

‘Prospects’ and ‘Promenades’:   
Using 3D-GIS to recreate   
contemporary visual experiences   
within English designed landscapes   
c.1550-1660

Elizabeth Eleanor Rose Stewart

A thesis submitted in partial fulfilment  
of the requirements for the degree of  
Doctor of Philosophy  
in the School of History,  
University of East Anglia

September 2019

This copy of the thesis has been supplied on the condition that anyone who  
consults it is understood to recognise that its copyright rests with the author and  
that no quotation from the thesis, nor any information derived therefrom, may be  
published without the author's prior, written consent. ©

## **Abstract**

During the sixteenth and seventeenth centuries, the elite amongst contemporary society had the wealth and status to create English designed landscapes and artificially-organise them around a variety of visual experiences. These experiences included 'prospects', or landscape views, which contemporaries admired either from static vantage points or along 'promenades' involving movement. In 1624, Henry Wotton theorised how creating visual experiences within these landscapes satisfied the "usurping" sense of sight through the "Lordship of the Feete [and] likewise of the Eye". These visual experiences not only influenced the composition of separate estates but also reflected the landowners' attitudes towards the landscape. However, previous research rarely determined the characteristics of 'prospects' and 'promenades' at specific sites. One significant hindrance is the destruction and modernisation of designed landscapes and the subsequent bias towards renowned or grander sites in current research. The degradation of sites affects their appearance, our understanding of their development and our comprehension of how contemporaries experienced them. Therefore, this thesis utilised a multidisciplinary approach and a digital methodology to provide an innovative yet non-invasive solution. By combining the capabilities of CAD and GIS, 3D-GIS was used to recreate certain designed landscapes within their intended geographical and historical context. The experiences within these designed landscapes were then recreated using viewshed analysis, which estimates the visibility of specific 'prospects', and animation technology, for capturing what contemporaries along particular 'promenades' observed. These results were thus interpreted using an adaptation of phenomenology and reception theory. This research has provided fresh insight into contemporary perceptions within individual designed landscapes and the perspectives of the landowners who created them. 3D-GIS has been proven to contribute towards the study of designed landscapes but also has the potential to inspire research about other historic landscapes.

## **Contents**

Acknowledgements .....	6
Abbreviations .....	7
Editorial Conventions.....	8
List of Figures .....	9
List of Appendices .....	17
Chapter 1 - Introduction .....	18
Chapter 2 - Historiography .....	24
2.1 - Introduction .....	24
2.2 - Literary Studies .....	25
2.3 - Art History.....	27
2.4 - Architectural History .....	31
2.5 - Garden History.....	34
2.6 - Archaeology.....	37
2.7 - Geographical Studies.....	40
2.8 - Landscape History.....	42
2.9 - Regional Studies .....	45
2.10 - Digital Approaches to Landscape History.....	47
2.11 - Conclusion .....	53
Chapter 3 - Methodology.....	55
3.1 - Introduction .....	55
3.2 - Regional Distributions of Sites: Norfolk, Suffolk and Essex .....	55
3.2.1 - Topography .....	58
3.2.2 - Soils .....	61
3.2.3 - Rivers.....	69
3.2.4 - Neighbours .....	71
3.2.5 - Summary.....	74
3.3 - Recreating Designed Landscapes.....	75
3.3.1 - Selection Process .....	75
3.3.2 - Gazetteer: Case Studies.....	79
3.3.3 - Data Collection.....	80
3.3.4 - Data Processing.....	88

3.4 - Recreating Prospects and Promenades .....	104
3.4.1 - Data Collection.....	105
3.4.2 - Data Processing: Viewshed Analysis.....	105
3.4.3 - Data Processing: Animations .....	108
3.5 - Data Analysis: Results and Interpretation.....	109
3.5.1 - Establishing Perspectives .....	110
3.5.2 - Phenomenology and Reception Theory.....	111
3.5.3 - Gazetteer: Comparison Studies.....	113
3.6 - Conclusion.....	114
Chapter 4 - Stiffkey Old Hall, Norfolk.....	115
4.1 - Introduction .....	115
4.2 - History and Context.....	117
4.3 - Prospects and Promenades.....	120
4.3.1 - The Approach .....	121
4.3.2 - The Gallery.....	130
4.3.3 - The Principal Rooms .....	147
4.3.4 - The Terrace Walk and Banqueting House .....	160
4.3.5 - Summary.....	167
4.4 - Conclusion.....	170
Chapter 5 - Moulsham Hall, Essex .....	171
5.1 - Introduction .....	171
5.2 - History and Context.....	173
5.3 - Prospects and Promenades.....	179
5.3.1 - The Approach .....	181
5.3.2 - The <i>Piano Nobile</i> .....	192
5.3.3 - The Viewing Mount.....	210
5.3.4 - The Tower .....	218
5.3.5 - Summary.....	225
5.4 - Conclusion.....	229
Chapter 6 - Hoxne Hall, Suffolk .....	230
6.1 - Introduction .....	230
6.2 - History and Context.....	233

6.3 - Prospects and Promenades.....	238
6.3.1 - The Approach .....	240
6.3.2 - The <i>Piano Nobile</i> .....	249
6.3.3 - The Gatehouse.....	266
6.3.4 - The Wall Walk .....	274
6.3.5 - The Garden Building .....	281
6.3.6 - The Lodge .....	286
6.3.7 - Summary.....	293
6.4 - Conclusion.....	297
Chapter 7 - Summary and Conclusion .....	298
7.1 - Introduction .....	298
7.2 - Beauty, Display and Scenery .....	299
7.3 - Progression, Exploration and Discovery .....	309
7.4 - Authority, Power and Status .....	314
7.5 - Privacy, Solitude and Contemplation .....	320
7.6 - Conclusion.....	325
Bibliography.....	332
Appendices - Images .....	368
Appendices - Family Trees.....	373

## **Acknowledgements**

This research was made possible thanks to funding from the Eastern Arc Research Consortium (EARC).

I would like to thank my supervisors, Jon Gregory and Paul Gooding, for their help and advice throughout my research. I have also greatly appreciated the support of the Landscape team at UEA. Thanks are also due to Anne Rowe, Mark Curteis, Victor Morgan, the Paston Heritage Society, the Aspinalls at Oxnead, and the National Trust teams at Melford and Blickling for their help with aspects of my research. Special thanks are due to John Williams, who taught me how to use Autodesk's 3DS Max specifically for this thesis. I would also like to thank my family, friends and colleagues for their encouragement and support.

## Abbreviations

2D	Two-Dimensional
2.5D	Two-and-a-half-Dimensional
3D	Three-Dimensional
AR	Augmented Reality
BAR	British Archaeological Report
CAD	Computer-Aided Design
CBA	Council for British Archaeology
CD	Compact Disc
DEM	Digital Elevation Model
DSM	Digital Surface Model
DTM	Digital Terrain Model
EHER	Essex Historic Environment Record
ERO	Essex Record Office
FSL	Folger Shakespeare Library
GIS	Geographical Information Systems
GPS	Global Positioning System
HALS	Hertfordshire Archives and Local Studies
HER	Historic Environment Record
HMSO	Her Majesty's Stationery Office
LiDAR	Light Detection And Ranging (Data)
OS	Ordnance Survey
NHER	Norfolk Historic Environment Record
NRO	Norfolk Record Office
NRS	Norfolk Record Society
NT	National Trust
RCHME	Royal Commission on the Historical Monuments of England
SHER	Suffolk Historic Environment Record
SRO(I)	Suffolk Record Office, Ipswich
TNA	The National Archives
TIN	Triangulated Irregular Network
VR	Virtual Reality

## **Editorial Conventions**

{insert text}	.....	Interlineations by writer
[insert text]	.....	Missing letters/words or translations of words
fn.2	.....	Footnote by writer
(unpaginated)	.....	No pages numbers given
[00:01]	.....	Animation timecode, in minutes and seconds

## List of Figures

Fig. 1.01 - Pleasure Garden, or A jardin d'amour (Anonymous, 1590) .....	18
Fig. 1.02 - The Promenade (Lucas van Leyden, 1520) .....	19
Fig. 2.01 - Estate map of Long Melford, Suffolk, by Samuel Piers [Pierse], 1613 (Piers, 1613) .....	28
Fig. 2.02 - Richmond Palace, Surrey (Hollar, 1640).....	29
Fig. 2.03 - The Paston Treasure (Dutch School, 1665).....	31
Fig. 3.01 - Location of Norfolk, Suffolk and Essex.....	56
Fig. 3.02 - Distribution of all recorded sites in Norfolk, Suffolk and Essex.....	57
Fig. 3.03 - Distribution of sites by topography .....	59
Fig. 3.04 - Frequency of sites by topography .....	61
Fig. 3.05 - Distribution of sites by soil classification .....	62
Fig. 3.06 - Frequency of sites by soil type (point location) .....	64
Fig. 3.07 - Frequency of sites by soil type (within 1,000 metres of point location)	64
Fig. 3.08 - Distribution of sites in the Brecks, Norfolk.....	67
Fig. 3.09 - Distribution of sites in West Norfolk.....	68
Fig. 3.10 - Distribution of sites by rivers .....	70
Fig. 3.11 - Frequency of sites by proximity to nearest river .....	71
Fig. 3.12 - Frequency of sites by proximity to nearest neighbouring estate .....	72
Fig. 3.13 - Distribution of sites by density .....	73
Fig. 3.14 - Site selection from available LiDAR-derived DTM .....	76
Fig. 3.15 - Locations of case studies in Norfolk, Suffolk and Essex.....	78
Fig. 3.16 - Focus area and skyline analysis of Hoxne Hall, Suffolk .....	81
Fig. 3.17 - Focus area and skyline analysis of Moulsham Hall, Essex .....	81
Fig. 3.18 - Focus area and skyline analysis of Stiffkey Old Hall, Norfolk.....	82
Fig. 3.19 - Photographic observations of landscape context at Stiffkey Old Hall (top) and parish church (bottom) .....	84
Fig. 3.20 - Photographic observation of view over Terrace Walk from Banqueting House, Melford Hall .....	85
Fig. 3.21 - GPS surveys at Melford Hall, Suffolk .....	87
Fig. 3.22 - GPS surveys at Oxnead Hall, Norfolk.....	87

Fig. 3.23 - Map of Hoxon Newe Park, by William Stokes, 1619 (SRO(I) HD40/422), georeferenced using 2 <sup>nd</sup> Order Polynomial (left) and Spline (right) transformations .....	89
Fig. 3.24 - Geo-referenced sources compiled within focus area of Hoxne Hall .....	90
Fig. 3.25 - Data from geo-referenced sources extracted as polygons, Hoxne Hall ...	92
Fig. 3.26 - Polygons visualised in 2.5D environment, Hoxne Hall.....	92
Fig. 3.27 - Photographic observation of Gatehouse, Stiffkey Old Hall.....	94
Fig. 3.28 - CAD model, upon COLLADA (.dae) file, of Gatehouse, Stiffkey Old Hall .	95
Fig. 3.29 - Photographic observations of Fountain (left) and Statue of Hercules (right) from Oxnead Hall, currently at Blickling Hall, Norfolk .....	97
Fig. 3.30 - Photogrammetric models of Fountain (left) and Statue of Hercules (right).....	97
Fig. 3.31 - CAD model imported into ArcMap with COLLADA file as guide .....	99
Fig. 3.32 - 2.5D polygons (left) compared to CAD models (right) within ArcScene	99
Fig. 3.33 - 2-metre DTM for Moulsham, showing motorways .....	101
Fig. 3.34 - 2-metre DSM for Moulsham, showing urbanisation of Chelmsford.....	101
Fig. 3.35 - 2-metre DTM for Moulsham, with motorways removed.....	103
Fig. 3.36 - 2-metre DSM for Moulsham, with sixteenth- to seventeenth-century features included .....	103
Fig. 3.37 - Comparing viewshed overlaid in GIS (left) with edited image (right). .	107
Fig. 3.38 - Visibility of Hoxne parish church within ArcMap (top) and ArcScene with base heights applied (bottom): Viewshed Bug (left) and solution (right) ...	107
Fig. 4.01 - 3D-GIS recreation of Stiffkey Old Hall, Norfolk .....	115
Fig. 4.02 - Soil distribution, Stiffkey Old Hall .....	116
Fig. 4.03 - Sketch of Stiffkey Old Hall, by Humphry Repton, c.1780 (reproduced from Herbert Jones, 1879) .....	119
Fig. 4.04 - Aerial photograph of Stiffkey Old Hall ©John Fielding .....	119
Fig. 4.05 - Old Gorhambury House, Hertfordshire (Anonymous, 18th century) ...	120
Fig. 4.06 - Animation route of Approach, Stiffkey Old Hall.....	122
Fig. 4.07 - Viewshed results from Approach, Old Gorhambury House .....	124
Fig. 4.08 - Approach to Layer Marney Tower, Essex, 1927 (Lloyd, 1927).....	124
Fig. 4.09 - Theobalds Palace, Hertfordshire, on map of Cheshunt Park by John Thorpe, 1611 (reproduced from Henderson, 2005, fig. 28).....	126
Fig. 4.10 - Earthworks of medieval tofts and crofts, Stiffkey (NHER 30712).....	126

Fig. 4.11 - Entrance porch, Old Gorhambury House .....	129
Fig. 4.12 - Reproduction of a 'plat' for the first floor of Stiffkey Old Hall, c.1573 (NRO RH 6/50; reproduced from Smith, 2002, fig. 7) .....	131
Fig. 4.13 - Reconstructive drawing of intended plan for Stiffkey Old Hall, displayed in St John's Church, Stiffkey .....	132
Fig. 4.14 - Ground floor plan of Old Gorhambury House (Page, 1821) .....	133
Fig. 4.15 - Viewshed results from Intended Gallery, Stiffkey Old Hall (Immediate Grounds).....	134
Fig. 4.16 - Viewshed results from Gallery, Old Gorhambury House.....	134
Fig. 4.17 - Plan of Wollaton Hall, Northamptonshire (Smythson, 1580).....	135
Fig. 4.18 - Viewshed results from Intended Gallery, Stiffkey Old Hall (Wider Landscape).....	137
Fig. 4.19 – Location of Actual Gallery, on reconstructive plan of attic floor, Stiffkey Old Hall (Smith, 2002, fig. 3).....	140
Fig. 4.20 - Viewshed results from Actual Gallery, Stiffkey Old Hall (Immediate Grounds).....	142
Fig. 4.21 - Viewshed results from Actual Gallery, Stiffkey Old Hall (Wider Landscape).....	145
Fig. 4.22 - Architectural remains of north-east section, Stiffkey Old Hall (Plunkett, 1984) .....	148
Fig. 4.23 - Reconstructive plans of ground and first floors of Stiffkey Old Hall, by Ernest Sandeen (Sandeen, 1959, figs. 15a-15b).....	149
Fig. 4.24 – Reconstructive plans of ground and first floors of Stiffkey Old Hall, by Alfred Hassell Smith (Smith, 2002 figs. 1-2) .....	150
Fig. 4.25 - Viewshed results from Hall/Parlour, Stiffkey Old Hall (Immediate Grounds).....	152
Fig. 4.26 - Nathaniel Bacon's monument at St John's Church, Stiffkey, c.17 <sup>th</sup> century .....	153
Fig. 4.27 - Doddington Hall, Lincolnshire (Knyff & Kip, 1707; McKee, 2004, plate 63).....	154
Fig. 4.28 - Viewshed results from Hall/Parlour, Stiffkey Old Hall (Wider Landscape) .....	154
Fig. 4.29 - Viewshed results from Great Parlour/Great (Dining) Chamber, Stiffkey Old Hall (Immediate Grounds) .....	156

Fig. 4.30 - The Royal Garden at Whitehall Palace, from Family of Henry VIII (British School, 1545) .....	157
Fig. 4.31 - Viewshed results from Great Parlour/Great (Dining) Chamber, Stiffkey Old Hall (Wider Landscape) .....	159
Fig. 4.32 - Photographic observation of Banqueting House, Stiffkey Old Hall .....	161
Fig. 4.33 - Animation route of Terrace Walk, Stiffkey Old Hall .....	161
Fig. 4.34 - Viewshed results from West Front of Banqueting House, Stiffkey Old Hall (Immediate Grounds) .....	163
Fig. 4.35 - Viewshed results from Banqueting House, Old Gorhambury House .....	163
Fig. 4.36 - Viewshed results from West Front of Banqueting House, Stiffkey Old Hall (Wider Landscape) .....	166
Fig. 4.37 - Viewshed results from East Front of Banqueting House, Stiffkey Old Hall .....	166
Fig. 5.01 - 3D-GIS recreation of Moulsham Hall, Essex .....	171
Fig. 5.02 - Soil distribution, Moulsham Hall .....	172
Fig. 5.03 - Moulsham Hall, on estate map by John Walker (senior), 1591 (ERO D/DM P2) .....	174
Fig. 5.04 - Old Thorndon Hall, Essex, on estate map by John Walker (senior), c.1598 (ERO D/DP P5) .....	175
Fig. 5.05 - Ingatestone Hall, Essex, on estate map by John Walker (senior and junior), 1605 (Edwards & Newton, 1984, plate XVII) .....	175
Fig. 5.06 - Engraving of Moulsham Hall, c.1638 (Puget de la Serre, 1639) .....	176
Fig. 5.07 - Engraving of Moulsham Hall, c.1776 (ERO I/Mb 74/1/131) .....	176
Fig. 5.08 - Moulsham Hall, on county map of Essex, by John Chapman and Peter André, 1777 (Chapman & André, 1777) .....	177
Fig. 5.09 - Estate map of Moulsham, 1591 (ERO D/DM P2) overlaid onto OS 1:2000 map .....	178
Fig. 5.10 - Terling Hall, Essex, on estate map by John Walker (senior), 1591 (Edwards & Newton, 1984, plate IX) .....	180
Fig. 5.11 - Animation Route of Approach, Moulsham Hall .....	182
Fig. 5.12 - Viewshed results from Approach (Gatehouse), Terling Hall .....	184
Fig. 5.13 - Viewshed results from Approach (Forecourt), Terling Hall .....	184
Fig. 5.14 - Mildmay Monument, 1571, at Chelmsford Cathedral (Church of St Mary the Virgin) .....	186

