGIS 10.1

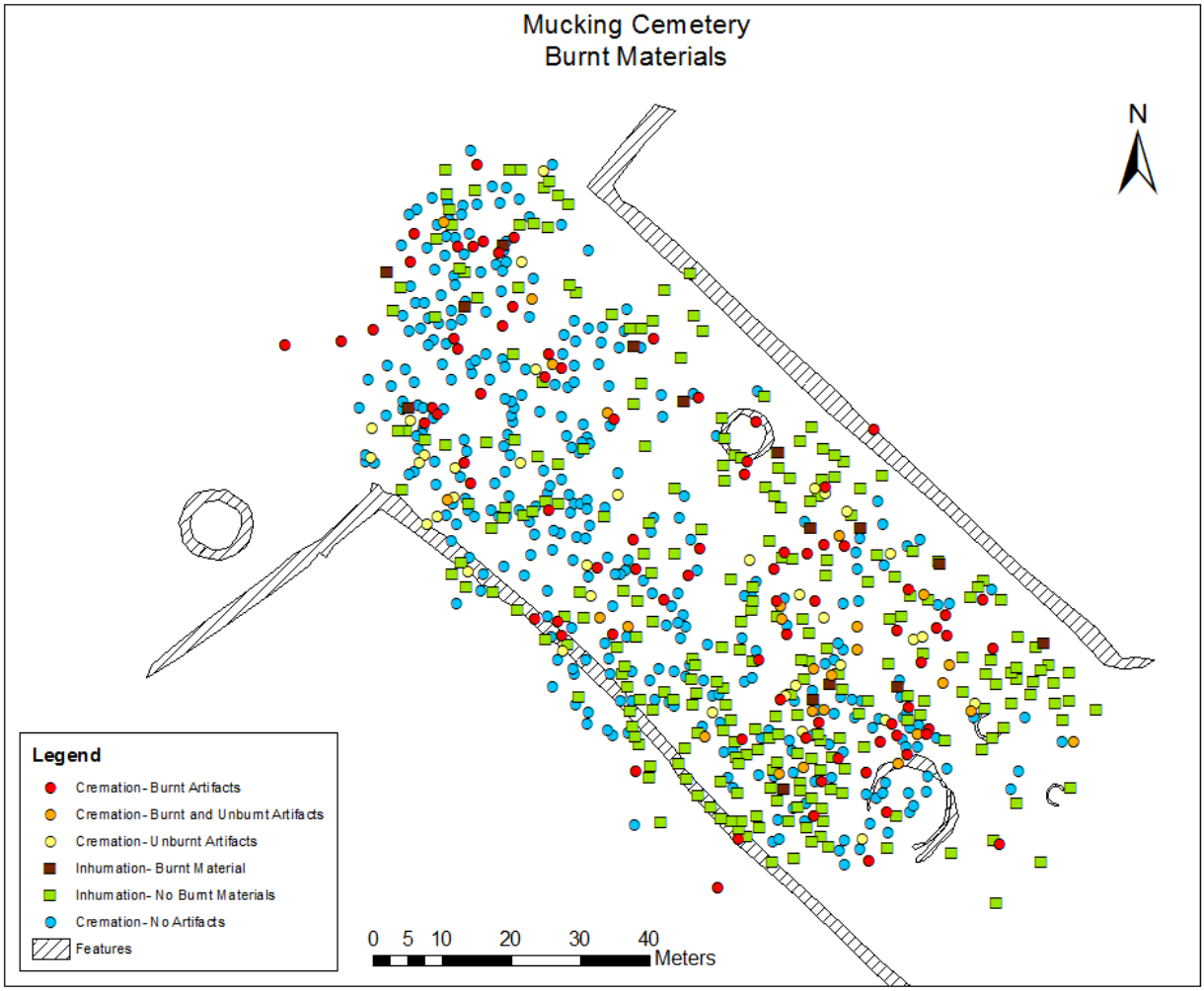


Figure 46: Wasperton Cemetery, presence of burnt material, created by author in ArcGIS 10.1

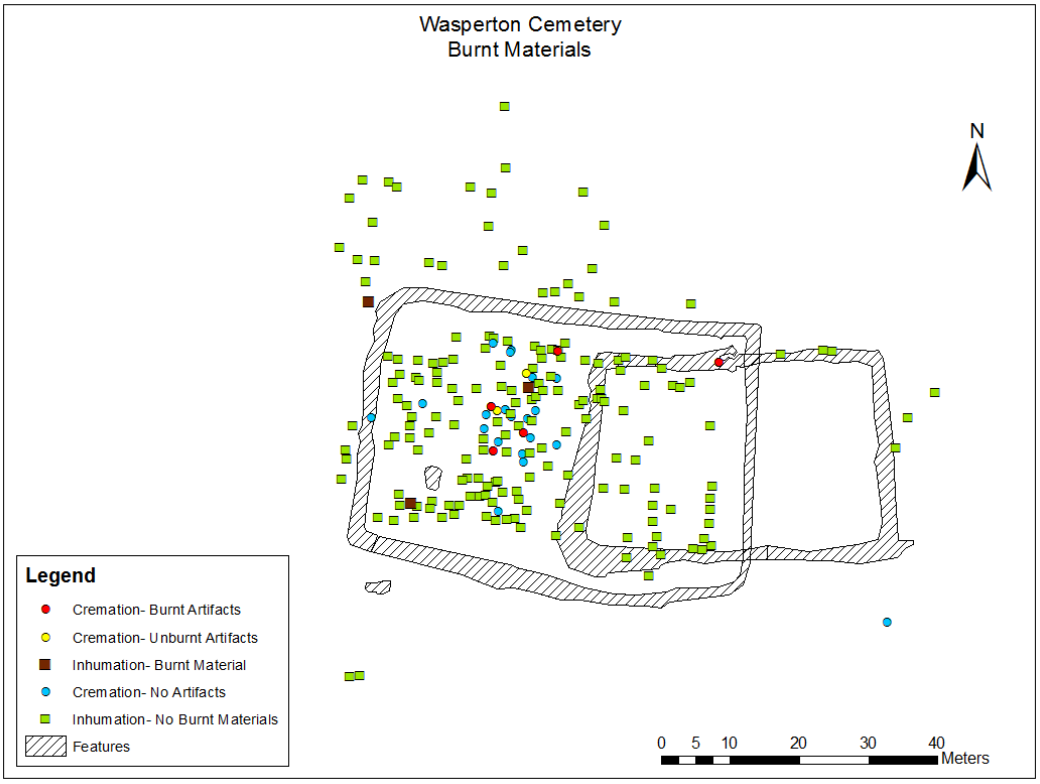


Figure 47: Worthy Park Cemetery, presence of burnt material, created by author in ArcGIS 10.1

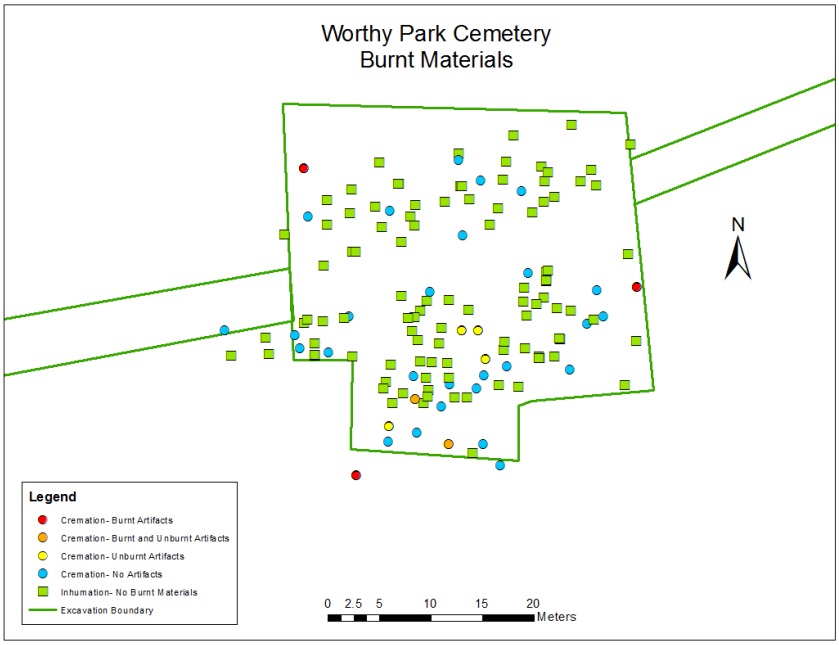


Table 20: Summary of Results

Cemetery	Statistical Analysis	Spatial Analysis	Burnt Artifacts
Alwalton	Cremation associated with containers and combs; Inhumation strongly associated with weapons	Density significant at 7m; three possible groups	Burnt includes brooches, purses, spindlewhorls; Unburnt includes combs, honestones, razors, shears and tweezers
Lechlade	Cremation associated with containers; Inhumation strongly associated with weapons, brooches, beads and pins	Density significant at 7m; two to four possible groups	Unknown
Mucking	Cremation associated with containers and miniature toilet implements; Inhumation associated with weapons, brooches, buckles and nails	Density significant at 14m; two to four possible groups	Burnt includes gaming pieces, glass, keys, miniature razors, purses, pots, sickles, spindlewhorls, toilet implements, arrow; Unburnt includes shields
Wasperton	Cremation associated with containers; Inhumation associated with weapons	Density significant at 7m; three possible groups	Burnt includes brooches, hobnails
Worthy Park	Cremation associated with containers, miniature items and combs; Inhumation associated with weapons and buckles	Density significant at 5m; four possible groups	Burnt includes beads and pins; Unburnt includes combs, miniature combs, razors and toilet implements

CHAPTER 8: DISCUSSION

The goal of this dissertation is to develop an approach to co-occurrence of cremation and inhumation burials that allows for the two practices to be analyzed together in order to determine their relationship to one another and improve studies of this type of cemetery. Early medieval England has provided the case studies for examination of this phenomenon, and the results of the analysis have been presented in the previous chapter. This chapter explores the results of the study within the broader context of early medieval England and current archaeological work. Next, it examines the three research questions in relation to the five case study sites, as well as mortuary archaeology more broadly.

I. Spatial Analysis: Cemetery Layout

The spatial analysis of each of the five case studies revealed evidence for clustering of individual burials, as well as dispersion of ages, sexes, and artifacts among these groups. Social power during this period was based within the house and one's community. Therefore, the mixed demography and internal variation of these spatial clusters may represent these household groups (Arnold 2005). This type of argument has been proposed since Hope Taylor's (1977) early spatial analyses, and supported by more recent work. Sayer and Weinhold (2013) argue that the presence of households versus some other type of structuring feature is due to the fact that there is internal variation within the spatial clusters suggestive of the different roles played within the house. If we accept that these are households, the overlapping of cremation and inhumation within these clusters suggests that both disposal forms could be

found within the same house, although the patterns of clusters may indicate that households had a preference for certain types despite a tolerance for behavior. If households are internally varied by status, but have some preference for burial due to familial or ethnic tradition, then this could be an explanation for the patterns seen at the case study sites.

The problem with this concept of the household is that despite it being a common argument to explain roles and identities in this period (Harke 2011; Ravn 2003; Squires 2013; Williams 2004), there is little explicit discussion about what this term means, how power was structured, and who was included. A counterpoint to this is the discussion occurring in Roman studies regarding households, including whether households consisted of nuclear families (Saller and Shaw 1984), an extended group of both related and non-related individuals living and working within a single house (Hingley 1990), or if they run the full spectrum between these two extremes (Martin 1996). Allason-Jones (2007) in particular note how attempting to define who is part of a household is complex due to the range of influences and ethnic backgrounds that were present during the Roman Empire. They argue that in Roman Britain, a household could range from the Roman soldier's immediate family, to mixed polygamous group of British natives, to elite households consisting of an extended family, as well as their slaves and servants (Allason-Jones 2007).

Taking this into consideration, it is possible that these spatial groups do represent some type of household and could be used to better understand what an early medieval household looked like. However, we also need to consider other possible interpretations. The appearance of clusters may simply be attributed to development of the cemetery through time obscuring other patterns- due to the nature of archaeological materials, we cannot determine the exact

age of each burial, and even reducing them into 50 year spans, we could be losing important data about the original layout of the cemetery. At sites like Lechlade (Boyle et al. 2011), there appear to be some parallel and perpendicular lines of burials. It may have been the case at this cemetery that its original design was for lines, but filling in between the lines over time, or loss of burial markers created the appearance of clusters where there were not any intended. At Alwalton, it had been suggested by Gibson (2007) that the appearance of a cremation group may have simply been due to the desire to focus these burials more closely around the pyre rather than designate a specific group.

II. Statistical Analysis: Patterns of Artifacts

When we review the data from the three statistical analyses, there are a number of trends we can see. In general, when we take into consideration the problem of preservation due to burning or acidic soils, the large majority of artifact types are found with both cremation and inhumation burials. This likely points to similarity in the funerary process for each. As is argued by Williams and others (Lucy 2000; Squires 2013; Williams 2004, 2005), the funerary process in this period likely consisted of preparation of the dead, laying out of the deceased in a tableau whereby offerings and gifts could be made, and then either burial, or burning followed by burial. Carver (2000) proposes that during this period, that material culture was used as part of the burial in order to create a vivid tableau of the deceased. This tableau would portray the dead in a memorable manner that would allow for them to be portrayed in an idealized manner (Squires 2013; Williams 2005). Williams (2004, 2005) argues that the tableau scene, of the individual would be made up of the deceased, their clothing, personal effects, and offerings of

gifts, and would be displayed either on the pyre or in the grave, potentially for a number of days prior to burning or burial. There has been little speculation regarding the burial process beyond this interpretation; it is possible that the funerary process was varied between cremation and inhumation, and there is another explanation for the patterns seen however there has been no critical investigation into this.

In general, inhumation burials were buried supine, with legs extended, and were usually without any containers and a small amount of personal grave goods and offerings such as jewelry, brooches, buckles, and weapons. Individuals were buried with a full suite of clothing, a few personal belonging and may have had gifts added to the grave (King 2004). Few individuals were buried in unique methods, although the presence of decapitation burials could suggest either a punishment (Reynolds 2009), desire to stop possible revenant associated behavior in the deceased (Milella et al. 2015), or a Roman influence- decapitation during the Roman Empire has been argued to indicate a range of possible meanings including being a commemorative act or part of the funerary ritual (Müldner et al. 2011). Cremation was carried out by means of a pyre, with the body laid out in a similar manner similar to the final inhumation. Fewer than a third of the bones and artifacts would be collected from the pyre and placed in an urn for burial, sometimes with offerings added at this stage.

However, the statistical analysis revealed from specific artifact associations found in the analysis relating to burial type that require further discussion. In particular, I want to focus on the association of weapons with inhumation burials, and hair care and toilet implements with cremation burials. The only object that has a special and significant relationship with inhumation at all five sites is the presence of weapons. The presence of these items does not

attest necessary to an identity as a warrior, since many of the weapons found with burials are not of high enough quality for actual use in combat as has been argued by Härke (1990). He proposes that weapon burials were a sign of status relating to one's position within a household or a way of demonstrating one's Germanic ancestry. Harke (1990) proposes that weapons were likely seen as inalienable property that required burial at the death of its owner. Of course, this raises a significant question. If these represent an important part of a Germanic male's burial assemblage, why are they not found with cremation burials and why are they not found with every male? Williams (2005: 255) argues that "lack of weapons in cremation graves as due to the powerful and 'dangerous' mnemonic significance that weapons may have held. The ability for weapons to forcefully evoke memories of the past could have been out of kilter with the dissolution and reconfiguration of the body and social memory that cremation entailed". Weapons, therefore, may have been an important part of the funeral assemblage, but inappropriate for the process of cremation. An alternative proposal is that weapons were too fragile to survive the process of burning or may be burned into unrecognizable metal pieces. Fragmented pieces of weapons have been recovered from cremation contexts, but Williams (2005) argues their frequency is too low, and the lack of weapons in cremation does represent a real and meaningful trend. Another possibility is that mourners were faced with a practical choice due to the size of the weapons in comparison to the size of the urns, and chose to omit them or dispose of them elsewhere.

Combs and hair care implements have been proposed to be important to the cremation process in the early medieval period in England. Williams (2003, 2014) argues that combs and toilet implements played a role in the transformation of the deceased into a their new identity

as an ancestor. Due to the destructive nature of burning the dead, Williams (2007: 87) proposes that items like combs, razors and tweezers may have a strong connection to body and identity management in life; therefore "their presence in the cinerary urn could have been an act of embodiment; providing both allusions to the past biography of the living person, but also as a corporeal focus for the new ancestral identity created for the dead at the end of the funeral". Unlike inhumation, where the focus was around the creation of an idealized tableau within the burial and objects placed with these individuals were focused around presentation and remembrance of their identity, cremation was meant to be an act of transformation and reconstruction, with combs aiding in this transition (Squires 2013: 194). Squires (2013) proposes that the destruction of objects at the pyre may have allowed for the removal of these personal effects from circulation and perhaps have an intended purpose in the afterlife, whereas those objects included after cremation may have been more related to the production of memory and negotiation of the identity of the deceased. Since combs were often included in the urn following burning, they argue that there were part of the reconstruction process rather than a personal effect (Squires 2013, Williams 2003).

However, there are other, more pragmatic reasons that combs may be found in cremation burials more frequently than inhumation. Materials like antler and bone, from which combs are usually made, actually preserve in some soils better when burnt. Sobolik (2003:22) notes that "calcined or almost-calcined bone preserves well in areas with acidic soils where unburned bone is degraded through chemical action". Therefore, when combs are found in higher frequency in cremation, it could be because the object simply preserved better due to being burned or being buried in burned material, and didn't survive the acidic soil of the

inhumation burial. Other hair care implements like metal shears and razors are also found more frequently in cremation burials, but this is only statistically significant at the group level and doesn't have the same strong association as combs. A second consideration is the presence of combs and other hair implements among inhumation burials. At the site of Lechlade and Mucking, combs are found with both cremation and inhumation burials. If we use Williams (2003) and Squires (2013) arguments for combs as an important part of the transformation of the body following cremation, then the appearance of these objects in inhumation could be a sign a citation of mortuary practices, whereby an individual who is being inhumed is creating a connection to cremation by using an object symbolic of that process. Another possibility is that these objects were simply part of the range of grave goods and offerings that could be included with either. The only site where we see this strong association of combs and cremation is at Alwalton, and it is clear here that those individuals who are choosing to burn the deceased are doing something different, as they set themselves apart in both artifacts and space. Even at Alwalton, when cremation is found mixed with inhumation, we do not have combs present.

Finally, an important part of the statistical analysis was the comparison of quality of the artifacts, as this added an important dimension to the analysis of both burial forms. Quality of artifacts indicated whether objects were burnt or unburnt. Burnt objects found in cremation burials are assumed to be part of the original deposition of the individual on the pyre prior to burning. As discussed previously, it was proposed by Williams (2005, 2014) that individuals were laid out in a tableau, fully clothed and with a range of offerings and gifts, either in the grave prior to burial or on the pyre prior to burning. This means that objects that are found burnt should have more in common with inhumation burials that were also set up as tableaus.

Conversely, unburnt artifacts are assumed to have been added to the cremation burial after the burning, and therefore are more related to the production and negotiation of the identity of the ancestor rather than part of the commemoration of the deceased. However, this division, while used by Squires (2013) and Williams (2007) is countered by McKinley, who proposes that objects placed on the exterior of the body on the pyre, such as combs in the hair or toilet implements attached to loose belts, could have been dislodged or fallen from the pyre. If this is the case, these objects may not show evidence of burning, despite being added to the pyre (McKinley 1989, 2008). She argues this based on the presence of burning on some of the combs found at Spong Hill in cremation burials. While we must consider that the division between burnt/unburnt; pyre good/grave good, may be confounded by the evidence or lack there of, it has the potential to be revealing about the nature of the relationship between inhumation and cremation as will be discussed later.

III. Role of Structures in the Broader Cemetery

Traces of what may have been external structures were found at four of the five sites, suggesting that there may be an important relationship between co-occurrence of cremation and inhumation, and the presence of these buildings. Other examples of these structures have been found at Lankford (Lethbridge 1951), Berinsfield (Boyle et al. 1995: 11, 62) and most notably at Apple Down (Down & Welch 1990: 25-33), where 33 examples of mortuary structures associated with cremation burials have been located. There are a number of possibilities as to the function of these spaces within the broader mortuary rituals at these sites. First, they may have been areas for preparation of the deceased prior to burial or

following burial. The presence of structures without burials within them supports the conclusion that it was not necessarily used for burial but rather another purpose in the funerary process. Further, in the case of both Alwalton and Lechlade, these structures are located outside of the cluster of burials. In particular, the concept of the structures acting as a place for post-cremation spaces is appealing given the evidence for the period. Mortuary houses may have acted as protective spaces that allowed for practical use in the preparation of the urn for burial, but also provided a space for ritual creation of an identity of the deceased. Williams (2007, 2014) has proposed that artifacts in cremation burials, specifically combs and hair care implements, suggest that the cremated dead required additional transformation and regeneration after burning. It is possible these structures provided a space for the storage of the cremated remains during this liminal period, allowing time for their regeneration and eventually lead to burial of the newly deceased among the other ancestors once they were ready. Finally, it is also possible that these structures acted as columbaria, and had shelves for the display and storage of multiple urns.

If we argue that these structures indeed play an important role in the mortuary program, their relationship to the other burial practices must be considered. Three possible uses are proposed by Meyers Emery and Williams (2016):

- Separate mortuary program or set of rituals: the presence of mortuary houses may indicate that mourning communities had three choices for the funeral including inhumation and burial, cremation and burial, or cremation and use of the mortuary house for display, preparation or other purpose. Given that mortuary structures are primarily found in mixed cemeteries with cremation and inhumation, these were places

where diversity in practice was already allowed, so expansion to a third program or ritual is a possibility.

- Same mortuary program, but different stage: we can also propose that the use of mortuary structures may have been part of the bi-ritual funerary process. Given the breakdown of the body during cremation, the dead may have required an extra step to allow them to become fully part of the deceased community. These houses may have served as places to protect the dead and/or the living during a liminal period.
- Same mortuary program, but for special individuals: Finally, the structures may have been used to mark high status or deviant individuals. A high status individual or household may have marked their importance by having the sensory and elaborate experience of the pyre, and then continued to show their status through erection of a more permanent structure. Alternatively, the use of the structure may have been a way of marking deviant individuals who were buried in the mortuary houses to protect the living.

For Alwalton, Lechlade and Wasperton, it is possible that the presence of these structures marks a difference in the ritual behavior surrounding cremation. At each of these sites, there is an area where cremation clusters closely together, and at Alwalton this group is spatially segregated. At all three sites there is some blending of cremation and inhumation either at the edges of the cluster or with some dispersed burials placed within clusters of the other disposal type. This may suggest that at these sites, there was a household or group of households that were more dedicated to a specific cremation ritual that used a mortuary structure as part of the process. The cremation burials not associated with the structure may

have been part of a different program that different require the structure for transformation or married into a different household.

IV. Cemetery Discussion

With these spatial and statistical arguments in mind, we can summarize the results of each site and discuss possible interpretations for these patterns within the broader context. The patterns seen at the five case study sites tell different possible narratives about the communities who lived and died there, their adaptation to the shifting landscape, and demonstrate both conformity and divergence from what we know was broadly occurring in England. I will briefly summarize the patterns seen at each of the sites, and then discuss the implications of these interpretations within the broader context. For these interpretations, we are going to follow the argument that spatial clustering on the landscape likely indicate some type of relationship between the deceased, whether it be a familial or other type of social, economic, ethnic or political relationship.

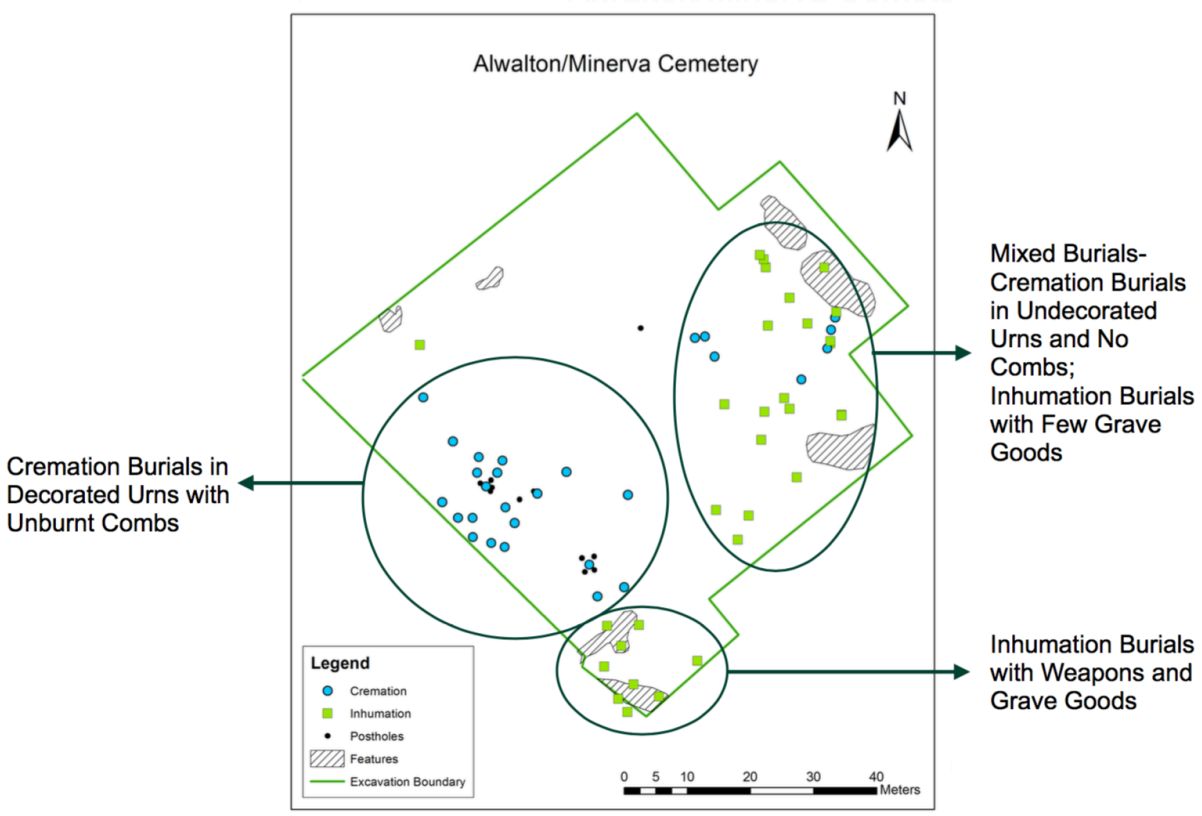
A. Alwalton

Alwalton has been interpreted primarily as a cemetery for a group of culturally Anglo-Saxon households, with differences in mortuary tradition (Gibson 2007). Of all five sites, Alwalton appears to have followed the most consistent traditions for funerary behavior, and households varied in their relationship to disposal forms in the community. Cremation burials were primarily focused in one cluster, which may have been cordoned off with a fence or other materials. At the periphery of this cremation grouping was an external structure that may have

been a mortuary house. It is proposed that these structures may have served as temporary houses for the cremation urns and remains while they were being prepared for burial. The presence of unburnt combs in the majority of these urns suggests that there was some type of ritual associated with reconstruction of the deceased's identity as proposed by Williams (2003), or perhaps they were added to signal the end of mourning and belonged to the survivors of the deceased. Further, this site had the highest weights for burial, suggesting that there was an importance to collecting the remains and manipulating them further to aid in their transformation.

Inhumation burials at the site were found in two clusters: one to the south that was primarily inhumation and one to the east that had some cremation burials mixed in. Each has slightly different composition suggesting that they may have belonged to different households that chose to express identity in different ways. The cremation burials in the eastern cluster lack the combs that are found in the primary west cluster and are not near a mortuary structure. This may indicate that there was a different set of rituals performed for these burials due to their association with inhumation. The inhumation burials in this eastern cluster have the presence of the only container associated with a non-cremation, and have few artifacts in general. Conversely, the cluster of inhumation burials in the south fits more with our understanding of this type of burial, and has a higher percentage of weapons, keys, pins, beads, buckles and other items.

Figure 48: Summary Map of Alwalton, created by author using ArcGIS 10.1



For Alwalton, there appear to be three patterns: 1) cremation burials associated with combs and a range of burnt and unburnt artifacts, as well as a mortuary structure, 2) inhumation burials with range of grave goods and no evidence of burning, and 3) mixed inhumation and cremation burials with few grave goods present, and no burnt non-human materials. All three patterns are clear during the entire period of use of the cemetery. The relationship between the disposal types is most likely a relational and horizontal group pattern. Different clusters of individuals, possibly familial groups, had preferences for different types of disposal. The cremation dominant group potentially used its fiery ritual as a way to reinforce their difference from the other groups. However, the groups with mixed clusters of inhumation

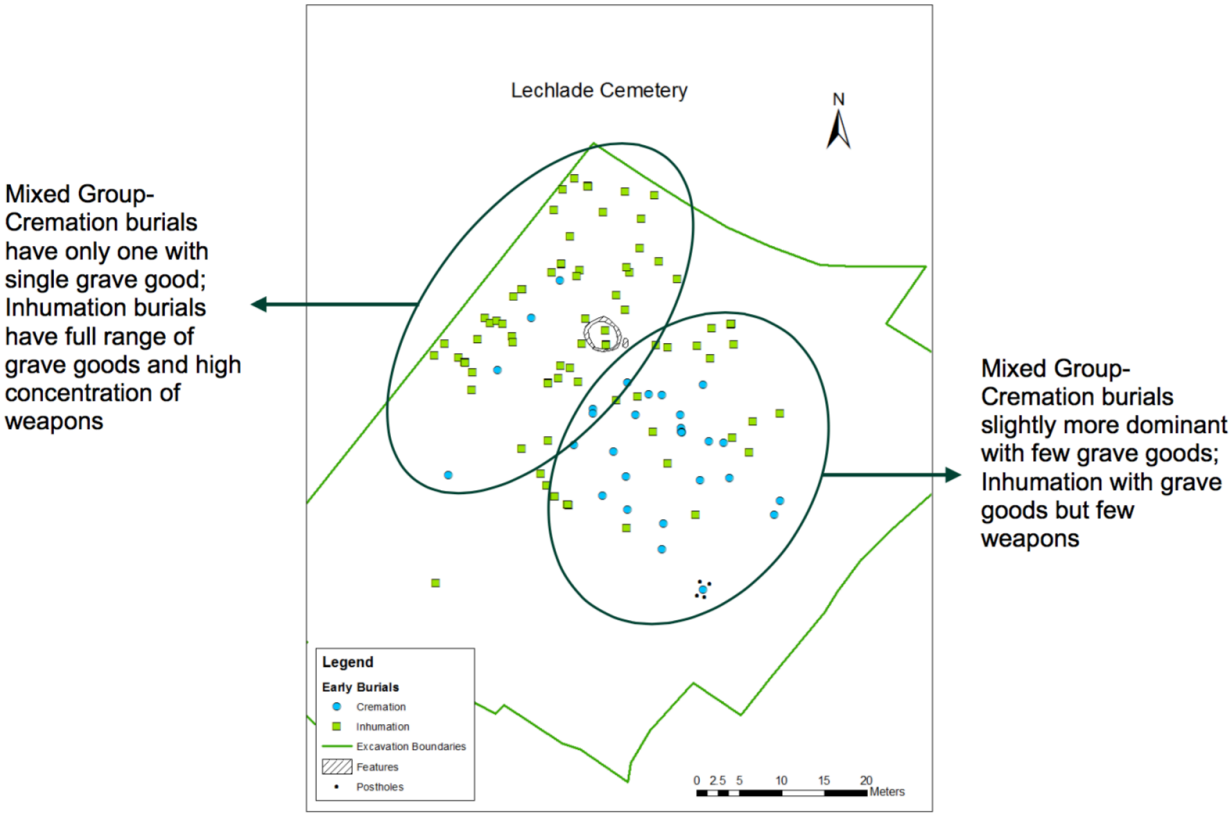
and cremation may have viewed the two burial forms as relational to one another, and therefore, allowed for the addition of new burial types whether through intermarriage or changes in individual preference. The loss of combs in cremation in the mixed group suggest changes in perception of the burial rite, away from the strictness seen in the cremation only cluster.