Fig. 5.15 - Inigo Jones' stage design from the masque <i>Florimène</i> , 1635 (Strong & Wragg, 1967, fig. 73) .....	188
Fig. 5.16 - Ground floor reconstruction of Apethorpe Hall, Northamptonshire, 16 <sup>th</sup> century (RCHME, 1984, fig. 21) .....	190
Fig. 5.17 - South façade of Ingatestone Hall .....	190
Fig. 5.18 - Viewshed results from <i>Piano Nobile</i> , South Range, Moulsham Hall (Immediate Grounds) .....	194
Fig. 5.19 - Viewshed results from <i>Piano Nobile</i> , Western Range, Terling Hall (Immediate Grounds) .....	194
Fig. 5.20 - Whitehall Palace, on Ralph Agas' map <i>Civitas Londinum</i> , 1560 (Agas, 1560) .....	195
Fig. 5.21 - Viewshed results from <i>Piano Nobile</i> , Northern Range, Terling Hall (Immediate Grounds) .....	196
Fig. 5.22 - Viewshed results from <i>Piano Nobile</i> , South Range, Moulsham Hall (Wider Landscape) .....	197
Fig. 5.23 - A Landscape with a Shepherd and his Flock (Rubens, 1638) .....	198
Fig. 5.24 - Gardens of Wilton House, Wiltshire (Caus, 1640) .....	198
Fig. 5.25 - Viewshed results from <i>Piano Nobile</i> , West Range, Moulsham Hall (Immediate Grounds) .....	200
Fig. 5.26 - Viewshed results from <i>Piano Nobile</i> , West Range, Moulsham Hall (Wider Landscape) .....	200
Fig. 5.27 - Viewshed results from <i>Piano Nobile</i> , North Range, Moulsham Hall (Immediate Grounds) .....	202
Fig. 5.28 - Viewshed results from <i>Piano Nobile</i> , Southern Range, Terling Hall (Wider Landscape) .....	204
Fig. 5.29 - Viewshed results from <i>Piano Nobile</i> , North Range, Moulsham Hall (Wider Landscape) .....	204
Fig. 5.30 - Viewshed results from <i>Piano Nobile</i> , East Range, Moulsham Hall (Immediate Grounds) .....	206
Fig. 5.31 - Viewshed results from <i>Piano Nobile</i> , Eastern Range, Terling Hall (Wider Landscape) .....	206
Fig. 5.32 - Viewshed results from <i>Piano Nobile</i> , East Range, Moulsham Hall (Parkland) .....	207
Fig. 5.33 - Viewshed results from <i>Piano Nobile</i> , East Range, Moulsham Hall (Wider Landscape) .....	207

Fig. 5.34 - Viewshed results from <i>Piano Nobile</i> , Western Range, Terling Hall (Wider Landscape).....	208
Fig. 5.35 - Arbour, on estate map of Old Thorndon, by John Walker (senior), c.1598 (Edwards & Newton, 1984, plate X).....	211
Fig. 5.36 – Viewing Mount with Banqueting House, on William Lawson's plan for a garden (Lawson, 1617, p.13).....	211
Fig. 5.37 - Viewing Mount at New College, Oxford (Seeber, 2012, fig. 4) .....	211
Fig. 5.38 - Viewshed results from Viewing Mount, Moulsham Hall (Immediate Grounds).....	213
Fig. 5.39 - Viewshed results from Viewing Mount, Moulsham Hall (Wider Landscape).....	214
Fig. 5.40 - Freston Tower, Suffolk (The Landmark Trust, 2018) .....	219
Fig. 5.41 - Viewshed results from Tower at 15 metres, Moulsham Hall (Immediate Grounds).....	220
Fig. 5.42 - Viewshed results from Tower at 25 metres, Moulsham Hall (Immediate Grounds).....	220
Fig. 5.43 - Viewshed results from Tower, Moulsham Hall (Parkland).....	222
Fig. 5.44 - Viewshed results from Park Lodge, Terling Hall.....	224
Fig. 5.45 - Viewshed results from Tower, Moulsham Hall (Wider Landscape) .....	224
Fig. 6.01 - 3D-GIS recreation of Hoxne Hall, Suffolk .....	230
Fig. 6.02 - Soil distribution, Hoxne Hall (Oakley Park) .....	231
Fig. 6.03 - Hoxne Hall, on map by William Stokes, 1619 (SRO(I) HD40/422) .....	234
Fig. 6.04 - Hoxne Hall, on map of Hoxne, 1700 (SRO(I) HB21/280/1).....	235
Fig. 6.05 - Hoxne Hall, from survey book, 1757 (SRO(I) HB21/280/1) .....	235
Fig. 6.06 - Aerial photography of Oakley Park (left) with nineteenth-century house and paths outlined in black (right) .....	237
Fig. 6.07 - Aerial photography of moated site of Woodrising Hall, Norfolk .....	237
Fig. 6.08 - Oxburgh Hall, Norfolk.....	238
Fig. 6.09 - Oxburgh Hall, on parish map by Philip Wissiter, 1722 (NRO BRA 2524/1).....	239
Fig. 6.10 - Oxburgh Hall, on estate map by I.I. de Wilstar, 1725 (NRO BRA 2524/2) .....	239
Fig. 6.11 - Animation route of Approach, Hoxne Hall.....	241
Fig. 6.12 – Photographic observation through entrance gate, Oxburgh Hall.....	242

Fig. 6.13 - Viewshed results from Approach, overlaying parish map by Phillip Wissiter, 1722 (NRO BRA 2524/1) .....	244
Fig. 6.14 - Design of courtyard façade of gatehouse range, Theobalds Palace, c.1570 (Cole, 2017, fig. 9) .....	246
Fig. 6.15 - Practique XI (Dubreuil, 1679, p.125) .....	246
Fig. 6.16 - Valleri [Vallery], France (Du Cerceau, 1576, p.140) .....	248
Fig. 6.17 - Coldham Hall, Suffolk ©John Fielding .....	249
Fig. 6.18 - Ground-floor plan of Oxburgh Hall, by F. Mackenzie, 1774 (Britton, 1809, pp.96–7) .....	250
Fig. 6.19 - Viewshed results from <i>Piano Nobile</i> , North Front, Hoxne Hall (Immediate Grounds) .....	251
Fig. 6.20 - Viewshed results from <i>Piano Nobile</i> , East Range, Oxburgh Hall, overlaying parish map by Phillip Wissiter, 1722 (NRO BRA 2524/1) .....	252
Fig. 6.21 - Fishponds at Buckland Priory, Durston, Somerset .....	254
Fig. 6.22 - Viewshed results from <i>Piano Nobile</i> , South Range, Oxburgh Hall, overlaying estate map by I.I. de Wilstar, 1725 (NRO BRA 2524/2) .....	254
Fig. 6.23 - Earthworks of seventeenth-century water gardens, Oxburgh Hall (Cushion & Davison, 2003, pp.224–5) .....	255
Fig. 6.24 - Viewshed results from <i>Piano Nobile</i> , North Front, Hoxne Hall (Wider Landscape) .....	255
Fig. 6.25 - Viewshed results from <i>Piano Nobile</i> , East Front, Hoxne Hall (Immediate Grounds) .....	258
Fig. 6.26 - Viewshed results from <i>Piano Nobile</i> , East Front, Hoxne Hall (Wider Landscape) .....	258
Fig. 6.27 - Viewshed results from <i>Piano Nobile</i> , South Front, Hoxne Hall (Immediate Grounds) .....	260
Fig. 6.28 - Viewshed results from <i>Piano Nobile</i> , South Front, Hoxne Hall (Wider Landscape) .....	260
Fig. 6.29 - Viewshed results from <i>Piano Nobile</i> , West Front, Hoxne Hall (Immediate Grounds) .....	262
Fig. 6.30 - Brome Hall, Suffolk (Knyff & Kip, 1707; McKee, 2004, plate 45) .....	264
Fig. 6.31 - Viewshed results from <i>Piano Nobile</i> , West Front, Hoxne Hall (Wider Landscape) .....	264
Fig. 6.32 - Viewshed results from <i>Piano Nobile</i> , East Front, Brome Hall (Wider Landscape) .....	265

Fig. 6.33 - Viewshed results from Gatehouse, Hoxne Hall (Immediate Grounds).	268
Fig. 6.34 - Château d'Anet, France (Du Cerceau, 1579) .....	268
Fig. 6.35 - Viewshed results from Gatehouse, Oxburgh Hall, overlaying parish map by Phillip Wissiter, 1722 (NRO BRA 2524/1) .....	269
Fig. 6.36 - Viewshed results from Gatehouse, Oxburgh Hall, overlaying estate map by I.I. de Wilstar, 1725 (NRO BRA 2524/2) .....	270
Fig. 6.37 - Viewshed results from Gatehouse, Hoxne Hall (Wider Landscape, South-East) .....	270
Fig. 6.38 - Viewshed results from Gatehouse, Hoxne Hall (Hoxne Priory) .....	272
Fig. 6.39 - Viewshed results from Gatehouse, Hoxne Hall (Wider Landscape, West) .....	272
Fig. 6.40 - Perimeter wall at the Bishops' Palace in Wells, Somerset .....	275
Fig. 6.41 - French ceiling (left) and parterre designs (right) (Du Cerceau, 1576)	276
Fig. 6.42 - Thomas Southwell, 1 <sup>st</sup> Baronet, with a Gun and His Dog (Anonymous, 1650) .....	277
Fig. 6.43 - Practique LXXXVI (Dubreuil, 1679, p.112) .....	278
Fig. 6.44 - Banqueting House, Melford Hall.....	282
Fig. 6.45 - Viewshed results from Garden Building, Hoxne Hall (Immediate Grounds).....	283
Fig. 6.46 - Viewshed results from Garden Building, Hoxne Hall (Wider Landscape) .....	285
Fig. 6.47 – Lodge, on map by William Stokes, 1619 (SRO(I) HD40/422) .....	286
Fig. 6.48 - Viewshed results from Lodge, Hoxne Hall (Immediate Grounds) .....	287
Fig. 6.49 - Greenwich and London from One Tree Hill (Vorsterman, 1680) .....	289
Fig. 6.50 - Viewshed results from Lodge, Hoxne Hall (Wider Landscape, East) ...	289
Fig. 6.51 - Viewshed results from Lodge, Hoxne Hall (Wider Landscape, West) ..	290
Fig. 6.52 - Viewshed results from Lodge, Hoxne Hall (Wider Landscape, South-East) .....	291
Fig. 6.53 - Viewshed results from Lodge, Hoxne Hall (Wider Landscape, North).	291
Fig. 6.54 - Photographic observations of earthworks from park pale, Hoxne Hall (Easting: 617630, Northing: 276830) .....	292
Fig. 8.01 – Sample of website for 3D-GIS recreations .....	331

## List of Appendices

### Appendices - Images

Appendix 1 - Soil classifications map legend .....	368
Appendix 2 - Frequency of sites by soil classification (point location).....	369
Appendix 3 - Frequency of sites by soil classification (within 1,000-metres of point location) .....	370
Appendix 4 - Satellite locations during GPS surveys (Ford, 2018) .....	371
Appendix 5 - OFFSETA heights for viewshed analyses from vantage points at case studies and comparative sites .....	372

### Appendices - Family Trees

Family Tree Appendix 1 - The Bacons including Cookes, Cecils and Greshams, with Lords of Stiffkey underlined .....	373
Family Tree Appendix 2 - The Mildmays including Fanes, with Lords of Moulsham underlined.....	374
Family Tree Appendix 3 - The Southwells including Bedingfields, Cornwallises and Jerninghams, with Lords of Hoxne underlined .....	375

### CD Appendices

CD Appendix 1 - 3D-GIS recreation of Stiffkey Old Hall, Norfolk, including viewsheds and animations	
CD Appendix 2 - 3D-GIS recreation of Moulsham Hall, Essex, including viewsheds and animations	
CD Appendix 3 - 3D-GIS recreation of Hoxne Hall, Suffolk, including viewsheds and animations	

## Chapter 1 - Introduction



**Fig. 1.01 - Pleasure Garden, or A jardin d'amour (Anonymous, 1590)**

Landscapes have been created and developed as a result of humans' physical and intellectual engagement with the world (Whyte, 2002, p.7). In particular, a powerful connection exists between landscape change and sight, one of humanity's strongest senses (Cosgrove, 2008, p.2). This connection was evident within English designed landscapes of the sixteenth and seventeenth centuries. Designed landscapes of this period included a country house surrounded by gardens and parks, where elite landowners and their guests amongst the upper echelons of contemporary society lived in and experienced (Fig. 1.01). These landscapes also expanded into estates, covering thousands of acres of demesne and other manors that included agricultural land, villages, commons and woodland. Designed landscapes thus became topographical landmarks that revealed their owners' sprawling possessions (Myers, 2013, p.62).

Across the sixteenth and seventeenth centuries during what Roy Strong dubbed the "Age of Adventure" and "Age of Display" (Strong, 1992, p.5), these landscapes were explicitly designed with visual experiences in mind. As Brian Dix described, contemporaries experienced all components of an estate both individually and collectively (Dix, 2011, p.152). During the Elizabethan period, attitudes had shifted away from the static experiences within the confinement of enclosed gardens seen in the medieval period. Instead, there was a growing desire to command a landscape view whilst also actively engaging with the landscape through movement (MacDougall, 1972, p.46; Girouard, 1983, p.107).



**Fig. 1.02 - The Promenade (Lucas van Leyden, 1520)**

In this thesis, the term 'prospect' indicates "an extensive or commanding sight or view... as affected by one's position" (Cosgrove, 1985, p.55). 'Promenade', typically meaning leisurely walking along pre-designated paths, is a term inspired by Lucas van Leyden's sixteenth-century engraving titled 'The Promenade' (Fig. 1.02). Throughout designed landscapes, there were many opportunities to enjoy both prospects and promenades. Preparing visitors for the principal entrance to the house, the approach was frequently "orchestrated" to include appealing visual features within the views along its route (Henderson, 2005, p.35). From prospect rooms, loggias and rooftop walks to great chambers, galleries and state apartments, there were many elevated places throughout the house that provided impressive prospects, either from unenclosed spaces or through large windows (Girouard, 1983, p.107; Henderson, 2005, p.213). Within the gardens "some high [Viewing] Mount" or "exalted Terras[Terrace]-Walk" were pieces of landscape architecture which required significant amounts of earth-moving to create the necessary height "for the Enlargement of the Prospect... to the Satisfaction of the Most Curious" (Evelyn, 1717, p.12). Also constructed were a myriad of permanent ornamental buildings. From banqueting houses, summer houses and pavilions to park standings, hunting towers and follies, these structures were frequently

recorded as being part of visitors' experiences of these landscapes (Woodfield, 1991, p.124). This assortment of locations thus demonstrated the importance of both prospects and promenades when experiencing designed landscapes.

Henry Wotton described this concept of visual experiences from both stationary vantage points and through movement in his text, *The Elements of Architecture*. Wotton subsequently highlighted, to his readers but especially landowners, the importance of acknowledging landscape views within prospects and along promenades when designing country-house estates:

*"Some againe may bee said to bee Optical? Such I meane as concerne the Properties of a well chosen Prospect: which I will call the Royaltie of Sight. For as there is a Lordship (as it were) of the Feete, wherein the Master doth much joy when he walketh about the Line of his owne Possessions: So there is a Lordship likewise of the Eye which being a raunging, and Imperious, and (I might say) an usurping Sence, can indure no narrow circumscription; but must be fedde, both with extent and varietie" (Wotton, 1624, p.4).*

As implied by Wotton, Charles Estienne also wrote that these landscapes were designed "upon the pleasure of the maister and Lord unto whom the ground and garden appertaineth" but especially "by the pleasing of his eye according to his best fantasie" (Estienne, 1616, p.253). Because these landowners had both status and wealth, their desires were frequently satisfied (Strong, 2005, p.22). As the developers, landowners then expressed their ideas and aspirations within carefully-manipulated experiences, which they sought in order to impress their visitors (Dix, 2011, p.152).