B. Lechlade

The cemetery of Lechlade was has been argued to be composed of a mixed group of culturally Anglo-Saxon households (Boyle et al. 2011). The occupation of the cemetery begins with a period of mixing between cremation and inhumation around a central prehistoric feature, with the former more clustered to the south and east, and the latter dispersed around the remaining space. A mortuary structure associated with a single cremation is located at the periphery of the cluster. Following the earliest period of occupation, Lechlade follows the broader trend of shifting towards being an inhumation only cemetery. During the middle period of occupation, inhumation burials continue this pattern, filling in gaps between prior inhumations and cremation, and cremation is discontinued. During the final period there is increased clustering around the monument and inhumations, as well as expansion of the cemetery limits to the southwest. There were very few items associated with the cremations, and those that traditionally are, combs and toilet implements, were found with inhumation burials. There is no clear spatial association between inhumation with combs and toilet implements to cremation burials, although the only inhumation burials with coffins are near the cremation burials.

It is possible in the earliest period of Lechlade's use that the population allowed for both cremation and inhumation, with certain households or groups having a preference for one or the other. During the 6th and 7th century, preference shifted to inhumation only. During the 6th and 7th century, preference shifted to inhumation only. During the period of overlap between the two forms, the lack of artifacts with cremation could attest to a lack of need to add anything else to the burial to perform the funerary ritual properly. Instead, the mortuary structure may have been a site where these were performed, not requiring further addition or modification, although Alwalton also has a mortuary structure and the artifacts patterns are not similar. The low weight of collected remains may indicate that once burned, the individual was no longer spiritually present and burial was of a token amount not requiring manipulation to complete the transformation, or indicate poor preservation due to medieval ploughing.

Figure 49: Summary Map of Lechlade, created by author using ArcGIS 10.1



Based on the evidence, Lechlade has a number of possible patterns and groups for its earliest period of occupation where both cremation and inhumation are present: 1) multiple households or groups practicing either inhumation or cremation, and only minor mixing of burial types between them, 2) multiple households or groups that allowed for either form of burial, though they may had a preference, or 3) one group practicing cremation with some possible mixing seen within this household, with another group practicing primarily inhumation with some minor mixing. It is clear that cremation and inhumation were seen as allowable variation at the cemetery scale, but it is unknown whether both were allowable within the same household or spatial group.

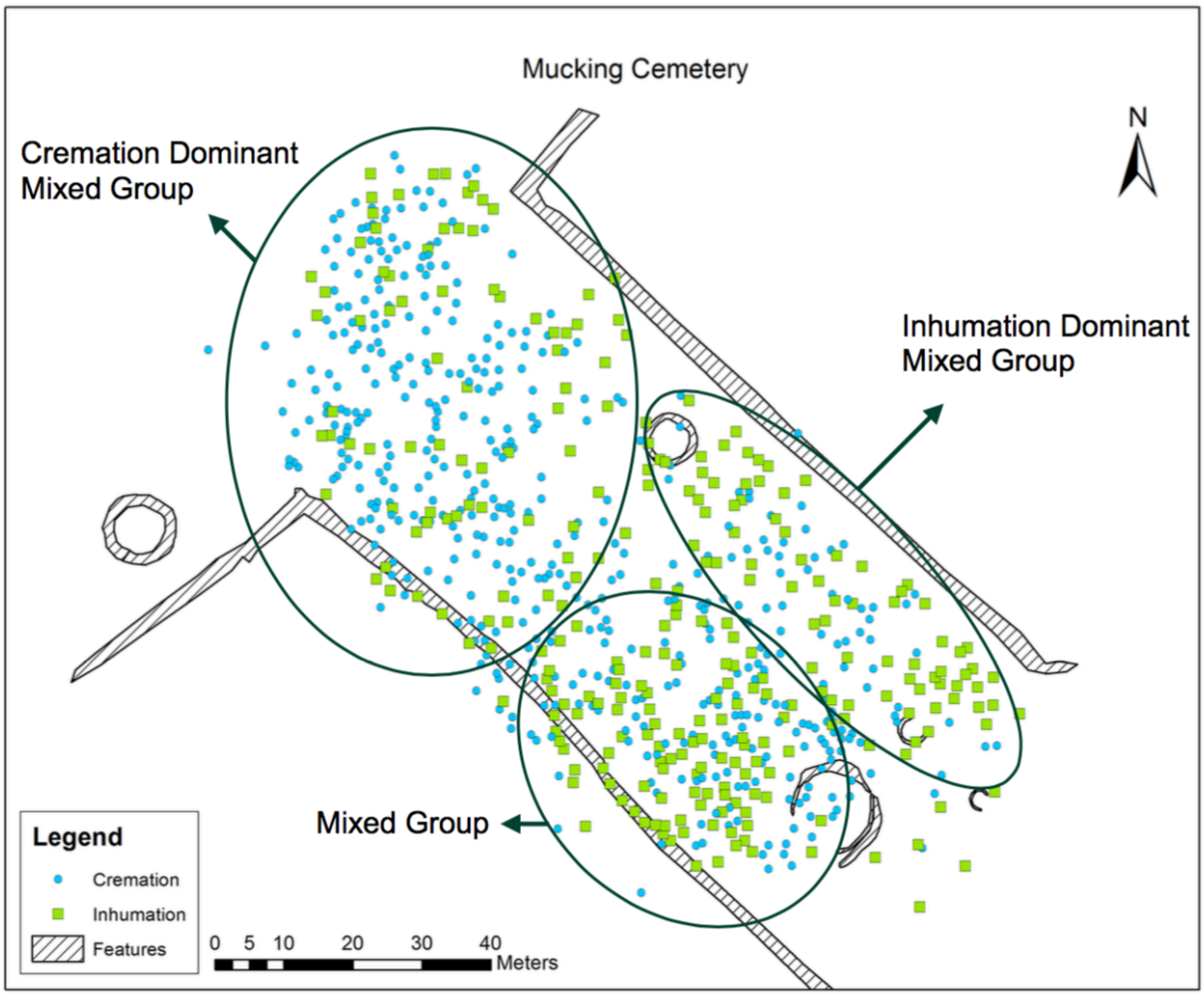
C. Mucking

Mucking has been interpreted as being primarily culturally Anglo-Saxon with some evidence of Roman influence, whether this be through trade and interaction with the post-Roman Britons or Germanic *foederati* (Hirst and Clark 2009). Mucking has overlap in groups practicing inhumation and cremation, showing no clear spatial or temporal divisions between them. There does seem to be spatial preference for certain types, that may indicate that some households or groups preferred one option over the other, but this is not a statistically significant difference. During the early period of occupation, there is a mixed cremation and inhumation group to the south, and some dispersed burials to the north. As we move into the mid period, the cemetery use increases dramatically, and some patterns become clear. Activity increases in general at the western edge of the cemetery, and cremation burials are found more prominently in the northern area. There are few late burials, suggesting the cemetery fell out of use in this period.

While toilet implements were found in both inhumation and cremation graves, the miniature versions of these were only found with the latter and they were primarily burnt. In general, Mucking had a higher percentage of burnt materials and very few unburnt found with cremation graves, and there were a number of inhumation graves with burnt materials found in them. This may suggest that similar to Lechlade, there was no need to add goods to the graves following the burning, and the presence of burnt miniatures may suggest that adding the items to the pyre was an important part of providing for the deceased. Also similar to Lechlade, the cremation burial weights were primarily below 300 grams, suggesting that very little was collected at all from the pyre. Interestingly, miniature cremation items tend to cluster in areas

where cremation is more prominent. Conversely, cremation graves with both burnt and unburnt materials tend to be found in areas where inhumation occurs at higher levels. This pattern of burnt and unburnt materials may point to some citation between those practicing inhumation and cremation as a coping mechanism or a token of tradition. The burial of a cremation with an unburnt object or the burial of an unburnt body with burnt materials may be a way of appeasing the deceased or coping with a change in practice. The only items unique to cremation were hair care items (combs, razors, shears) and gaming pieces. Given that only a few occur throughout the cemetery, it is unlikely that this indicates a major pattern, but may however demonstrate that there is a flow of ideas from other cemeteries or a migration of individuals to whom the artifacts may have been important as traditions from their place of origin. Gaming pieces in particular have been associated with elite males, as have hair care items, which could suggest that cremation burials belonged to a higher status. However, there are similarly inhumation burials with high status objects and high amounts of grave goods. This may further support the argument that these individuals representing wealthier households or the heads of them. However, an alternative argument is that gaming pieces were common in both types of burial, but only survive in cremation burials- burnt animal bone is more likely to preserve than unburnt bone.

Figure 50: Summary Map of Mucking, created by author using ArcGIS 10.1

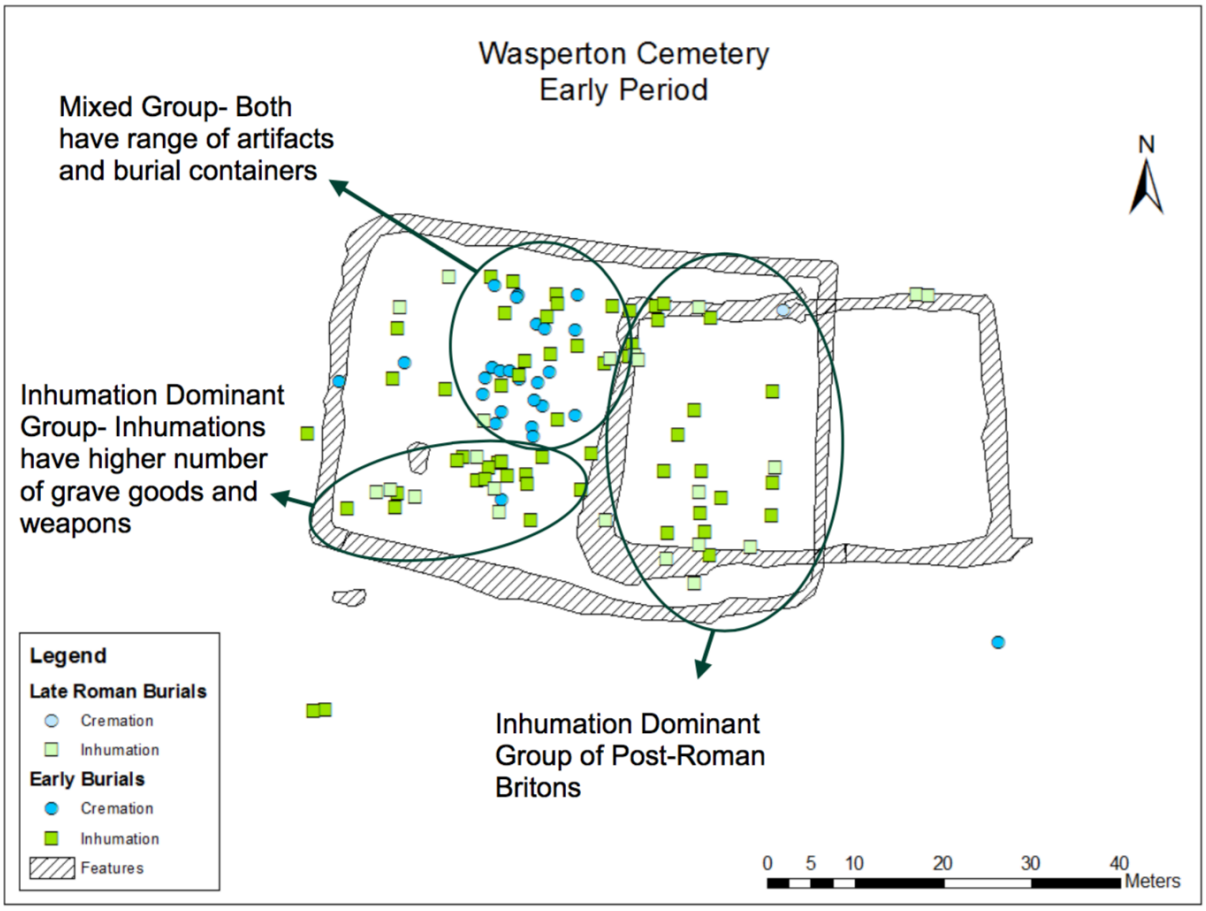


Unlike the other cemeteries, there are not as clear patterns of development or spatial association of specific burial forms at Mucking, which may indicate that both at the household and cemetery scale, there was allowable variation in disposal method. Additionally, Mucking is the only cemetery to have increased number of cremation burials over time in relation to inhumations. Based on the evidence, it is most likely that there was a relational affiliation between cremation and inhumation, and while households may have had a preference, either option was considered an appropriate method for disposing the dead.

D. Wasperton

Wasperton began as a Late Roman cemetery with several inhumation burials and a single cremation burial just within the boundaries of an enclosure. In the early period of Anglo-Saxon occupation, a group of individuals practicing both cremation and inhumation with grave goods arrived causing increase in cremation and inhumation burials within the center of the main enclosure (Carver et al. 2009). Cremation in this period clusters more tightly together in the center, whereas inhumation is slightly more spread out. During the mid and late periods, the cemetery expands beyond the enclosure and fills in gaps within, but only inhumation burials are present in this period. This pattern is fairly similar to that of Lechlade. Also similar to Lechlade, and some extent to Mucking, is the lack of artifacts in general found with cremation, those are present have been burnt in the pyre, and there is a generally low weight of the cremated remains themselves. Interestingly, however, inhumations found with containers are more clustered around the location of the cremation burials, and there are three inhumations found with burnt materials in the graves. The only items unique to cremation include bowls and unknown glass fragments (although these could be melted beads). During the 6th century, there is increased use of inhumation and expansion beyond the cemetery boundaries. By the late 6th and early 7th, there are only a few individuals buried around constructed barrows. External structures at Wasperton have not been confirmed, but there are a number of potential ones around the cremation burials that may hint to similarities with Lechlade and Alwalton. These were constructed around the late 5th century when the cremation burials began appearing, and may indicate fences or structures. If so, this provides us with further confirmation that a building was part of some cremation rituals.

Figure 51: Summary Map of Wasperton, created by author using ArcGIS 10.1



It is not known whether the cremation burials were a completely intrusive practice that remained segregated. Carver et al. (2009) argued that a cremation-focused household joined the Roman and inhumation practicing Anglo-Saxon community during the late 5th century, there was mixing of cremation and inhumation practices, eventually leading to the discontinuation of the former practice possibly indicating increased coherence in group identity being expressed at the cemetery level. The burial pattern is fairly similar to that of Lechlade, with the exception of the Roman burials. There is a group of individuals inhuming the dead with few grave goods, which is joined by a group that practices both cremation and inhumation

burials with grave goods. This shifts to an increased focus on the latter practice, and little transformation of the cremation needed following burning. While at the cemetery level there is a relational affiliation, with variation of disposal allowed, it is not known if this necessarily occurred at the household level, although there does appear to be more mixing at Wasperton than was seen at Lechlade.

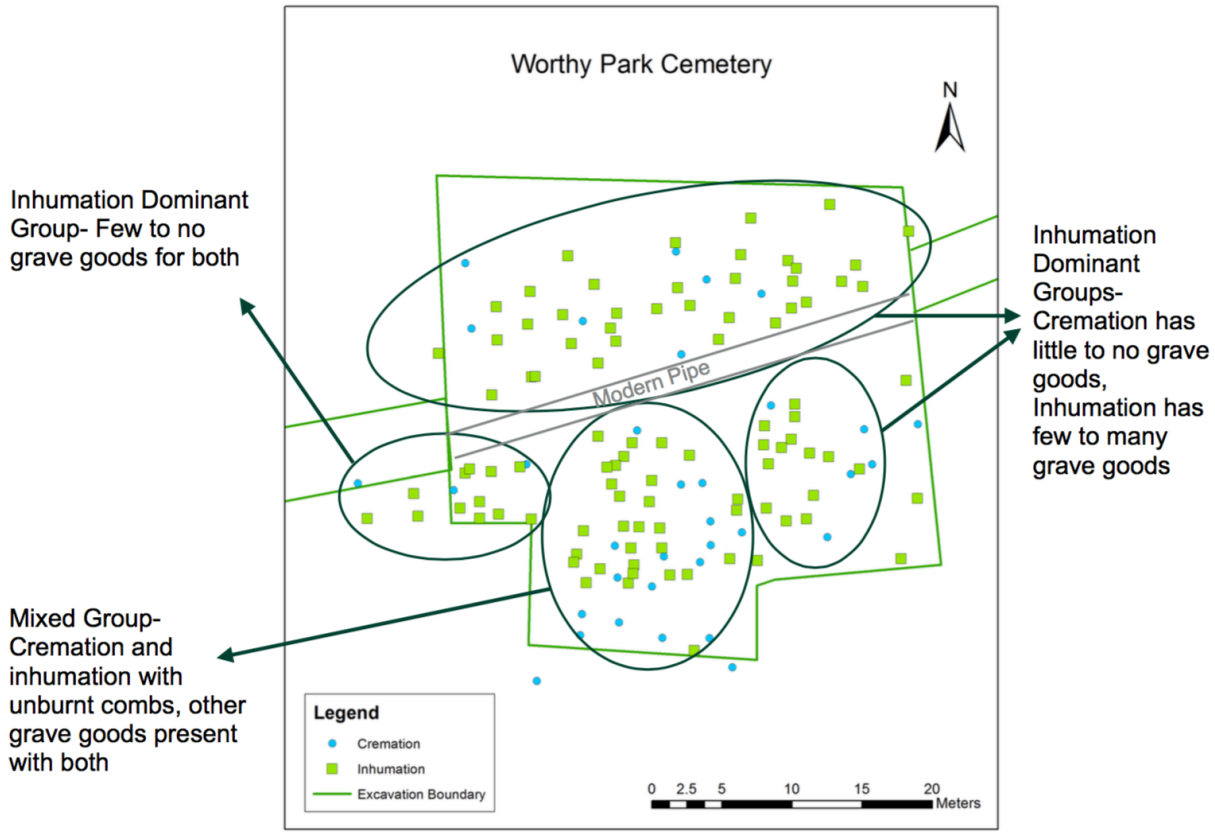
E. Worthy Park

Worthy Park was proposed to consist of individuals from a mixed community of possibly Saxons, Britons, Franks and others of North Germanic origin (Chadwick Hawkes and Grainger 2003). Similar to Mucking, Worthy Park has clear blending of practices throughout its use, although they tend to cluster in a central area in a manner similar to Lechlade and Wasperton. Cremation does tend to cluster slightly more to the south during all periods, and there is some clustering of similar disposal types suggesting that they did prefer to be buried near like disposal types. Inhumation is dispersed throughout, with a slightly tighter cluster to the west and east of the central cremation cluster. Containers are dispersed throughout the cemetery, and in general there is an overall lack of grave goods with both disposal types in comparison to the other cemeteries. Combs, pins and toilet implements tend to cluster more frequently in the southern portion of the cemetery, and are found with both cremation and inhumation.

Similar to Alwalton, Worthy Park has a high amount of unburnt material found in the cremation burials, including combs, both full-size and miniature, toilet implements, and shears. Miniature tools were also recovered, one burnt and one unburnt, and a burnt toilet set was found. Unlike Alwalton, there were two unburnt combs found with inhumation, suggesting that

they were not limited to cremation, although both these were full-size. One of these combs with an inhumation was located near the main cremation cluster, as were many of the toilet implements. This may suggest that the unburnt materials in the cremation were part of the transformation and inclusion with an inhumation was a citation to the transformation following burning on the pyre, as was the case for Mucking. Worthy Park had the lowest amounts of cremated bone found in the burials, so the inclusion of unburnt artifacts seems important since there was not much fully collected from the pyre. This seems in contrast to the other patterns, where high weight is associated with unburnt artifacts, and low weight is associated with burnt material and low number of artifacts.

Figure 52: Summary Map of Worthy Park, created by author using ArcGIS 10.1



Based on the evidence, there is a relational affiliation between cremation and inhumation that varied in intensity by group. We may have: 1) multiple households or groups that allowed for either form of burial, though they may had a preference, or 2) one household or group practicing cremation with some possible mixing seen within it, while other groups were practicing primarily inhumation with some minor mixing. Like Lechlade, cremation and inhumation were seen as allowable variation at the cemetery scale, but it is unknown whether both were allowable within the same group.

V. Interpretation

Based on this evidence, I propose that co-occurrence of cremation and inhumation primarily indicates a relational and horizontally differentiated based relationship between the forms of disposal in early medieval England. This conclusion is compatible within the broader historical context, and we can propose the following narrative. With the loss of the Roman Empire, there was an influx of Germanic and Northern European immigrants into England who brought along with them a range of localized beliefs and traditions. These beliefs were adapted to the local conditions of their new homeland, and became mixed with the practices of the native Britons and post-Roman inhabitants of the country. In some cases, mixed traditions of burial practices were maintained and diversity thrived, and in others there was increasing homogeneity of the burial practices to form a coherent group identity even in death. As Williams argues, “This presents a different perspective on the relationship between cremation and inhumation in early Anglo-Saxon England by seeing them as related mortuary technologies operating dialectically with each other, the results of practical choices made by the survivors to

negotiate their identities and social memories" (2014: 94). Williams (2014) has proposed that the use of different but related methods of disposal was a way to signal differences in groups or communities, and that the relationship between them likely varied by context. My research confirms his hypothesis, but demonstrates the wide range in variation that this relationship occurred based on not only the cemetery, but the households and individuals within them. The use of different 'technologies of remembrance' does not necessarily indicate different beliefs or statuses, but instead may be different methods of achieving the same ends.

For sites like Mucking, it is clear that while cremation and inhumation do different things to the body they have enough similarities in their ritual to support the conclusion that they were part of the same mortuary program and that variation in the commemoration and negotiation of the identity of the deceased was allowed. At Lechlade, Wasperton and Worthy Park, there is clear clustering of a single group of cremation burials at each site, either as evidence of one household with a focus on this type of commemoration, whether it be heavily cremation or mixed with inhumation. We also see at these three sites that the variation was allowed in other households with dispersed cremation burials appearing in other households and inhumation burials within the main cremation cluster, unlike Alwalton's segregated cremation specific group. It is possible at Alwalton and Worthy Park that cremation for some households represented a completely different mortuary tradition. At Alwalton, there are clear divisions in the rituals that different households are using with a segregated cremation burial cluster with unburnt combs, but there is also blending of the households to form mixed groups with a combination of rituals in other areas of the site. Worthy Park also has evidence of a cremation specific ritual with combs, though it is not restricted in the same way as Awalton

since it is found within inhumation burials as well. At these sites, not all may have seen cremation and inhumation within the same program, or at least saw the need to add to the post-cremation rituals.

Death is an emotional process, and especially during times of change and instability it came become an important way to solidify ties, negotiate identities and maintain relationships. If fire plays an important role in the transformation of the deceased, the absence of fire may be negotiated by the presence of other burnt materials in the grave, or artifacts involved in transformation of the body. Conversely, the absence of the body following cremation may require additional offerings or manipulation in order to aid in the production of memory and reconstruction of identities (Sørenson and Bille 2008; Williams 2003, 2013). In this sense, when both forms of disposal are found within the same cemetery, they may cite one another in order to create ties between the two, aid intra-group identity construction, and lessen the emotional insecurity of the mourning community. By having aspects of both rituals, the mourners reduce their insecurity and provide for the deceased.

Every site has similarities to the others in different ways, suggesting that there was not so much an overarching set of rules guiding the appropriate way to treat the deceased, but rather guidelines that could be elaborated or simplified by household and community. Cremation and inhumation appear to be part of the same general mortuary program, with variation in how the body was disposed and what this act required to properly commemorate the deceased or negotiate the identities of one's ancestor. Cremation and inhumation lie on a continuum of mortuary behavior in this period, and may not have been the most important decision in how the mourners negotiated loss, and the identities of the dead and living. Rather, the association

with the broader community and household seem to be the strongest guiding force, and within this, variation in disposal was tolerated to different extents depending on their household.

CHAPTER 9: CONCLUSION

The goal of this research was to develop an approach to co-occurrence that allows for cremation and inhumation to be co-interpreted, using early medieval England as a case study. In general, this dissertation demonstrates that the interpretation of co-occurrence cemeteries is much richer when both cremation and inhumation are viewed as equal forms, rather than studied separately, and that relationships between the two disposal forms can be teased apart using statistical and spatial analysis. This chapter begins by addressing the three research questions. Next, implications of this research for future studies of co-occurrence are proposed. Finally, the contributions of this research to mortuary archaeology broadly, and studies of early medieval burial practices are elaborated, along with suggestions for further research.

I. Research Questions

Co-occurrence of cremation and inhumation is found throughout time and space, from modern Western populations to Late Bronze Age Europe. Instead of assuming that there is a fundamental difference between cremation and inhumation, this research has demonstrated that an approach can be taken that will allow for the relationships between them to be teased apart to produce more meaningful interpretations. It is argued that this type of approach will aid future studies of co-occurrence in other periods and regions, as well as provide cross-cultural comparisons that may help determine if there are more universal patterns for co-occurring burial practices.

A. Equalizing Analysis of Co-occurrence of Cremation and Inhumation

Research Question 1: Can cremation and inhumation be integrated in an objective and equal manner that allows for complete comparison and avoids falling prey to current disciplinary divides between these two forms as they occur in early Anglo-Saxon England?

Yes. Using the Goldstein's dimensions of mortuary behavior and assessing both inhumation and cremation by the same characteristics, we can analyze both disposal forms in an equal and objective manner. By taking this approach, there is not an a priori assumption that these two disposal forms are different, but instead, it allows for the patterns to become clear during the analysis. By doing this for early medieval England, we are able to notice some interesting trends in the patterns at co-occurrence sites, and also see the wide variation in treatment. Further, it means that we can equally compare the burial forms and sites. Prior to this reorganization, the cremation and inhumation burials were catalogued separately with different attributes and variables considered. While the new method does have some cremation or inhumation specific categories that cannot be analyzed against one another, it does allow for more appropriate comparison, and begins with the assumption that these burials, by being in the same cemetery, may be part of the same mortuary program and use the evidence to determine whether or not this is appropriate and divide from there.

For example, in their study of the spatial layout of Lechlade, Sayer and Weinhold (2013) omit cremation from the site. However, when both burial forms are compared using their spatial method, some of the cremation burials fall within the identified households, and the clusters of cremation have some inhumation burials mixed between them as well. While we can say that this cemetery does become an inhumation based location, it likely began as a mixed

community with some households having a preference for one form or the other. Additionally, the removal of cremation from Sayer and Weinhold's (2013) study leaves out that the placement of these burials was an important factor in how inhumation burials were located. Lines of inhumation burials seemed to be placed between lines of cremation—a fact that changes the way we see the site when both are studied together. While it does appear that there is some division between the two burial forms in Lechlade, our interpretation is biased without the inclusion of both as they do appear to have some type of relationship.

However, integration of two different burial forms into a single database did reveal some problems that needed to be dealt with during the process of research. First, not every attribute measures the same thing for both burial types, and researchers need to note how they are comparing these. For example, in the completeness of the remains attribute, in inhumations, this is a record of body displacement that can be a sign of disturbance or a measure of preservation. While the same is true in cremation burials, this measure also includes behavior like selective collection of the bones for burial from the cremation pyre. Details like this make direct comparison for this period complicated, but also potentially revealing.

Second, the role that fire plays in destroying and preserving makes co-interpretation difficult, and does require careful attention. Fire will melt beads, destroy wooden materials, and shatter and warp metals. Conversely, the burning of antler and bone can improve preservation, which explains why the majority of artifacts produced from antler are found with cremation burials rather than inhumation. Further, because cremation leads to the destruction of the body, we do not know the importance of collecting items from the pyre for burial and whether including pyre goods was important or incidental. When we compare weight of the

cremated remains against the presence of pyre goods, there is no trend to suggest that increased care in collecting bone led to increased care in collecting artifacts, and it seems to vary by site.

Finally, some measures only apply to a single burial form for the period or are not archaeologically visible. In inhumation burials, it is not known what the pre-disposal facility looked like or whether it was even present, and certain measures like weight of the remains were data that was not collected by the original researchers. For cremation, orientation is not feasible due to their circular nature, and burial context within the grave was not always recorded.

Regardless of the limitations, using the expanded dimensions of mortuary behavior does allow for cremation and inhumation be integrated in an objective and equal manner that allows for complete comparison. By organizing in this manner, differences between cremation and inhumation were found naturally or not at all, which prevents us from making the assumption that they are innately different and can therefore be separated. While study may demonstrate that in some cases divided research of cremation and inhumation at mixed cemeteries may be warranted, the broader interpretation is enriched by this approach.

B. Interpreting Relationships Between Cremation and Inhumation

Research Question 2: When found within the same spatial and temporal locations, can we infer patterning and relationships between cremation and inhumation, specifically within early Anglo-Saxon England?

Yes. By using a range of statistical and spatial data, we are able to tease apart possible relationships between cremation and inhumation in early medieval England. The combination of Ripley's K and kernel density analysis provided data on the locations of clusters, which indicated potential household groups. By using chi-square, CA and corrgrams, significant relationships between artifacts and disposal types were determined. Finally, by combining the statistical and spatial data, and using Hot Spot analysis as a visual indicator, we were able to see that there were few artifact associations with spatial importance beyond those relating to cremation and inhumation. By doing this, we were able to propose possible relationships between cremation and inhumation at different scales. From the analysis of evidence, it is most likely that at each site the relationship between burial forms is defined by a range of factors that change over time. Based on previous research, there were six possible relationships between burial forms that were to be explored in the analysis. These included complementary, relational, differential, situation, oppositional and secondary.

From the outset, we can remove secondary and situational practices as possible reasons for the appearance of multiple burial forms. While we do not have data on each site regarding the burning of the human remains in cremation burials, it is highly unlikely that it was part of a secondary practice, and there has not been evidence of this for this period. Secondary burning of previously inhumed bones causes the bones to warp, crack and change in color in a different manner than when done on fleshed individuals (Symes et al. 2008:17). Further, cremation and inhumation are often in fairly equivalent numbers with similarities in grave goods, demography and space, suggesting that it was not done in specific situations for specific type of individuals, nor is there any contextual evidence to back this assertion.

A complementary relationship between forms is also unlikely given the evidence, with the exception of Alwalton. At Alwalton, younger individuals were more likely to be cremated, and older individuals were more likely to be inhumed. It is possible that those who hadn't achieved a specific age or life course may have been burned rather than buried. Given Williams (2003, 2014) arguments regarding cremation and the meaning of combs in this period, it is possible that the burning of the young was a way to transform them, or allow them a change they did not have in life. The unique addition of an unburnt comb may have aided in the process, allowing the individual to remake themselves or aid in the transformation. The high weight of the bones collected means that it is unlikely the bodies were divided in space like the example provided by Brück (2009), but they were spatially separate from the other burials. The external structure may act as a place for the deceased to reform and continue their transformation following the burning. Since older individuals had already completed their life and made their mark, this type of transformation may not have been necessary. However, this is simply a hypothesis based on arguments forwarded by Williams (2003, 2014), and does not hold true when we look at other cemeteries, and there are a number of graves for which we do not know the age of the individual- a factor that could potentially change this interpretation. While possible, a complementary relationship is unlikely, and no evidence for this was found at other cemeteries.

As has been argued in the discussion section, a relational and horizontal differential relationship between burial forms is more likely. The clustering of individuals into groups on the landscape, the internal variation of those clusters, and the composition of those groups, with most having one type of burial form dominant over the other, supports this. This study

demonstrated that inhumation and cremation do not necessarily represent fundamental distinctions between groups or traditions, and may not have been a major dividing factor within groups of the past. The addition of fire as an element to the funerary process was likely an important choice, but how different this choice was from inhumation was dictated at different scales within the family, household or community. People in early medieval England may have had different beliefs in how what consisted of a 'good death' and an appropriate burial, but they also allowed for variation in method, whether it was variation allowed within their community or even within their own household. We cannot assume that different disposal forms represent different mortuary programs or traditions, since they may have been allowable or seen on a continuum of behavior, and it is more likely that these disposal choices were different expressions of change within the same set of ritual behavior.

C. Changes in the Patterns of Co-occurrence at Different Scales

Research Question 3: Are there patterns or differences of spatial scale when examining co-occurrence in early Anglo-Saxon England, and what might these patterns mean?

Yes. In general, while the funeral behavior at these sites seems fairly similar on the surface, there are local differences in the funerary process for both cremation and inhumation. Comparison of burning on the cremated bone demonstrates that there were differences in temperature, duration, pyre construction and inclusion of pyre goods that may speak to broader differences social perceptions of what was considered 'completely burnt' and 'appropriate' in cremation burials, including how much bone to collect from the pyre and whether the remains should be placed in an urn and with what artifacts. Comparison of pyre

versus grave goods in cremation burials proved to be an important part of the analysis when comparing the sites, because it revealed variation in what was part of the initial funeral for the dead versus what was considered part of the commemoration and construction of the identity of one's deceased ancestor. Similarly, there was variation in the appropriate method of burial for inhumation, including presence and types of containers, amounts of grave goods, whether individuals were buried alone, the frequency of deviant burial, orientation and more. . All five sites were most likely to bury the dead in a supine and extended position in a single burial. Only Lechlade had high amount of multiple burials. Wasperton was the only site with a high amount of deviant burials, primarily decapitation. Few inhumation burials had coffins, although Mucking and Wasperton had the highest percentage with 49% and 22% respectively.

When we compare the spatial analyses for all five sites, the only pattern that remains consistent is that there is a tendency for individuals to be buried in clusters or groups with a range of grave goods, ages and sexes. This supports the idea that these clusters represent households or familial groups that had differences in internal social status and preferences for certain rituals. Interestingly, four of the five cemeteries, excluding Mucking, have a clear group that seems to prefer cremation, with others focusing more on inhumation with light dispersion of cremation.

As part of this analysis, one of the steps in answering this final question was to complete a statistical analysis of each site individually, as well as all five sites as a single sample. Recently, studies of early medieval England have been emphasizing the value of studying burial practices in this period top down through the creation of massive databases that combine data for dozens of sites into a single sample. Other than just seeing whether my five case study sites had

similarity, I wanted to determine whether analyzing them as a single dataset was an appropriate approach and would allow me to have a larger dataset to work from, as well as achieve similar results. The statistical analysis of all five sites combined concealed important variation about the sites. Objects that appear to be statistically significant among one burial type when analyzed as a single dataset are associated with both or with the other form in certain cemeteries. For example, miniature items are often associated with cremation, but were significant at Lechlade among inhumations. The behaviors occurring in this period are too complex and varied to be aggregated in a single study, and need to be examined individually.

Based on this, there are no broader regional arguments that we can make; behavior was occurring locally. This is an important conclusion, and has implications for future research during this period, because it demonstrated that the trends and patterns seen for the total sample were not necessarily representative of the local patterns, and therefore, does not provide a reliable measure of relationships between cremation and inhumation for this period.

II. Contributions and Implications for Studies of Co-occurrence

This dissertation makes a number of contributions, both to the broader study of co-occurrence in mortuary archaeology, and more specifically, study of cemeteries in early medieval England. These include setting a framework and method for researching this phenomenon, discussing the importance of scale in these studies, generating new questions, and demonstrating a need to examine sites using a 'bottom up' perspective.

A. Framework for analysis of co-occurrence cremation and inhumation

This dissertation demonstrates that we cannot make the assumption that cremation and inhumation are fundamentally different, and therefore can only be analyzed separately. In fact, they may be part of the same mortuary program and the behavior of the one may be shaped by the other. While the archaeological remains of cremation and inhumation appear fundamentally different, we cannot assume that they necessarily were to the living community who buried them. With this in mind, we need to record and catalogue cremation and inhumation in comparable ways, and note the qualities that are both similar and different.

This research sets a framework for further research into co-occurrence of cremation and inhumation, and provides a common language for discussion possible relationships between multiple forms of burial. By using the expanded multidimensional framework, we can compare the behavioral remains of cremation and inhumation, rather than focusing on the final deposits, and allow for equal study of both forms as potentially part of the same mortuary program. Additionally, this framework provide future researchers with common terminology for describing and discussing possible relationships between cremation and inhumation. In particular, it focuses on using the term co-occurrence to prevent any a prior association with ritual from being made. The terms complementary and relational were used by Brück (2009) and Williams (2014) respectively to describe their research into cremation and inhumation, and other terms, including differential, oppositional, situational and secondary are all common to discussions of burial. However, this study uses them as more general models and hypotheses for exploring possible relationships, and outlines the evidence that would be required.

Additionally, this study uses a unique combination of spatial and statistical analysis that allows for location of clusters in space and analyzes their internal composition. This technique that was first introduced by Sayer and Weinhold (2013) proved to be an important guide in learning more about the cemetery's makeup and the relationships between disposal types. By using Ripley's K and kernel density estimation for the cemetery as a whole, divided by time periods, and divided by disposal type, it was possible to determine where and when co-occurrence was taking place. Further, by combining this with Hot Spot Analysis, it was possible to look closer at the internal makeup of these clusters and determine whether there were any clear artifact associations that matched the group clusters.

B. Importance of assessing co-occurrence at the appropriate scale

The analysis of these five cemeteries revealed an important difference in how these cemeteries are discussed that has implications for future research. Co-occurrence was defined as the appearance of two forms of burial treatment in a cemetery during the same time period, but this did not take into account the different ways that mixing of burial types was occurring at different scales in time and space. While Mucking cemetery has co-occurrence at the cemetery and household level, this is not necessarily true for the other sites where there is some spatial and temporal differentiation in the disposal methods. The relationship between cremation and inhumation may vary by scale, with differences in choice of disposal of the individual dictated by their household affiliation, but broader variation in practice allowable within the cemetery. Determining this prior to analysis is an important step that changes the way that the sites are analyzed. While Lechlade and Wasperton are classified as bi-ritual sites, they only practice

inhumation and cremation together for a short period of the cemetery's occupation. By the turn of the 7th century, neither cemetery would be considered to exhibit co-occurrence, and should instead be classified as an inhumation cemetery. If these differences were better tracked and examined, we may have a better understanding for how burial practices changed more broadly through time and space in this period, and also be able to better understand the development of proto-kingdoms, as the changes in burial may speak to broader change in power and religion.

C. Comparison of burial practices generates new questions and creates more nuanced interpretation

By analyzing cremation and inhumation as part of a single mortuary tradition, it raised interesting questions that may not have previously been addressed and allows for more nuanced interpretation of this sites. For example, part of this research involved the comparison of burnt and unburnt materials in both cremation and inhumation graves. The presence of burnt material in inhumation burials and unburnt material in cremation burials may be a method of citing the other form of treatment and creating connections between individuals who were disposed in different methods (Sørenson and Bille 2008). Burnt material was found at both Mucking and Wasperton in inhumation burials, and was recovered in the backfill of a number of inhumation graves from all cemeteries. This burnt material could be both accidental and intentional, and further exploration of this is needed in order to continue improving our interpretation of the use of fire in this cemetery.

D. Need to examine variation and expression locally, not as part of unified dataset

Finally, this analysis brings into question whether having large-scale analyses of broad, diverse time periods is beneficial. This study demonstrates that grouping individual sites from this period into one large sample does not necessarily aid in the interpretation of co-occurrence, and may actually hide some patterns. For example, Alwalton's unique comb ritual overwhelmingly dominates this category, and gives the impression that combs in general are highly associated with cremation. While this is true for Worthy Park and Mucking, the opposite is true for Lechlade, where combs are more associated with inhumation. The interactions we are seeing in this time period are highly local, and broader studies of behavior, patterns and artifacts may not be the best option. While large scale studies can be important for determining broader patterns, they can also mask important local differences.

Increasingly, the study of mortuary archaeology in early medieval England is shifting towards larger scale studies of broad regions in order to address more general questions about social, economic and political change (Penn and Brugman 2007, Harke 1992, Stoodley 1999). This study demonstrates the value of examining sites at the local level rather than as part of a unified dataset. For the early medieval period in particular, we know that the ethnic makeup of these sites is highly diverse, and the burial practices support this. By combining them in a single dataset, we lose important local diversity, and mask the interesting narratives occurring at each site.

III. Future Research

In terms of future research, there are two primary directions that this project will take: 1) further analysis of co-occurrence in early medieval England, and 2) expansion of the approach to other regions and periods.

First, further investigation into funerary practices in early medieval England has the potential to be highly revealing about the broader social, political, economic and religious changes in this period. This dissertation provides a first step in what will be continued investigation into mortuary practices in this period as the integrated study of both cremation and inhumation has the potential to change previous interpretations. The research here focused on developing an approach to co-occurrence and teasing apart the material and spatial differences between cremation and inhumation. However, there is much work left to be done regarding the more theoretical and social implications of co-occurrence in this period. Further research is needed into the relationship between co-occurrence and the negotiation and production of memory and identities of the deceased in this period. Recent work by Semple (2013) and Williams (2006) has shown that the way that early medieval peoples negotiated their landscape, used ancient monuments, and buried the deceased has significant implications for better interpreting how identities were reconstructed and negotiated, the use of different 'technologies of remembrance' and relationships with deceased ancestors, and the perceptions of the dead. This study provides a suitable dataset for continued examination of these variables, and will be the next major step of research. Further, this research provides a template for expansion of the study to other cemeteries in this period and region. While the study demonstrated that analysis of all five cemeteries was not appropriate due to local

variation, the addition of other co-occurrence cemeteries to the sample could reveal similarities. Lechlade and Wasperton appear to have similarities in the presence of cremation as a small group within the larger inhumation cemetery, and analyzing more cemeteries like this may aid in interpretation. The study would also benefit from the addition of more cremation dominant cemeteries. Mucking was the only cemetery with majority cremation and provided a unique set of data. By adding more sites to the sample, we may find that there are broader patterns of note.

Second, the study of co-occurrence should be expanded to other time periods and regions in order to test whether the approach developed here can be used more broadly. Co-occurrence is found in Late Antique Europe, medieval Mongolia, Ancient Greece, and modern Western and Hindu cultures, to name a few. These are all possible areas for expansion of my approach and future research. Improvement of this type of phenomenon would greatly benefit the discipline. Interpretations of these types of sites usually end with one type of burial as the priority, and the other, usually cremation, playing a secondary role. By expanding this approach to other sites, we demonstrate the importance of not pre-dividing cremation and inhumation into separate categories, improve our studies of the past, and provide more reliable interpretations.

APPENDICES

APPENDIX A: DATA CODING GUIDE

This guide shares the coding scheme for the multidimensional analysis of cremation and inhumation burial practices for five case study cemeteries. All columns that are noted as Present/Absent are coded as either a 0 for absent or 1 for present. This coding was used for conducting statistical and spatial analysis- for the full catalog see Appendix B.

Cemetery

Individual = Individual #
- Ai = Alwalton Inhumation[1]
- Ac = Alwalton Cremation[1]
- Li = Lechlade Inhumation
- Lc = Lechlade Cremation
- Mi = Mucking Inhumation
- Mc = Mucking Cremation
- Wi = Wasperton Inhumation
- Wc = Wasperton Cremation
- WPi = Worthy Park Inhumation
- WPc = Worthy Park Cremation

Cemetery = Cemetery Name
- Awalton, Lechlade, Mucking, Wasperton or Worthy Park

Disposal = Type of body disposal
- Cremation or Inhumation

Period = Period of the Burial
- Pre = Prior to mid 5th c.
- Early = 5th to Early 6th c.
- Mid = 6th to Early 7th c.
- Late = Mid 7th and later

1. Treatment of the Body

Body_Pos = Body position
- 0 = Supine
- 1 = Side
- 2 = Prone
- 3 = Unknown
- 4 = Commingled/Disarticulated
- 5 = Sitting

Leg_Pos = Leg Position
0 = Extended
1 = Semi-Flexed
2 = Flexed
3 = Unknown
4 = Commingled/Disarticulated

Dev = Deviance Present/Absent

Dev_Type = Deviance Type
0 = Absent
1 = Decapitated
2 = Prone
3 = Stoned
4 = Amputated

2. Preparation of the Disposal Facility

Cont = Container Present/Absent

Cont_Type = Container Type
0 = Absent
1 = Coffin
2 = Urn

Line = Grave Lining Present/Absent

Line_Type = Grave Lining Type
0 = Absent
1 = Stone lining (including gravel and limestone)
2 = Burnt lining
3 = Straw lining
4 = Grass lining
5 = Pillow
6 = Mattress
7 = Wooden bier
8 = Stone cap
9 = Metal sheet

Ext_Struct = External Structure Present/Absent

3. Burial Context Within the Grave

Brooch	=	Brooch Present/Absent
Brooch1/2	=	Type of Brooch Present, Two Columns for Multiple Types
0	=	Absent
1	=	Fragments or unknown portions
2	=	Cruciform
3	=	Small long
4	=	Equal arm
5	=	Square head
6	=	Disc
7	=	Saucer
8	=	Button
9	=	Applied
10	=	Annular
11	=	Penannular
12	=	Great square head
13	=	Bow
14	=	Quoit
15	=	T-shaped
16	=	Supporting Arm
17	=	Composite
18	=	Lozenge
Brooch_Long	=	Long Brooch Type[2] Present/Absent
Brooch_Circ	=	Circular Brooch Type[3] Present/Absent
Brooch_Rom	=	Roman Brooch Present/Absent
Weapon	=	Weapon Present/Absent
W_Knife	=	Knife Present/Absent
W_Shield	=	Shield Present/Absent
W_Sword	=	Sword Present/Absent
W_Seax	=	Seax Present/Absent
W_Spear	=	Spear Present/Absent
W_Arrow	=	Arrow Present/Absent

W_Scab	=	Scabbard Present/Absent
W_Axe	=	Axe or Throwing Axe Present/Absent
Beads	=	Beads Present/Absent
Beads_No	=	Number of Beads
0	=	0
1	=	1-9
2	=	10-19
3	=	20-29
4	=	30-49
5	=	50-79
6	=	80-99
7	=	100-199
8	=	200+
Buckets	=	Bucket Present/Absent
Bowls	=	Bowl Present/Absent
Pots	=	Non-urn Pots Present/Absent
Urns	=	Urn Present/Absent
Toilet	=	Toilet Implements Present/Absent, Miniature or Full-size
Toilet_Mini	=	Miniature Toilet Implements Present/Absent
Fabric	=	Fabric Present/Absent
Nail_H	=	Hobnail Present/Absent
Nail_C	=	Coffin Nail Present/Absent
Nail_U	=	Unknown Nail Present/Absent
Buckles	=	Buckle Present/Absent
Combs	=	Comb Present/Absent, Miniature or Full-size
Combs_Mini	=	Miniature Comb Present/Absent

Chat	=	Chatelaine Present/Absent
Tools	=	Tools Present/Absent, Miniature or Full-size
Tools_Mini	=	Miniature Tools Present/Absent
Text_Tool	=	Textile Tool Present/Absent
Game	=	Gaming Piece Present/Absent
Frag	=	Fragments of Metal Present/Absent
Faunal	=	Faunal Remains Present/Absent
Pin	=	Pin Present/Absent
Ring	=	Ring Present/Absent
Purse	=	Pursemount or Purse Elements Present/Absent
Key	=	Key or Lock Present/Absent
RCoin	=	Roman Coin Present/Absent
Spoon	=	Spoon Present/Absent
Pendant	=	Pendant or Necklace Present/Absent
Armlet	=	Armlet or Bracelet Present/Absent
Shoe	=	Shoe Present/Absent
Latch	=	Latchlifter Present/Absent
Glass	=	Glass Present/Absent
Fossil	=	Fossil or Shell Present/Absent

4. Population Profile and Biological Dimensions

Age	=	Age of the individual
0	=	Fetal
1	=	Infant, under 2 years
2	=	Child, 2-10 years
3	=	Juvenile, 11-14 years
4	=	Subadult, unknown exact age
5	=	Adolescent, 15-17 years
6	=	Young Adult, 18-30 years
7	=	Adult, unknown exact age
8	=	Middle Adult, 31-45 years
9	=	Old Adult, 45+ years

Age_Dem		
0	=	Unknown
1	=	Infant (0-2 years)
2	=	Sub-adult (2-16 years)
3	=	Adult (17-40)
4	=	Mature (40+)

Sex	=	Sex of the individual
0	=	Male
1	=	Probable male
2	=	Indeterminate
3	=	Probable female
4	=	Female

Gender	=	Gender of the individual
0	=	Masculine
1	=	Probable masculine
2	=	Indeterminate
3	=	Probable feminine
4	=	Feminine

Sex/Gender	=	Sex of the individual
0	=	Male
1	=	Probable male
2	=	Indeterminate
3	=	Probable female
4	=	Female

Endnotes:

[1] Note: Individual number is based on the original excavation catalog number to allow for easy comparison. A letter corresponding to the cemetery was added to prevent overlap in numbering. Alwalton had the letter designation of F for the original catalog numbers- this was changed to A to correspond with the broader pattern of numbering.

[2] Long form includes Cruciform, Small long, Equal arm, Square head, Great square head, T-shaped, Supporting Arm

[3] Circular form includes Disc, Saucer, Button, Applied, Annular, Penannular, Quoit, Composite, Lozenge

APPENDIX B: MULTIDIMENSIONAL ANALYSIS CATALOG

In this appendix is the structure of the multidimensional analysis catalog that was used to organize data in a manner that allowed for direct comparison. Data was coded and simplified for statistical and spatial analysis, but this includes the full catalog columns that was used during the data collection and allowed for comparison of the two burial types.

Table 21: Multidimensional Analysis Catalog, Part I

Major Column	**Minor Column**	**Description**
General	Cemetery Name	
	Burial #	
	Type of Burial	Inhumation or Cremation
	Period	Pre, Early, Mid or Late
Treatment of the Body	Degree of Articulation	Degree of Articulation
		Specific Bone Moved
	Degree of Burning	Complete or Partial Burn
		Color of Burnt Bone
	Disposition of Burial	Body Position
		Burial Position
		Body Present
	MNI	MNI
	Mutilations/Modifications	Mutilation
		Deviance
	Completeness	Completeness
		Weight
	Burnt Bone	Presence
Preparation of Pre-Disposal	Form of the Pre-Disposal	Type
		Location
Preparation of Disposal	Form of the Facility	Burial Container
		Grave Lining
		Shape of Grave
		External Structures
	Orientation	Cardinal Direction of Facility
		Cardinal Direction of Body
	Location of the Disposal	Within or Outside Village
		Above or Below
	Location of the Grave	Location of the Grave
	Form of the Disposal Area	Cemetery
		Location Near Monument

Table 22: Multidimensional Analysis Catalog, Part II

Major Column	Minor Column	Description
Burial Context Within Grave	Form of Furniture	Container Presence
		Type of Container
		Preservation of Container
		Material of Container
		Matting
		Pillow or Head Rest
	Brooches	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Weapons	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
Burial Context Within Grave	Beads	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Buckets	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Bowls	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt

Table 23: Multidimensional Analysis Catalog, Part III

Major Column	Minor Column	Description
Burial Context Within Grave	Pots	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Toiletries	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Fabric	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Nails	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Buckles	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Combs	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt

Table 24: Multidimensional Analysis Catalog, Part IV

Major Column	Minor Column	Description
Burial Context Within Grave	Chatelaines	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Tools	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Textile Tools	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
	Other	Presence
		Number
		Types
		Location on Body
		Cultural Affiliation
		Burnt or Unburnt
Population Profile and Biological Dimensions	Age	
	Sex/Gender	Sex
		Gender
	Paleopathology	Pathology
		Trauma
		Cause of Death
	Nutrition	Nutritional Deficiencies
	Genetics	Non-metric Traits

APPENDIX C: RIPLEY'S K

I. Alwalton Ripley's K

Figure 53: Alwalton Ripley's K All Burials

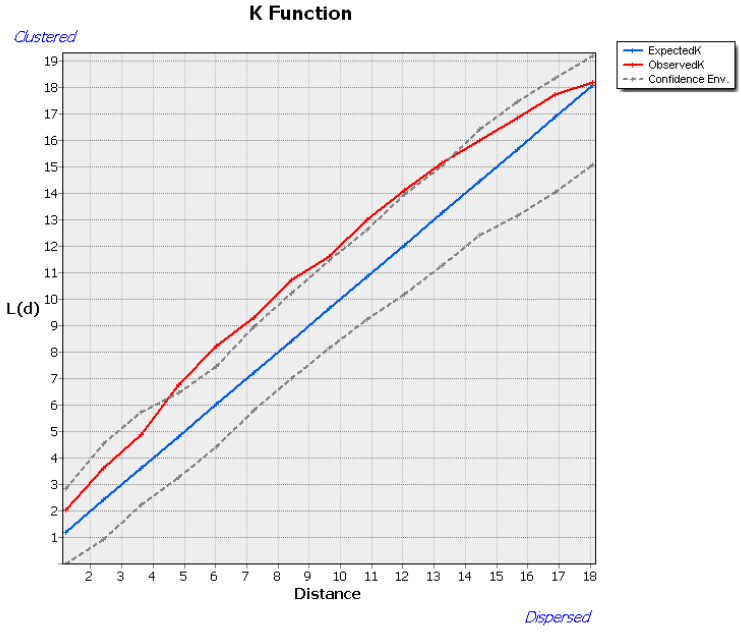


Figure 54: Alwalton Ripley's K All Burials Early Period

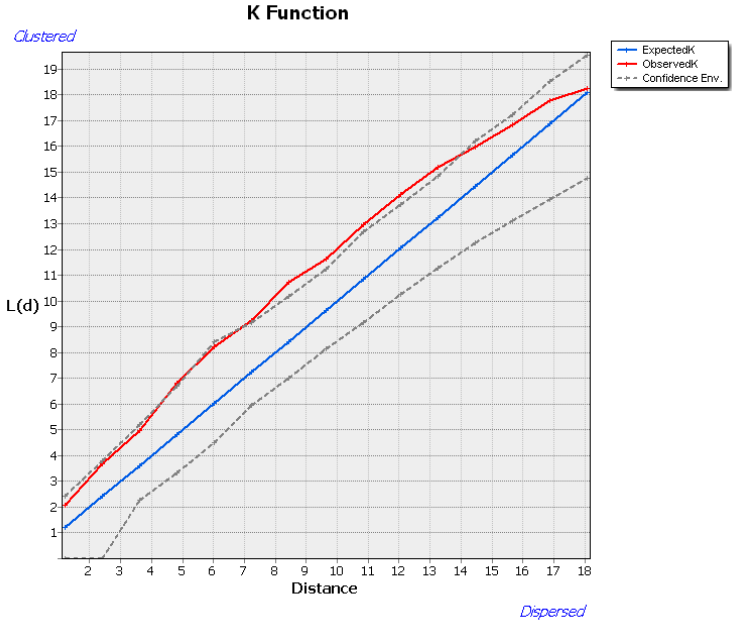


Figure 55: Alwalton Ripley's K All Burials Mid Period

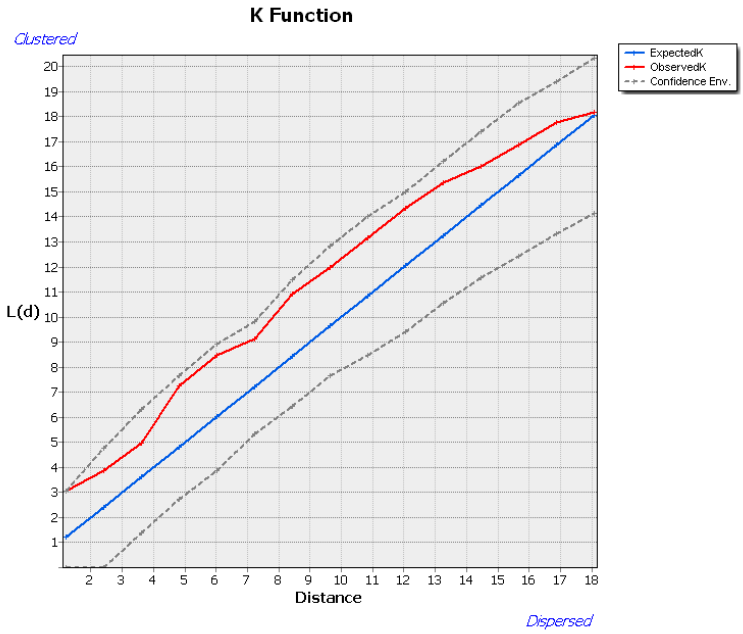


Figure 56: Alwalton Ripley's K Cremation All Periods

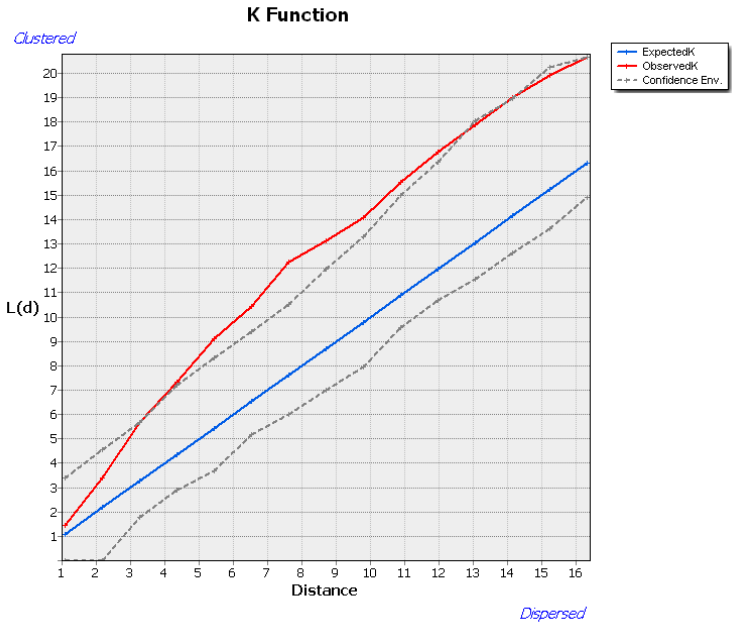
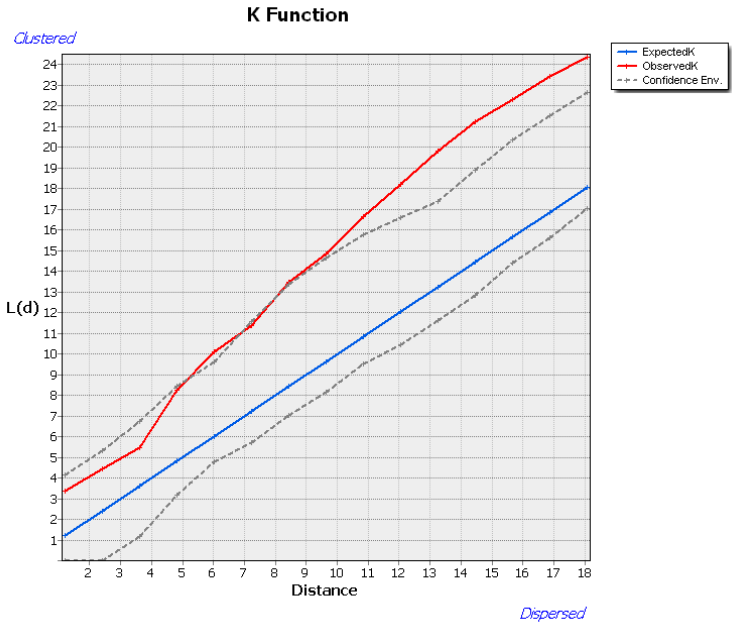