However, as Italian painter and art theorist Giovanni Paolo Lomazzo determined, "before these images can come to our understanding, they bee first in the eie[eye]: that is, they must first be seene" (Lomazzo, 1598, p.180). Therefore, in order to understand how landowners and their guests experienced designed landscapes, we must first witness these estates for ourselves. Herein lies the main problem that has hindered research into this subject, as Sarah Spooner stated: "No garden of this period has survived in its entirety in order to fully understand and experience [them]" (Spooner, 2005, p.76). Consequently, as Eugenio Battisti noted, "we have lost not only the Renaissance gardens, themselves, but also the complex mood necessary for the enjoyment and cultural use of those gardens"

(Battisti, 1972, p.6). The gardens, however, are not the only parts of the landscape to be affected. W.G. Hoskins witnessed that as the “country houses decay and fall” and “naked and gashed lies the once beautiful park”, the countryside has also changed as “the bulldozer rams at the old hedges” alongside “by-pass[es], treeless and stinking of diesel oil, murderous with lorries” (Hoskins, 1970, pp.298–9). Unfortunately, these events are part of wider trend where centuries of landscape change have irreversibly impaired our perceptions of how past landscapes once looked and thus how contemporaries originally experienced them. If we are to understand how landowners and their visitors interacted with English designed landscapes, “to a large extent they have to be reconstructed through an imaginative engagement with the physical structure and appearance of the landscapes in question” (Williamson, 1998c, p.2).

This thesis primarily seeks to gain new insight into what the visual experiences within the English designed landscapes of the sixteenth and seventeenth centuries elucidate about the landowners who created, lived in and experienced them. “The critical investigation of place, space and location as an artefact of human history and experience” has been facilitated by developments in digital methodologies within the spatial humanities in combination with traditional humanities assets such as texts and maps (Dunn, 2019, p.2). Therefore, this thesis adopts a multidisciplinary historiographical approach and utilises a digital methodology to help recreate, visualise and comprehend what contemporaries experienced within English designed landscapes including their original landscape context. For this investigation, 3D-GIS is the primary tool. Created using Computer-Aided Design (CAD) and photogrammetry, 3D models are combined with Geographical Information Systems (GIS) to create 3D-GIS landscape representations of designed landscapes. Subsequently, these 3D-GIS recreations assist in providing new understanding of what contemporaries experienced visually. Increased interest in using 3D-GIS has taken place whereby “the multi-layered nature of the GIS environment” together with the “more humanised” perspective that 3D provides has contributed to studies seeking to “evaluate the perceptual experience of space centred on a human perspective” (Landeschi, 2018, p.12). 3D-GIS thus has the capabilities to improve our comprehension of visual experiences within English designed landscapes.

To emphasise the benefits of this approach, I will first explore the variety of historiographical approaches which previous researchers have utilised within the study of designed landscapes in Chapter 2. Numerous disciplines have scrutinised different aspects of designed landscapes and investigated a variety of primary sources which have ultimately contributed to our wider comprehension. However, this chapter will also assess to what extent their individual methods have affected our ability to truly understand these landscapes. Subsequently, I introduce the concept of a multidisciplinary approach facilitated by digital technologies, specifically 3D-GIS, to collectively draw on the methods of each discipline. I will argue that multidisciplinarity coupled with 3D-GIS can help to establish a more resourceful and versatile approach of studying designed landscapes and thus of experiences within them.

Chapter 3 outlines how the methodology implements this approach by combining traditional historical research methods with digital processing, visualisation and analysis. This methodology provides the opportunity for designed landscapes to be recreated and thus investigated within a 3D-GIS environment. Subsequently, by using these recreations to analyse what was experienced visually, new insight into the landowners' and other contemporaries' perceptions towards the landscape can be interpreted. Descriptions are given of each stage of the methodological process and the reasoning behind every decision. The effectiveness of this methodology is thus demonstrated in three case studies chosen from the English counties of Norfolk, Suffolk and Essex. Each case study varied in obscurity, in terms of their surviving landscape conditions, available sources, and current knowledge about their owners. As a result, the recreation, analysis and interpretation of these case studies, which 3D-GIS enabled, greatly improved research into and thus understanding of these sites. These designed landscapes are investigated in greater detail in Chapters 4 to 7.

Chapter 4 introduces the case study of Stiffkey Old Hall, a private residence in Norfolk. Stiffkey was the modest home of Nathaniel Bacon, a member of the lesser elite. This site subsequently sets a precedent because to aid in its recreation and analysis, aspects of Stiffkey's original sixteenth- to seventeenth-century designs remain within the landscape to a certain degree while a greater wealth of sources survives about the site. Chapter 5 then presents Moulsham Hall in Essex as the second case study. Despite its original grandeur as an elite residence which

hosted royalty, little is known about Moulsham or its owners, the Mildmay family. The estate's obscurity was primarily due to its demolition, as a result of war-time occupation and subsequent landscape urbanisation. These factors have resulted in limited physical and documentary evidence that has impacted the ability of this site to contribute effectively to studies of designed landscapes. A similar scenario was evident at Hoxne Hall in Suffolk, the final case study which is the focus of Chapter 6. Hoxne Hall was another demolished site with even fewer contemporary sources about the estate and which remains under private ownership today. Hoxne was also a more complicated designed landscape. Its history as a medieval episcopal palace subsequently affected the development of Hoxne into a secondary country-house estate for a prestigious yet recondite family, the Southwells. The recreation and analysis of these case studies using 3D-GIS provided the scope to interpret the prospects and promenades within them. Enhanced by comparative analyses of related sites analysed within 2D-GIS, what landowners and visitors experienced within the 3D-GIS interpretations of the three case studies are examined in these chapters.

Chapter 7 amalgamates and concludes these findings to ascertain what landowners and visitors both popularly and uniquely experienced within these designed landscapes. This chapter thus illuminates whether the landowners' concepts of landscape perception aligned with fashionable opinions or if they differed thereby influencing them to prioritise their own ideals within their estates. Furthermore, these conclusions clarify what new insight has been gained concerning prospects and promenades within designed landscapes as a result of adopting this multidisciplinary approach and digital methodology. This thesis provides evidence that, even though only three case studies were investigated, 3D-GIS can help produce more comprehensive research of designed landscapes including sites that have been under-researched, misunderstood, or neglected by previous historians. Regardless of these estates' current condition within the landscape, the availability of primary sources, or knowledge of the owners, each site can contribute to the wider understanding of these landscapes. 3D-GIS combined with this multidisciplinary approach therefore provides new opportunities to engage with this period of history through the eyes of contemporaries who once lived within and experienced these English designed landscapes.

## Chapter 2 - Historiography

### 2.1 - Introduction

Designed landscapes and their various components, including country houses, gardens, parks and the wider estate landscape, have been studied by scholars working in a range of disciplines. Important contributions have emerged from literary studies, art history, architectural history, garden history, archaeology, geography, and landscape history. However, while each discipline has their merits, a lack of collaboration and acknowledgement of alternative methods created a “disciplinary vacuum”, meaning disciplines have tended to ignore others’ works and approaches (Spooner, 2010, p.7). Although primarily situated within landscape history, this thesis also embraces a multidisciplinary approach and incorporates digital techniques, which are promising developments for studies in landscape history and subsequently of designed landscapes. As a result, this research more comprehensively and significantly helps in establishing new interpretations and creating more holistic views of the appearance, development and thus the experiences of country-house estates.

While there are some notable exceptions (Strong, 1998; Henderson, 2005), studies of the development of designed landscapes have favoured the eighteenth and nineteenth centuries over the sixteenth and seventeenth centuries. Consequently, our overall knowledge of sixteenth- and seventeenth-century designed landscapes is lacking in some respects. What we currently understand is predominantly based on evidence from well-documented estates and those where elements of earlier designs have escaped significant later modifications. These sites tended to belong to the greater landowners and include royal residences, such as Henry VIII’s Hampton Court Palace in London (Thurley, 1988; Thurley, 2003; Worsley & Souden, 2005), as well as the houses of influential officials, such as Thomas Howard, 1<sup>st</sup> Earl of Suffolk, who owned Audley End in Essex (Department of the Environment, 1958; Drury, 1980; Sutherill, 1995; Alexander, 2015), and William Cecil, who designed a prodigy house called Theobalds Palace in Hertfordshire (Summerson, 1959; Andrews, 1993; Sutton, 2004; Cole, 2017). This bias in social stratification means we know rather little about smaller estates owned by less-wealthy landowners, where both surviving landscape evidence and documentary evidence tend to be inconsistent and, in some cases, non-existent.

Furthermore, there has been a noticeable inability to acknowledge designed landscapes, or indeed landed estates, as collective entities rather than a collection of distinct components to be studied in isolation. As a result, researchers frequently dissociated designed landscapes from their wider landscape setting, despite its significant bearing on the development and utilisation of these sites (Williamson, 2007, p.8; Spooner, 2015, pp.2-3).

As a result, there has been little research into how contemporaries experienced designed landscapes within their landscape context. While researchers have investigated the history of the senses in contemporary sources (Smith et al., 2015; Kern-Stahler et al., 2016) and how memory influenced experiences of landscapes (Schama, 1995; Wood, 2013), the detailed examination of experiences when directly applied to historic country-house estates has been minimal. Subsequently, there is little analysis of notions such as prospects and promenades within the context of designed landscapes. To effectively establish a greater understanding of this concept, it is not only necessary to determine contemporary perceptions of these landscapes but also how landowners shaped such experiences at specific sites amongst the diverse range of designed landscapes existing in the sixteenth and seventeenth centuries.

## **2.2 - Literary Studies**

When William Caxton introduced the printing press to England in the fifteenth century, the mass of new literary works helped encourage many to acquire the art of reading during the sixteenth century (Bennett, 1969, pp.25-6). Therefore, there is huge potential to use these texts as a resource to determine and understand what contemporaries' cultural and intellectual habits were (Dix, 2011, p.153). The contribution of literary studies to historical landscape research is thus important, as it has been readily adopted by other disciplines researching designed landscapes, including architectural history, garden history and landscape history, to name but a few.

Literary scholars have critically analysed a wide variety of texts regarding sixteenth- and seventeenth-century landscape design. The most renowned and discussed genre on the subject is seventeenth-century 'country house' poetry. Alistair Fowler anthologised seventy-seven poems, which he recognised should be called 'estate poems' because of the comprehensiveness of their content (Fowler,

1994). From Ben Jonson's 'To Penshurst', first published in 1616 (Jonson, 1640b), to Andrew Marvell's 'Upon Appleton House', dating originally to 1654 (Marvell, 2007), these poems are of great analytical interest. Their attention to detail regarding the physical attributes of an estate landscape is useful. They also provide insight into the lives of contemporary figures like Sir Robert Sidney and Thomas Fairfax and how they experienced their estates called Penshurst Place, Kent, and [Nun-]Appleton House, Yorkshire (McClung, 1977; Stocker, 1986, pp.46-66; Acheson, 2011; Twynning, 2012). However, these poems have limited usefulness because they tend to focus on one individual estate and the information may, therefore, not apply to other examples. Also, as John Twynning identifies in 'To Penshurst', they poetically reconstruct an ideal edifice which only appears to be natural because these places did exist (Twynning, 2012, pp.118-9). Consequently, these poems often exaggerate and embellish country-house estates for poetic effect and thus never intended to be accurate historical records of these landscapes.

Researchers have explored poetry but also prose and drama with emphasis on different aspects of designed landscapes. Some write specifically on the country house (McClung, 1977; McBride, 2001; Myers, 2013) or gardens (Stewart, 1966; Munroe, 2008; Tigner, 2012) and with the occasional exploration of the wider estate and countryside (Gill, 1972; Baker, 2000). Other studies focus on the works of individuals, such as the novels by Jane Austen, amongst others (Duckworth, 1971; Duckworth, 1989), plays by William Shakespeare (Crane, 1980; Lecercle, 2003) and masques by Inigo Jones (Peacock, 1995; Mowl, 2000). In each instance, these studies rarely analyse these pieces of literature alongside examples of real designed landscapes. When they are, the referenced estates are renowned and of high status, but they form only a small percentage of sites which existed.

However, this discipline tends to primarily analyse fictitious over factual texts and unpublished material, which is more the historians' domain. These non-fictitious works are, nevertheless, becoming readily accessible as anthologies and publications, including the travel diaries of Thomas Platter (Platter, 1937) and John Leland (Leland, 1993) as well as the letters of the infamous Paston family (Agnew, 2012). Some authors have also provided more in-depth explorations of factual and published texts, such as the architectural work of Roger North (North et al., 1981) or farming literature by the likes of Gervase Markham (Leslie &

Raylor, 1992). They have, on the other hand, only been examined and analysed in recent decades (Williamson, 1995, p.5). As a result, these texts are more rarely addressed and analysed collectively, alongside fictitious literature beyond country-house poetry, and with reference to entire designed landscapes (Allen, 1969). Factual and unpublished works certainly provide greater insight into what designed landscapes were really like, but there is no substantial literature which addresses this directly regarding non-fictional examples.

On the other hand, studies of literature are not purely limited to the critical analysis of texts. From the 1960s, literary history, or the “social and cultural history of communication by print”, became partly concerned with “how exposure to the printed word affected the thought and behaviour of mankind” (Darnton, 2009, p.176). This became known as ‘reception theory’; the response of the hearers and readers, in terms of their achievements, contributions, and skills, based on their individual creativity, selectivity and reactivity to literary texts (McGregor & White, 1990, p.1). Although literature on reception theory is extensive, it is still not homogenous and, at present, there is no method developed for written texts to transfer automatically or easily to how readers responded to landscape designs (Hunt, 2013, pp.12–13). As a result, researchers have little analysed individual landowners’ perspectives towards designed landscapes and subsequently of prospects and promenades documented within texts. Studies in reception theory emerged primarily when the subject gained the most influence in the decade after its conception, yet their conclusions were only theoretical (Allen, 1969, pp.124–133; Turner, 1979, pp.49–84). This thesis will, therefore, seek to develop and implement reception theory, which is considered necessary and can offer exciting and fresh perspectives for studies of designed landscapes (Hunt, 1999, p.89; Hunt, 2013, p.7).

### **2.3 - Art History**

Artistic sources also contain vital evidence about designed landscapes. These sources include cartography and landscape paintings and, as kindred activities, their practitioners held common conceptions of the Earth and shared the problems of selecting phenomena and representing landscapes coherently on a plane surface (Rees, 1980, p.60). Cartographic sources have been fundamental for evidencing historic landscape morphologies (Harvey, 1993b). Of special



**Fig. 2.01 - Estate map of Long Melford, Suffolk, by Samuel Piers [Pierse], 1613 (Piers, 1613)**

interest, however, are estate maps (Harvey, 1993a; Buisseret, 1996). These sources record the landowners' property alongside their designed landscapes, an example being the Savages' estate of Melford Hall, Suffolk (Fig. 2.01).

However, paintings and other visual representations created by contemporary artists are also intriguing. During the sixteenth and seventeenth centuries, paintings took the form of either observations or designs (Brown, 1989, p.19). The commissions for paintings correlated with a notable rise in the development of estates during this period. From the outbreak of the Civil War in the 1640s to the turn of the eighteenth century, a noticeable disruption occurred in the number of paintings produced (Strong, 2005, pp.35; 56). Up until this point, a wealth of artistic resources provided useful insights into how contemporaries designed or envisioned their estates, exemplified by Wenceslaus Hollar's depiction of the royal residence of Richmond Palace, Surrey<sup>1</sup> (Fig. 2.02). Since many designed landscapes from this period rarely survive physically intact today, these paintings are considered to be "rare and miraculous relics" (Brown, 1989, p.19), which makes them a popular subject for art historians.

<sup>1</sup> Richmond remained part of Surrey until Greater London absorbed it in the 1960s.



Fig. 2.02 - Richmond Palace, Surrey (Hollar, 1640)

The study of landscapes within paintings from a historical rather than purely aesthetic perspective emerged in the mid-twentieth century (Ogden & Ogden, 1955). Its application to designed landscapes developed in the pioneering works of John Harris, with *The Artist and the Country House* (Harris, 1979), and subsequently Jane Brown and Roy Strong (Brown, 1989; Strong, 2005). However, these texts only briefly analysed singular estates within paintings, while either referencing the sources' background histories or mainly addressing the authors' choices of landscape designs and styles. They also show an inevitable bias towards the grander estates because their owners could afford to commission such paintings. Also, these works are more frequently in good condition and easily accessible within public venues like major country houses or galleries. Only in recent decades have art historians analysed designed landscapes depicted within portraiture in greater detail (Strong, 2005), after Harris and Brown initially referenced and analysed only a couple of portraits (Harris, 1979, pp.21–3; Brown, 1989, p.27). Some art historians have examined the works of key artists, such as Edmund Prideaux (Harris, 1964) and Jan Kip and Leonard Knyff (McKee, 2004). However, researchers tend to prefer certain figures over others like Jan Siberechts, whose work on 'prodigy houses' and other designed landscapes has not been analysed effectively since the 1930s (Fokker, 1931) until recently (Ward, 2016). As a result, art historians have largely ignored other artists' work and the estates of less-affluent landowners.

Paintings provide some insight into the sixteenth and seventeenth centuries, but they can be of limited use when it comes to analysing the landscape as it existed. Painters could choose to distort the actual landscape, appealing to the

tastes of their commissioners. For example, artworks could delineate a real garden as much as one that existed only in the imagination (Strong, 2005, pp.12–13). More importantly, other disciplines have recognised the likelihood that painters manipulated or ignored the natural topography in order to fit a particular view or set of features within the confines of the canvas (Dix, 2011, p.153). Topographical drawings were rare at this time (Harris, 1979, p.8), with the most notable examples being the depictions of Hampton Court and Richmond Palace in Anthonis van den Wyngaerde's perspective of London (Colvin & Foister, 1996). The lack of topographical accuracy in the landscape representations within both paintings and cartographic sources involving designed landscapes also affected how they depicted visual experiences. Analysing prospects has been attempted using later and more accurate works in the context of nineteenth-century public parks in Liverpool (Layton-Jones, 2013). Regarding sixteenth- and seventeenth-century designed landscapes, however, it is more challenging to understand prospects from artistic representations alone. Although not applicable to every painting created during this period, Strong highlighted that:

*"The desire was always to look down from above conveying in detail a garden's extent and lay-out, but not giving any notion of the visitor's experience on foot which would have been one of constant wonder and surprise" (Strong, 2005, p.126).*

Despite this, paintings and maps still retain their value as sources for determining elements of the designs and layouts of designed landscapes, notably when used in conjunction with other available evidence. They also provide a visual record of how landowners wished their visitors to perceive their estates.

Another research perspective amongst art historians concerns the paintings and other artefacts exhibited within country houses. Their analysis determined what works estate owners chose, which thus enables the exploration of their aesthetic and intellectual opinions (Hearn et al., 1999). For example, scholars have attempted to specifically analyse the lives of the Pastons of Oxnead Hall in Norfolk through the Yarmouth Collection (Wenley, 1991; Bucklow, 2018; Moore et al., 2018), focusing primarily on a seventeenth-century painting depicting an assemblage of the family's treasures (Fig. 2.03). Exploring their possessions is a promising approach in ascertaining the individual preferences and lifestyles of landowners. However, in the context of designed landscapes, art historians have



Fig. 2.03 - The Paston Treasure (Dutch School, 1665)

yet to apply this area of study. This thesis endeavours to utilise the approach of art history and these artistic representations, if such sources are available, to create a more holistic picture of not only designed landscapes but the lives of the people who owned and experienced them.

#### **2.4 - Architectural History**

Some of the most prominent features in our landscape, as a result of human intervention, are architectural in nature. Architecture served many purposes within the estate landscape, from the country house itself, to garden and parkland structures, and even other buildings beyond the site, such as the vernacular architecture of tenants' houses, villages and towns or ecclesiastical architecture in parish churches and chapels. These structures have been studied both collectively and individually in terms of architectural history and theory. However, there are still gaps within this approach concerning sixteenth- and seventeenth-century designed landscapes.

Architectural history addresses the physicality of historic architectural structures. Within the literature, one of the most popular subjects in this discipline is the country house, heralded as the greatest contribution by England to the visual arts (Clemenson, 1982, p.33). In the sixteenth and seventeenth centuries, both professional and amateur architects designed these country houses (Colvin, 2008).

Some of the leading architectural history texts about this period have been written from a variety of perspectives. Alongside generalised texts of building histories, including country houses in this period (Airs, 1982; Airs, 1998; Howard, 2008), others have more specifically addressed the economic aspects of building country houses (Airs, 1975; Airs, 1987) or social living within them (Girouard, 1978; Howard, 1987). Even the individual attributes of these country houses have been addressed, from entire floor plans (Gomme & Maguire, 2008) to individual rooms like long galleries (Coope, 1986) or libraries (Gwynn, 2010). Consequently, architectural historians understand country houses as more than buildings owned by the landed elite but as residences that they lived within and experienced. Scholars also have also focused on significant architects like Robert Smythson (Girouard, 1966; Girouard, 1983) and produced detailed studies of specific sites like Hampton Court (Thurley, 1988; Thurley, 2003) or Hill Hall, Essex (Drury & Simpson, 2009). These studies have thus provided insightful explorations of the influential architects and renowned sites that inspired landowners throughout the sixteenth and seventeenth centuries.

One disciplinary strength is the utilisation of a variety of sources, including documents and artistic representations alongside literature on sixteenth- and seventeenth-century architectural theory. By implementing this more diverse range of evidence, architectural historians have therefore explored actual country houses but also theoretical ones. Consequently, their studies also recognise the impact that certain theorists had on architectural practice, including the creation but also adaptation of country houses. Hanno-Walter Kruft has emphasised that “it is only in dialogue with each other that architectural theory and architecture itself can flourish” (Kruft, 1994, p.17). As well as researching foreign works, architectural historians have also explored the contributions of English theorists to country-house architecture (Harris & Savage, 1990), with more specific work on architects such as Inigo Jones (Harris & Summerson, 1989; Newman, 1992; Worsley, 1993) and John Webb (Bold, 1989). It was John Webb who famously stated in 1660 that “most gentry in England at this day have some knowledge in the theory of architecture” (Colvin, 2008, p.871). Therefore, analysis of such texts by architectural historians has aided our understanding of the architectural fashions and developments which elite landowners desired to implement in their country houses during this period.

However, architectural historians have prioritised, markedly, the eighteenth century over previous centuries (Girouard, 1978, pp.119–244; Christie, 2000; Wilson & Mackley, 2000). The increased survival rate of later country houses has in part distracted their attentions away from earlier eras of architectural design. Malcolm Airs has also observed that whilst the Tudor and Jacobean periods should be recognised as the ‘Age of the English Country House’, the natural inclination of many architectural historians is to attribute this to the eighteenth century given the number of constructions within England during this time (Airs, 1998, p.ix). Additionally, England’s main contribution to architectural theory dates from the beginning of the eighteenth century, whilst the chief texts during the sixteenth and seventeenth centuries were translations of foreign works, particularly Italian ones (Kruft, 1994, p.229). As a result, the prominence of country-house architecture during this period is underrated compared to later periods. This thesis thus seeks to further progress studies of the sixteenth and seventeenth centuries within architectural history and theory.

Furthermore, the country house forms only one component of the estate landscape. Architectural historians have rarely recognised the existence of let alone ventured into the landscape beyond the county house. Those that do have tended to include only a passing remark, for example acknowledging the siting of country houses (Airs, 1998, pp.25–26) or referencing neighbouring buildings worthy of note (Girouard, 1978, pp.106–108). Architectural history texts which have more readily addressed the landscape setting of country houses, including other estate buildings, are those which investigated individual case studies like Hampton Court (Thurley, 1988; Thurley, 2003), Hill Hall (Drury & Simpson, 2009) and Blickling Hall in Norfolk (Stanley-Millson & Newman, 1986). This general disregard of the wider landscape by architectural historians stemmed from their inattention to other approaches; for example, regarding garden history, architectural historians have tended to acknowledge Francis Bacon’s *Of Building* while disregarding its companion *Of Gardens* (Henderson, 2008, p.64). Therefore, multidisciplinary historians, like architectural and landscape historian Paula Henderson, have more comprehensively explored other structures alongside the country house (Henderson, 1992b; Henderson, 1999; Henderson, 2005). This thesis will thus ensure country houses are examined collectively with other buildings and their encompassing landscape contexts.

As a result, discussions of visual experiences by architectural historians have centred on those from the country house. Scholars have recognised galleries, loggias and rooftop banqueting houses as platforms from which contemporaries enjoyed a prospect. Some researchers have, however, expanded into concepts of movement through the landscape, such as observations along the approach to Hill Hall (Drury & Simpson, 2009, p.137). Nevertheless, this text is a rare example that contemplated the landscape beyond the house, which many studies have failed to address. Other works have only referenced the prospect, identified the most apparent scenarios and made theoretical assumptions. For example, Mark Girouard has concluded that the windows of the galleries at Thornbury Castle in London “probably all look[ed] inward onto the garden” without further exploration (Girouard, 1978, p.100). Airs has also only conducted “cursory examinations of surviving houses” (Airs, 1998, p.25) to see whether landowners followed Andrew Boorde’s advice (Boorde, 1547), which included creating beneficial prospects but without fully comprehending what contemporaries experienced. Within this thesis, the physicalities of country houses and other structures will be explored within their landscape contexts, while also acknowledging the contributions of English and European architects and theorists. The main aim of adopting this approach is thus to develop a greater understanding of prospects and promenades from the country house and beyond it.

## **2.5 - Garden History**

Before the 1980s, historic parks and gardens were largely the domain of garden historians (Wilson-North, 2003a, p.1). The making and utilisation of gardens is a significant and, in many respects, unique human action. Therefore, as John Dixon Hunt has emphasised, “they deserve their own history” (Hunt, 1999, p.77). During the Renaissance period, gardens were more than simply arrangements of individual features. Landowners’ ideas and aspirations became visible in how they stylised and combined their gardens to impress visitors and manipulate their experiences (Dix, 2011, p.152). However, in the context of sixteenth- and seventeenth-century designed landscapes, there are identifiable weaknesses in the approaches and interpretations of garden historians.

Before *The Renaissance Garden in England* (Strong, 1998), first published in 1979, there was no authoritative account on the subject of Tudor and Stuart

gardens (Strong, 1998, p.7). Up until this point, garden historians' understanding of them has been, in Strong's view, restricted to "vague visions of clipped topiary yews and knot gardens, mazes and arbours, quaint fountains and obelisks" (Strong, 1998, p.12). Instead, they have preferred to explore medieval gardens (Harvey, 1981; McLean, 1981; MacDougall, 1986), the eighteenth-century landscape style pioneered by Lancelot 'Capability' Brown (Stroud, 1950; Hunt, 1988; Brown, 2011; Rutherford, 2016), and the contributions of Humphry Repton, amongst others, towards the concept of the picturesque within landscape design (Stroud, 1962; Hussey, 1967; Jacques, 1983; Hunt, 1994; Ballantyne, 1997; Watkins & Cowell, 2012). As a result, some gardens historians have misunderstood and thus fewer studies exist involving detailed analysis of the sixteenth and seventeenth centuries. Tom Williamson has observed that "garden historians did not really feel the need to explain the changing styles of garden design... Gardens just changed" (Williamson, 1995, p.1). Regarding the sixteenth and seventeenth centuries, some garden historians have wrongly considered this period of garden history as, Spooner highlighted, either a continuation of medieval trends or a precursor to the eighteenth century (Spooner, 2005, p.3).

*The Renaissance Garden in England* is the most renowned text about this era of landscape design by a garden historian, in which Strong has analysed contemporary gardens from an iconographic and literary perspective (Strong, 1998, p.7). However, there are criticisms of this work which apply to the approaches of garden historians generally. One apparent disadvantage is that garden historians have preferred to purely study the garden and rarely acknowledged let alone embraced the contributions of other disciplines or other parts of designed landscapes. To begin with, Paula Henderson has highlighted how garden historians have tended to overlook architectural history. Strong has been guilty of this when he stated that "[t]here is...no mention of any relationship of the house to the garden as an architectural entity" in Francis Bacon's essay *Of Gardens* (Strong, 1998, p.135). This observation is correct, but Bacon instead mentioned the situation of the house, including the gardens, in his essay more architectural in content called *Of Building* (Bacon, 1864b, pp.229; 234). As Henderson has ascertained, Bacon intended contemporaries to read these texts in conjunction with each other (Henderson, 2008, p.64).

This lack of recognition for other disciplines has also been evident in another of Strong's observations:

*"Where, in fact, can we go and see these gardens? The answer is unfortunately nowhere. The formal gardens of sixteenth- and seventeenth-century England are a totally lost art form"*  
(Strong, 1998, p.11).

Strong possibly did not realise the existence or even disregarded the value of a wealth of information available from aerial photography and fieldwork in garden archaeology, which Christopher Taylor pioneered (Taylor, 1983). Garden historian John Phibbs has recognised the benefits of archaeology in this discipline, but even he was reluctant in adopting a more multidisciplinary approach because "academic reports are likely to be cumbersome where research involves a number of disciplines" (Phibbs, 1983, p.173). Garden historians have therefore been slow to adopt archaeological evidence and practices, but Strong has since realised their value following his third edition of *The Renaissance Garden in England* in 1998, twenty-one years after its first publication (Strong, 1999, p.3).

Gardens historians have produced significant literature on different types of garden (Currie, 1990; Taylor, 2008; Whittle, 2017), individual gardens within a single site (Whittle & Taylor, 1994; Eburne, 2008; Seeber, 2013; Woudstra, 2016), or a symbolic theme amongst gardens (Francis, 2008; Bartos, 2010). However, as Ian Henderson has observed, garden historians still desire to focus on the meaning of gardens rather than analyse their "physical attributes and spatial organisation [which] is often strangely absent." Henderson continued to elucidate that without taking those basic characteristics into account, it affects our understanding of what designers intended visitors to experience in their gardens (Henderson, 2016, pp.42; 50). Such observations rarely emerge in these texts except when garden historians have analysed each garden within an estate collectively (Andrews, 1993; Brighton, 1995). Therefore, much of what garden historians have concluded is based on selective content and is thus more speculative.

When garden historians have addressed experiences, however, they only mention specifically-chosen contemporary quotes concerning only prospects of gardens. For example, Strong has addressed John Aubrey's observations of Danver's House in Chelsea and had specifically chosen these quotes: "then you

enjoy a prospect of the Garden" and "you overlook the garden" from the banqueting house (Aubrey, 1921, p.261; Strong, 1998, p.179). On the other hand, Aubrey remarked on other "delightfull Vistos" from the house itself, plus "one southward over the Thames and to Surrey" (Aubrey, 1921, p.259) not mentioned by Strong. Therefore, garden historians' understanding of contemporary experiences has been limited to gardens as their focus and, because of their predilection to only select evidence to support their theories, rarely has the landscape beyond the garden been acknowledged.

Multidisciplinary historians have superiorly studied experiences within these landscapes. Battisti, trained in art history with interests in architecture and garden iconography, added to his understanding of this concept by using taped music of water and birds to recreate the atmosphere of Italian Renaissance gardens (Battisti, 1972, p.3, fn.1). Hunt, using elements of both garden and landscape history approaches, acknowledged how garden historians should address the reception and consumption of gardens within designed landscapes:

*"To use or to inhabit a landscape may be regarded as a response to its design, and to study such responses will bring us to a better understanding of design history. So we need to track how people have responded to sites in word and image" (Hunt, 1999, p.89).*

However, a recent edition of one of Hunt's works called *The Afterlife of Gardens*, first published in 2004, indicated that reception theory has still not been acknowledged by other garden historians researching any garden, not just Renaissance ones (Hunt, 2013, pp.7; 12–13). Therefore, this thesis utilises the garden history approach to shed further light on the impact of the Renaissance within garden design. More importantly, the multidisciplinary approach that this work adopts will improve research into how contemporaries visually-experienced gardens within designed landscapes.

## **2.6 - Archaeology**

Some of the best evidence concerning designed landscapes is archaeological in nature. Through the generations, estates have been continually altered, modernised, left ruinous, entirely removed or replaced by other developments. Garden historians like Strong have believed that certain landscape features, particularly the more ephemeral elements of garden design, did not survive

(Strong, 1998, p.11). However, since the emergence of archaeology within studies of designed landscapes, there has been a greater awareness of the existence of specific features and entire archaeological sites (Dix, 2003, p.21; Wilson-North, 2003a, p.4). Archaeological contributions have been significant in this area, but there are limitations to this approach.

When archaeologists first became involved with designed landscapes, it was typically because they were studying sites for other reasons (Wilson-North, 2003a, p.1). It was not until the 1970s that archaeologists demonstrated the benefits of garden archaeology with the publication of the late-Elizabethan garden earthworks at Lyveden New Bield in Northamptonshire (Brown & Taylor, 1972). Still, it was a decade later when Christopher Taylor's *Archaeology of Gardens* (Taylor, 1983) made a significant impact in the field of garden archaeology and almost single-handedly established the topic on the agenda of modern archaeology (Everson & Williamson, 1998, p.139). The recognition of numerous abandoned garden schemes has been considered one of the major discoveries of the last few decades, which Taylor had played a leading role (Aston & Bettey, 1998, p.121; Everson & Williamson, 1998, p.139).

The field soon progressed and numerous texts have since proved the merit of garden archaeology (Taylor, 1991; Taylor, 1996; Dix, 1997; Dix, 2003; Papworth, 2003; Currie, 2005; Dix, 2011). Archaeological investigations have also occurred elsewhere in the estate landscape (Williamson, 2007), more specifically including parks (Williamson, 1998c), rabbit warrens (Williamson, 2006c), agricultural land (Miller, 1997) and woodland (Rackham, 1981), to mention but a few. However, archaeologists have less frequently examined country houses (Uglow et al., 2012; Cohen & Parton, 2019). One reason is that architectural and art historians provide adequate explorations into them, thus rendering archaeological contributions obsolete (West, 1999, p.104). Nevertheless, archaeology has become "a respected tool in the armoury" for investigating, interpreting and conserving designed landscapes (Wilson-North, 2003a, p.1). As a result, garden archaeology is a key investigative tool which Historic England uses to support research for the *Register of Parks and Gardens of Special Historic Interest in England*, established in 1983 (Currie, 2005, p.167). Archaeologists have also been increasingly accepting of archaeological evidence about designed

landscapes. Such results feature in excavations reports, for instance about Baconsthorpe Castle in Norfolk (Dallas & Sherlock, 2002, pp.32–35).