Figure 57: Alwalton Ripley's K Inhumation All Periods



II. Lechlade

Figure 58: Lechlade Ripley's K All Burials

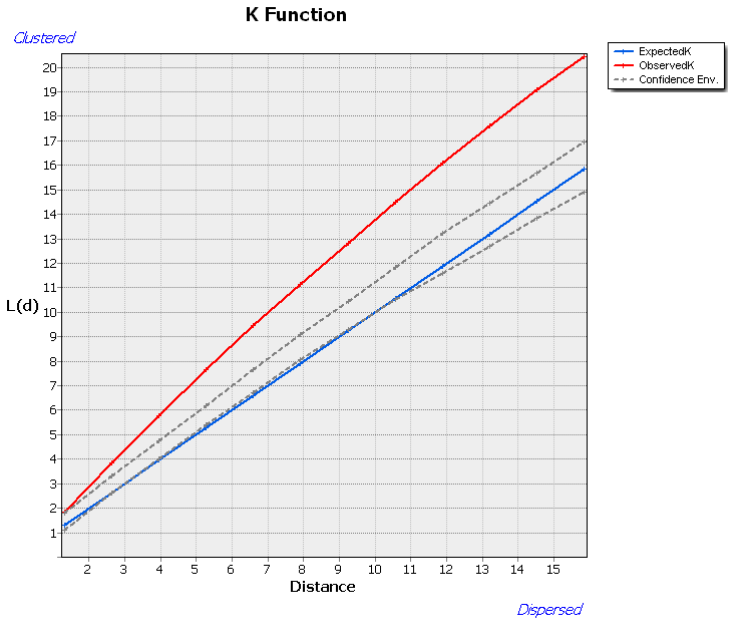


Figure 59: Lechlade Ripley's K All Burials Early Period

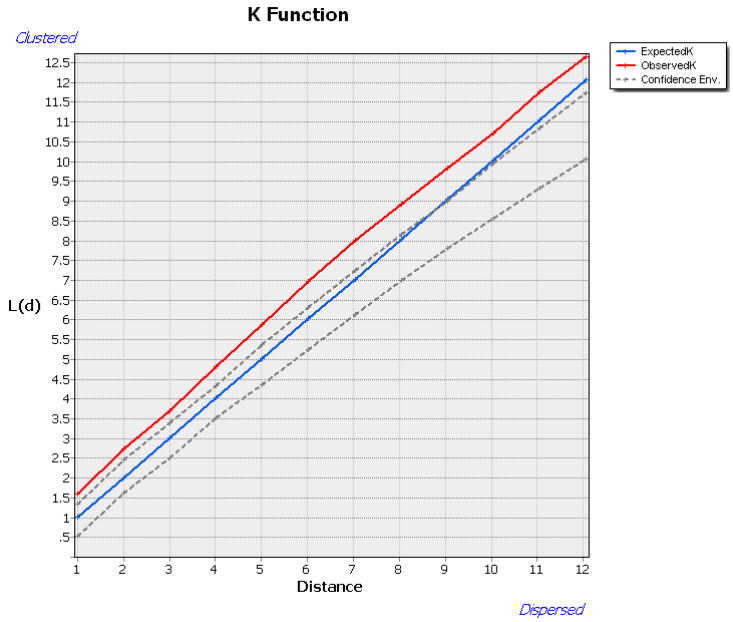


Figure 60: Lechlade Ripley's K Cremation All Periods

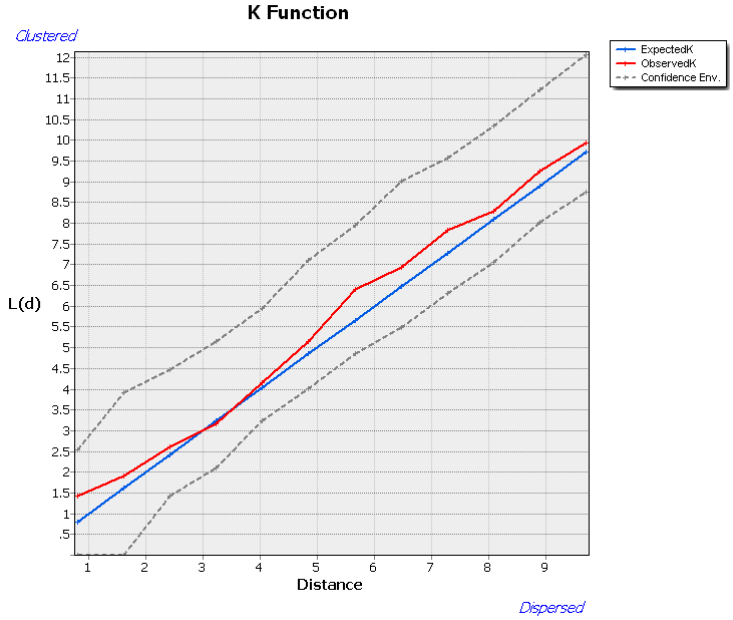


Figure 61: Lechlade Ripley's K Inhumation All Periods

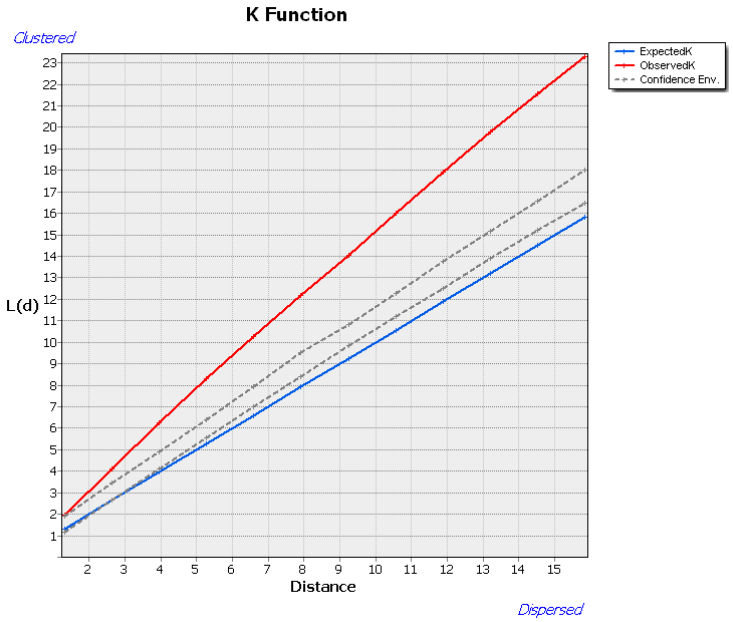
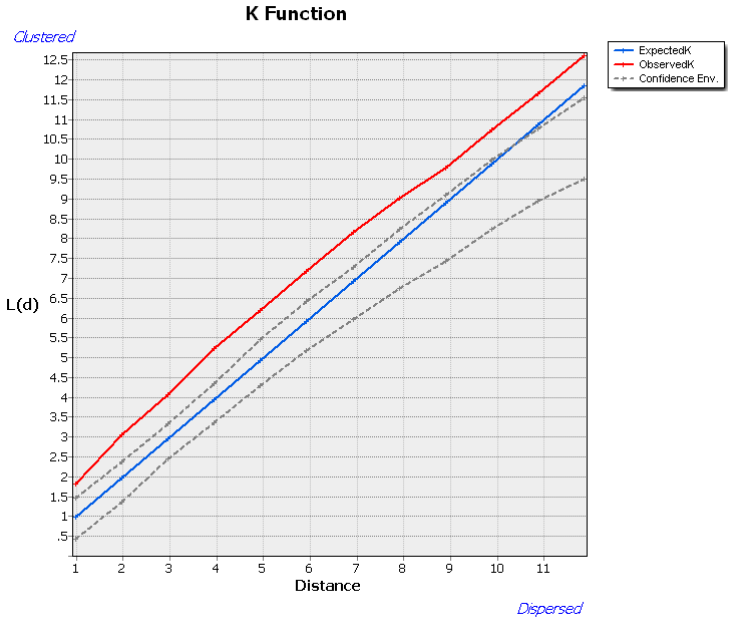


Figure 62: Lechlade Ripley's K Inhumation Early Period



III. Mucking

Figure 63: Mucking Ripley's K All Burials

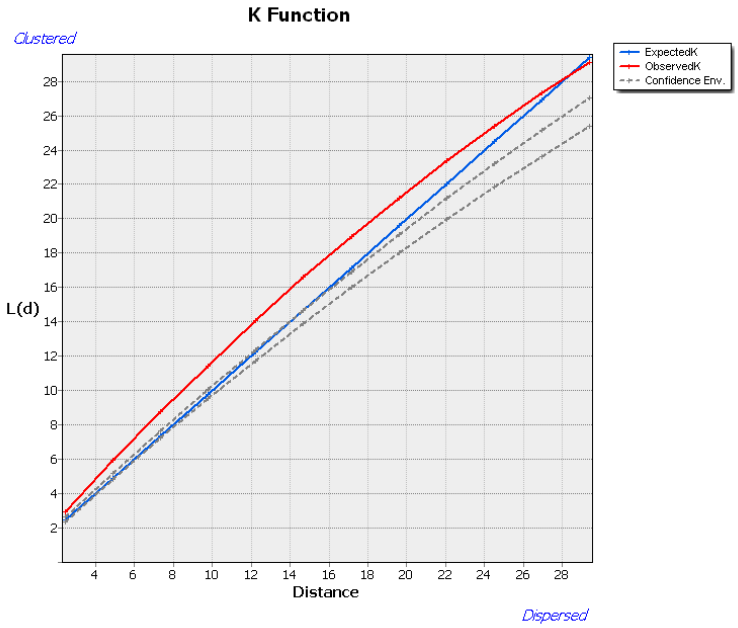


Figure 64: Mucking Ripley's K All Burials Early Period

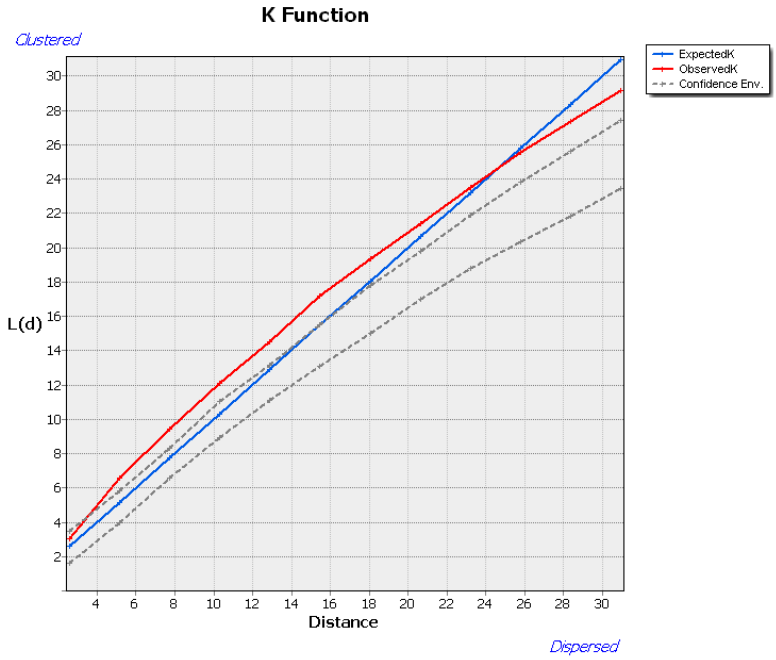


Figure 65: Mucking Ripley's K All Burials Mid Period

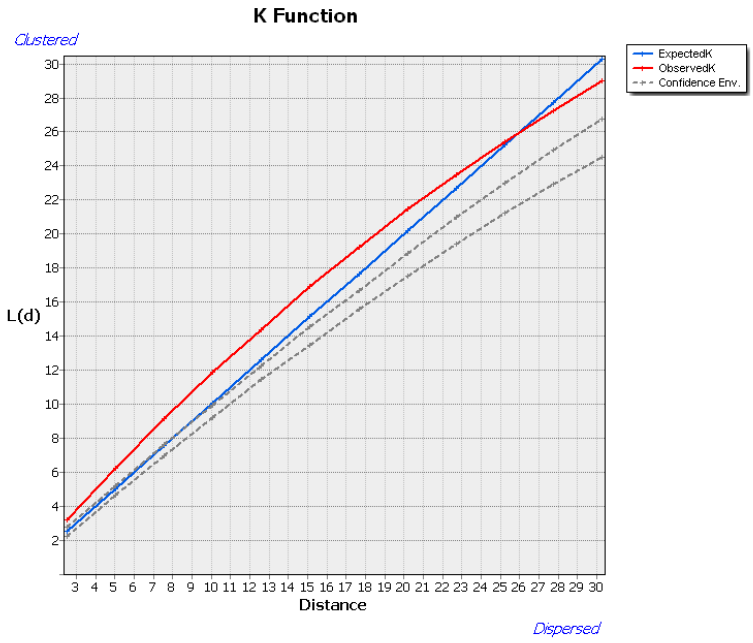


Figure 66: Mucking Ripley's K All Burials Late Period

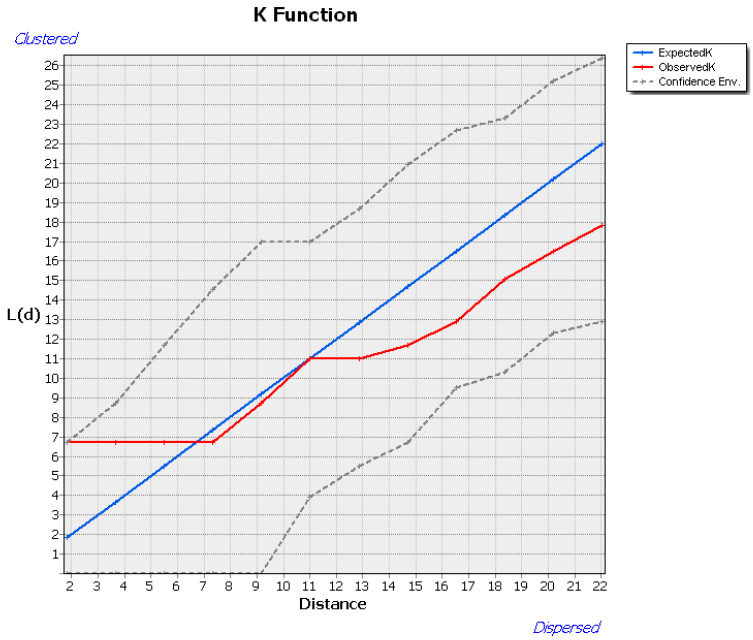


Figure 67: Mucking Ripley's K Cremation All Periods

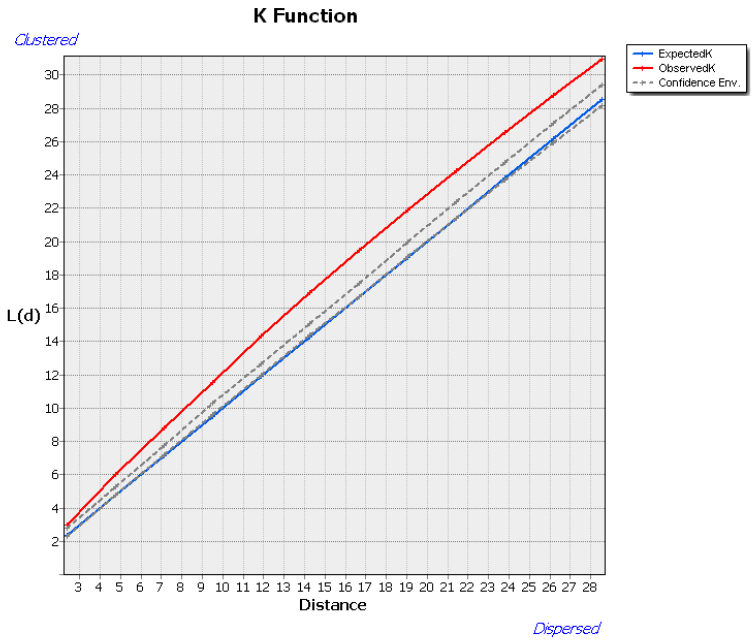
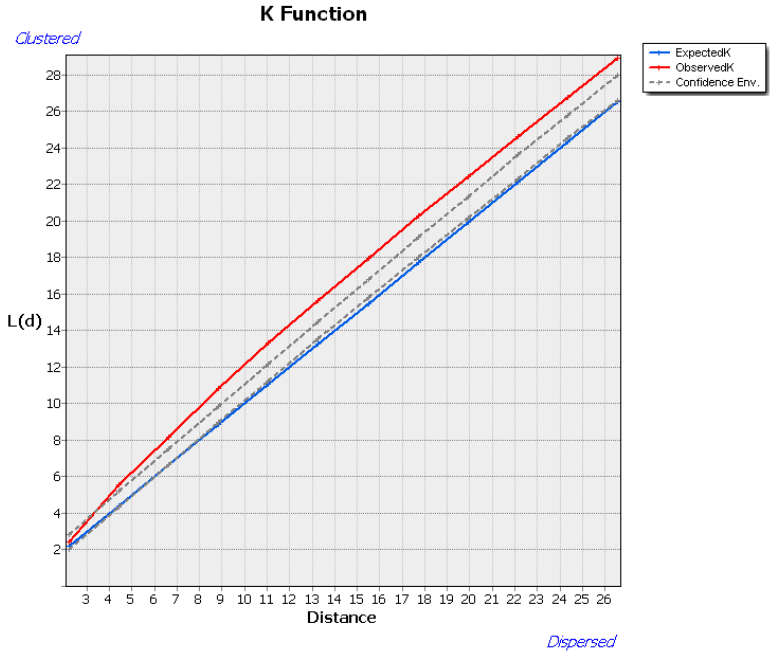


Figure 68: Mucking Ripley's K Inhumation All Periods



IV. Wasperton

Figure 69: Wasperton Ripley's K All Burials

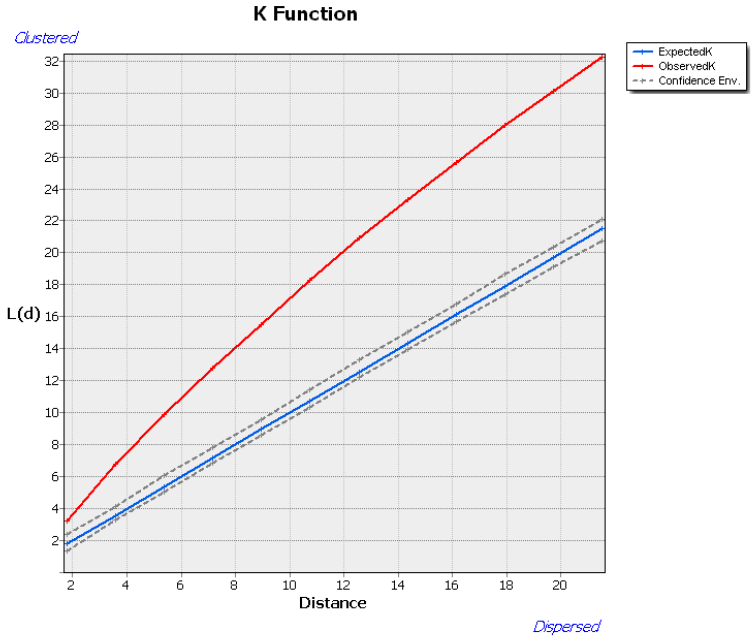


Figure 70: Wasperton Ripley's K All Burials Roman Period

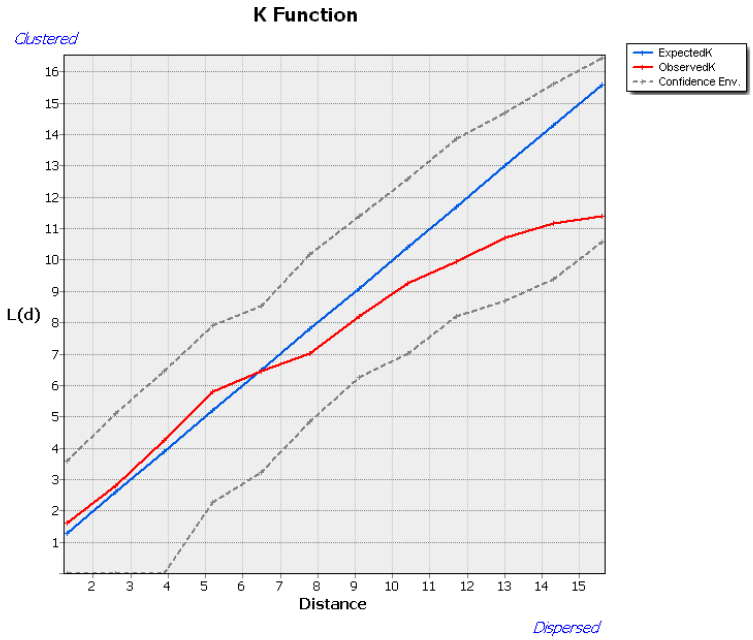


Figure 71: Wasperton Ripley's K All Burials Early Period

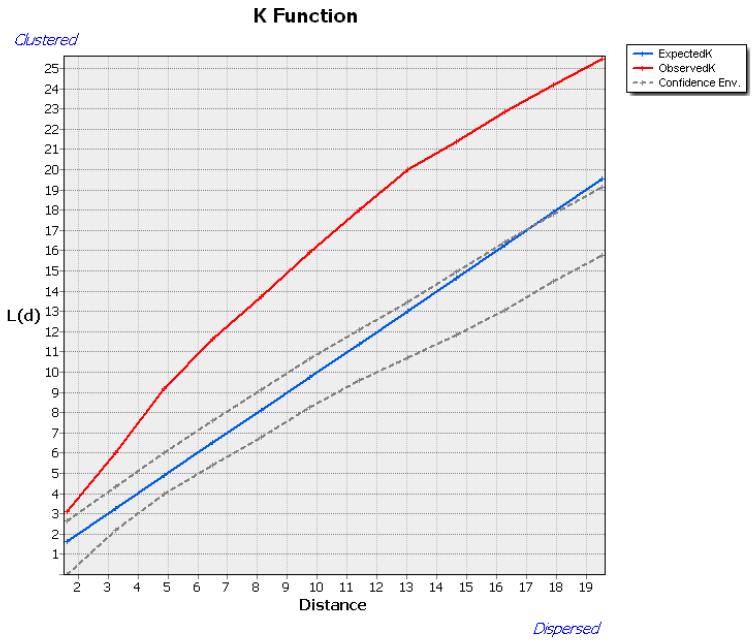


Figure 72: Wasperton Ripley's K All Burials Mid Period

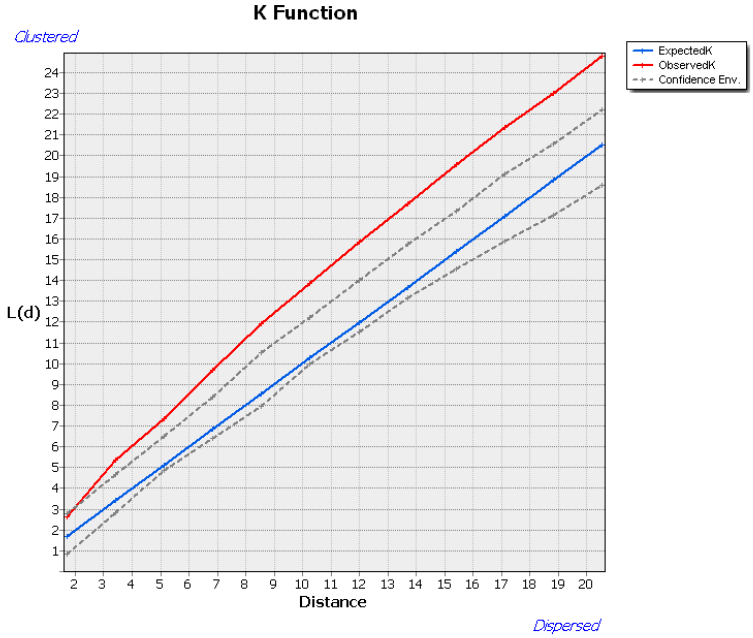


Figure 73: Wasperton Ripley's K Cremation All Burials

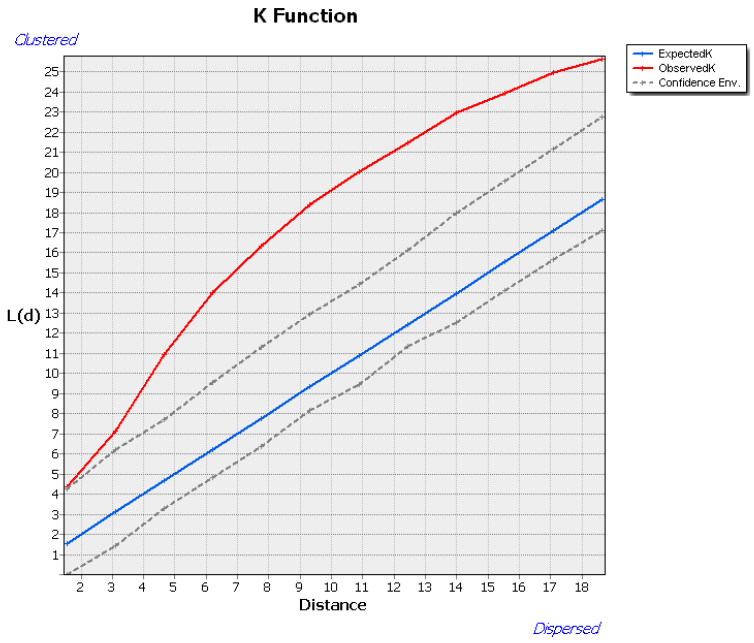
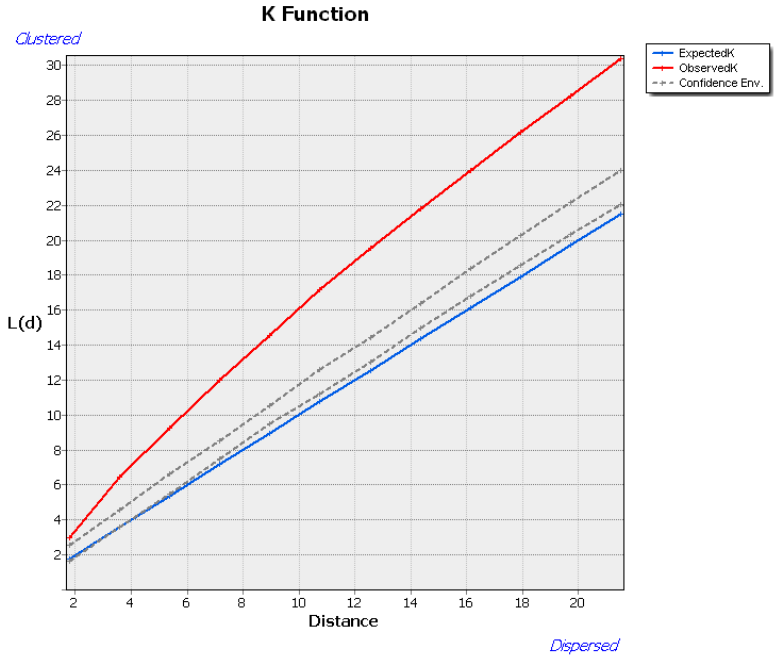


Figure 74: Wasperton Ripley's K Inhumation All Burials



V. Worthy Park

Figure 75: Worthy Park Ripley's K All Burials

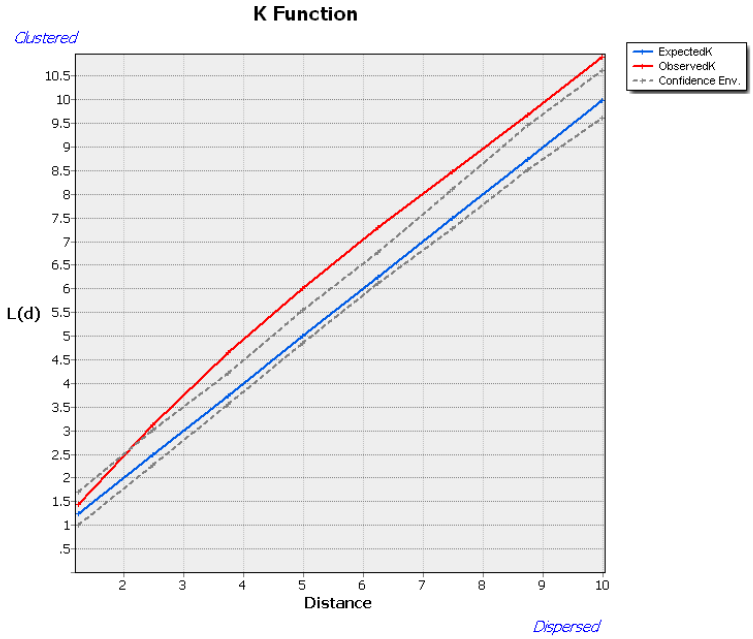


Figure 76: Worthy Park Ripley's K All Burials Early Period

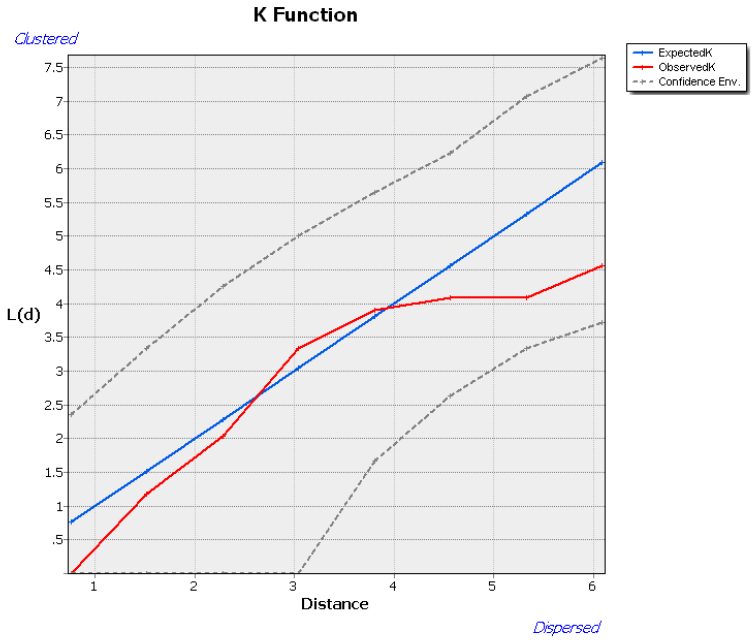


Figure 77: Worthy Park Ripley's K All Burials Mid Period

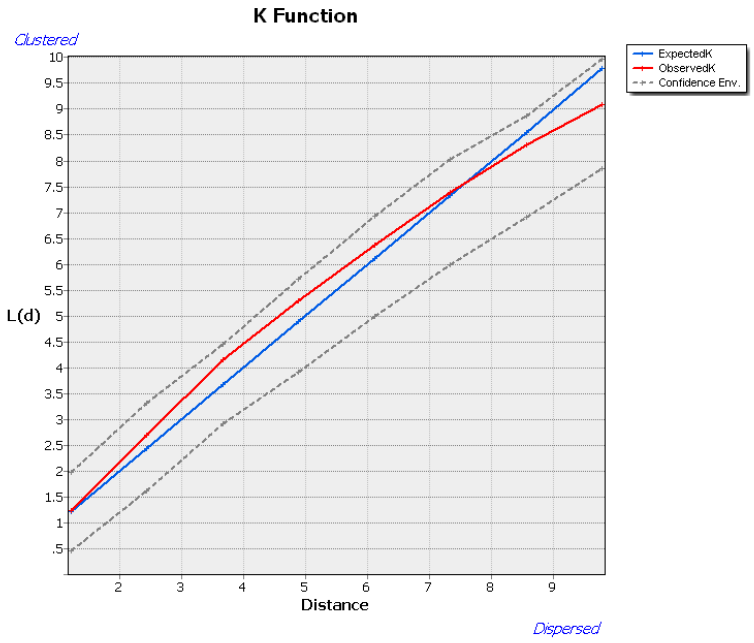


Figure 78: Worthy Park Ripley's K All Burials Late Period

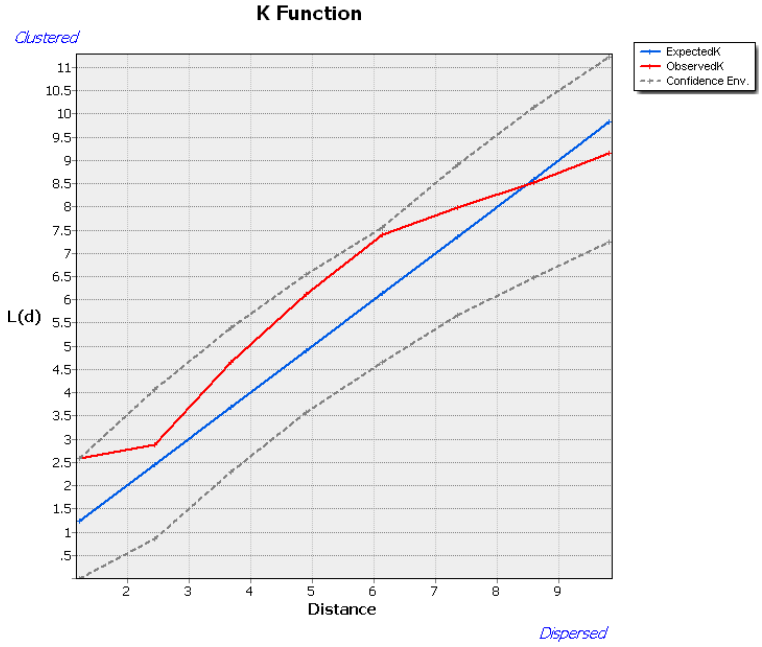


Figure 79: Worthy Park Ripley's K Cremation All Periods

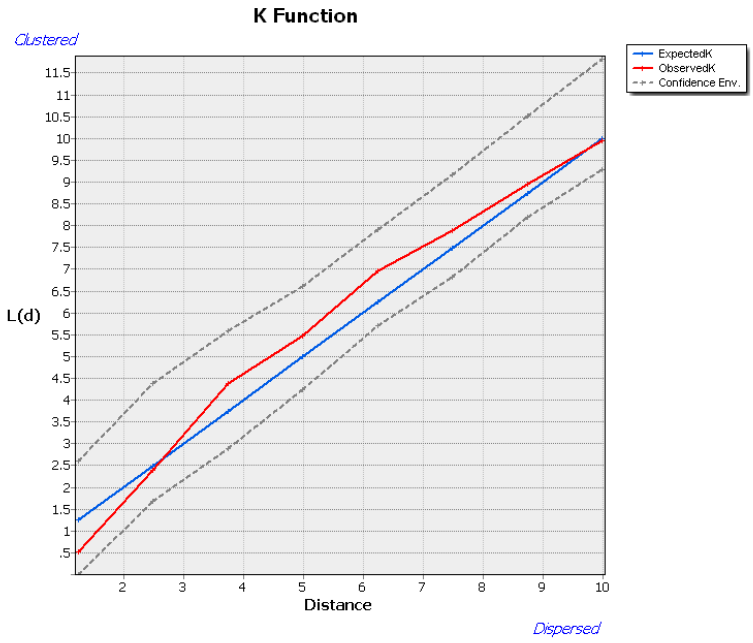
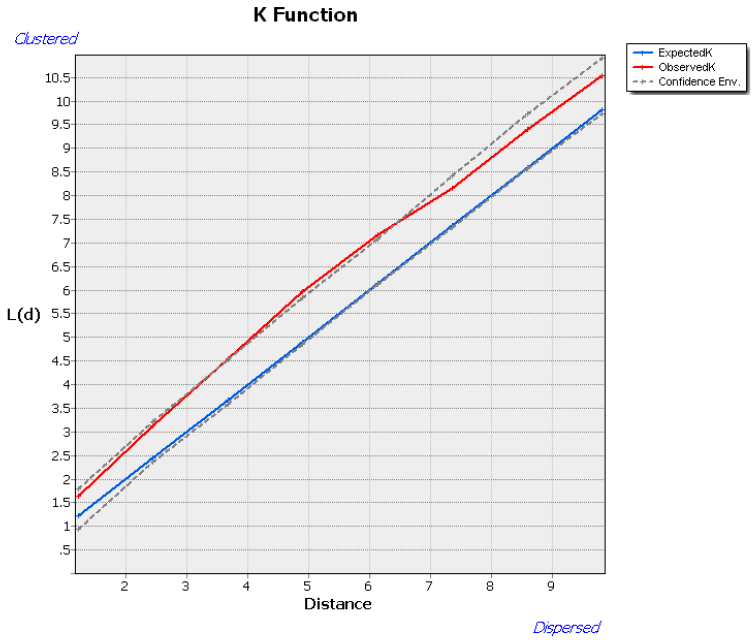