Regarding designed landscapes from the sixteenth and seventeenth centuries, archaeological approaches have proved particularly useful. Creating gardens in this period involved considerable amounts of earth-moving to build terraces, viewing mounts and water features alongside 'hard landscaping', including walls, paths and ornamental buildings (Williamson, 1998c, p.2). Archaeological evidence, therefore, ranges from earthworks and other upstanding remains to subsurface evidence of previous path layouts and planting arrangements (Dix, 2011, p.151). For example, a recent display of parchmarks revealed the original seventeenth-century parterre garden at Chatsworth Hall in Derbyshire during the summer heatwave in 2018 (BBC News, 2018). However, archaeological investigations into designed landscapes have frequently targeted more prominent archaeological sites like Chatsworth (Bannister & Barnatt, 2009). Landscape historians, therefore, have been left with the more fragmentary archaeological remnants (Williamson, 1998c) and whose discipline previously struggled to form a large part of archaeological training (Phibbs, 1983, p.169).

Taylor has also noted that archaeologists have been "obsessed with the collection of data", rushing to gather it before destruction rather than sufficiently interpreting it (Taylor, 1998, pp.2–3). As a result, some scholars have dismissed their findings. Confirming the absence of features can also be as beneficial as evidence of existence (Spooner, 2010, p.14). However, the invisibility or immateriality of some archaeological data has not typically been considered historically significant by interpreters and so publications have disregarded such findings (Phibbs, 1983, p.169). Another issue is that garden seats and similar temporary structures were not built for posterity (Brown, 1989, p.224), so very little would survive to uncover, despite their known existence (Dix, 2011, p.165). Nevertheless, depending on the conditions of surviving evidence, original plans can be recovered and the data used as the foundations for reconstructions or conservation management (Dix, 2003, p.23; Papworth, 2003, p.12).

Archaeologists have been attempting to understand experiences within landscapes from a first-person perspective using phenomenology. Other scholars have criticised phenomenology as lacking a rigorous methodology that limits

experiences to the 'observer' (Eve, 2014, pp.40-1). Using their own body as a medium has been a central principle of this approach, but what phenomenologists have also recognised is that we cannot understand archaeology without human engagement, an idea which has gained wider acceptance (Barrett & Ko, 2009, p.280). Currently, most phenomenological texts have been concerned with prehistoric landscapes (Brück, 2005; Eve, 2014), particularly focusing on ritual monuments like Stonehenge (Tilley, 1994; Bender, 1999; Tilley, 2004; Bender et al., 2007). On the other hand, country houses have inspired less emotive reactions in archaeologically-minded people to warrant exploration (West, 1999, p.104).

Nevertheless, the contemporary experiences of designed landscapes have been addressed by archaeologists to some extent (Leone, 1984; Finch, 2008). More recently, Shaun Richardson has explored prospects within the late-medieval designed landscape of Harewood Castle in Yorkshire (Richardson, 2010). His conclusions drew on earthworks, photography and observations on-site while he focused on views from specific vantage points within the castle. Fortunately, the castle still stands so the prospects could be pictured (Richardson, 2010, p.38). However, his theories do not wholly account for wider landscape changes, which means the contents of these prospects are still theoretical. Also, this approach is impractical for landscapes which no longer exist, as many sixteenth- and seventeenth-century designed landscapes do not. As a result, little literature exists regarding historic landscape experiences from an archaeological approach alone. Nevertheless, as Catherine Frieman and Mark Gillings have ascertained, reconstructing perception is better achieved by reconstructing people (Frieman & Gillings, 2007, p.8). To tackle this subject, this thesis will thus use archaeological and phenomenological approaches when recreating designed landscapes, the prospects and promenades within them, and the people who created them.

## **2.7 - Geographical Studies**

Geographers have found their interests in various areas, from ecological and environmental studies to cultural and aesthetic ones. Nonetheless, by definition, all geography is considered historical and can be subdivided depending on distinct processes (Dennis, 1991, p.265). Geographical approaches have thus followed many lines of enquiry to help advance studies of historic landscapes. However, geographers have tended to explore alternative subjects to designed

landscapes. As a result, little has been published about them, let alone from the sixteenth and seventeenth centuries or about experiences within them.

Nevertheless, the contributions of this discipline are applicable and thus, our understanding of designed landscapes can be furthered using this approach.

Within geographical studies, landscape change has remained of central importance (Pacione, 1987, p.7). As a result, geographers have analysed various aspects of the landscape throughout time, including the sixteenth and seventeenth centuries. Eva Taylor first combined topographical studies with human geography to produce two key texts on the geography of the Tudor and Stuart periods (Taylor, 1930; Taylor, 1934). Other scholars have published geographical texts which do address the histories of collective kinds of features, from the distribution of parks (Prince, 1967; Prince, 2008) to the evolution of villages (Rowley, 1987; Wild, 2004) and towns (Glennie, 2013). Such texts have provided useful insight into the workings of the wider landscape, but literature on designed landscapes, particularly of this period, is limited. Studies exploring such landscapes have been biased towards the eighteenth century onwards (Clemenson, 1982; Daniels, 1999; Daniels & Seymour, 2013) because those from earlier centuries less often survive.

Geographers have more frequently adopted a multidisciplinary approach due to the importance attached to using a wide variety of sources to support their research. The discipline has acknowledged the economic impact on agricultural landscape change (Overton, 1984; Overton, 1996; Yelling, 2013) or the cultural impact on geography supported by fictional (Sanders, 2011) combined with non-fictional texts (Barnes & Duncan, 1992). Taylor also listed bibliographies of historic published and unpublished texts alongside her work (Taylor, 1930, pp.163–283; Taylor, 1934, pp.177–298). The discipline also accepted archaeological sources as valuable (Hill, 2015). However, what geographers have specialised in are visual analyses, and thus they frequently use iconographic sources like cartography and art when studying landscapes (Rees, 1980, p.60). Maps have long been recognised as a primary analytical tool for geographers (Cosgrove, 1984, p.30). Geographers' interventions in historical subjects have spanned from how the Earth was imagined throughout history (Cosgrove, 2001) to specific landscape depictions on estate maps, for example, to address rural change and agricultural improvement in England from sources owned by Christ Church, Oxford (Fletcher, 1990). Geographers have also incorporated paintings into their

research, such as Stephen Daniels' work on nineteenth-century landscape designer, Humphry Repton (Daniels, 1999). As a result, whilst geographical investigations have utilised a range of sources, visual analyses tend to dominate.

Regardless, because of their gravitation towards visual analyses, geographers have provided more literature on landscape perception and experiences (Appleton, 1975; Cosgrove, 2008; Cooper & Gregory, 2011). David Cosgrove has particularly looked into prospects within landscapes, including brief references to seventeenth-century rural estates (Cosgrove, 1984, pp.192–196), but there has been a noticeable preference towards the eighteenth century and onwards (Cosgrove, 1985; Daniels, 1999). Furthermore, these texts only contain theoretical assumptions rather than practical analyses of the prospect. As Cosgrove has stated, “the ideology of vision, the way of seeing implicit in much of our geography still awaits detailed examination” (Cosgrove, 1985, p.58). Altogether, geographers have yet to explore the individual nature of the prospect within designed landscapes of the sixteenth and seventeenth centuries. Nevertheless, their research into the wider landscape and visual experiences will be advantageous within this thesis.

## **2.8 - Landscape History**

This thesis predominantly adopts a landscape history approach. Landscape historians have been concerned with exploring the landscape, explaining how mankind has shaped it over time and interpreting the spatial patterns and structures created in the past (Williamson, 1998b, p.1). Our landscape is a rich historical record, and it is possible to peel back its layers to gain a greater understanding of its development (Beckett, 2007, p.111). A frequent metaphor in this field is that the landscape is a ‘palimpsest’ (Crawford, 1953, p.51; Johnson, 2007, p.45; Pryor, 2010, p.15; Spooner, 2010, p.14) because all human activities have left their signature upon the land, each partly overwriting whatever has gone before (Jessop, 2007, p.39). The landscape history approach has thus proved beneficial in the identification, analysis and interpretation of designed landscapes, which have been greatly altered, removed and replaced since their creation. Notwithstanding this, there are still gaps in the knowledge regarding these landscapes in the sixteenth and seventeenth centuries.

In 1955, W.G. Hoskins' *The Making of the English Landscape* (Hoskins, 1970) became the pioneering text of this discipline (Williamson, 1998b, p.1). Brown has argued that because Hoskins assured his readers that Elizabethan and early seventeenth-century designed landscapes had existed and evidence of them could still be found (Hoskins, 1970, pp.163–170), landscape historians endeavoured to confirm their presence (Brown, 1999, p.148). Since Hoskins, landscape historians have continued to acknowledge the importance of the country house and its landscape and provided some of the leading texts in the analysis of designed landscapes throughout time (Williamson, 1995; Finch & Giles, 2007; Spooner, 2015). However, only a few historians have studied sixteenth- and seventeenth-century designed landscapes using a landscape history approach. Paula Henderson has produced some of the most useful texts for the Tudor period (Henderson, 1992b; Henderson, 1999; Henderson, 2005; Henderson, 2008; Henderson, 2011) while John Dixon Hunt's works begin in the seventeenth century (Hunt, 1975; Hunt, 1986). Certain texts by Anthea Taigel and Tom Williamson (Taigel & Williamson, 1991) and Sarah Spooner (Spooner, 2005) take a more in-depth look into sixteenth- and seventeenth-century designed landscapes from different lines of enquiry. Nevertheless, there is still a notable lack of publications about this period compared to others (Benson, 2017; Rowe, 2019).

One advantage of this approach is a willingness amongst landscape historians to be multidisciplinary. Landscape historians overlap with historians, historical geographers, historical ecologists and archaeologists; even Hoskins was notably a social and economic historian (Williamson, 1998b, p.1). This approach ensured the popularity of Hoskins' pioneering text. Therefore, historians using a landscape history approach have also adopted more multidisciplinary ones, like with Henderson's architectural and garden history (Henderson, 2005), Hunt's garden history (Hunt, 1986), Williamson's archaeology (Williamson, 1998c) and Spooner's social and intellectual approaches (Spooner, 2005). As a result, there is a greater breadth of analysis into designed landscapes. Landscape history is also popular amongst both experts and amateurs alike. As Williamson has explored, the increasing professionalism in disciplines like archaeology has excluded many enthusiasts. On the other hand, compared to archaeologists, landscape historians utilise more non-invasive and less complicated techniques of collecting data, which has thus made this discipline far more accessible (Williamson, 1998b, p.1).

The works of landscape historians have contributed to the study of designed landscapes using their approach to the subject. However, they have also achieved more in-depth analyses because they accept and utilise numerous primary resources. Evidence is not only sought from the landscape but the vast range of cartographic sources, artistic representations, archaeological evidence, literary texts and manuscripts. However, the sixteenth to the seventeenth century is a difficult period to research because of the lack of material and surviving sites. Analysis of these landscapes has thus demonstrated difficulties in synthesising all available evidence (Stewart, 2015, p.15). As Kate Tiller has concluded, there are still layers of 'palimpsest' to be studied by landscape historians and it is becoming necessary "to engage with a wider body of knowledge" (Tiller, 2007, p.200). Therefore, this thesis acknowledges this situation by enabling a greater range of resources and knowledge to be analysed cohesively.

Because of their adoption of multidisciplinary approaches, landscape historians have been characteristically interested in scales of landscape analysis wider than that of the 'site' (Williamson, 1998b, p.1). As Paul Everson and Tom Williamson have explained, within the context of designed landscapes, the gardens and wider landscape were connected to the buildings whose setting they provided. This approach thus ensures that they are analysed together, which more academically-compartmentalised disciplines have failed to achieve (Everson & Williamson, 1998, p.141). Subsequently, the landscape history approach has provided more supportive foundations for analysing how people experienced landscapes in the past (Whyte, 2005; Whyte, 2009; Whyte, 2015). Amongst others, landscape historians have so far only been able to speculate what landscape views existed. In some cases, the possibility has been dismissed altogether, which tended to occur without testing the hypothesis (Taigel & Williamson, 1991, p.6). Experiences within designed landscapes have only recently begun to be explored using the landscape history approach, including how contemporaries primarily experienced gardens after their initial construction (Hunt, 2013) but also looking at the views from within entire sites (Spooner, 2009; Spooner, 2015; Stewart, 2015; Stewart, 2019). However, more is still to be understood. Research conducted to date has demonstrated that it is by recreating the conditions of the time that allows greater realisation of contemporary landscape experiences, including visual ones. Another of Tiller's conclusions is that landscape historians

need to find “some different ways of seeing” the subject and the evidence (Tiller, 2007, p.200). This thesis, therefore, not only adopts a multidisciplinary approach rooted in landscape history but also uses the strengths of computational approaches in order to ‘see’ the evidence in ways currently challenging to achieve.

## **2.9 - Regional Studies**

Regional variation studies identify landscape diversity by restricting the spatial parameters of analysis to a region. Researchers assess each predetermined region for variations in their physical landscape attributes, including soil type and topography, and the impact of human intervention, such as agricultural practice, settlement patterns and communication systems. It is thus possible to ascertain similarities and differences in how individual regions operated, in response to social, cultural and economic factors, to name but a few. This approach has highlighted how regions have not been homogenous and many regions have adopted their own sense of identity (Whyte, 2002, p.7). Therefore, by not addressing and analysing each of these aspects concerning regional variation, it “hinders more than helps our understanding of the past” (Williamson, 2013, p.146). The application of this approach to the study of designed landscapes is important, yet some disciplines have not addressed regional variation, or they have preferred certain regions over others. Subsequently, the regions of Norfolk, Suffolk and Essex, of which this thesis predominantly focuses upon, have not been equally represented within the studies of designed landscapes.

In 2006, England Heritage published the most recent comprehensive regional survey of historic landscapes. In this series, eight volumes assessed each official region across England, from the North East to the South West (Aalen, 2006; Cunliffe, 2006; Hooke, 2006; Kain, 2006; Short, 2006; Stocker, 2006; Williamson, 2006a; Winchester, 2006). However, each volume varied in its content and approach. Consequently, references to sixteenth and seventeenth-century estates were restricted to small sections or, in some cases, little more than a paragraph (Aalen, 2006, p.81; Cunliffe, 2006, pp.93–94; Hooke, 2006, pp.129–134; Short, 2006, pp.231; 230; Stocker, 2006, pp.144–150; Williamson, 2006a, pp.134–138; Winchester, 2006, pp.159–160), even not at all (Kain, 2006). Other historians have also adopted this approach, for example looking at South-East England or the Midlands (Brandon, 1979; Wilson-North, 2003b; Spooner, 2015).

More typically, however, regional analysis has focused upon individual counties, which is how English Heritage organised their *Register of Parks and Gardens of Special Historic Interest in England* (English Heritage, 1998). Selecting counties is convenient because they are already prime for individual landscape and documentary analysis (Spooner, 2010, p.19). Researchers have explored some counties within studies on designed landscapes (Woodward, 1982; Sheeran, 1990; Pugsley, 1994; Stamper, 1996; Pett & Wales, 1998; Rowe, 2007) although some scholars prefer certain counties, such as James Bond's works on Somerset (Bond & Iles, 1991; Bond, 1998; Bond, 2003). Timothy Mowl's *Historic Gardens* county series is another notable contribution (Mowl, 2002; Mowl, 2003; Mowl, 2004; Mowl, 2005; Mowl, 2006; Mowl, 2007; Mowl & Hickman, 2008; Mowl & Mako, 2008; Mowl, 2010a; Mowl, 2010b; Mowl & James, 2011; Mowl & Mayer, 2013).

However, analysis of designed landscapes within East Anglian counties has been predominantly undertaken by landscape historians, with contributions particularly by Williamson and Spooner (Williamson & Taigel, 1990; Williamson, 1998a; Williamson, 1998c; Edwards & Williamson, 2000; Williamson, 2000; Williamson, 2004; Spooner, 2010; Spooner, 2012b; Dallas et al., 2013; Spooner, 2015; Williamson et al., 2015). Other disciplines, however, have not adopted the regional approach and therefore, their analysis of designed landscapes within these counties has been minimal. For example, no Norfolk designed landscapes had been analysed by art historian John Harris in *The Artist and the Country House* (Harris, 1979). If such studies had adopted regional approaches, it would have proven beneficial for understanding, for example, topographical representations in pictorial evidence of designed landscapes. Therefore, there are genuine possibilities for adopting the regional approach to studies of designed landscapes.