Figure 80: Worthy Park Ripley's K Inhumation All Periods



APPENDIX D: KERNEL DENSITY MAPS

Figure 81: Alwalton Kernel Density by Disposal Type, Both are at 7m

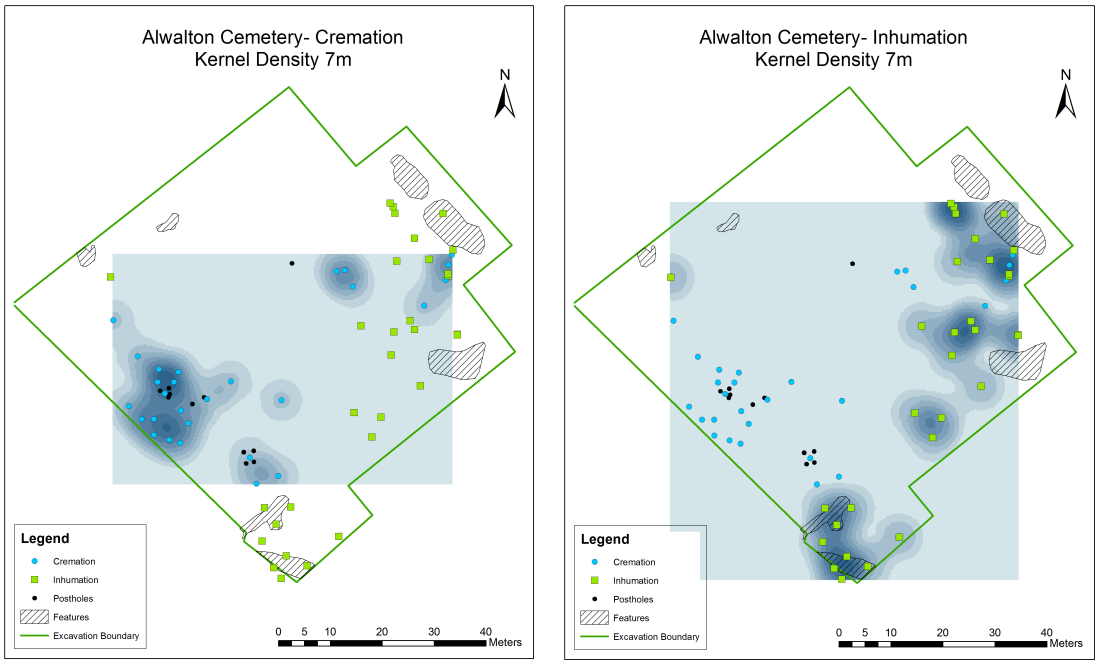


Figure 82 Lechlade Kernel Density by Disposal Type, Cremation at 5.75m, Inhumation at 7m

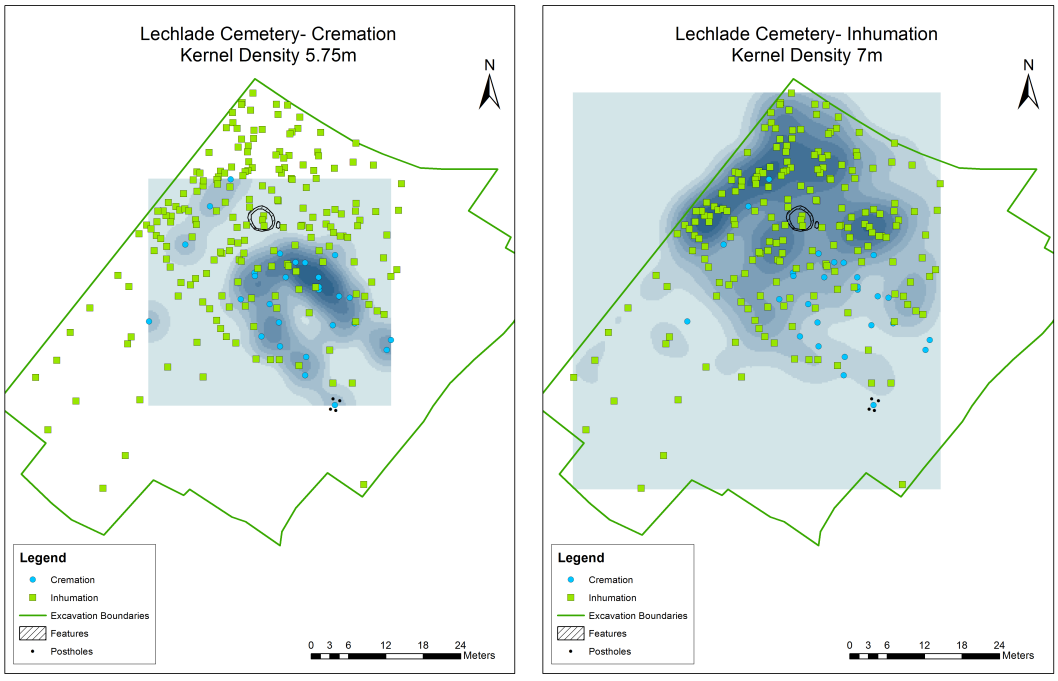
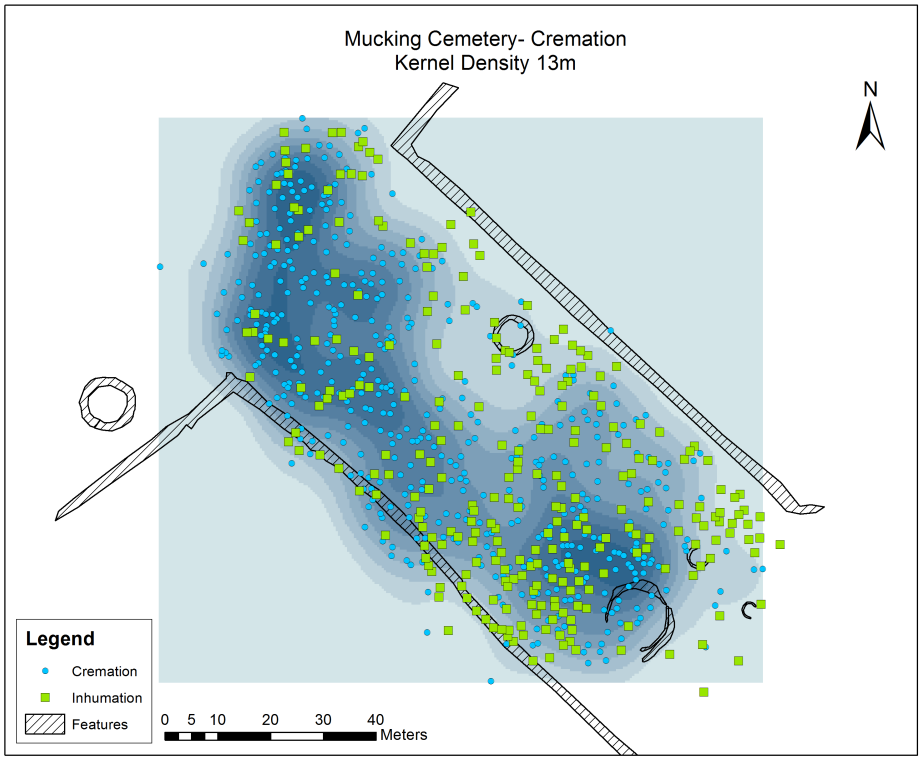


Figure 83: Mucking Kernel Density by Disposal Type, Both are at 13m



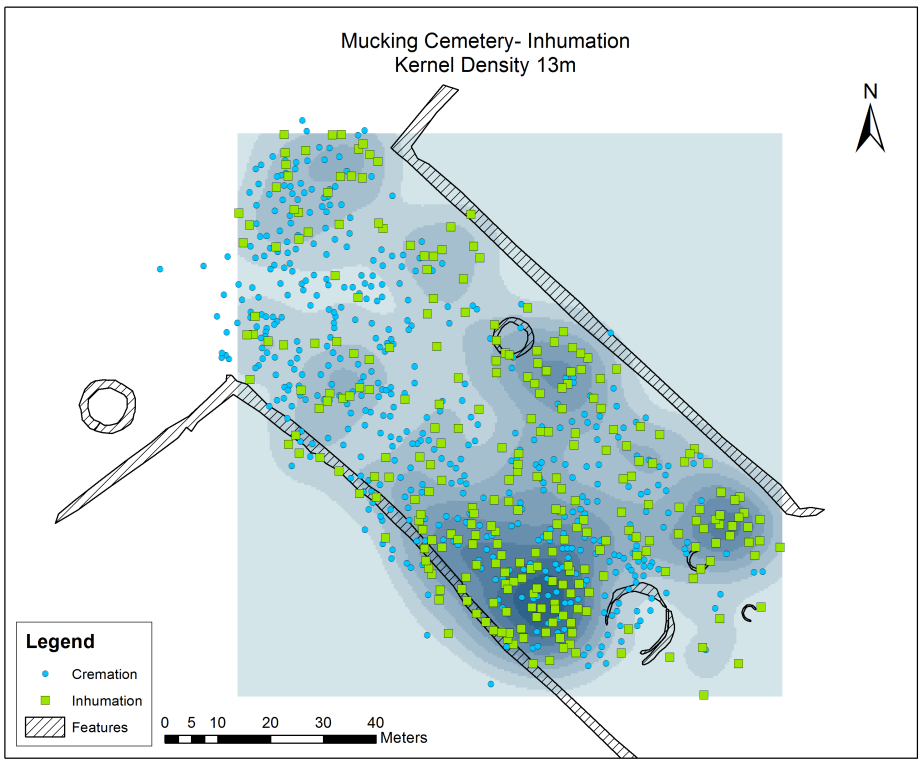
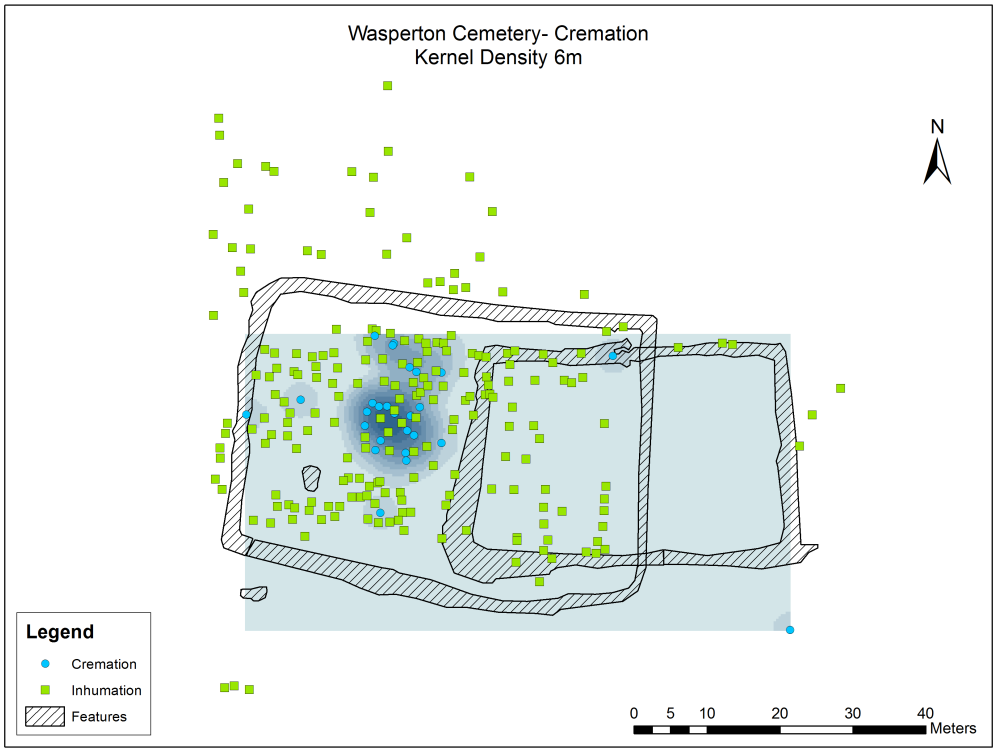


Figure 84: Wasperton Kernel Density by Disposal Type, Both are at 6m



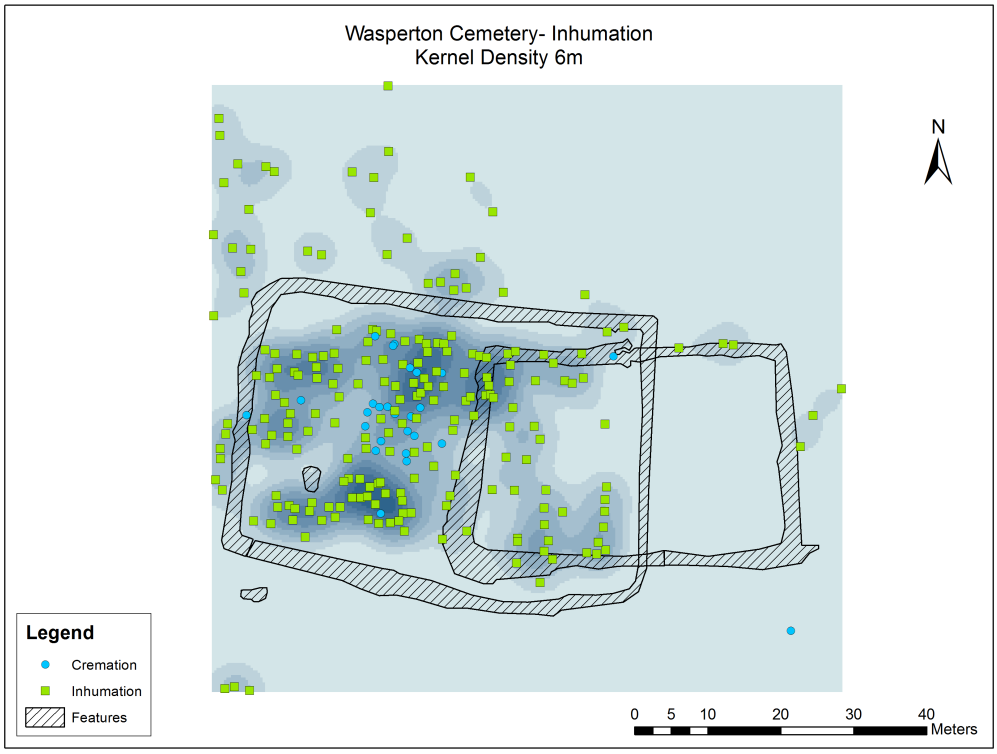
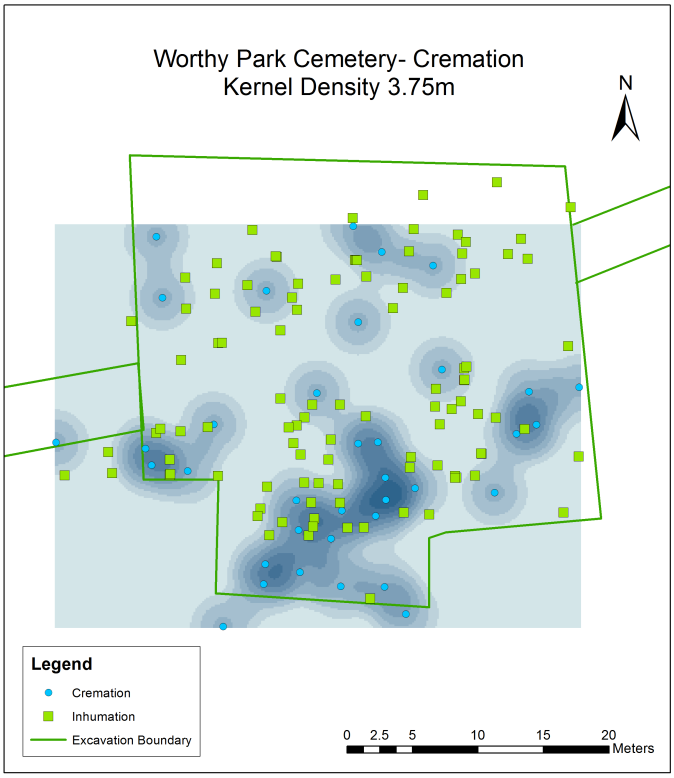
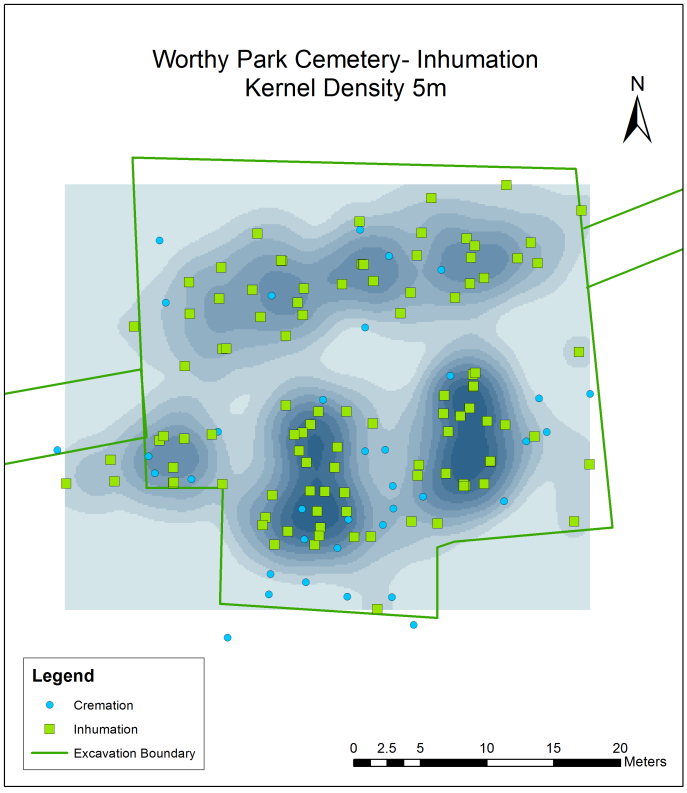


Figure 85: Worthy Park Kernel Density by Disposal Type, Cremation at 3.75m, Inhumation at 5m





APPENDIX E: HOT SPOT ANALYSIS

I. Alwalton Hot Spot Analysis

Figure 86: Alwalton Hot Spot Analysis Combs

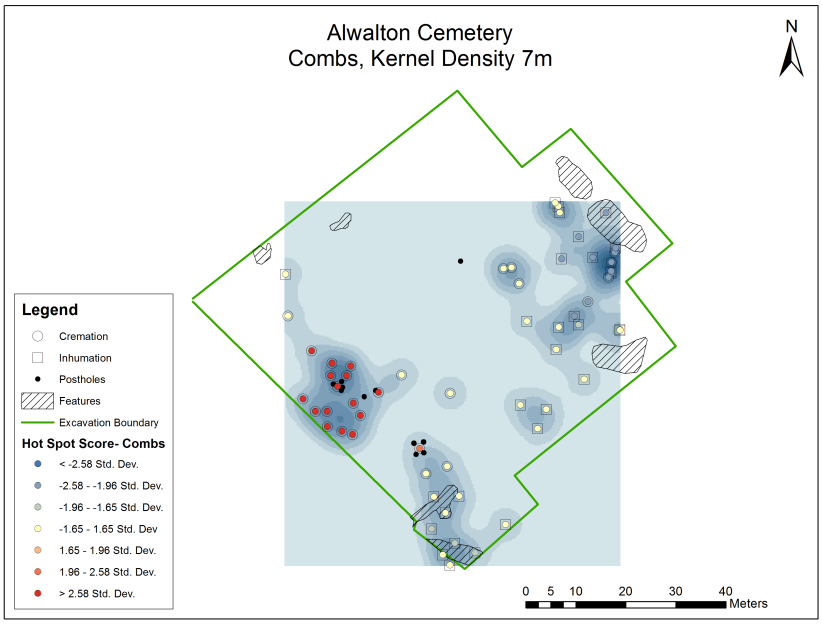


Figure 87: Alwalton Hot Spot Analysis Containers

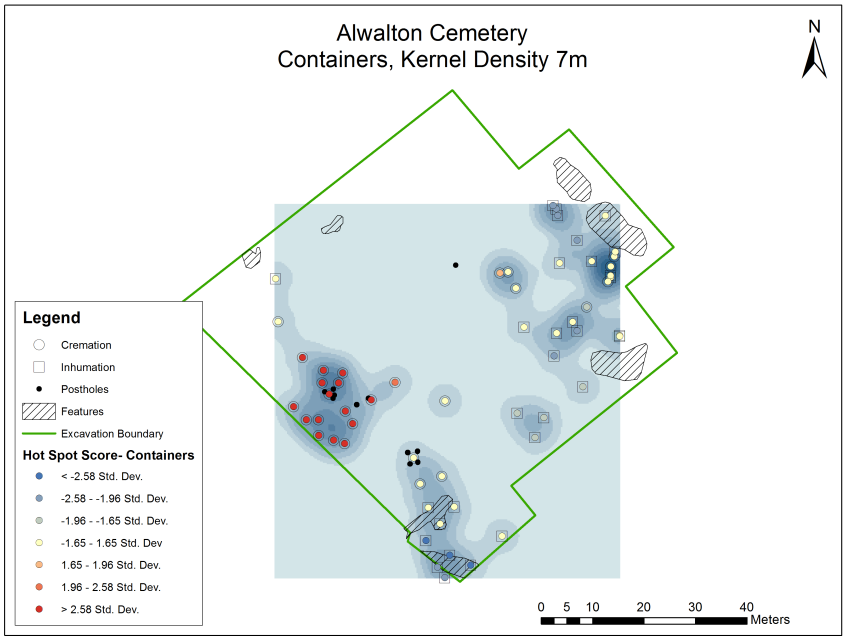


Figure 88: Alwalton Hot Spot Analysis Knives

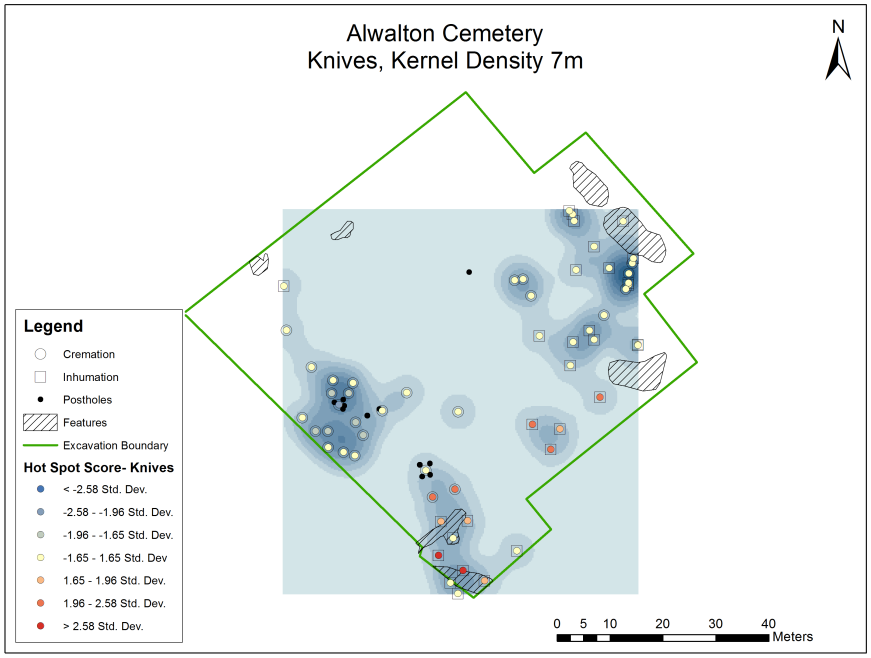
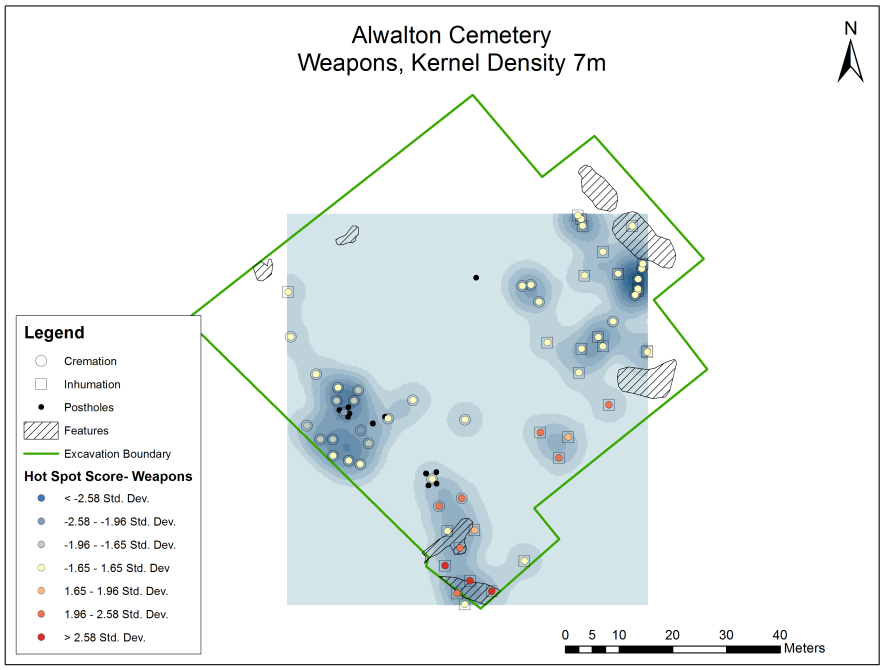


Figure 89: Alwalton Hot Spot Analysis Weapons



II. Lechlade

Figure 90: Lechlade Hot Spot Analysis Beads

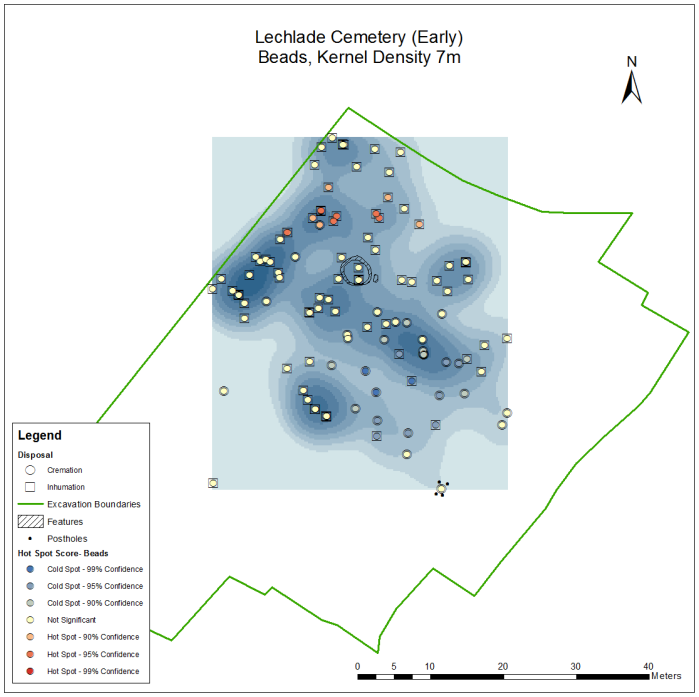


Figure 91: Lechlade Hot Spot Analysis Containers

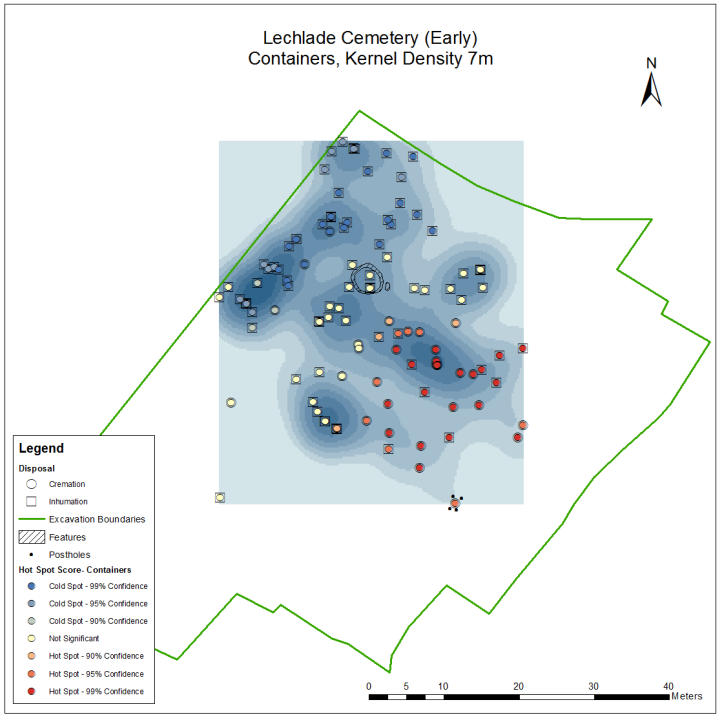


Figure 92: Lechlade Hot Spot Analysis Toilet Implements

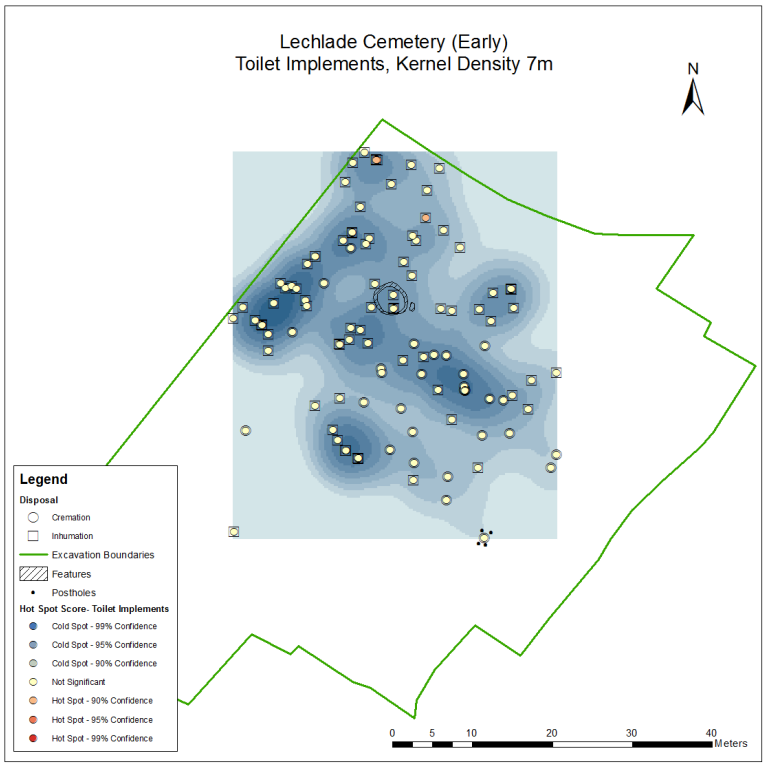
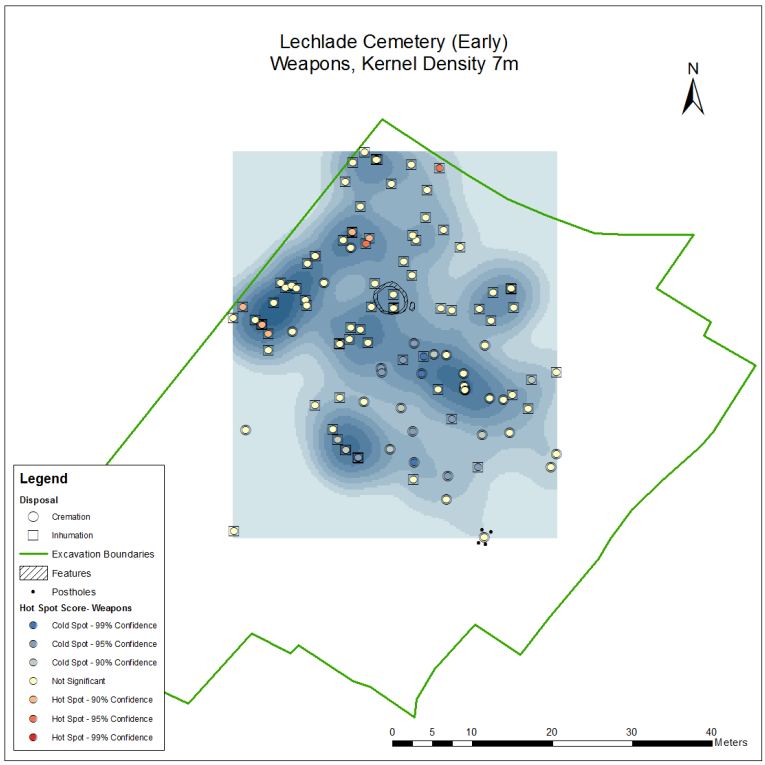