Fewer publications have adopted a regional approach when addressing designed landscapes of the sixteenth and seventeenth centuries (Mowl, 2002, pp.29–38; Mowl, 2005, pp.24–34; Mowl, 2006, pp.31–44; Mowl, 2004, pp.20–29; 30–41; Mowl, 2007, pp.27–44; Mowl & James, 2011, pp.21–37; 38–61; Mowl & Mako, 2008, pp.16–34; Mowl & Mayer, 2013, pp.40–64; 63–88; Stamper, 1996, pp.5–24; Steane, 1977; Bond & Iles, 1991). However, some have only briefly referenced or catalogued sites rather than undertaken in-depth studies of individual estates within a regional context. Additionally, there has been a bias between the counties and so Norfolk, Suffolk and Essex, although represented to

some extent (Wright, 1990; Taigel & Williamson, 1991; Hoppitt, 1992; Williamson, 2000, pp.11–29; Stubbings, 2002, pp.3–9; Spooner, 2005; Stewart, 2015; Stewart, 2019), still requires more considerable attention. There have also been instances where only a selection of sites was acknowledged while many were unrecognised. For example, Henderson had only referred to fourteen sites within Norfolk (Henderson, 2005), and Spooner had highlighted that many more had existed and yet were not mentioned (Spooner, 2005, p.4).

Even fewer works exist that have analysed experiences of the landscape, including that of the prospect. Nevertheless, the works of Nicola Whyte has ensured that, to a certain extent, contemporary experiences of Norfolk have been addressed (Whyte, 2005; Whyte, 2009; Whyte, 2015). However, her work has predominantly focused on the working classes within rural environments rather than elite owners within country-house estates. They are, nonetheless, useful when understanding regional perspectives towards landscape experiences. Therefore, there is potential in analysing the regional variation of designed landscapes and the different ways that, for example, topography or cultural differences affected how contemporaries experienced these landscapes.

## **2.10 - Digital Approaches to Landscape History**

Looking at the works by researchers in the aforementioned disciplines, our current understanding of sixteenth- and seventeenth-century designed landscapes is deficient. The most apparent and influential problems have been that, first, there is a lack of available material and surviving sites from this period, which became a predicament for scholars' analyses previously, and second, researchers have not effectively synthesised all the available material or approaches supported by other disciplines (Stewart, 2015, pp.15–16). For these reasons, it is crucial to combine all disciplinary approaches and relevant resources to analyse individual designed landscapes effectively. In order to ensure this, this thesis has incorporated digital approaches that have assisted research of landscape history.

Digital technologies have significantly contributed to various research aspects of landscape history. One area involves data collection, where digital methods provide non-invasive methods of landscape investigation that appeal to landscape historians (see Section 2.8). The repurposing of World War II air reconnaissance photography has aided the discovery and exploration of the

historic environment (Cowley et al., 2010). Aerial photographs were a significant development until the introduction of Light Detection and Ranging (LiDAR), where airborne lasers detecting the surface of the earth have revealed, for example, three potential Roman camps at Hadrian's Wall (Collins, 2015). Geophysical prospection using magnetometers has especially proven useful in detecting subsurface evidence, including garden archaeology (Cole et al., 1997; Wheeler et al., 2007).

Presenting data in ways that makes them accessible to others is another objective. There has been an increase in digitised sources, from aerial photographs stored at the Cambridge Air Photography Library (Cambridge Digital Library, 2017) to archaeology reports, amongst other archival material, hosted by the Archaeology Data Service (Archaeology Data Service, 2018). Database technology has allowed textual landscape information to be accessed, as exemplified by the English Place Names database (Hough, 1998). Photo-editing software, such as Adobe Photoshop, has helped visualise and annotate the geometric proportions and positions of mapped features within John Vanbrugh's landscape designs (Dalton, 2012). Global Positioning Systems (GPS), which has become integral in landscape investigation, now features in mobile devices and has opened up new ways of interacting with heritage sites (Dunn, 2019, p.13). For example, visitors to Venta Icenorum, the Roman town at Caistor St Edmunds, can explore the landscape within an interactive Augmented Reality (AR) virtual tour (Jam Creative Studios, 2018). As featured within this app, 3D visualisations of historic landscapes have become popular by allowing public access to cultural heritage objects and sites and enabling new research to be conducted (Pellitero, 2011, p.202). 3D modelling software is one of the digital technologies that this thesis utilises, and its specific historiographical intervention shall be addressed shortly.

The previous digital approaches are beneficial. However, the spatial humanities including spatial history, which prioritise the handling of spatial data, have been essential to landscape archaeology and site-based studies (Earley-Spadoni, 2017, p.100). At the heart of spatial history and spatial humanities is Geographical Information Systems or GIS (Bodenhamer et al., 2010; Gregory & Geddes, 2014, pp.ix-x; Dunn, 2017, p.89; Gregory et al., 2018, p.1; Dunn, 2019, p.3). GIS has benefitted not only landscape historians but other disciplines addressing humanities subjects, such as Literary GIS (Cooper & Gregory, 2011). When combined with 3D visualisation software, 2D-GIS becomes 3D-GIS and, for this

thesis, 3D-GIS has helped recreate and analyse visual experiences within designed landscapes. The scholarly interventions using these digital technologies singularly and collectively within landscape history are the focus of the following sections.

### **Geographical Information Systems (GIS)**

In its simplest terms, GIS is defined as the merging of cartography, statistical analysis, and database technology. However, what characterises GIS is its ability to handle spatial data, which are geographically-referenced to a map projection in an Earth coordinate system, and to perform spatial analyses using such data (Agugiaro & Remondino, 2014, p.101). Created in the 1960s, GIS became a replacement for cartography for planning infrastructure and developments, which progressed throughout the 1970s and 1980s (Chapman, 2006, p.16).

The utilisation of GIS for the study of historic landscapes is a more recent phenomenon. GIS had emerged in disciplines like archaeology in the 1980s with prominent publications from the 1990s (Green, 1990; Harris & Lock, 1995; Lock, 2000; Wescott & Brandon, 2003; Wheatley & Gillings, 2003; Mehrer & Wescott, 2005; Conolly & Lake, 2006) before advancing into landscape studies by the late 1990s (Gillings et al., 1999; Chapman, 2006). Gillings has previously stated that GIS was of benefit to landscape studies but had not yet been readily-applied to individual site-based studies (Gillings, 2000, p.106). Since then, there has been an increase in literature where researchers utilise GIS for studies of individual historic landscapes, such as prehistoric sites (Fisher et al., 1997; Chapman, 2003; Llobera, 2007; Saunders, 2014). Regarding designed landscapes, on the other hand, scholars have less frequently used GIS. A GIS system had helped store archival data for the management of Brodsworth Hall, Yorkshire (Dallas et al., 1993). Especially regarding the eighteenth century, researchers have visualised maps and conducted spatial analyses of eighteenth-century designed landscapes, such as those by Vanbrugh (Dalton, 2012), as well as visual analyses of smaller sites in rural and urban landscape contexts (Spooner, 2009; Spooner, 2015).

GIS is an attractive system for many reasons. Various qualitative and quantitative sources can be imported and layered alongside others to ease data synthesis, which has previously been difficult to achieve. Scholars have also struggled with variables such as topography within their analyses, which GIS can incorporate. Also, researchers have conducted regional variation analyses, in some

cases using very large and complex datasets, with relative ease (Gillings, 2000, p.106; Williamson, 2006b; Deegan & Foard, 2008; Spooner, 2009; Partida, 2014; Saunders, 2014). These are just a few of its advantages for the study of historic landscapes. The main reason for using GIS within this thesis, however, is for its spatial analysis techniques. Concerned with the visual analyses of historical landscapes, this work uses the 'viewshed' tool to estimate landscape visibility from certain locations. Scholars have frequently used viewsheds to analyse visibility within GIS-based studies of historic landscapes (Fisher et al., 1997; Chapman, 2003; Llobera, 2007; Eckardt et al., 2009; Saunders, 2014; Gregory & Liddiard, 2016), but less frequently of designed landscapes (Dalton, 2012, p.200; Spooner, 2015; Stewart, 2015; Stewart, 2019).

However, what the majority of these texts could improve upon is the integration of topographical barriers, such as vegetation and built environments, to ensure more accurate results (Bevan & Lake, 2013, p.245; Saunders, 2014, p.24). Also, as previously mentioned, there is no substitute for experiencing these landscapes on foot (Strong, 2005, p.126). 2D-GIS, however, prevents analysts from immersing themselves, thus hampering visualisations of contemporary perspectives and landscape experiences (Richards-Rissetto, 2017a, pp.199–200). As a result, other visual experiences through movement have been ignored when using GIS and instead have been explored using other technologies (Dunn & Woolford, 2013). Therefore, this thesis has adopted a three-dimensional approach to GIS called 3D-GIS, achieved by incorporating 3D models created using Computer-Aided Design (CAD) and Photogrammetry into GIS.

### **Computer-Aided Design (CAD), Photogrammetry and 3D-GIS**

Unlike 2D-GIS, 3D-GIS utilises the Z-axis along with the X-axis and Y-axis of the Earth's coordinate axes system. These attributes enable elevations or heights to be expressed as contours but also for three-dimensional models to be integrated into the virtual landscape (Chapman, 2006, p.41). 3D-GIS also has animation capabilities which, alongside viewshed analysis, can improve understanding of visual experiences within landscapes. However, GIS systems do not have the capabilities to produce acceptable standards of 3D models, which is why 3D modelling software is utilised. In the 1950s, developers created CAD as a replacement for paper drawings in architecture and design professions, which

enabled the creation of single models instead of amalgamations of multiple 2D drawings. CAD became a standard tool in the 1980s (Jameson, 2004, p.263) alongside the development of Virtual Reality (VR) (Virtual Reality Society, 2015). Scholars only addressed 3D-GIS at the end of the 1980s (Raper, 1989) before being used by certain disciplines during the 1990s (Abdul-Rahman & Pilouk, 2007, p.6). Only a few systems are presently available which attempt to provide a solution for 3D representation and analysis, such as ESRI's ArcGIS (Zlatanova et al., 2002, p.1). Despite its infancy, 3D-GIS has great potential for historic landscape studies.

Researchers have used CAD software for the reconstruction of historic landscapes. Heritage and educational industries have popularly used historically-accurate digital models, as Virtual Past has demonstrated with CAD but in a way that borders on VR (Virtual Past, 2016). This approach has also been applied to, for example, designed landscapes including Gawthorpe Hall in Lancashire, Harewood House and Temple Newsam, both in West Yorkshire, as part of a temporary exhibition (Heritage Technology, 2013). The process of modelling historic buildings and features has been assisted by developments in photogrammetry, which can create digital replicas of objects or landscapes from multiple photographs. Cultural heritage and archaeology specialists have frequently used this method to recreate long-lost historical landscapes such as Pompeii, Italy (Apollonio et al., 2012), or revive more recently demolished heritage sites like Palmyra, Syria (Silver et al., 2018). Photogrammetry has become more popular because equipment costs have dropped as modelling quality increased (Reljić & Dunder, 2019, p.94). Regarding designed landscapes, photogrammetry has been used to survey existing structures, like Melford Hall which helped the National Trust determine its chronological development (Boothman & Hyde Parker, 2005, pp.lxviii–lxix). Researchers, however, have yet to explore its potential for reconstructing entire designed landscapes fully.

Nonetheless, there has also been criticism that those who have created 3D models have used “3D for 3D’s sake” (Shepherd, 2008, p.200). Scholars have also questioned and criticised the credibility of such reconstructions as little more than attractive images (Pujol, 2004, p.4). Additionally, the use of a 2D virtual environment is more appropriate in certain circumstances and, in some cases, 3D has nothing more to offer (Bleisch & Dykes, 2015). However, these criticisms have emerged because of CAD and photogrammetry interfaces, even though the

purposes of these softwares are predominantly to construct models. As a result, the benefits of combining 3D modelling and GIS software into 3D-GIS becomes evident. The essential difference between the two is the handling of the spatial aspects of the data, which subsequently affects the ability to conduct further spatial analyses of CAD and photogrammetric models (Abdul-Rahman & Pilouk, 2007, pp.1; 4–5). Therefore, by incorporating them into a GIS environment, 3D models can become part of the analyses undertaken within GIS. Archaeologists have primarily used 3D-GIS as a way of “improving the qualitative experience of a user in terms of visualisation” (Dell’Unto et al., 2016, p.88). For example, archaeological research has included spatial analyses within the House of Birds in Roman Italica (Earl, 2005), visual analyses of buildings at Pompeii (Dell’Unto et al., 2016; Landeschi et al., 2016), and viewshed analyses to measure visibility within landscape reconstructions of ancient Maya (Richards-Rissetto et al., 2014; Richards-Rissetto, 2017a; Richards-Rissetto, 2017b). Stuart Eve has also experimented with 3D-GIS within a ‘mixed reality’, combining phenomenology and augmented reality, to investigate and experience the Bronze Age landscape of Bodmin Moor, Cornwall (Eve, 2014).

On the other hand, only on rare occasions have researchers used 3D-GIS within the context of designed landscapes. Arnoud de Boer et al. have reconstructed the seventeenth-century rural estate and landscape context surrounding the Palace of Honselaarsdijck, within the Netherlands (de Boer et al., 2011). However, the project had only experimented with and assessed the reconstructive capabilities of 3D-GIS, and thus no further analysis had been undertaken. There have also been instances where 3D modelling did not account for or authentically recreate the wider landscape context, which potentially affects how people visually experienced the landscape. Consequently, using 3D-GIS as a reconstructive and analytical tool for designed landscapes has only more recently been trialled, looking specifically at the prospect using viewshed analysis (Stewart, 2015; Stewart, 2019). The results from this research demonstrate how 3D-GIS can provide the best opportunity to recreate not only the sixteenth- and seventeenth-century designed landscapes that have long-since vanished. 3D-GIS can also help determine the ways that contemporaries once perceived these landscapes and thus provide the circumstances to better comprehend who these people were through what they experienced.

## **2.11 - Conclusion**

This chapter has made evident the potential of 3D-GIS to rekindle analysis into sixteenth- and seventeenth-century designed landscapes. Nonetheless, it has also become clear that adopting the strengths of various disciplinary approaches is necessary to produce a more robust methodology. Firstly, literary history has frequently provided written evidence of high-status or well-known estates but from more imaginative or idealised perspectives, which means that this approach is less useful for reconstructing real designed landscapes with confidence.

Nevertheless, literature and other written texts, fictitious or factual and published or unpublished, can elucidate the personalities and habits of landowners. By adapting reception theory, the landowners' thoughts and inspirations behind their landscape designs visual experiences can be theorised through literary works. Art history can also serve a similar purpose. Although artworks may not depict actual estates and prospects thereof as they truly existed in the landscape, the observations and designs they record can still support the 3D-GIS recreations. However, iconographic sources can capture how landowners envisioned their estates to be perceived. Although the works art historians have predominantly examined are typically attributed to grander and more renowned sites, this evidence can nonetheless assist in recreating the historical and landscape contexts that inspired other estates' designs and visual experiences within them.

One of the approaches better equipped to help recreate designed landscapes in 3D-GIS is architectural history. Although the country house remains this discipline's key focus, its use of historical evidence is beneficial when reconstructing what existed but also what was proposed and envisioned yet never executed or completed. Furthermore, the theoretical works of notable architects add further knowledge to support the recreations but also improve understanding of what architecture potentially inspired these landowners. Garden historians, on the other hand, have effectively explored the meanings within gardens, which can beneficially support interpretations of experiences within them. On the other hand, their inattention to physical and spatial elements of gardens has been problematic when reconstructing gardens as well as understanding them in conjunction with other estate features. While their methods have benefitted investigations of more popular subjects like post-eighteenth-century designed landscapes, both architectural and garden history approaches can similarly benefit

our comprehension of sixteenth- and seventeenth-century ones. However, both disciplines have struggled to recognise each other's research contributions as well as the wider landscape context, meaning their understanding of contemporary experiences does not go beyond their chosen foci.

To help bolster these weaknesses, the physical elements of surviving but also ruinous, demolished or abandoned sites along with the wider landscape can be supported by archaeology and geography. However, archaeology's phenomenological approach can also further support reception theory by adding an immersed first-person perspective within the 3D-GIS recreations. Geography, on the other hand, has demonstrated disciplinary strengths in using a diverse range of sources but also visual analyses to improve knowledge of landscape perception. Although researchers within these disciplines have gravitated towards other time periods, geographical and archaeological approaches are relevant and can be adapted to help reconstruct sixteenth- and seventeenth-century landscapes and people.

These approaches have strengths which help counter the weaknesses of others, but it is landscape history that has the scope to combine them into a multidisciplinary approach. Landscape historians have treated designed landscapes as collective entities and recognised the landscape context of these sites. In-depth regional analysis shall provide further insight into the physical and cultural attributes of designed landscapes in this part of East Anglia. Subsequently, studies of experiences within designed landscapes shall not be restricted to the site or its individual components. Using digital technologies and ultimately 3D-GIS, reconstructing these sites and analysing prospects and promenades within them shall thus have greater support using a multidisciplinary approach that predominantly resides in landscape history. 3D-GIS shall further research beyond what single sources or disciplines have achieved by combining data from multiple sources as singular reconstructions, visualising them from immersive and realistic perspectives, and comprehending experiences using viewsheds and animations. Therefore, this approach has the potential to reveal more about the lives and personalities of contemporaries who created and experienced these sites. Altogether, by synthesising these approaches and resources using 3D-GIS as a catalyst, this thesis shall provide the best opportunity to explore this noteworthy yet under-researched phenomenon.