Figure 93: Lechlade Hot Spot Analysis Weapons



III. Mucking

Figure 94: Mucking Hot Spot Analysis Beads

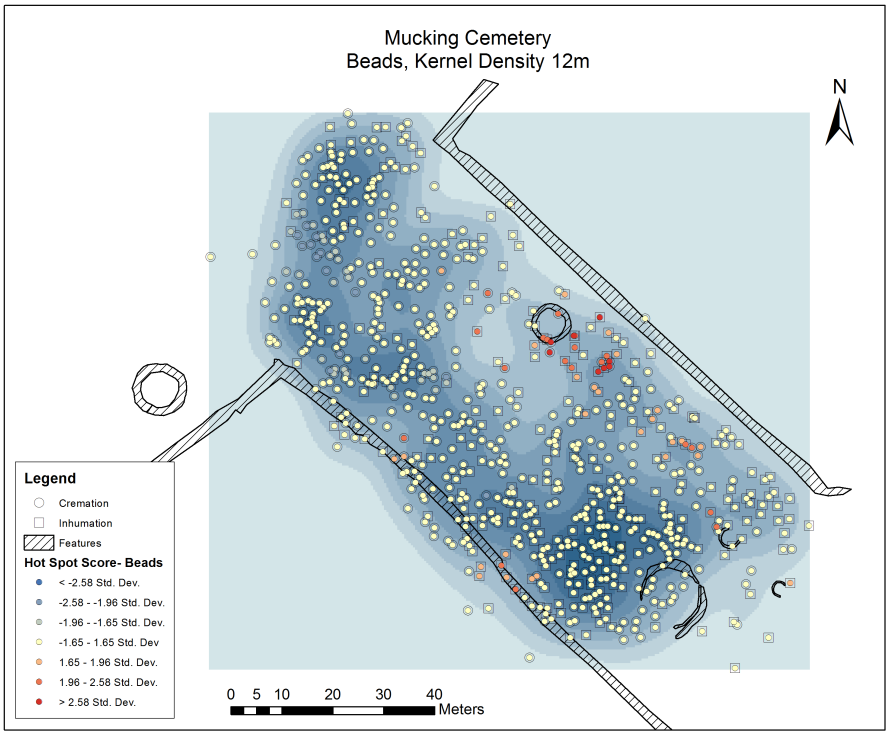


Figure 95: Mucking Hot Spot Analysis Brooches

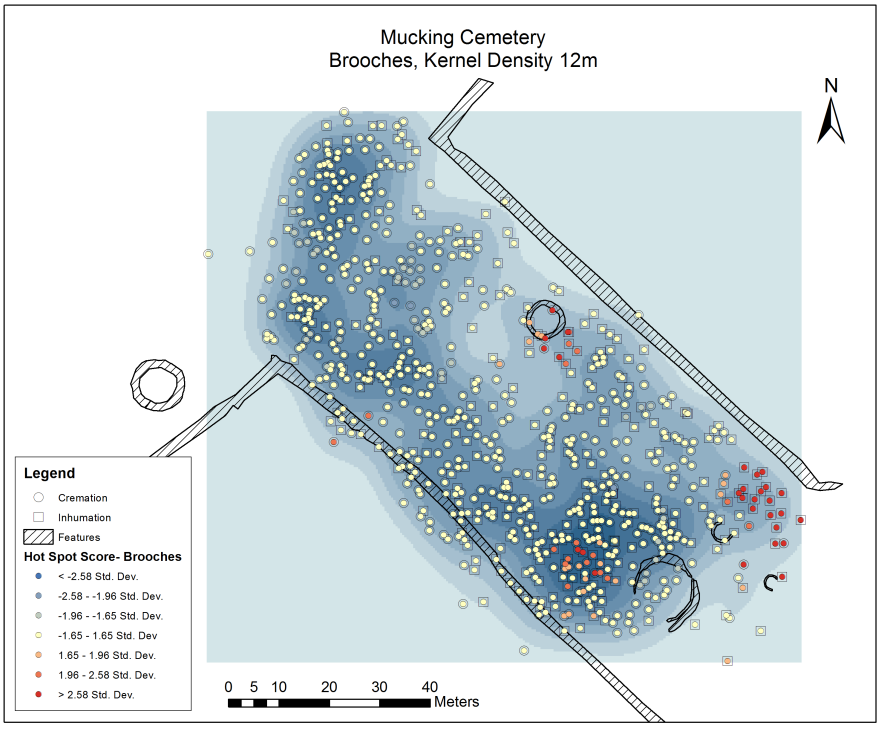


Figure 96: Mucking Hot Spot Analysis Buckles

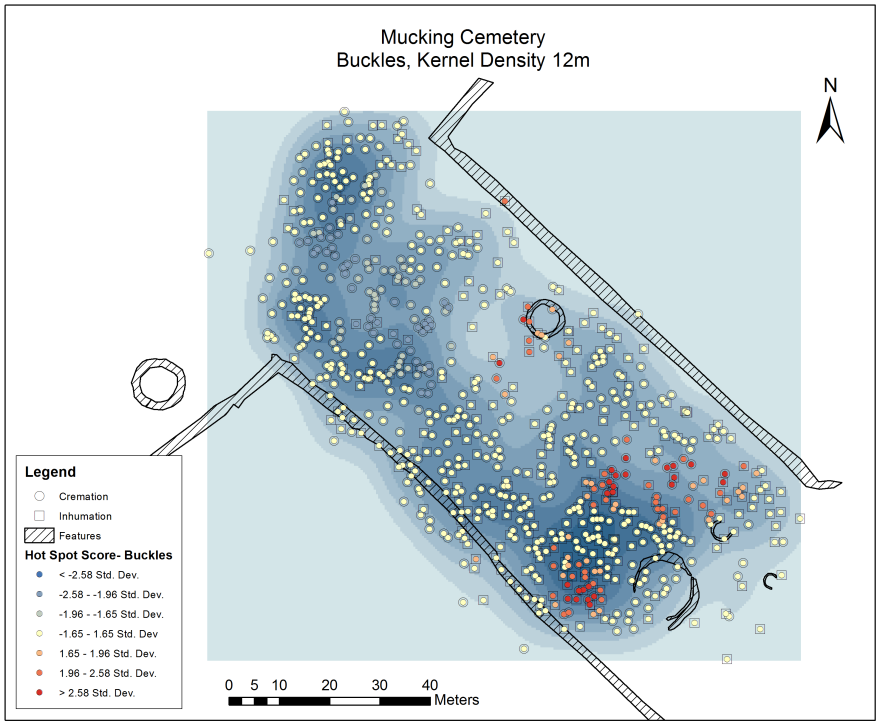


Figure 97: Mucking Hot Spot Analysis Combs

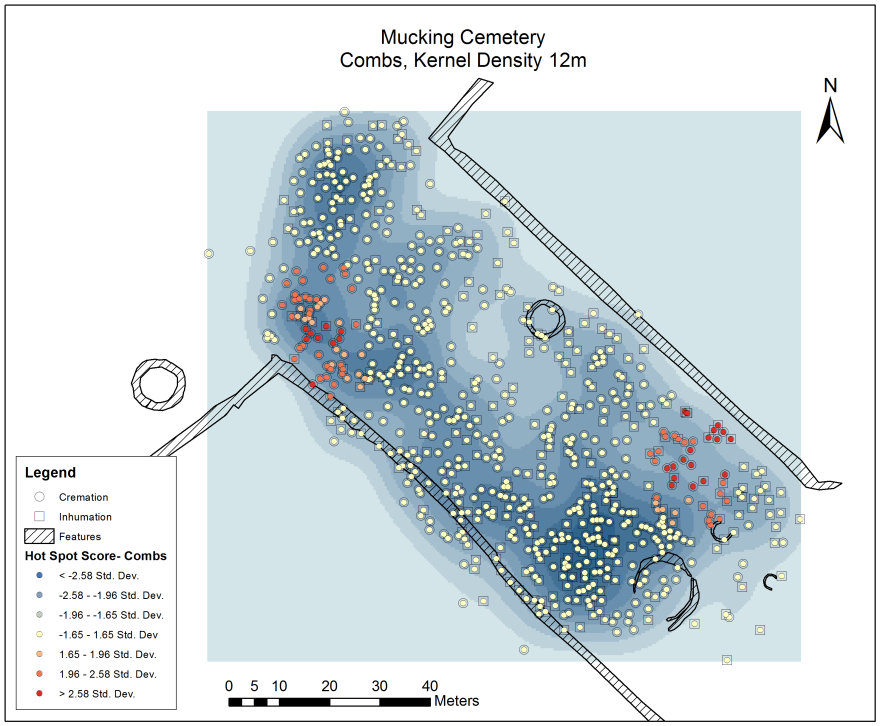


Figure 98: Mucking Hot Spot Analysis Containers

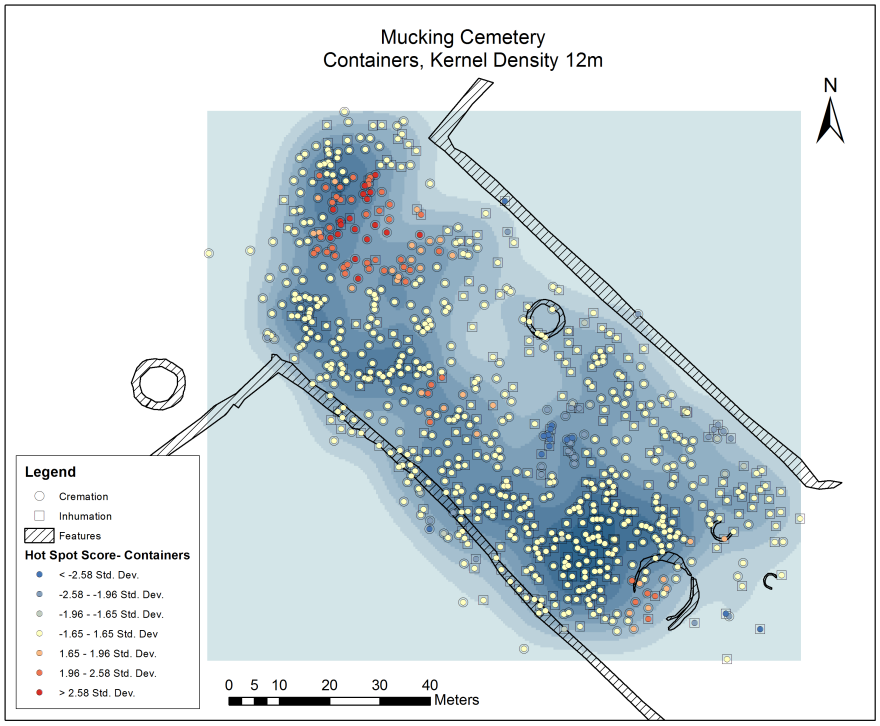


Figure 99: Mucking Hot Spot Analysis Knives

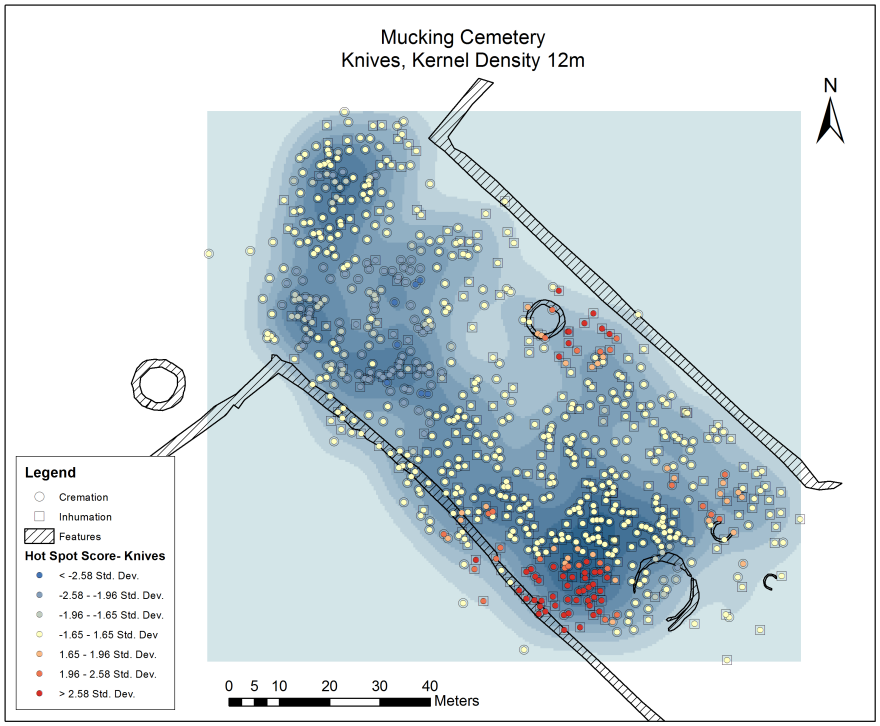


Figure 100: Mucking Hot Spot Analysis Pins

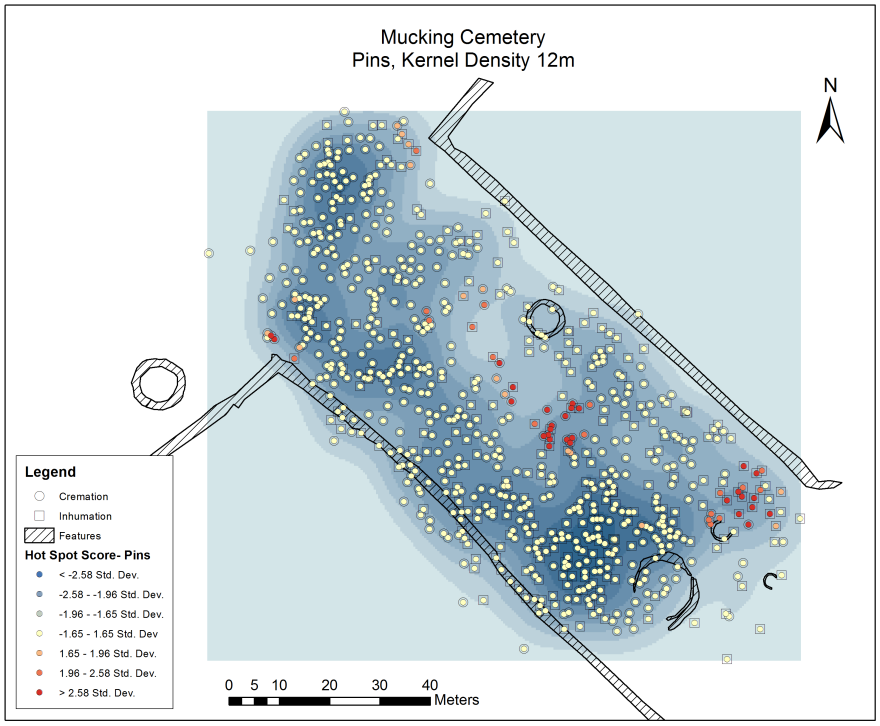


Figure 101: Mucking Hot Spot Analysis Rings

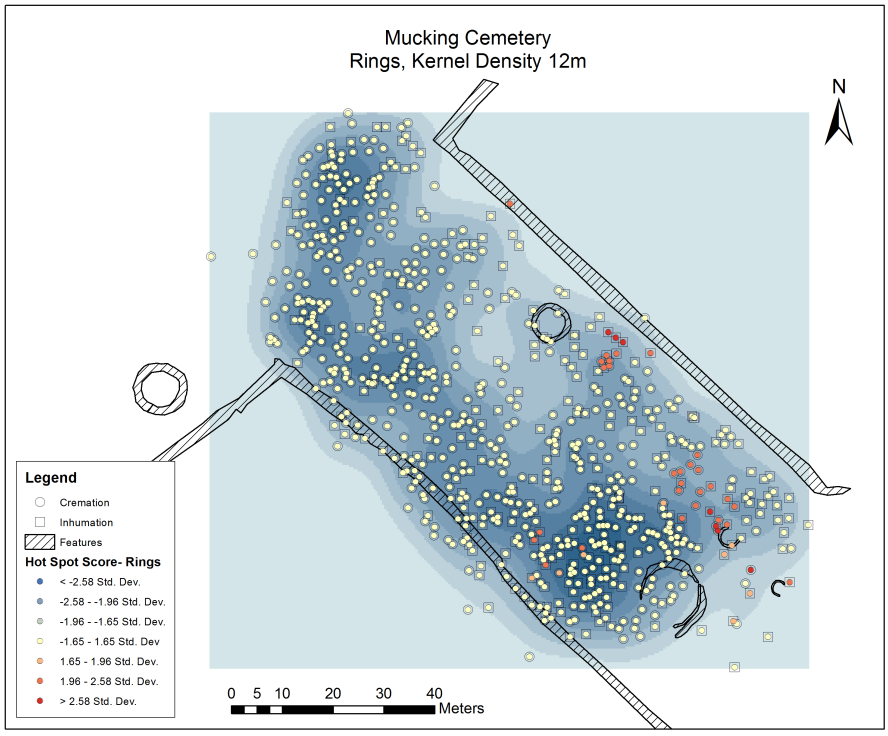


Figure 102: Mucking Hot Spot Analysis Toilet Implements

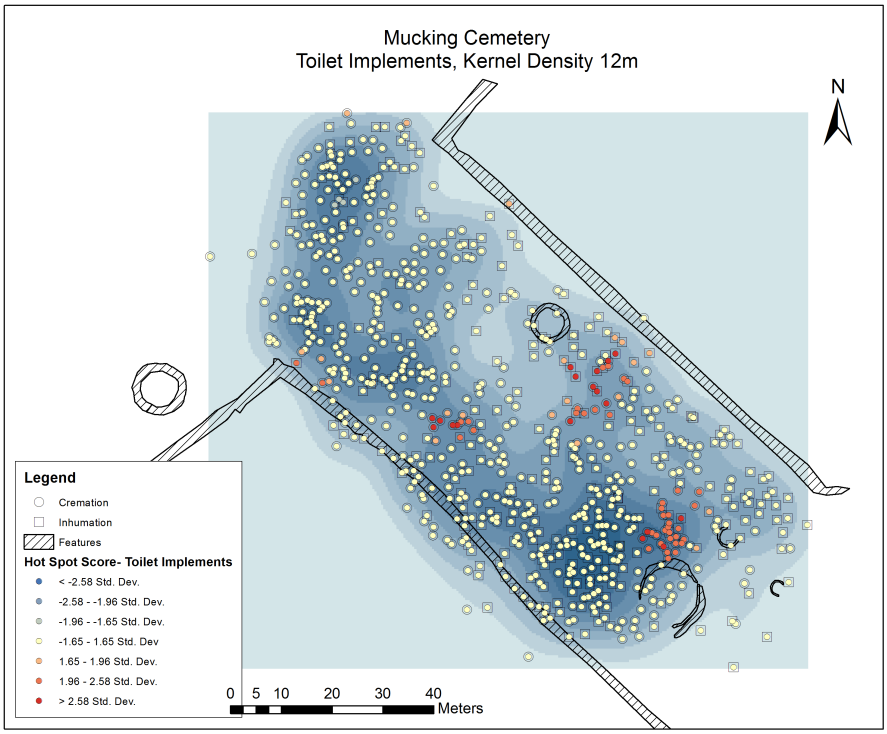


Figure 103: Mucking Hot Spot Analysis Weapons

IV. Wasperton

Figure 104: Wasperton Hot Spot Analysis Containers

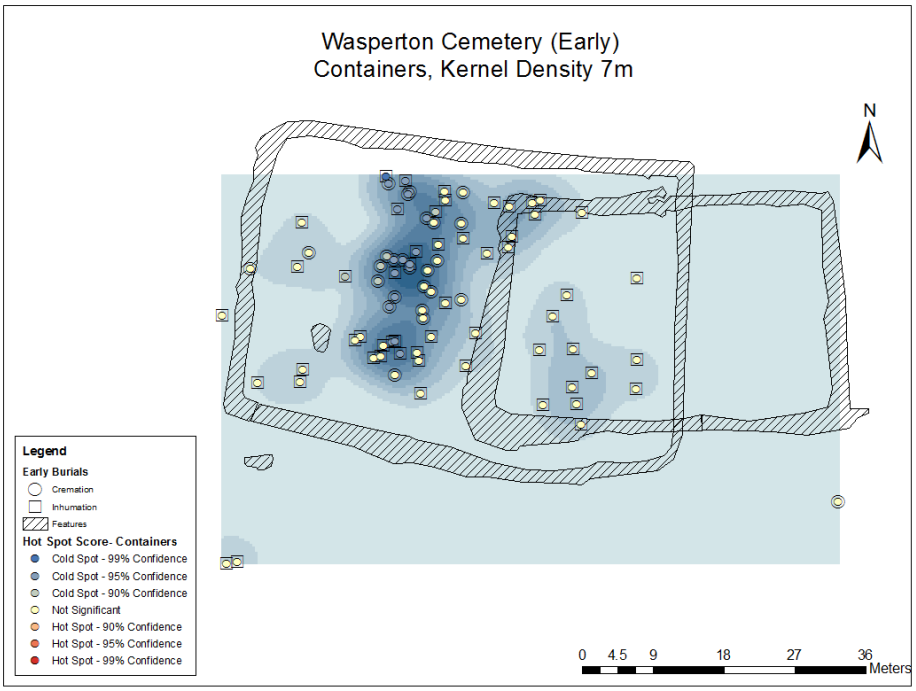
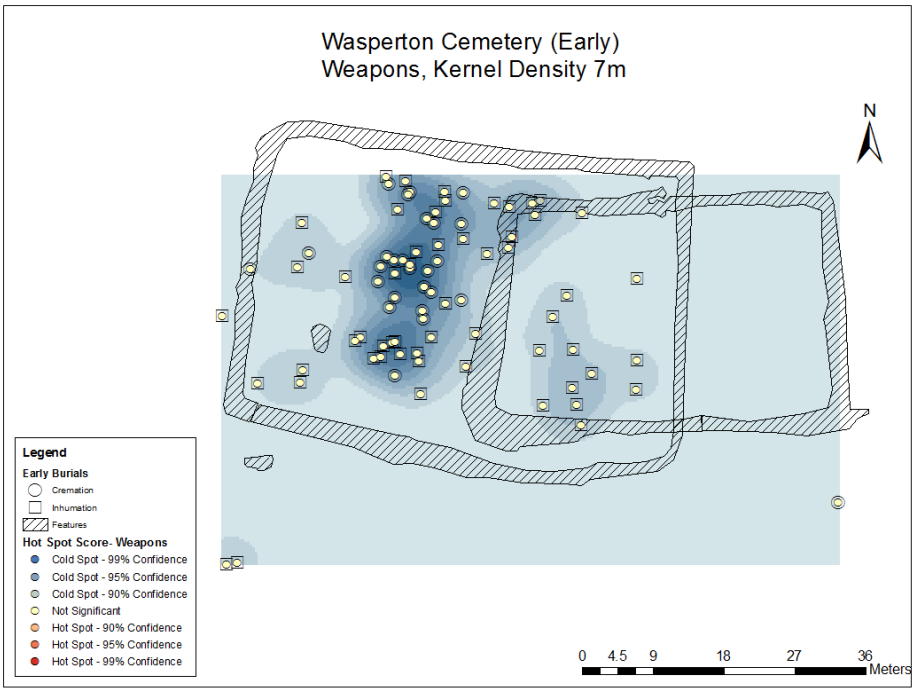