## Chapter 3 - Methodology

### 3.1 - Introduction

This chapter presents the historical research methods used alongside software, tools and other digital processes which form this methodology. The aim is to demonstrate how this work used a well-informed multidisciplinary approach to recreate and analyse designed landscapes, specifically regarding the visual experiences within them. Additionally, this methodology highlights any encountered problems and, if found, their solutions. Within the preliminary phase, the regional context of English designed landscapes, specifically within the counties of Norfolk, Suffolk and Essex, was established. This stage explored the distributions of known sites and interpreted any potential trends and variations. Subsequently, this study assisted in deciding which designed landscapes within the region to recreate and analyse as case studies. Once selected, the chosen case studies became digital visualisations within 3D-GIS. These recreations thus provided the context for visualising and analysing the prospects and promenades using a combination of viewshed analysis and animations. Interpretations of these recreated prospects and promenades then required establishing the contemporary landowners' perspectives using an adapted combination of phenomenology and reception theory. This research stage helped interpret how these landowners' perceptions of the landscape potentially influenced the designs of their estates and thus what they intended their visitors to experience within these sites. While this methodology has assisted in improving our knowledge of English designed landscapes, there is potential for it to be adapted for the benefit other studies researching historic landscapes. Therefore, this chapter seeks to inspire other scholars and historiographical disciplines to use 3D-GIS and a multidisciplinary approach in the future.

### 3.2 - Regional Distributions of Sites: Norfolk, Suffolk and Essex

The preliminary methodological stage explored the regional context of designed landscapes. First, a database was created using a Microsoft Excel spreadsheet which recorded all relevant sites, from the grandest royal residences to the country houses of the local gentry. The database contained the locations and identities of designed landscapes inside the counties of Norfolk, Suffolk and Essex,



**Fig. 3.01 - Location of Norfolk, Suffolk and Essex**

within the region of East Anglia (Fig 3.01).<sup>2</sup> These counties were chosen partially because of their current level of recognition within previous regional studies of sixteenth- and seventeenth-century designed landscapes. Scholars have most frequently researched sites within Norfolk in great depth (Williamson & Taigel, 1990; Taigel & Williamson, 1991; Spooner, 2005; Stewart, 2015; Stewart, 2019), whereas less work has been undertaken on those in Suffolk (Williamson, 2000) and Essex (Stubbings, 2002). However, these counties also form a unique English landscape region, which this analysis explores.

1,381 sites were identified within this part of East Anglia and recorded within the database. Each estate either already existed from the medieval period or emerged during the sixteenth and seventeenth centuries. Online heritage databases and secondary literature, including county-specific architectural guides and previous regional works on designed landscapes, provided information about these sites. These consulted sources were thus inputted alongside the relevant entries within the database. Also, any existing data concerning the owners, their status in society or title, and the current condition of these sites was documented. However, some designed landscapes may still be unaccounted for within the

<sup>2</sup> County boundaries mostly unchanged since the fifth century, except southern Essex reorganised into part of the Greater London Boroughs in 1965 (Hunter, 1999, p.ix).

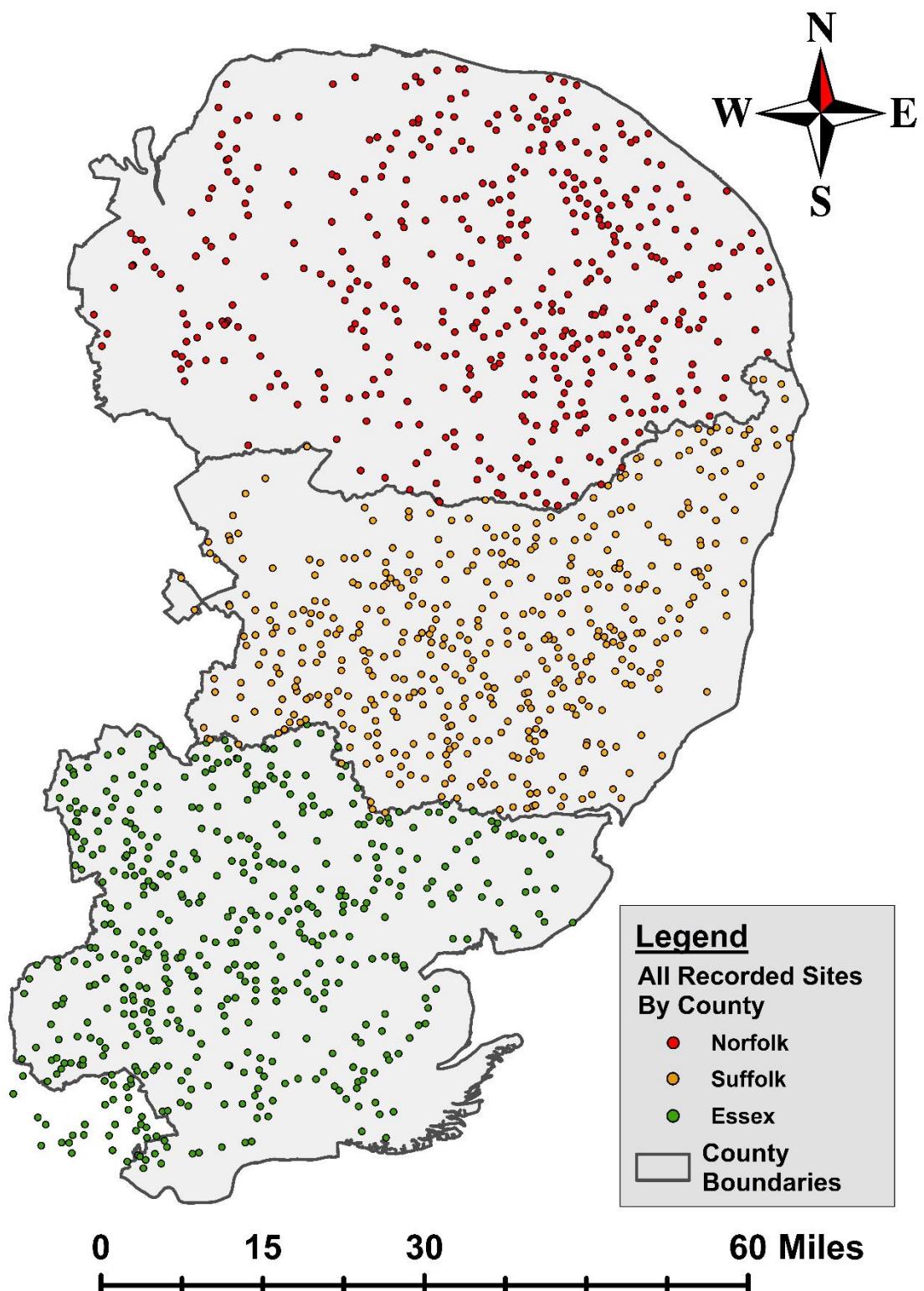


Fig. 3.02 - Distribution of all recorded sites in Norfolk, Suffolk and Essex

historical record whilst certain information was unverifiable due to inconsistent or absent data. For example, the site of a demolished estate called Kettlestone Hall, Norfolk, has not been identified, and thus its location was approximated within the database. Another complication was determining at which point a small country house became a farmhouse because the grandest examples of farmhouses were indistinguishable from the houses of the lesser gentry (Airs, 1987, p.79). As a result, the yeoman tenant farm of Bishop's Hall in Chelmsford, Essex, was excluded from the database. Altogether, Bond has previously ascertained that "no published survey of parks and gardens can ever be definitive" and "will continue to be reassessed", as new evidence, investigative techniques and questions arise (Bond, 2003, p.84). Subsequently, this database cannot be considered complete and thus may be subject to change.

Alongside these entries, the geographical locations of each site in the database were recorded as Eastings and Northings. These coordinates corresponded with the British National Grid coordinate system used by ESRI's ArcMap 10.3, a 2D-GIS software program. Subsequently, by uploading the spreadsheet into ArcMap, every recorded site was transformed into point data and displayed spatially according to their coordinates (Fig. 3.02). Specific analyses were then conducted on these point data to help determine the relationships between each site and other regional landscape factors, including topography, soil types, rivers, and other designed landscapes or places of prominence in contemporary society. While 2D-GIS helped analyse the data spatially, Excel assisted in conducting statistical analyses of these sites. The aim was to improve our understanding of designed landscapes by identifying patterns, correlations and variations between these designed landscapes and the regional landscape.

### **3.2.1 - Topography**

One recognisable aspect of East Anglia is its topography. Especially within Norfolk before progressing into Suffolk and Essex, topography is flatter and closer to sea-level compared to other regions. To assess its influence on designed landscapes, the point data was first overlaid onto the region's topography, recorded within raster dataset with 50-metres resolution downloaded from Edina Digimap, to undergo spatial analysis (Fig. 3.03). A significant lack of sites occurred where the topography was closest to sea-level. Sites surrounded large areas of

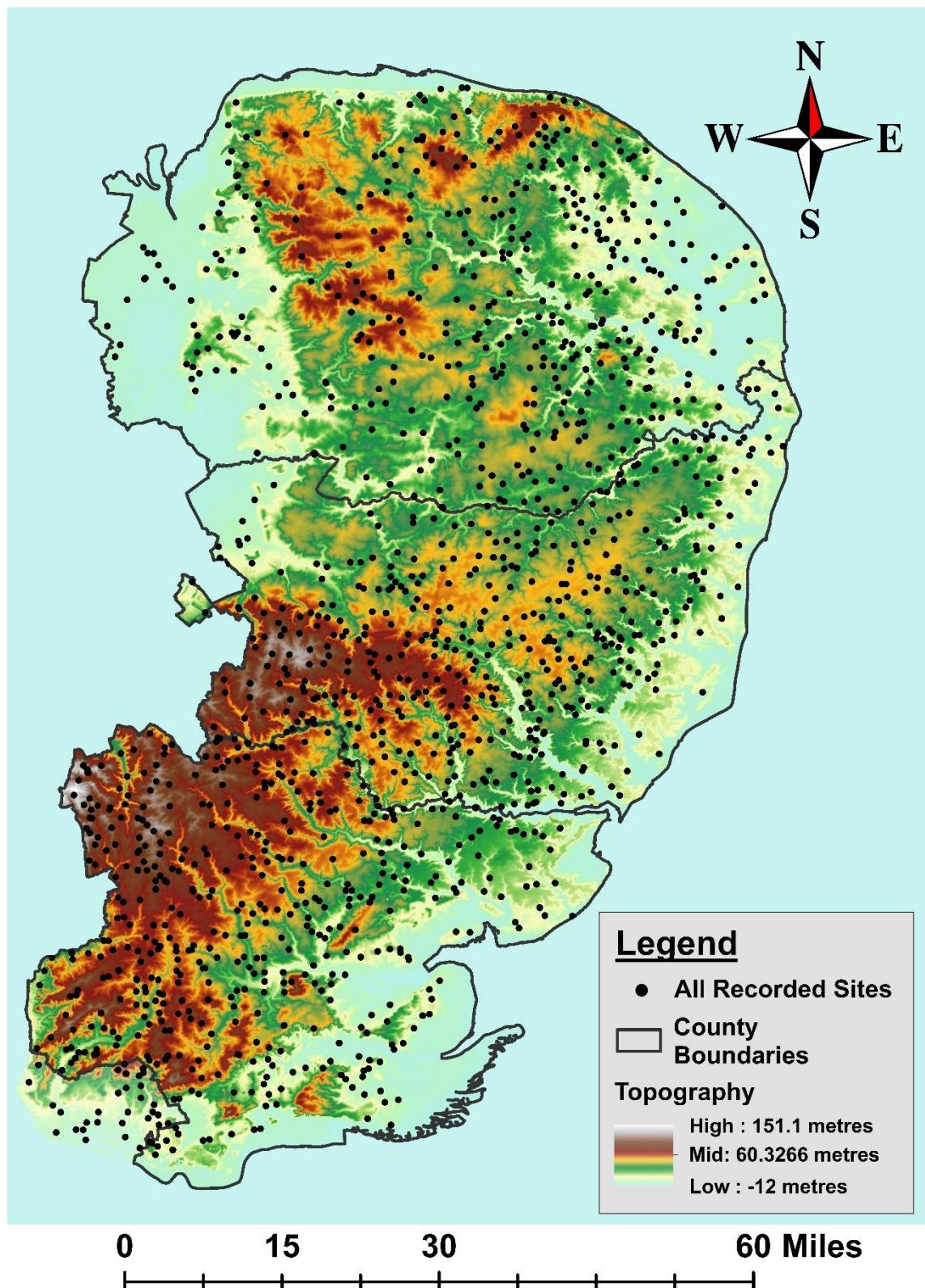
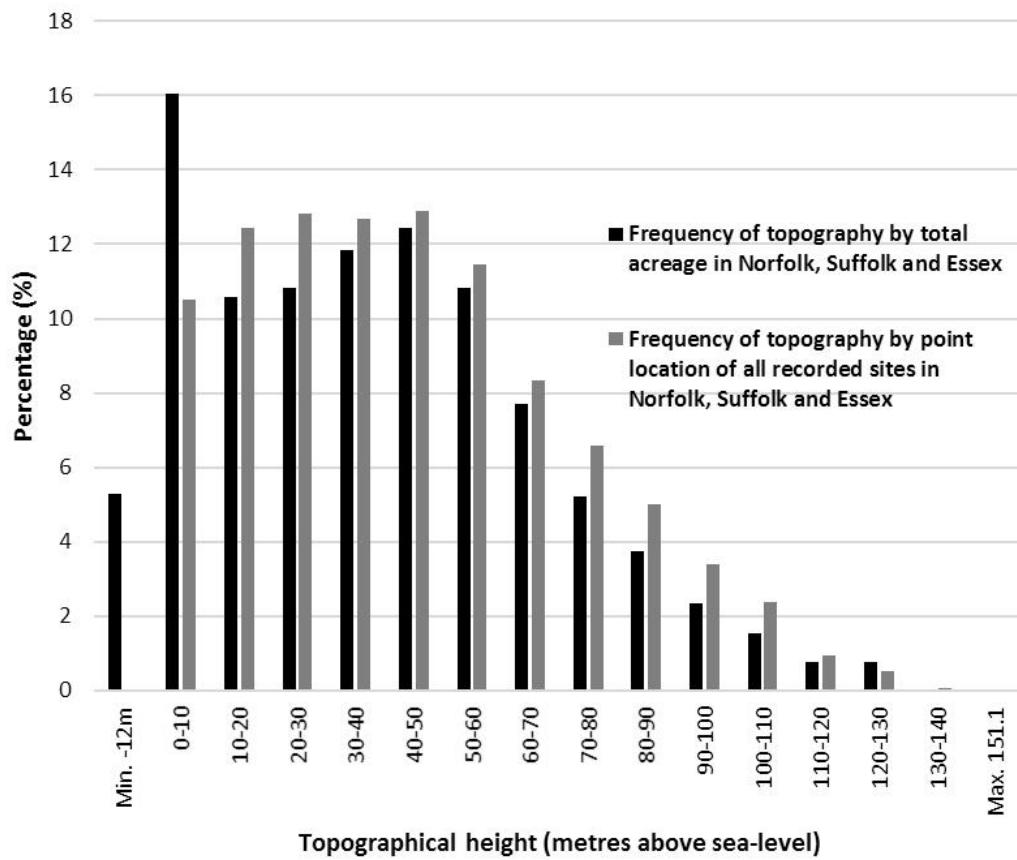


Fig. 3.03 - Distribution of sites by topography

water including the easterly Norfolk Broads, where estates demarcated the marshland's border. On the other hand, a small conglomeration of designed landscapes existed within the west-Norfolk fenlands. It was logical for landowners to avoid building on these areas, which were susceptible to rising sea-levels. Also, Wotton advised not to build too near "any foggy noysomnesse from Fenns or Marshes" (Wotton, 1624, p.3). Most landowners adopted his advice except within West Norfolk, indicating that they likely built their estates here for reasons besides topography. Beyond these observations, determining what topographical heights each site precisely resided upon using only spatial techniques was difficult.

Consequently, statistical analysis was conducted to determine the heights that landowners most commonly situated their designed landscapes. Using the 'Extract Values to Point' tool within GIS, the values from the 50-metre raster dataset were embedded into the overlying point data. Subsequently, a database was created, which recorded each site's topographical height in metres above sea-level. The topographical raster dataset was also converted using the 'Raster to Point' tool in GIS, thus allowing the extraction of all topographical values throughout the region to compare with the elevations upon which each designed landscape resided. Once exported into Excel, statistical analysis was conducted on the data, which produced the following results (Fig. 3.04). The sites corresponded with the region's topographical heights almost consistently. There were noticeable differences, however, regarding the lowest topographies. Both statistical and spatial analyses recognised that no sites existed below sea-level. However, the statistical analysis also identified that, although 16% of the region was up to 10 metres above sea-level and thus the most common topographical height, landowners less frequently situated their sites upon that elevation range.

Instead, landowners typically placed their designed landscapes upon elevations between 10 and 50 metres above sea-level. Certain factors potentially encouraged this activity. For example, Wotton recommended that landowners should not situate an estate somewhere "too steepie", which created an "incommodious Accesse to the trouble both of friends and familie" (Wotton, 1624, p.4). According to North, "the mean is best" to avoid being "intolerably exposed to weather" or too "neer water [which was] found or thought unwholesome" (North et al., 1981, p.89). Consequently, the intermediate ground accounted for both



**Fig. 3.04 - Frequency of sites by topography**

“want of sunne” with shade and “want of wind” with shelter in moderation (Wotton, 1624, p.3). Therefore, topography likely influenced the landowners’ decisions on where to situate their designed landscapes, to avoid sea-level while seeking a balanced and temperate environment to improve their situations overall. However, designed landscapes typically adhered to the region’s topography.