Figure 105: Wasperton Hot Spot Analysis Weapons



V. Worthy Park

Figure 106: Worthy Park Hot Spot Analysis Buckles

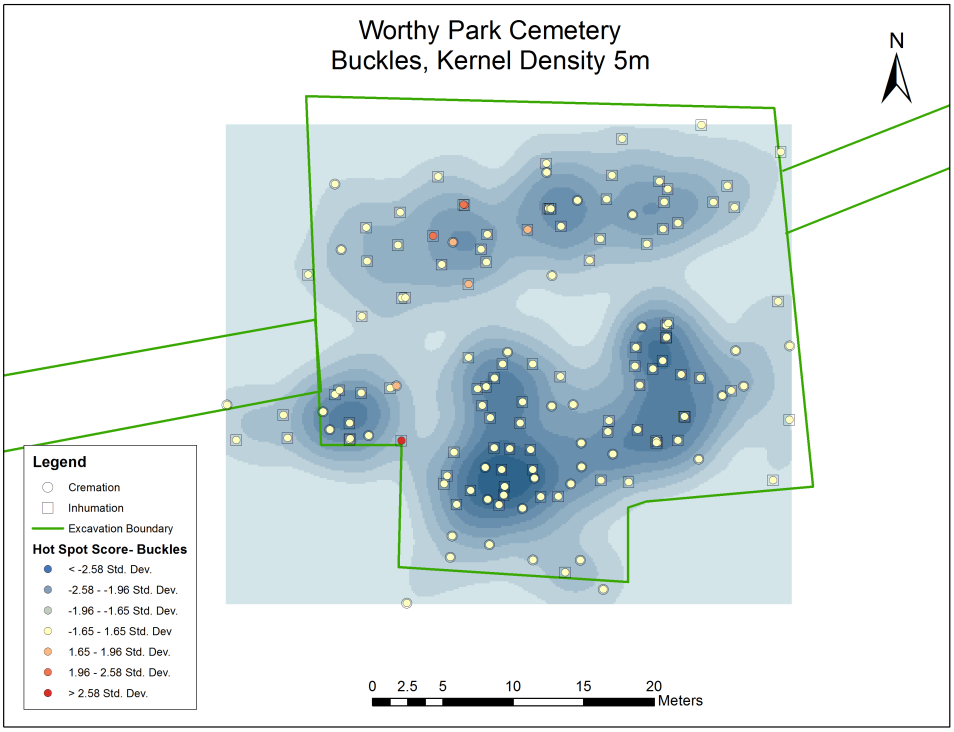


Figure 107: Worthy Park Hot Spot Analysis Combs

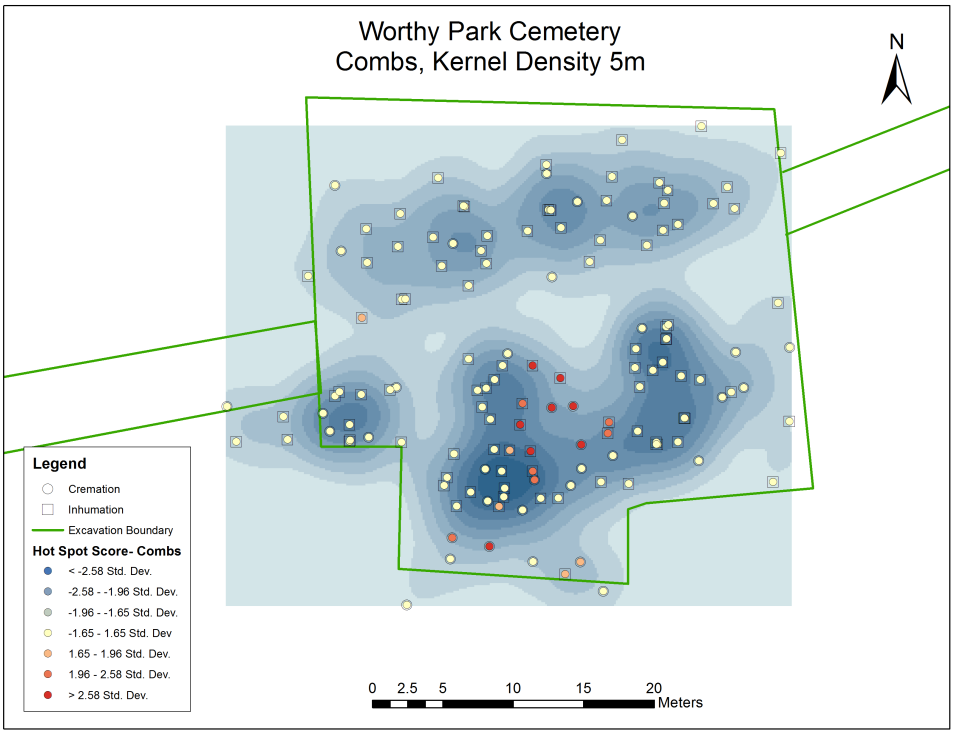


Figure 108: Worthy Park Hot Spot Analysis Containers

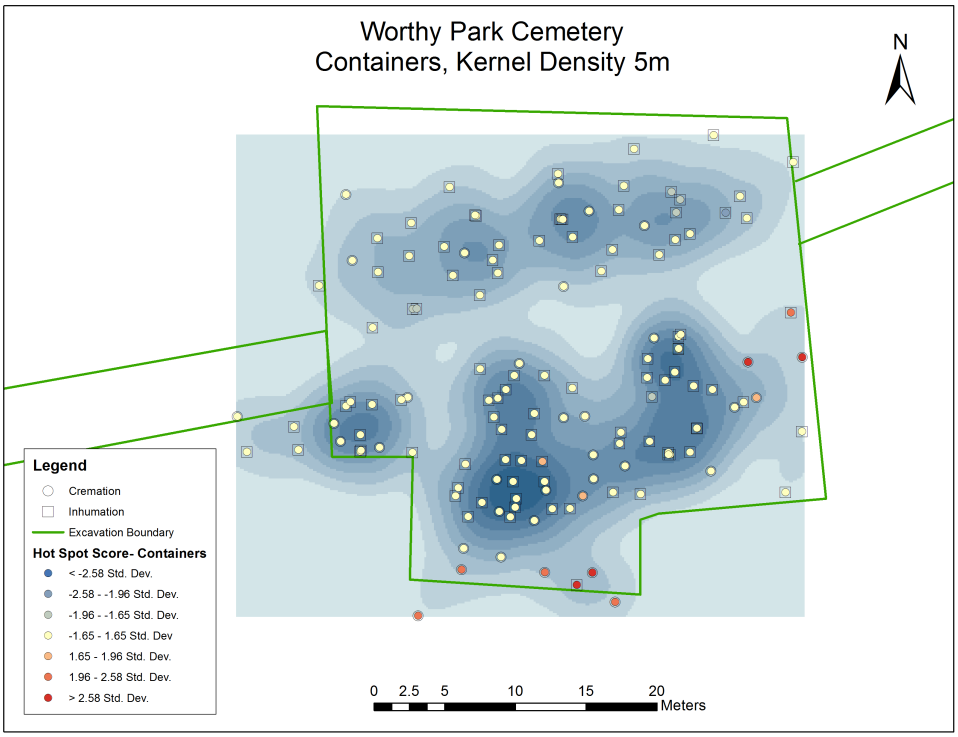


Figure 109: Worthy Park Hot Spot Analysis Toilet Implements

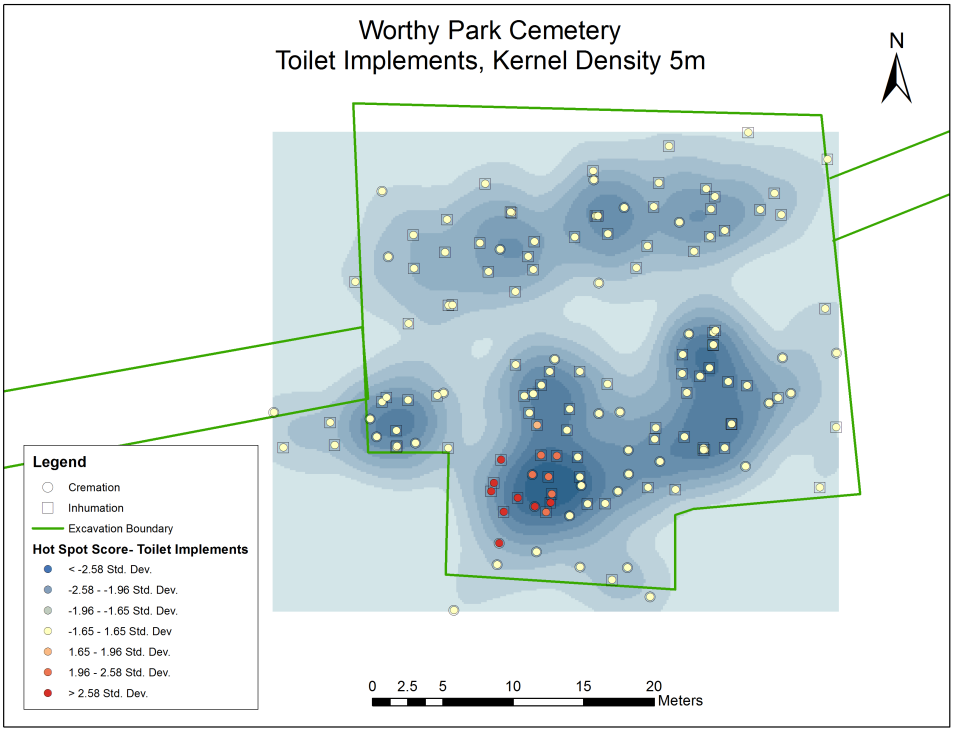


Figure 110: Worthy Park Hot Spot Analysis Knives

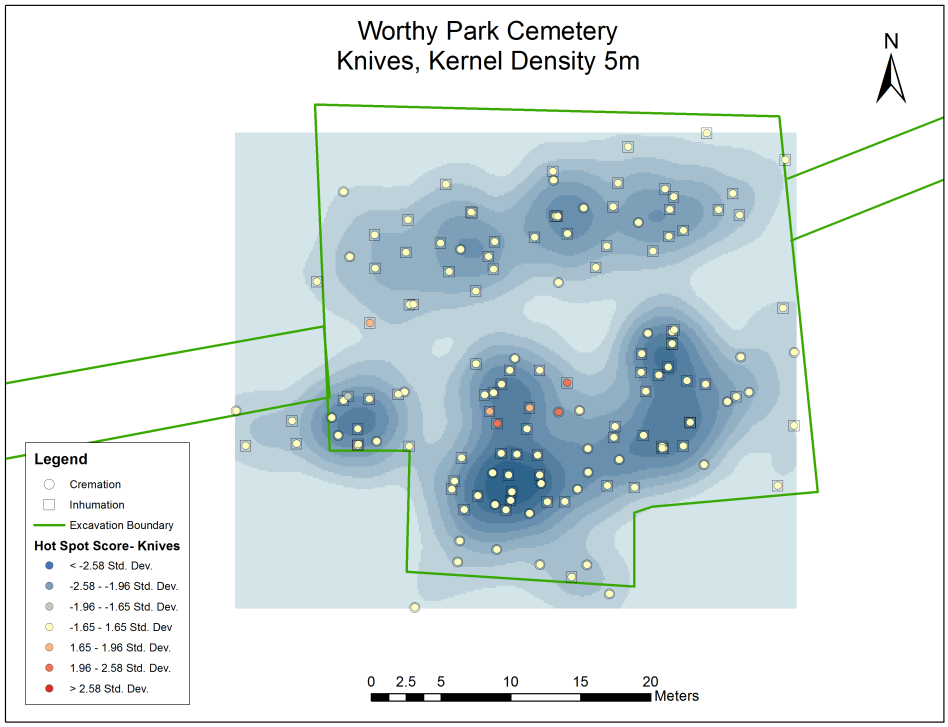
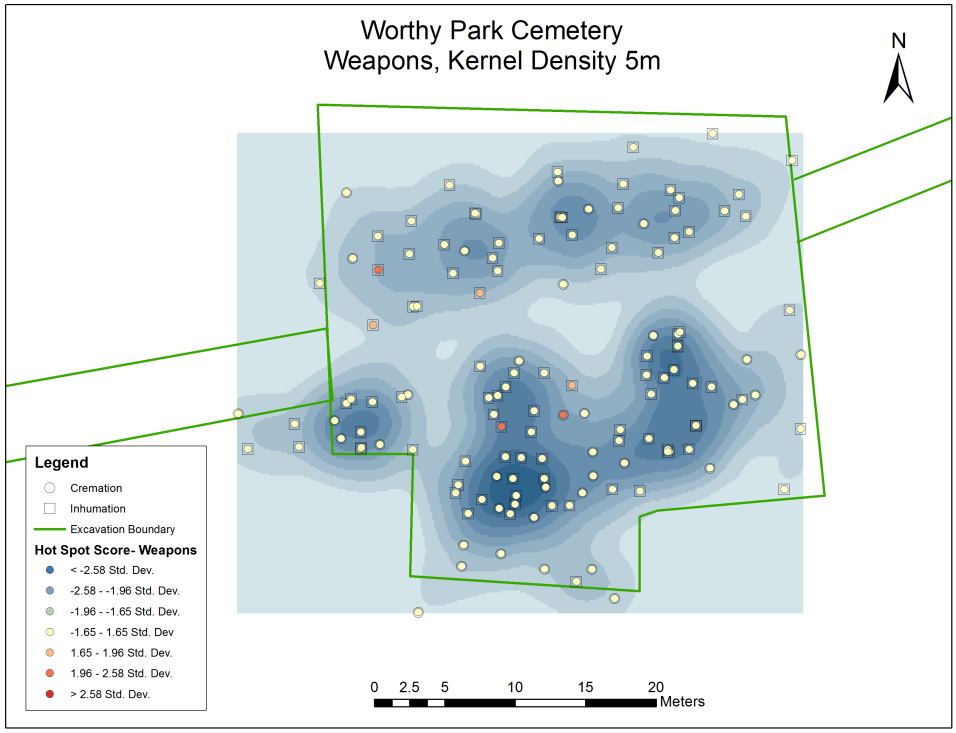


Figure 111: Worthy Park Hot Spot Analysis Weapons



LITERATURE CITED

LITERATURE CITED

Åberg, Nils
1926 *The Anglo-Saxons in England*. Almquist & Wiksell, Upsala.

Ager, Barry
1985 The Smaller Versions of the Anglo-Saxon Quoit Brooch. Anglo-Saxon Studies in Archaeology and History 4: 1-58.

Akerman, John
1855 *Remains of Pagan Saxondom*. London: Privately Printed

Allason-Jones, Lindsey
2007 The Family in Roman Britain. In *Companion to Roman Britain*, edited by M. Todd, pp. 273-287. Blackwell Publishing, Oxford.

Allison, Penelope
2008 Dealing with Legacy Data - an introduction. *Internet Archaeology* 24: http://dx.doi.org/10.11141/ia.24.8

Anthony David
1997 Prehistoric migration as a social process. In *Migrations and invasions in archaeological explanation*, edited by J. Chapman and H. Hamerow, pp. 21-32. British Archaeological Research International Series 664, Oxford.

ArcGIS
2015 *ArcGIS Pro Tool Resources*. http://pro.arcgis.com/en/pro-app/tool-reference/main/arcgis-pro-tool-reference.htm

Arnold, C.J.
2005 *An Archaeology of Early Anglo-Saxon Kingdoms*. 2nd ed. Routledge, London.

Ashmore, W. and P.L. Geller
2005 Social Dimensions of Mortuary Space. In *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millenium*, edited by G. Rakita, J. Buikstra, L. Beck and S. Williams, pp. 107-123. University Press of Florida, Gainsville.

Austin, William
1928 A Saxon Cemetery at Luton, Beds. In *Antiquaries Journal* 8: 177-192.

Bass, William M
2005 *Human Osteology: A Laboratory and Field Manual*. Missouri Archaeological Society, Missouri.

Bass, William and Richard Jantz
2004 Cremation Weights in East Tennessee. *Journal of Forensic Science* 49(5): 901-904.

Baxter, Michael J.
1994 *Exploratory Multivariate Analysis in Archaeology*. Edinburgh University Press, Edinburgh.

Becdelievre, C. de, S. Thiol, F. Santos and S. Rottier
2015 From fire-induced alterations on human bones to the original circumstances of the fire: An integrated approach of human cremains drawn from a Neolithic collective burial. *Journal of Archaeological Science: Reports* 4: 210-225

Bevan, Andrew and Mark Lake
2013 *Computational approaches to archaeological spaces*. Left Coast Press, Walnut Creek, California.

Bevan, Andrew, Enrico Crema, Xiuzhen Li and Allesio Palmisano
2013 Intensities, Interactions and Uncertainties: Some New Approaches to Archaeological Distributions. In *Computational Approaches to Archaeological Spaces*, edited by A. Bevan and M. Lake, pp. 27-52. Left Coast Press, California.

Binford, Lewis
1963 An analysis of cremations from three Michigan sites. In *An Archaeological Perspective*, edited by S. Struever, pp. 373-382. Seminar Press, New York.

Binford, Lewis
1971 Mortuary Practices: Their Study and Potential. In *Approaches to the Social Dimensions of Mortuary Practices*, edited by J.A. Brown, pp. 6-29. Society for American Archaeology 25, Washington, DC.

Blair, Peter Hunter
2003 *An Introduction to Anglo-Saxon England*. 3rd ed.. Cambridge University Press, Cambridge.

Blinkhorn, Paul
1999 Of Cabbages and Kings: Production, Trade and Consumption in Middle- Saxon England. In *Anglo-Saxon Trading Centres and their Hinterlands: Beyond the Emporia*, edited by M Anderton, pp. 4-23 Glasgow, Cruithne.

Bloch, Maurice
1971 *Placing the Dead: Tombs, Ancestral Villages and Kinship Organization in Madagascar*. Seminar Press, London.

Bølviken E.E., K. Helskog, I. Holm-Olsen, L. Solheim, and R. Bertelsen
1982 Correspondence Analysis: An alternative to Principal Components. *World Archaeology* 14: 41-60.

Bone, P.
1989 *The Development of Anglo-Saxon Swords from the Fifth to Eleventh Century*. Oxford University Committee for Archaeology Monograph, Oxford.

Bongers, J., E. Arkush, and M.l Harrower
2011 Landscapes of death: GIS-based analyses of chullpas in the western Lake Titicaca basin. *Journal of Archaeological Science* 39(6): 1687–1693.

Boyd, Michael
2014 The materiality of performance in Mycenaean funerary practices. *World Archaeology* 2: 192-205.

Boyle, A., D. Jennings, D. Miles and S. Palmer
1998 *The Anglo-Saxon Cemetery at Butler's Field, Lechlade, Gloucestershire, Volume 1*. Thames Valley Landscapes Monograph No. 10. Oxford Archaeological Unit, Oxford.

2011 *The Anglo-Saxon Cemetery at Butler's Field, Lechlade, Gloucestershire, Volume II*. Thames Valley Landscapes Monograph No. 33, Oxford Archaeological Unit, Oxford.

Bradley, S.
1982 *Anglo-Saxon Poetry*. Dent, London

Braun, David P.
1981 A Critique of Some Recent North American Mortuary Studies. *Antiquity* 46: 398-416.

Brickley, Megan and Jacqueline McKinley
2004 *Guidelines to the standard for recording human remains*. IFA/ BABAO.

Briggs, John Joseph
1869 Notice of a Discovery of Ancient Remains at King's Newton, Derbyshire. *The Reliquary and Illustrated Archaeologist: A Quarterly Journal* 9.

Brooks, Nicholas
2006 From British to English Christianity: Deconstructing Bede's Interpretation of the Conversion. In *Conversion and Colonization in Anglo-Saxon England*, edited by n Nicholas Howe and Catherine Karkov, pp. 1-30. Arizona Center for Medieval and Renaissance Studies, Tempe.

Brown, James A. (Editor)
1971 The Dimension of Status in the Burials at Spiro. In *Approaches to the Social Dimensions of Mortuary Practices*, pp. 92-111. Society for American Archaeology No. 25, Washington, DC.

1979 Charnel House and Mortuary Crypts: Disposal of the Dead in the Middle Woodland Period. In *Hopewell Archaeology: The Chillicothe Conference*, edited by D.S. Brose and N.O. Greber, pp. 211-219. Kent State University Press, Kent.

1981 The Search for Rank in Prehistoric Burials. In *The Archaeology of Death*, edited by R. Chapman, I. Kinnes, and K. Randsborg, pp. 25-37. Cambridge University Press, Cambridge.

2010 Cosmological Layouts of Secondary Burials as Political instruments. In *Mississippian Mortuary Practices: Beyond Hierarchy and the Representationist Perspective*, edited by L. Sullivan and R. Mainfort, pp. 30-52. University of Florida Press, Florida.

Browne, T.
1893 [1658] *Hydrotaphia, Urn Burial; with an account of some urns found at Brampton in Norfolk*. London: Whittingham.

Brück, Joanna
2009 Women, Death and Social Change in the British Bronze Age. *Norwegian Archaeological Review* 42(1): 1-23.

2014 Cremation, Gender, and Concepts of the Self in the British Early Bronze Age. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, edited by I. Kuijt, C. Quinn, and G. Cooney, pp. 119-142. University of Arizona Press, Tucson.

Brugmann, Birte
2011 Migration and Endogenous Change. In *The Oxford Handbook of Anglo-Saxon Archaeology*, edited by H. Hamerow, D. Hinton and S. Crawford. Oxford University Press, Oxford.

Brush, Karen
1988 Gender and Mortuary Analysis in Pagan Anglo Saxon Archaeology. *Archaeological Review from Cambridge* 7(1): 76-89.

1993 Adorning the Dead: The Social Significance of Early Anglo-Saxon Dress in England (Fifth to Seventh Centuries AD). Unpublished PhD Dissertation. Department of Archaeology. University of Cambridge.

Buikstra, Jane and Lynne Goldstein
1973 *Perrins Ledge Crematory Site*. Illinois State Museum, Springfield.

Buikstra, Jane and M. Swegle
1989 Bone Modification Due to Burning: Experimental Evidence. In *Bone Modification*, edited by R. Bonnichsen and M. Sorg, pp. 247-258. Center for the Study of the First Americans, Maine.

Buikstra, Jane and Douglas Ubelaker
1994 *Standards for Data Collection from Human Skeletal Remains: Proceedings of a Seminar at the Field Museum of Natural History*. Arkansas Archeological Report Research Series, Arkansas.

Capuzzo, Giacomo and Juan Barcelo
2015 Cultural changes in the second millenium BC: a Bayesian examination of radiocarbon evidence from Switzerland and Catalonia. *World Archaeology* 47(4): 622-641.

Carroll, Maureen
2012 "No part in earthly things": The death, burial and commemoration of newborn children and infants in Roman Italy. In *The Familia and its Transformation from ancient Rome to Barbarian Europe (50-600 CE),* edited by L. Larsson Lovén and M. Harlow, pp. 41-63. Continuum Press, London.

Carver, Martin, Catherine Hills and Jonathan Scheschkewitz
2009 *Wasperton. A Roman, British and Anglo-Saxon Cemetery in Central England*. Woodbridge: Boydell Press.

Cerezo-Roman, Jessica
2014 Pathways to Personhood: Cremation as a Social Practice Among the Tuscon Basin Hohokam. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, edited by I. Kuijt, C. Quinn, and G. Cooney, pp. 148-167. University of Arizona Press, Tucson.

Cerezo-Roman, Jessica and Howard Williams
2014. Future Directions for the Archaeology of Cremation. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, edited by I. Kuijt, C. Quinn, and G. Cooney, pp. 240-256. University of Arizona Press, Tucson.

Chadwick, Sonia
1958 The Anglo-Saxon cemetery at Finglesham, Kent: a reconsideration. *Medieval Archaeology* 2:2-17.

Chadwick Hawkes, Sonia
1977 Orientation at Finglesham: Sunrise dating of death and burial in an Anglo-Saxon cemetery in East Kent. *Archaeologia Cantiana* 92: 33–51.

Chadwick Hawkes, Sonia and Calvin Wells
1983 The Inhumed Skeletal Material from an Early Anglo-Saxon Cemetery in Worthy Park, Kingswothy, Hampshire, South England. *Paleobios* 1(1-2): 3-36.

Chadwick Hawkes, Sonia and Guy Grainger
2003 *An Early Anglo-Saxon Cemetery at Worthy Park, Kingsworthy, Oxford*. Oxford University School of Archaeology Monograph 59, Oxford.

Charles, Douglas K. and Jane E. Buikstra
2002 Siting, Sighting, and Citing the Dead. In *The Space and Place of Death*, edited by H. Silverman and D. Small, pp. 13-25. Archaeological papers of the American Anthropological Association Vol. 11, Arlington.

Chesson, Meredith S.
1999 Libraries of the Dead: Early Bronze Age Charnel Houses and Social Identity at Urban Bab edh'Dhra', Jordan. *Journal of Anthropological Archaeology* 18: 137-164.

Childe, Vere Gordon
1945 Directional Changes in Funerary Practices During 50,000 Years. *Man* 45: 13-19.

Clarke, David
1977 *Spatial Archaeology*. London: Academic Press.

Conkey, Margaret W. and Janet D. Spector
1984 Archaeology and the Study of Gender. In *Advances in Archaeological method and Theory*, Vol. 7, edited by M.B. Schiffer, pp. 10- 38. Academic Press, Orlando.

Connolley, James and Mark Lake
2006 *Geographical Information Systems in Archaeology*. Cambridge Manuals in Archaeology, Cambridge.

Cook, A. and M. Dacre
1985 *Excavations at Portway, Andover 1973-1975*. Oxford University Committee for Archaeology Monograph 4, Oxford.

Cooney, Gabriel
2014 The Role of Cremation in Mortuary Practice in the Irish Neolithic. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, edited by I. Kuijt, C. Quinn, and G. Cooney, pp. 189-206. University of Arizona Press, Tucson.

Crabtree, Pam
2010 Agricultural innovation and socio-economic change in early medieval Europe: evidence from Britain and France. *World Archaeology* 42(1): 122-136.

Crawford, Sally
2009 *Daily Life in Anglo-Saxon England*. Greenwood World Publishing, Oxford.

Crubézy, E., F.X. Ricaut, H. Martin, S. Erdenebaatar, H. Coqueugnot, B. Maureille, and P.H. Giscard
2006 Inhumation and cremation in medieval Mongolia: analysis and analogy. *Antiquity* 80: 894-905.

Dark, Ken
2000 *Britain and the End of the Roman Empire*. Tempus, Charleston.

Deforce, Koen and Kristof Haneca
2011 Ashes to ashes: Fuelwood selection in Roman cremation rituals in northern Gaul. *Journal of Archaeological Sciences* 39(5): 1338–1348.

Dickinson, Tania
1976 The Anglo-Saxon Burial Sites of the Upper Thames Region and their Bearing on the History of Wessex, circa AD 400-700. Unpublished Dphil Thesis. Department of Archaeology. University of Oxford.

1979 On the origin and crhonology of the early Anglo-Saxon disc brooch. *Anglo-Saxon Studies in Archaeology and History* 1: 39-80.

1993 Early Saxon Saucer Brooches: A Preliminary Overview. *Anglo-Saxon Studies in Archaeology and History* 6: 11-44.

Douglas, J.
1793 *Nenia Britannica*. Nichols, London.

Down, A. and M. Welch
1990 *Chichester Excavations VII*. Chichester District Council, Chichester.

Drinkall, G. and M. Foreman
1998 The Anglo-Saxon Cemetery at Castledyke South, Barton-on-Humber. Sheffield Excavation Reports 6, Sheffield.

Duncan, William N., Andrew K. Balkansky, Kimberly Crawford, Heather A. Lapham, and Nathan J. Meissner
2008 Human cremation in Mexico 3,000 years ago. *PNAS* 105(14): 5315–5320.

Dunn, Marilyn
2009 *The Christianization of the Anglo-Saxons, c. 597-700*, Continuum Press, London.

Effros, Bonnie
2001 Monuments and Memory: The Repossession of Ancient Remains in Early Medieval Gaul. In *The Topography of Power in the Early Medieval West*, edited by M. de Jong and F. Theuws, pp. 93-118. E.J. Brill, Leiden.

2003 Memories of the Early Medieval Past: Grave Artifacts in Nineteenth-Century France and America. In *Archaeologies of Remembrance: Death and Memory in Past Societies*, edited by H. Williams, pp. 255-280. Kluwer Academic/Plenum Publishers, New York.

Esmonde Cleary, Simon
2011 *The Ending of Roman Britain*. Routledge, New York.

Evison, Vera
1963 Sugar-loaf shield bosses. *The Antiquaries Journal* 43: 38-96.

1964 A Decorated Seax from the Thames at Keen Edge Ferry. *Berkshire Archaeological Journal* 61: 28-36.

1977 Supporting-Arm Brooches and Equal Arm brooches in England. In *Studien zur Sachsenforschung*, edited by H. Habler, pp. 127-147. Hildeshein, Lax.

1978 Early Anglo-Saxon applied disc brooches, Part II. *The Antiquaries Journal* 58:260-278.

1981 *Angles, Saxons and Jutes*. Clarendon, Oxford.

1987 *Dover: Buckland Anglo-Saxon Cemetery*. Historic Buildings and Monuments Commission for England, Archaeology Report 3, London.

1994 *An Anglo-Saxon Cemetery at Great Chesterford, Essex*. CBA Research Report 91, London.

Falconer, Christa
2014 An Examination of the Funerary Offerings Places in Mycenaean Chamber Tombs During the Palatial and Post-Palatial Periods in the Aegean. Masters Thesis. Department of Classics. Trent University.

Fehr, Hubert
2002 *Volkstum* as paradigm: Germanicpeople and Gallo-Romans in early medieval archaeology since the 1930s'. *On Barbarian Identity: Critical Approaches to Ethnicity in the Early Middle Ages,* edited by A. Gillett, pp.177-200. Brepols Publishers, Turnhout.

Filmer-Sankey, Williams and Tim Pestell
2001 Snape Anglo-Saxon cemetery: excavations and surveys 1824-1992. East Anglian Archaeology, Suffolk County, Ipswich.

Fleming, Robin
2011 *Britain After Rome: The Fall and Rise, 400–1070*. Penguin Books, New York.

Fowler, E.
1960 The origins and development of the penannular brooch in Europe. *Proceedings of the Prehistoric Society* XXVI: 149-177.

Fowler, Chris
2014 Change and Continuity in Early Bronze Age Mortuary Rites: A Case Study from Northumberland. In *Death and Changing Rituals: Function and Meaning in Ancient Funerary Practices*, edited by J.R. Brandt, H. Ingvaldsen, and M. Prusac, pp. 45-92. Oxbow Books, Oxford.

Frantzen, A. and J.D. Niles (Editors)
1995 *Anglo-Saxonism and the Construction of Social Identity*. Gainsville: University of Florida Press.

Friendly, Michael
2002 Corrgrams: Exploratory displays for correlation matrices. *The American Statistician* 1.5: 1-16.

Geake, Helen
1997 *The Use of Grave-Goods in Conversion-Period England, c. 600–c. 850 AD*. British Archaeological Reports, Oxford.

Geake, Helen
2002 Persistent problems in the study of conversion period burials in England. In *Burial in Early Medieval England and Wales*, S. Lucy and A. Reynolds, pp. 144-155. Society for Medieval Archaeology, London.

Gejvall, Nicholas
1969 Cremations. In *Science in Archaeology*, edited D. Brothwell and E. Higgs, pp. 468-479. Thames and Hudson, London.

Geller, Pamela
2005 Skeletal analysis and theoretical complications. *World Archaeology* 37(4): 597-609.

Gibson, Catriona
2007 Minerva: an Early Anglo-Saxon Mixed-Rite Cemetery in Awalton, Cambridgeshire. *Anglo-Saxon Studies in Archaeology and History* 14: 238-327.

Giles, J.A.
2012 [1842] *On the Ruin of Britain (De Excidio Britanniae)*. Project Gutenberg. Electrnoic Document. http://www.gutenberg.org/cache/epub/1949/pg1949-images.html

Goffart, Walter A.
1988 *The Narrators of Barbarian History (AD 550-800): Jordanes, Gregory of Tours, Bede, and Paul the Deacon*. Princeton University Press: Princeton.

Goldstein, Lynne
1981 One-dimensional Archaeology and Multi-dimensional People: Spatial Organization and Mortuary Analysis. In *The Archaeology of Death*, edited R. Chapman, I. Kinnes, and K. Randsborg, pp. 53-69. Cambridge University Press, Cambridge.

1995 Landscapes and Mortuary Practices: A Case for Regional Perspectives. In *Regional Approaches to Mortuary Analysis*, edited L.A. Beck, pp. 101-121. Plenum Press, New York.

2000 Mississippian Ritual as Viewed Through the Practice of Secondary Disposal of the Dead. In *Mounds, Modoc, and Mesoamerica: Papers in Honor of Melvin L. Fowler*, edited by S.R. Ahler, pp. 193-205. Scientific Papers Series 28, Illinois State Museum, Springfield.

Goody, Jack
1962 *Death, Property and the Ancestors: A Study of the Mortuary Customs of the Lodagaa of West Africa*. Stanford University Press, Stanford.

Graham, Emma J.
2009 Becoming persons, becoming ancestors. Personhood, memory and the corpse in Roman rituals of social remembrance. *Archaeological Dialogues* 16 (1) 51–74.

Gräslund, Anne Sofie
2001 The Position of Iron Age Scandinavian Women: Evidence from Graves and Rune Stones. In *Gender and the Archaeology of Death*, edited by B. Arnold and N. Wicker, pp. 81-99. Altamira Press, Walnut Creek.

Greenacre, Michael J.
1984 *Theory and Applications of Correspondence Analysis*. Academic Press, London.

Groves S.E., C.A. Roberts, S. Lucy, G. Pearson, D.R. Gröcke, G. Nowell, C.G. Macpherson and G. Young
2013 Mobility histories of 7th-9th century AD people buried at early medieval Bamburgh, Northumberland, England. *American Journal of Physical Anthropology* 151 (3): 462-76.

Hakenbeck, Susanne E.
2007 Situational Ethnicity and Nested Identities: New Approaches to an Old Problem. In Anglo-Saxon Studies in Archaeology and History 14: 19-27.

2011 Roman or barbarian? Shifting identities in early medieval cemeteries in Bavaria. *Post-Classical Archaeologies* 1: 37-69.

2013 Correspondence analysis of the cremation urns. In *Spong Hill Part IX: Chronology and Synthesis*, edited by C. Hills and S. Lucy, pp. 168-195. McDonald Institute Monographs.

Halsall, Guy
2007 *Barbarian Migrations and the Roman West, 376-568*. Cambridge University Press, Cambridge.

Hamerow, Helena
2008 The Earliest Anglo-Saxon Kingdoms. In *The New Cambridge Medieval History I*, edited by P. Fouracre, pp. 263-288. Cambridge University Press, Cambridge.

Harden, Donald
1977 Early Medieval Glass. *Bulletin de l'Association Internationale pour l'Historie du Verre* 8: 53-64.

Härke, Heinrich
1989 Knives in early Saxon burials: blade length and age at death. *Medieval Archaeology 33*:144-148.

1990 "Warrior Graves"? The Background of the Anglo-Saxon Weapon Burial Rite. *Past and Present* 126:22-43.

1992 Changing Symbols in a Changing Society: the Anglo-Saxon Weapon Burial Rite in the Seventh Century. In *The Age of Sutton Hoo*, edited by M. Carver, pp. 125-170. Boydell, Woodbridge.

1997 Material Culture as Myth: Weapons in Anglo-Saxon Graves. In *Burial and Society: The Chronological and Social Analysis of Archaeological Burial Data*, edited by C. Jensen and K. Nielsen, pp. 119-127. Aarhus University Press: Denmark.

2001 Cemeteries as places of power. In *Topographies of power in the Early Middle Ages (The Transformation of the Roman World, 6),* edited by M. de Jong and F. Theuws with C. van Rhijn, pp. 9-30. Brill, Leiden, Boston and Cologne.

2011 Anglo-Saxon immigration and ethnogenesis. *Medieval Archaeology* 55: 1-28.

Harvig, Lise
2015 Past cremation practices from a bioarchaeological perspective: how new methods and techniques revealed conceptual changes in cremation practices during the late Bronze Age and early Iron Age in Denmark. *The Archaeology of Cremation: Burned human Remains in Funerary Studies*, edited by T. Thompson, pp. 43-62. Oxbow Books, Oxford.

Harvig, L., J. Kveiborg and N. Lynnerup
2013 Death in Flames: Human Remains from a Domestic House Fire from Early Iron Age, Denmark. *International Journal of Osteoarchaeology* 25(5): 701-710.

Heather, Peter
2010 *Empire and Barbarians: The Fall of Rome and the Birth of Europe*. Oxford University Press, New York.

Herrmann, Nicholas, J.B. Devlin, and J.C. Stanton
2014 Bioarchaeological spatial analysis of the Walker Noe Crematory (15GD56). In *Commingled and Disarticulated Human Remains*, edited by A.J. Osterholtz, K.M. Baustian, and D.L. Martin, pp. 51-66. Springer, New York

Herrmann, Nicholas
2002 GIS Applied to Bioarchaeology: An Example from the Rio Talgua Caves in Northeast Honduras. *Journal of Cave and Karst Studies* 64(1): 17-22.

Hertz, Robert
1960 [1907]. *Death and the Right Hand*. The Free Press, Glencoe.

Higham, Nicholas
2007 Britons in Anglo-Saxon England. Boydell Press, Rochester.

Hills, Catherine
1979 The Archaeology of Anglo-Saxon England in the Pagan Period: A Review. *Anglo-Saxon England* 7: 297-329.

1980 Anglo-Saxon Cremation Cemeteries, with Particular Reference to Spong Hill, Norfolk. In *Anglo-Saxon Cemeteries*, edited by P. Rahtz, T. Dickinson and L. Watts, pp. 197-207. British Archaeological Research British Series, Oxford.

1998 Did the People of Spong Hill Come From Schleswig-Holstein? *Studien zur Sachenforchung* 11: 145-154.

2003 *Origins of the English*. Gerald Duckworth and Co. Ltd: London.

2011 Overview: Anglo-Saxon Identity. In *The Oxford Handbook of Anglo-Saxon Archaeology*, edited by H. Hamerow, D. Hinton and S. Crawford, pp. 3-12. Oxford University Press, Oxford.

Hills, Catherine and Samantha Lucy (Editors)
2013 *Spong Hill Part IX. Chronology and Synthesis*. McDonald Institute of Archeological Research, Cambridge.

Hines, John
1984 *The Scandinavian Character of Anglian England in the Pre-Viking Period*. British Archaeological Research British Series 124, Oxford.

1994 The Becoming of the English: Identity, Material Culture and Language in Early Anglo-Saxon England. *Anglo-Saxon Studies in Archaeology and History* 7: 49-59.

2011 Literary sources and archaeology. In *The Oxford Handbook of Anglo-Saxon*, edited by H. Hamerow, D. Hinton and S. Crawford. Oxford University Press, Oxford.

Hingley, Richard
1990 Domestic organisation and gender relations in Iron Age and Romano-British households. In *The social archaeology of houses*, edited by R. Samson, pp. 125-147. Edinburgh University Press, Edinburgh.

1996 Ancestors and identity in the later prehistory of Atlantic Scotland: the reuse and reinvention of Neolithic monuments and material culture. *World Archaeology* 28: 231-243.

Hirst, Sue
1985 *An Anglo-Saxon inhumation Cemetery at Sewerby East Yorkshire*. York University Archaeological Publications 4, York.

Hirst, Sue and Dido Clark
2009 *Excavations at Mucking: Volume 3, The Anglo-Saxon Cemeteries*. Museum of London Archaeological Service, London.

Hogarth, A.C.
1973 Structural Evidence in Anglo-Saxon Graves. *Archaeological Journal* 130: 104-119.

Hoggett, Richard
2007 Charting Conversion: Burial as a Barometer of Belief. In *Early Medieval Mortuary Practices*, edited by S. Semple and H.M. Williams, pp. 28-37. Anglo-Saxon Studies in Archaeology and History 14, Oxford.

Hope-Taylor, Brian
1977 *Yeavering: an Anglo-British centre of early Northumbria*. DoE Archaeological Report. HSMO, London.

Huggett, J.
1996 Social Analysis of Early Anglo-Saxon Inhumation Burials: Archaeological Methodologies. *Journal of European Archaeology* 4/3: 337-365.

Jensen, Claus Kjeld and Karen Høilund Nielsen (Editors)
1997 Burial and Society: The Chronological and Social Analysis of Archaeological Burial Data. Denmark: Aarhus University Press.

Johnson, Matthew
2014 Archaeological Theory: An Introduction. 2nd ed. Blackwell, Oxford.

Jones, Michael
1998 *The End of Roman Britain*. Cornell University Press, Cornell.

Jones, Sian
2003 *The Archaeology of Ethnicity: Constructing Identities in the Past and Present*. Routledge, London.

Kaliff, A. and Oestigaard, T.
2004 Cultivating Corpses – A Comparative Approach to Disembodied Mortuary Remains. *Current Swedish Archaeology* 12: 83-104.

Katzenberg, M. Anne and Shelley R. Saunders
2008 *Biological Anthropology of the Human Skeleton*. 2nd ed. Wiley, New York.

Kemble, John
1855 Burial and Cremation. *Archaeological Journal* 7:309-337.

Killgrove, Kristina
2005 Bioarchaeology in the Roman World. M.A. Thesis. Department of Classics. University of North Carolina

King, John M.
2004 Grave-Goods as Gifts in Early Saxon Burials (ca. AD 450-600). *Journal of Social Archaeology* 4: 214-238.

Knüsel, Christopher
2014 Crouching in fear: Terms of engagements for funerary remains. *Journal of Social Archaeology* 14(1): 26-58.

Kroeber, Alfred
1927 Disposal of the Dead. *American Anthropologist* 29: 308-315.

Kuijt, Ian and Colin Quinn
2013 Biography of the Neolithic Body: Tracing Pathways to Cist II, Mound of the Hostages, Tara. In *Tara-From the Past to the Future. Towards a new research agenda*, edited by M. O'Sullivan, C. Scarre, and M. Doyle, pp. 170-183. Wordswell and UCD School of Archaeology, Bray, Co. Wicklow.

Kuijt, Ian
1996 Negotiating Equality through Ritual: A Consideration of Late Natufian and Pre-Pottery Neolithic A Period Mortuary Practices. *Journal of Anthropological Archaeology* 15(4): 313-336.

Kuijt, Ian, Colin Quinn, and Gabriel Cooney (Editors)
2014 Transformation by Fire: The Archaeology of Cremation in Cultural Context. University of Arizona Press: Tucson.

Larsen, Clark Spencer
1999 Bioarchaeology: Interpreting Behavior from the Human Skeleton. Cambridge University Press, Cambridge.

Larsen, Clark Spencer and David Hurst Thomas
1982 *The Anthropology of St. Catherines Island*. Anthropological Papers of the American Museum of Natural History 57(3), New York.

Larsson, Ava and Liv Nilsson Stutz
2014 Reconcilable Differences: Cremation, Fragmentation and Inhumation in Mesolithic and Neolithic Sweden. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, edited by I. Kuijt, C. Quinn and G. Cooney, pp. 3-21. University of Arizona Press: Tucson.

Leeds, E.T.
1913 *The Archaeology of Anglo-Saxon Settlements*. Clarendon Press, Oxford.

1931 Chastleton Camp, Oxfordshire, a hill-fort of the Early Iron Age. *Antiquities Journal* XI: 382-398.

1936 *Early Anglo-Saxon Art and Archaeology*. Clarendon Press, Oxford.

1945 The Distribution of the Angles and Saxons Archaeologically Considered. *Archaeologia* 91: 1-106.

1949 A Corpus of Early Anglo-Saxon Great Square-Headed Brooches. Clarendon Press, Oxford.

Leeds, E.T. and M. Pocock
1971 A Survey of the Anglo-Saxon Cruciform Brooches of Florid Type. *Medieval Archaeology* 15: 13-36.

Lethbridge, T.C.
1951 A Cemetery at Lackford, Suffolk. Cambridge University Press, Cambridge.

Lindig, Wolfgang H.
1964 Tree Burial Among the Seri Indians. *Ethnology* 3(3):284-286

Loveluck, Christopher and Lloyd Laing
2011 Britons and Anglo-Saxons. In *The Oxford Handbook of Anglo-Saxon Archaeology*, edited by D. Hinton, S. Crawford and H. Hamerow, pp. 534-555. Oxford University Publishing: Oxford.

Lucy, Samantha
1998 *The Early Anglo-Saxon Cemeteries of East Yorkshire: An analysis and reinterpretation*. British Archaeology Research British Series 272.

2000 An Anglo Saxon Way of Death. Stroud, Sutton.

Lüdemann, H.
1994 Mehrfachbelegte Gräber im frühen Mittelalter. Ein Beitrag zum Problem der Doppelbestattungen, Fundberichte aus Baden-Württemberg 19(1): 421-590.

Martin, Dale
1996 The Construction of the Ancient Family: Methodological Considerations. *The Journal of Roman Studies* 86: 40-60.

Mattingly, David
2006 *An Imperial Possession: Britain in the Roman Empire*. Penguin Books, London.

Mayne Correia, P.M
1990 The Identification of Precremation Trauma in Cremated Bone. Unpublished Master's Thesis, Department of Anthropology. University of Alberta.

Mays, Simon
1998 *The Archaeology of Human Bones*. Taylor and Francis, London.

McKinley, Jacqueline
1989 Cremations: expectations, methodologies, and realities. In *Burial Archaeology: Current Research, Methods and Developments*, edited by C. Roberts, F. Lee, and J. Bintliff, pp. 65-72. British Archaeological Report S211, Oxford.

1994 *The Anglo-Saxon Cemetery at Spong Hill, North Elmham. Part VII: The Cremations*. East Anglian Archaeology 69, Dereham.

1997 Bronze Age Barrows and Funerary Rites and Rituals of Cremation. *Proceedings of the Prehistoric Society* 63: 129-145.

2000. Phoenix rising: aspects of cremation in Roman Britain. In *Burial, society and context in the Roman World*, edited by J. Pearce, M. Millet, and M. Struck, pp. 38-44. Oxbow Books, Oxford.

2006 Cremation… the cheap option? In *The Social Archaeology of Funerary Remains*, edited by R. Gowland and C. Knüsel, pp. 81-88. Oxbow Books, Oxford.

2008 Heat of the Pyre: Efficiency of Oxidation in Romano-British Cremations- Did it Really Matter? In *The Analysis of Burned Human Remains*, edited C. Schmidt and S. Symes, pp. 163-183. Academic Press, Great Britain.

2013 Cremation: Excavation, Analysis and Interpretation of Material from Cremation-Related Contexts. In *The Oxford Handbook of the Archaeology of Death and Burial*, edited by L.Nilsson Stutz and S. Tarlow. Oxford University Press, Oxford.

McKinley, Jacqueline and Ian Bond
2001 Cremated Bone. In *Handbook of Archaeological Sciences*, edited by D. Brothwell and A. Pollard, pp. 281-292. Wiley, Chichester.

McKinley, Jacqueline and Charlotte Roberts
1993 Excavation and Post-Excavation Treatment of Cremated and Inhumed Human Remains. IFA Technical Paper No 13, Birmingham.

McLeod, Shane
2011 Warriors and women: the sex ratio of Norse Migrants to eastern England up to 900 CE. *Early Medieval Europe* 19(3): 332-353.

Meaney, Aubrey
1981 *Anglo-Saxon Amulets and Curing Stones*. British Archaeological Research British Series 96, Oxford.

Meyers, Kathryn
2012 Isola Sacra Cinerary Urns: Archaeological Excavation Report. Unpublished Report Prepared for Luca Bondioli, Museo Nazionale Preistorico Etnografico Luigi Pigorini and Paola Germoni, Soprintendenza per I Beni Archeologici di Ostia.

2013 Examining Space of a Resting Place: GIS of a New York Cemetery. *Society for Historical Archaeology Blog*. Electronic Document. https://sha.org/blog/2013/08/examining-space-of-a-resting-place-gis-of-a-new-york-cemetery/

Meyers Emery, Kathryn and Howard Williams
2016 [Under Review] A Place to Rest Your [Burnt] Bones: Mortuary Houses in Early Anglo-Saxon England. *Archaeological Journal* [Forthcoming].

Milella , Marco, Valentina Mariotti, Maria Giovanna Belcastro, and Christopher J. Knüsel
2015 Patterns of irregular burials in Western Europe (1st-5th century AD). *PLOS ONE* June 26, 2015 ,DOI 10.1371/journal.pone.0130616.

Mizoguchi, Koji
2014 The centre of their life-world: the archaeology of experience at the Middle cemetery of Tateiwa-Hotta, Japan Yayoi. *Antiquity* 88: 836-850.

Mommsen, Theodor
1885 *The History of Rome*. Charles Scribner's Sons, New York.

Montgomery J., J.A. Evans, D. Powlesland and C.A. Roberts
2005 Continuity or colonization in Anglo-Saxon England? Isotope evidence for mobility, subsistence practice, and status at West Heslerton. *American Journal of Physical Anthropology* 126(2):123-138.

Mortimer, C.
1990 Some Aspects of Early Medieval Copper-Alloy Technology, as Illustrated by the Anglian Cruciform Brooch. D.Phil thesis. Department of Archaeology. University of Oxford.

Moskal-del Hoyo, Magdalena
2012 The use of wood in funerary pyres: random gathering or special selection of species? Case study of three necropolises from Poland. *Journal of Archaeological Sciences* 39(11): 3386-3395.

Müldner, Gundula, Carolyn Chenery and Hella Eckardt
2011 The 'Headless Romans': multi-isotope investigations of an unusual burial ground from Roman Britain. *Journal of Archaeological Science* 38(2): 280–290.

Myres, J.N.L.
1940 Cremation and Inhumation in Anglo-Saxon Cemeteries. *Antiquity* 16: 330-341.

1969 *Anglo-Saxon Pottery and the Settlement of England*. Clarendon, Oxford.

Naji, S.
2005 Death and Remembrance in Medieval France. In *Interacting with the Dead Perspectives on Mortuary Archaeology for the New Millennium*, edited by G. Rakita, J. Buikstra, L. Beck, and S. Williams, pp. 173-189. University Press of Florida, Gainesville.

Noy, David
2000 Half-Burnt on an Emergency Pyre': Roman Cremations Which Went Wrong. *Greece & Rome* 47(2): 186-196.

Nugent, Ruth and Howard Williams
2012 Sighted Surfaces: Ocular Agency in Early Anglo-Saxon Cremation Burials. *Encountering Images: Materialities, Perceptions, Relations,* edited by I.M. Back Danielsson, F. Fahlander, and Y. Sjöstrand, pp. 187-208. Stockholm Studies in Archaeology 57, Stockholm.

O'Brien, Elizabeth
1999 *Post-Roman Britain to Anglo-Saxon England: burial practices reviewed*. British Archaeological Research British Series 289, Oxford.

O'Shea, John M.
1981 Social Configuration and the Archaeological Study of Mortuary Practices: A Case Study. In *The Archaeology of Death*, edited by R. Chapman, I. Kinnes, and K. Randsborg, pp. 39-52. Cambridge University Press, Cambridge.

Oakdale, Suzanne
2005 Forgetting the Dead, Remembering Enemies. In *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millenium*, edited by G. Rakita, J. Buikstra, L. Beck and S. Williams, pp. 107-123. University Press of Florida, Gainsville.

Oestigaard, Terje
1999 Cremations as Transformations. *European Journal of Archaeology* 2/3: 345-364.

2004. *Death and World Religions: Human responses to the inevitable*. BRIC Press, Bergen.

2008. Cremations as Transformations: When the Dual Cultural Hypothesis was Cremated and Carried Away in Urns. *European Journal of Archaeology* 2: 345-364.

2013 Cremations in culture and cosmology. In *The Oxford Handbook of the Archaeology of Death and Burial*, edited by S. Tarlow and L.S. Nilsson, pp. 497-509. Oxford University Press, Oxford.

Oosthuizen, Susan
2011 Archaeology, common rights and the origins of Anglo-Saxon Identity. *Early Medieval Europe* 19(2): 153–181.

Osterholtz, Anna, Katheryn Baustian and Debra Martin , editors
2015 Introduction. *Commingled and Disarticulated Human Remains*, pp. 1-17. Springer, London.

Owen-Crocker, Gale
2004 *Dress in Anglo-Saxon England*. Boydell Press, Suffolk.

Pader, E.J.
1982 *Symbolism, Social Relations and the Interpretation of Mortuary Remains*. British Archaeological Research International Series 82, Oxford.

Parker Pearson, Michael
1982 Mortuary practices, society and ideology: an ethnoarchaeological study. In *Symbolic and Structural Archaeology*, edited I. Hodder, pp. 99-114. Cambridge University Press, Cambridge.

Penn, Kenneth and Birte Brugmann
2007 *Aspects of Anglo-Saxon Inhumation Burial: Morning Thorpe, Spong Hill, Bergh Apton and Westgarth Gardens.* Norfolk: Norfolk Museums and Archaeology Service.

Ward Perkins, Brian
2000 Why did the Anglo-Saxons not become more British? *The English Historical Review* 115(462): 513-533.

Pestell, T.
2010 Markets, Emporia, Wics and Producitve Sites: Pre-Viking Trade Centres in Anglo-Saxon England. In *Oxford Handbook of Anglo Saxon Archaeology*, edited by H. Hamerow, D.A. Hinton and S. Crawford, pp. 848-864. Oxford University Press, Press.

Philpott, Robert
1991 Burial practices in Roman Britain: a survey of grave treatment and furnishing A.D. 43-410. Tempus Reparatum, Oxford.

Pluskowski, Aleksander
2011 The archaeology of paganism. In *Oxford Handbook of Anglo Saxon Archaeology*, edited by H. Hamerow, D.A. Hinton and S. Crawford, pp. 764-778. Oxford University Press, Press.

Pluskowski, Aleksander and Philippa Patrick
2003 How Do You Pray to God? Fragmentation and Variety in Early Medieval Christianity. In *The Cross goes North. Processes of Christian Conversion in Northern Europe, c 300-1300 AD*, edited by M. Carver, pp. 29-58. York Medieval Press, York.

Prothero, Stephen
2001 *Purified by Fire: a History of Cremation in America*. University of California Press, Berkeley.

Prowse, Tracy, Henry P Schwarcz, Shelley Saunders, Roberto Macchiarelli and Luca Bondioli
2004 Isotopic paleodiet studies of skeletons from the Imperial Roman-age cemetery of Isola Sacra, Rome, Italy. *Journal of Archaeological Science* 31(3):259-272.

2014 Growth, Morbidity and Mortality in Antiquity. A Case Study from Imperial Rome. In *Human Diet and Nutrition in Bicultural Perspective: Past Meets Present*, edited by T. Moffat and T. Prowse, pp. 173-196. Berghahn, Great Britain.

Quinn, Colin, Lynne Goldstein, Gabriel Cooney and Ian Kuijt
2014 Perspectives- Complexities of Terminologies and Intellectual Frameworks in Cremation Studies. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, edited by I. Kuijt, C. Quinn, and G. Cooney, pp. 25-32. University of Arizona Press, Tucson.

Quinn, Colin, Ian Kuijt, and Gabrial Cooney (Editors)
2014 Introduction: Contextualizing Cremations. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, pp. 3-22. University of Arizona Press, Tucson.

Rakita, Gordon and Jane Buikstra
2005 Corrupting Flesh: Reexamining Hertz's Perspective on Mummification and Cremation. In *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millenium*, edited by G. Rakita, J. Buikstra, L. Beck and S. Williams, pp. 97-106. University Press of Florida, Gainsville.

Ravn, Mads
2003 *Death Ritual and Germanic Social Structure (AD 200-600)*. British Archaeological Reports, Oxford.

Rebay-Salisbury, Katherina
2012 Inhumation and Cremation: how burial practices are linked to beliefs. In *Embodied Knowledge: Historical Perspectives on Technology and Belief*, edited by M.L.S. Sørensen and K. Rebay-Salisbury, pp. 15-26. Oxbow, Oxford.

Reynolds, Andrew
2009 *Anglo-Saxon Deviant Burial Customs*. Oxford University Press, Oxford.

Richards, Julian
1987 *The significance of form and decoration of Anglo-Saxon cremation urns*. British Archaeological Research International Series 166.

Rife, Joseph L., Melissa Moore Morison, Alix Barbet, Richard K. Dunn, Douglas H. Ubelaker, and Florence Monier
2007 Life and Death at a Port in Roman Greece: The Kenchreai Cemetery Project, 2002-2006. In *Hesperia: The Journal of the American School of Classical Studies at Athens* 76(1): 143-181.

Risbøl, Ole, Troels Petersen and Gro Jerpåsen
2013 Approaching a Mortuary Monument Landscape using GIS and ALS Generated 3D Models. *Internal Journal of Heritage in the Digital Era* 2(4): 509-526.

Robb, J., Elster, E., Isetti, E., Knüsel, C., Tafuri, M., & Traverso, A.
2015 Cleaning the dead: Neolithic ritual processing of human bone at Scaloria Cave, Italy. *Antiquity* 89 (343): 39-54.

Roberts, Charlotte and Keith Manchester
2005 *Archaeology of Disease*. Cornell University Press, Ithaca.

Saller, Richard P. and Brent D. Shaw
1984 Tombstones and Roman Family Relations in the Principate: Civilians, Soldiers and Slaves. *The Journal of Roman Studies* 74: 124-156.

Saxe, Arthur A.
1970 Social Dimensions of Mortuary Practices. Unpublished PhD Dissertation, Department of Anthropology. University of Michigan.

Sayer, Duncan
2011 Investigating the Social Aspects of Early Medieval Mortuary Practice. *History Compass* 11(2): 147-162.

Sayer, Duncan and Michelle Wienhold
2013 A GIS-Investigation of Four Early Anglo-Saxon Cemeteries: Ripley's K-function Analysis of Spatial Groupings Amongst Graves. *Social Science Computer Review* 31(1): 71-89.

Schurr, Mark and Della Collins Cook
2014 The Temporal and Cultural Contexts of the Enigmatic Cremations from the Yokem Site, Illinois, USA. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, edited by I. Kuijt, C. Quinn, and G. Cooney, pp. 62-92. University of Arizona Press, Tucson.

Sellar, A.M.
2011 [1907] *Bede's ecclesiastical history of England: a revised translation with introduction, life and notes*. Project Gutenburg. Electronic Document. http://www.gutenberg.org/files/38326/38326-h/38326-h.html

Semple, Sarah J.
2013 *Perceptions of the Prehistoric in Anglo-Saxon England: Religion, Ritual and Rulership in the Landscape*. Oxford University Press, Oxford.

Shennan, Stephen
1997 *Quantifying Archaeology*. Iowa City: University of Iowa Press.

Shipman, Pat
1984 Burnt bones and teeth: an experimental study of color, morphology, crystal structure and shrinkage. *Journal of Archaeological Science* 11(4): 307-325.

Shipman, Pat, Giraud Foster, and Margaret Schoeninger
1984 Burnt bones and teeth: an experimental study of color, morphology, crystal structure and shrinkage. *Journal of Archaeological Science* 11(4): 307-325.

Silverman, Helaine
2002 Narratives of Identity and History in Modern Cemeteries of Lima, Peru. In *The Space and Place of Death*, edited by H. Silverman and D. Small, pp. 167-190. Archaeological Papers of the American Anthropological Association 11, Arlington.

Smith, R.A.
1905 Anglo-Saxon Remains. In *Victoria County History: Buckinghamshire Voume 1*, London.

1909. Notes. *Proceedings of the Society of Antiquaries* 22: 414–15.

Snyder, Christopher A.
1998 An Age of Tyrants: Britain and the Britons A.D. 400–600. Pennsylvania State University Press, University Park.

Sobolik, Kristin Dee
2003 *Archaeobiology. Archaeologist's Toolkit Volume 5*. Altamira Press, Walnut Creek, California.

Soren, David and Noelle Soren
1999 A Roman Villa and a Late-Roman Infant Cemetery: Excavation at Poggio Gramignano, Lugnano in Teverina. Oxbow, Oxford.

Sørenson, Tim
2009 The presence of the dead: cemeteries, cremation and the staging of non-place. *Journal of Social Archaeology* 9(1): 110-135.

Sørenson, Tim and Mikkel Bille
2008 Flames of transformation: the role of fire in cremation practices. *World Archaeology* 40(2): 253-267.

Sørenson, Marie Louise Stig and Katherina Rebay-Salisbury
2008 Landscapes of the Body: Burials in the Middle Bronze Age in Hungary. *European Journal of Archaeology* 11(1): 49–74.

Spruce, Michael, Ronald Williamson and John Dawkins
1978 The Bruce Boyd Site: An Early Woodland Component in Southwestern Ontario. *Ontario Archaeology* 29: 33-46.

Squires, Kristy
2013 Piecing Together Identity: A Social Investigation of Early Anglo-Saxon Cremation Practices. *Archaeological Journal* 170(1): 154-200.

Stalsberg, Anne
2001 Visible Women Made Invisible: Interpreting Varangian Women in Old Russia. In *Gender and the Archaeology of Death*, edited by B. Arnold and N. L. Wicker, pp. 65-80. Altamira Press, New York.

Stoodley, Nicholas
1999 *The Spindle and the Spear: a critical enquiry into the construction and meaning of gender in the early Anglo-Saxon burial rite*. British Archaeological Reports, Oxford.

2000 From the cradle to the grave: grave organization and the early Anglo-Saxon burial rite. *World Archaeology* 31(3): 456-472.

Swanton, Michael James
1973 *The spearheads of the Anglo-Saxon settlements*. Royal Archaeological Institute, London.

1996 *The Anglo-Saxon Chronicles*. Liverpool University Press, Liverpool.

Symes, Steven, Christopher Rainwater, Erin Chapman, Desina Gipson, and Andrea Piper
2008 Patterned Thermal Destruction of Human Remains in a Forensic Setting. In *The Analysis of Burned Human Remains*, edited by C. Schmidt and S. Symes, pp. 15-54. Academic Press, Great Britain.

Tainter, Joseph A.
1978 Mortuary Practices and the Study of Prehistoric Social Systems. In *Advances in Archaeological Method and Theory*, edited by M.B. Schiffer, pp. 105-141. Academic Press, New York.

Tanko, Eva and Karoly Tanko
2012 Cremation and Deposition in the Late Iron Age Cemetery at Ludas. In *Iron Age Rites and Rituals in the Carpathian Basin: Proceedings of the International Colloquium from Targu Mures*, edited by S. Berecki, pp. 249-258. Editura Mega, Targu Mures.

Thomas, M., M. Stumpf, and H. Harke
2006 Evidence for an apartheid-like social structure in early Anglo-Saxon England. *Proceedings for the Royal Society of Britain* 273: 2651–2657.

Thomas, Aline, Philippe Chambon and Pascal Murali
2011 Unpacking burial and rank: the role of children in the first monumental cemeteries of Western Europe (4600-4300 BC). *Antiquity* 85 (329): 772-786.

Thompson, Tim
2005 Heat-induced dimensional changes in bone and their consequences for forensic anthropology. *Journal of Forensic Sciences* 50: 1008-1015.

2015 *The Archaeology of Cremation: Burned human Remains in Funerary Studies*. Oxbow Books, Oxford.

Timby, Jane R.
1996 *The Anglo-Saxon Cemetery at Empingham II, Rutland.* Oxbow Books, London.

Toynbee, Jocelyn
1996 *Death and Burial in the Roman World*. John Hopkins University Press, Baltimore.

Tyler, Susan
1996 Early Saxon Essex AD 400-700. In *The Archaeology of Essex, Proceedings of the 1993 Writtle Conference*, editd by O. Bedwin, pp. 108-116. Essex County Council, Essex.

Ubelaker, Douglas H.
2009 The Forensic evaluation of burned skeletal remains: A synthesis. *Forensic Science International* 183: 1-5.

Ulmschneider, Katharina
2011 Settlement Hierarchy. In *The Oxford Handbook of Anglo-Saxon Archaeology*, edited by H. Hamerow, D. Hinton and S. Crawford, pp. 156-171. Oxford University Press, Oxford.

Urbancyzk, Przemyslaw
2003 The Politics of Conversion. In *The Cross goes North. Processes of Christian Conversion in Northern Europe, c 300-1300 AD*, edited by M. Carver, pp. 15-28. York Medieval Press, York.

Van Gennep, Arnold
1960 [1908] The Rites of Passage. University of Chicago Press, Chicago

VanPool, Todd and Robert Leonard
2011 *Quantitative Analysis in Archaeology*. John Wiley and Sons, West Sussex.

Wahl, Joachim
2008 Investigations on Pre-Roman and Roman Cremation Remains from Southwestern Germany: Results, Potentialities and Limits. In *The Analysis of Burned Human Remains*, edited by C. Schmidt and S. Symes, pp. 145-161. Academic Press, Great Britain.

Walker, Phillip, Kevin Miller and Rebecca Richman
2008 Time, Temperature, and Oxygen Availability: An Experimental Study of the Effects of Environmental Conditions on the Color and Organic Content of Cremated Bones. In *The Analysis of Burned Human Remains*, edited by C. Schmidt and S. Symes, pp. 129-135. Academic Press, Great Britain.

Wallin, Paul
2010 In search of rituals and group dynamics: correspondence analyses of Neolithic grave fields on the Island of Gotland in the Baltic Sea. *Documenta Praehistoric* 37: 65-75.

Ward, A.W., A.R. Waller, W.P. Trent, J. Erskine, S.P. Sherman, and C. Van Doren (Editors)
2000. *The Cambridge History of English and American Literature*. G.P. Bartleby.com, New York.

Watts, Dorothy
1991 *Christians and Pagans in Roman Britain*. Routledge, London.

Weiss-Krejci, Estella
2005 Excarnation, Evisceration, and Exhumation in Medieval and Post-Medieval Europe. In *Interacting with the Dead: Perspectives on Mortuary Archaeology for the New Millenium*, edited by G. Rakita, J. Buikstra, L. Beck and S. Williams, pp. 155-172. University Press of Florida, Gainsville.

Wells, Calvin and Charles Green
1973 Sunrise dating of death and burial. *Norfolk Archaeology* 35(4) 435-442.

Wheatley, David and Mark Gillings
2002 *Spatial Technology and Archaeology: The Archaeological Application of GIS.* CRC Press, London.

White, T. D., and P. A. Folkens
1991 *Human Osteology*. Academic Press, San Diego.

Wickham, C.
1998 The Fall of Rome Will Not Take Place. In *Debating the Middle Ages*, edited by L.K. Little and B.H. Rosenwein, pp. 45-57. Blackwell Publishers, Malden.

Wickholm, A.
2008. Reuse in the Finnish Cremation Cemeteries under Level Ground – Examples of Collective Memory. In *Materiality of Death Bodies, Burials, Beliefs*, edited by F. Fahlander and T. Oestigaard, pp. 89-97. British Archaeology Research International Series 1768.

Williams, P.
1983 *An Anglo-Saxon Cremation Cemetery at Thurmaston, Leicestershire*. Leicestershire Museums, Art Galleries and Records Service, Leicester. Archaeological Reports Series No. 8.

Williams, Howard
1997 Ancient Landscapes and the Dead: The Reuse of Prehistoric and Roman Monuments as Early Anglo-Saxon Burial Sites. *Medieval Archaeology* 41: 1-33.

2000 'The Burnt Germans of the Age of Iron': An Analysis of Early Anglo-Saxon Cremation Practices. Unpublished PhD. Department of Archaeology. University of Reading.

2002 The Remains of Pagan Saxondom"? Studying Anglo Saxon Cremation Practices. In *Burial in Early Medieval England and Wales*, edited by S.Lucy and A. Reynolds, pp. 47-71. Society of Medieval Archaeology Monograph Series 14, Leeds.

2003 Material culture as memory: combs and cremation in early medieval Britain. *Early Medieval Europe* 12(2): 89-128.

2004 Death warmed up: the agency of bodies and bones in early Anglo-Saxon cremation rites. *Journal of Material Culture* 9(3): 263-91."

2005 Keeping the dead at arm's length: memory, weaponry and early medieval mortuary technologies. *Journal of Social Archaeology* 5(2): 253-275.

2006 *Death and Memory in Early Medieval Britain*. Cambridge University Press, Cambridge.

2007 Transforming body and soul: toilet implements in early Anglo-Saxon graves. *Early Medieval Mortuary Practices: Anglo-Saxon Studies in Archaeology & History* 14: 66-91.

2008a Towards an Archaeology of Cremation. In *The Analysis of Burned Human Remains*, edited by C. Schmidt and S. Symes, pp. 239-269. Academic Press, Great Britain.

2008b Anglo-Saxonism and Victorian archaeology: William Wylie's Fairford Graves. *Early Medieval Europe* 16(1): 49–88.

2011 Mortuary practices in early Anglo-Saxon England. In *The Oxford Handbook of Anglo-Saxon Archaeology*, edited by H. Hamerow, D. Hinton and S. Crawford, pp. 238-259. Oxford University Press, Oxford.

2014 A Well-Urned Rest: Cremation and Inhumation in Early Anglo-Saxon England. In *Transformation by Fire: The Archaeology of Cremation in Cultural Context*, edited by I. Kuijt, C. Quinn, and G. Cooney, pp. 123-161. University of Arizona Press, Tuscon.

2015a The Plague of Terms: The 'Anglo-Saxons'. *Archaeodeath: Archaeology, Mortality and Material Culture*. Electronic Document. https://howardwilliamsblog.wordpress.com/2015/02/14/the-plague-of-terms-the-anglo-saxons/

2015b Beowulf and archaeology: megaliths imagined and encountered in Early Medieval Europe. In *The Lives of Prehistoric Monuments in Iron Age, Roman and Medieval Europe*, edited by M. Diaz-Guardamino Uribe, L. García Sanjuán and D. Wheatley, pp. 77-97. Oxford University Press, Oxford.

Woolf, Alex
2007 Apartheid and Economics in Anglo-Saxon England. In *Britons in Anglo-Saxon England* edited by *N.* Higham, pp. 114-129. Boydell Press, Rochester.

Wylie, William Michael
1858 The Burning and Burial of the Dead. *Archaeologia: or Miscellaneous tracts relating to antiquity* 37: 455-478.