### **3.2.2 - Soils**

Soils and compositions thereof are also subject to regional variation and thus they influenced the locations of designed landscapes. To analyse correlations between estates and soils, spatial analysis was first undertaken. The site distribution data was superimposed onto a mapped soil classification dataset, containing descriptions of each soil classification within its attributes (Fig. 3.05; Appendix 1). To ascertain which soil compositions these designed landscapes resided upon, the point data was merged with the soil dataset using a spatial ‘Join’ function. However, soils also affected the designation of land use in the areas surrounding designed landscapes, which thus influenced the placement of these sites. Therefore, buffers spanning 1,000 metres were generated around each

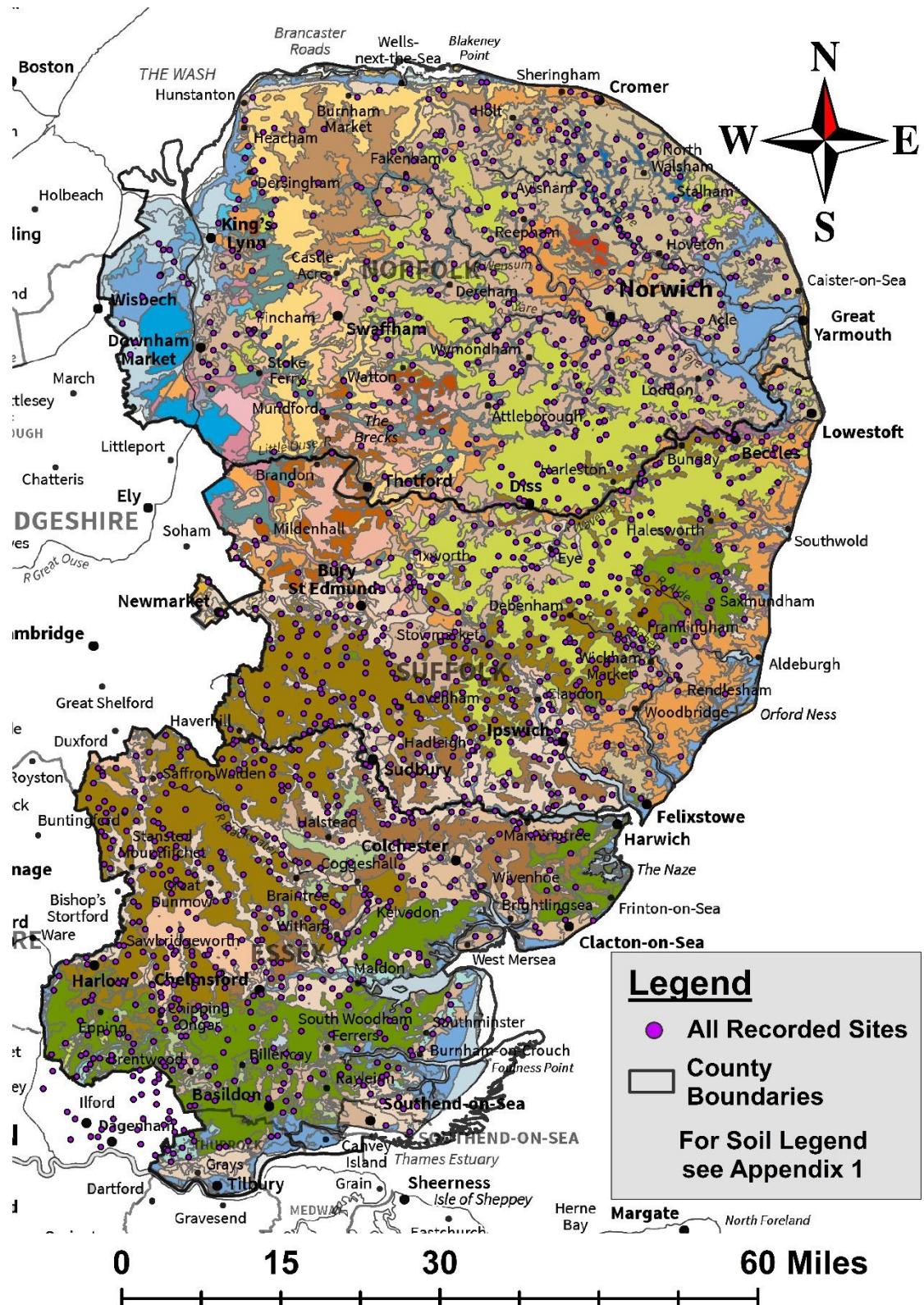
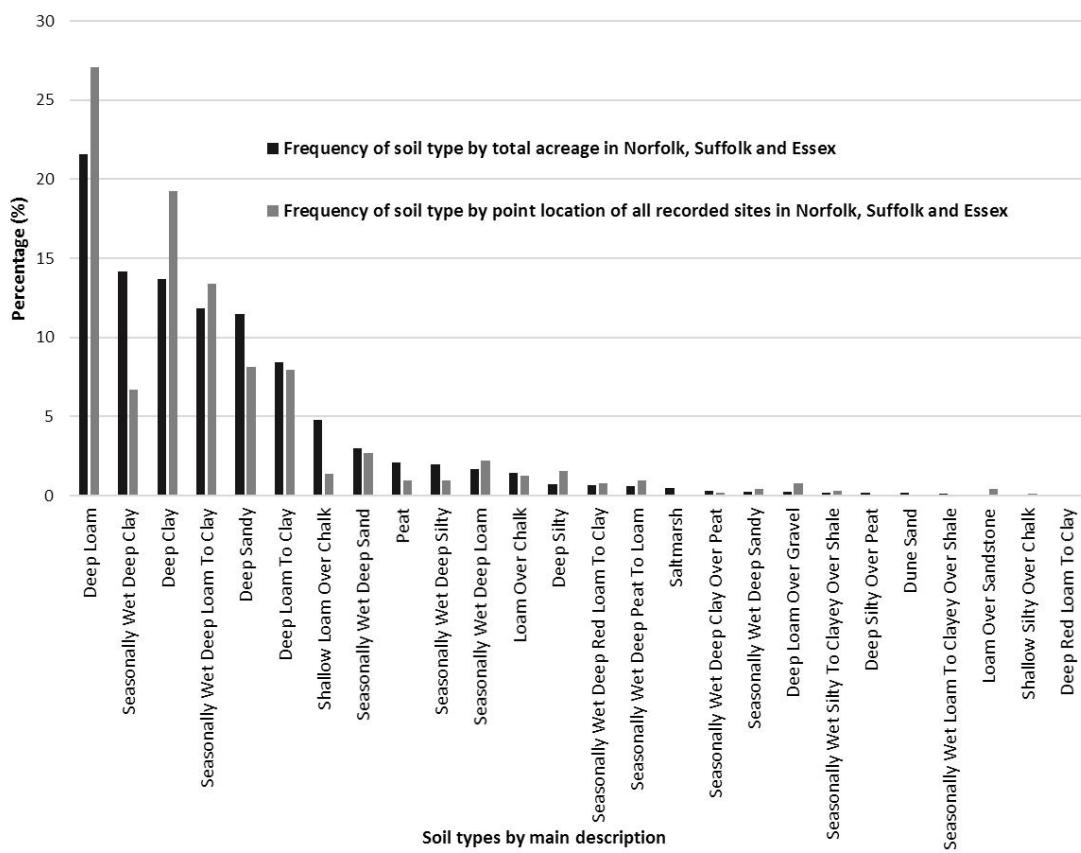


Fig. 3.05 - Distribution of sites by soil classification

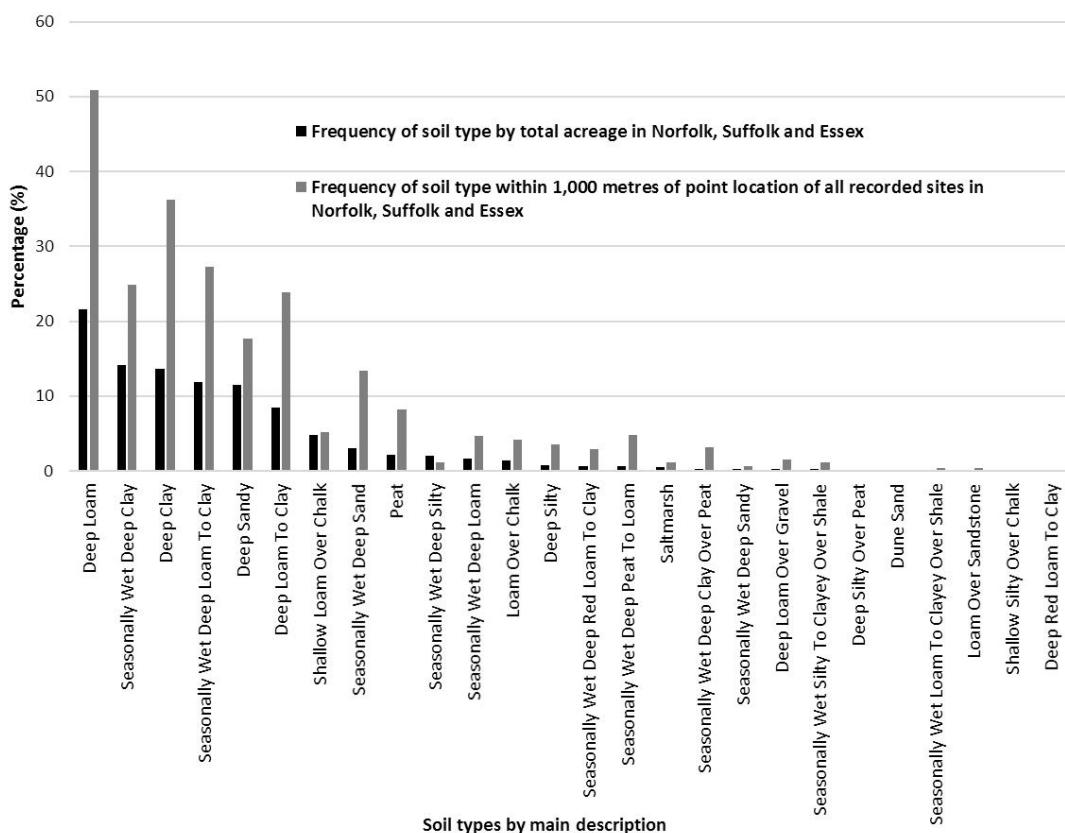
point. Each buffer had an Area field, within which their acreages were determined using the 'Calculate Geometry' function. Using the 'Intersect' tool, the buffers were then divided into individual polygons that reflected where soil changes occurred within their areas. The information from soils classification dataset was also embedded into these polygons' attributes, which were then exported into Excel for statistical analysis. However, 81 soil classifications exist within this region, which was a large, cumbersome dataset and thus unhelpful as a soil identification system for regional analysis in this instance. Whilst the relationship between sites and soil classifications was explored (Appendices 2-3), addressing the 30 main soil types constituting these classifications was deemed of more use (Fig. 3.06-07).

Deep loams are the most dominant soil type, constituting nearly 22% of this area in East Anglia. However, combining various deep clay classifications established that clay soils were the most common, making up around 27% of the region. Clay and loam combinations then represented under 21%. Deep sandy soils less-frequently occurred, comprising close to 12%, whilst various compositions of chalk, peat, silt and other remaining soil combinations collectively formed 18% of the region. When investigating the relationships between these soils and designed landscapes, certain correlations became evident.

A higher frequency of sites existed on and in the vicinity of prevalent deep loam soils, which existed in two main areas. One resided in central Norfolk, dominated by the Burlingham and Wick classifications. This area was part of Norfolk's sheep-corn husbandry or mixed farming region, used for both arable cultivation and husbandry (Allison, 1957). Sites were particularly numerous immediately north of Norwich, Norfolk. Amongst this area was the village of Worstead, famous for its worsted wool industry (Pound, 1988, p.2). The second area where deep loams were prominent was along the Suffolk-Essex border, primarily consisting of Ludford soils. Of high importance was the production of cloth for trade with London, but smaller villages also devoted themselves entirely to agriculture (MacCulloch, 1987, p.18). Loams are more manageable than clay soils because of their excellent mineral content and friability. As a result, loams have been profitable not only for farming purposes but also making bricks and other building materials (Hartlib, 1659, p.67). Its versatility thus likely appealed to landowners during the sixteenth and seventeenth centuries.



**Fig. 3.06 - Frequency of sites by soil type (point location)**



**Fig. 3.07 - Frequency of sites by soil type (within 1,000 metres of point location)**

With the highest acreage regionally, deep clays also had many designed landscapes built on and in its vicinity. Clays were integral to wood-pasture areas, such as those designated by the Hanslope soils within Suffolk. Wood pastures benefitted the dairy industry, which was more favourable than arable farming in this period (Phil, 1984, p.306). Subsequently, wood pastures became “the backbone of [Suffolk’s] prosperity”, which assisted in the production of the county’s renowned cheese (MacCulloch, 1987, p.18). On the other hand, fewer sites were present where the deep clays are seasonally wet, such as where the Windsor soils engulf South Essex. Referring to the topographical analysis, the lack of sites upon certain seasonally wet deep clays were also nearer sea-level. The Wallasea classifications constitute South-East Essex as well as the Broads in East Norfolk, whilst the Downholland soils comprise the clay fens in West Norfolk. Sites amongst fenland favoured Wisbech and Agney soils, which are not clay but silt soils. Settlements and farms successfully reclaimed the silt fens during the medieval period, unlike the adjacent clay and peat fens (Williamson & Macnair, 2010, p.113). As a result, more landowners chose to create their designed landscapes upon the silt fens over the clay fens. Furthermore, regarding cultivation, clay soils were already hard to plough and break down but being waterlogged produced additional problems (Overton, 1996, p.56). Concerning husbandry, the unpredictable water-tables, especially around the fens, meant that these clayey areas were unfit for grazing livestock, particularly during winter (Ravensdale, 1974, p.72).

By comparison, landowners placed 13% of their sites onto and around 27% locally to the more popular seasonally wet deep loam to clay soils. Designed landscapes were prevalent on the Beccles classifications of this soil type, found within the wood-pasture regions either side of the Norfolk-Suffolk border. Therefore, it was not simply the waterlogged nature of these soils but also a higher percentage of clay which, when combined, became problematic for landowners. Nevertheless, other regional factors help explain this trend. Fewer sites on clay soils also reflected a broader trend where dispersed settlements, clustering around greens and commons along with isolated farms, frequently resided on these heavier clays (Williamson, 2000, p.5). As a result, the landowners’ influences became more widely-distributed and evenly-spread, which resulted in fewer designed landscapes being present on these clays.

Also devoid of sites were areas dominated by sandy soils, especially around three areas of heathland: Sutton Heath in East Suffolk, Mousehold Heath near Norwich, and the Brecks around Thetford, South Norfolk. The Brecks, encompassing four known deep sandy soil classifications in the region, notably contained almost no estates. Instead, designed landscapes retreated towards other soil compositions around the heath's perimeter (Fig. 3.08). Although few existed, some estates were large enough to force their more scattered distribution. As Rosemary Hoppitt observed, the Culford and Euston estates established large parks in the impoverished areas around Breckland, whilst Henham achieved the same around Sutton Heath (Hoppitt, 1992, pp.85; 93). While this trend was less prevalent compared to the landscape parks of the Georgian period (Spooner, 2015, p.15), estate sizes likely contributed towards the greater dispersion of sites in the sixteenth and seventeenth centuries. However, John Evelyn provided another explanation for this trend, which he diarised during his travels in 1677. He described the Brecks as "the Travelling Sands" which had "so much damaged the country, rolling from place to place" that, "like the Sands in the Deserts of Lybia", the sandy soils "quite overwhelmed some gentlemen's own estates" (Evelyn, 1901, p.119). As a result, landowners rarely built their estates onto sandier soils including areas of heathland like the Brecks.

Despite their prevalence in the region, shallow loams over chalk, constituting the Newmarket classifications, were also unfavourable amongst landowners, especially around the Brecks (Fig. 3.08) and into North-West Norfolk (Fig. 3.09). Also forming part of the sheep-corn husbandry region in Norfolk, these chalky, unfertile soils encouraged landowners to implement more foldcourses to boost soil fertility through intensive sheep manuring (Allison, 1957, p.14). However, immediately east of these Newmarket soils in Norfolk, few sites were present on the Barrow soil classification, a deep loam to clay soil which has typically been favourable to landowners throughout this analysis. The underlying chalk in the Barrow soils is one possible reason for its unpopularity (Hodge et al., 1984, p.415), which potentially explains the use of foldcourses in this area in order to combat the unfertile chalk (Allison, 1957, p.14). However, the statistical analysis by soil classification identified that Melford soils, also deep loam to clay with chalky till, was favoured over Barrow soils (Appendix 2). Therefore, other reasons beyond soil type may explain this lack of sites on Norfolk's Barrow soils.

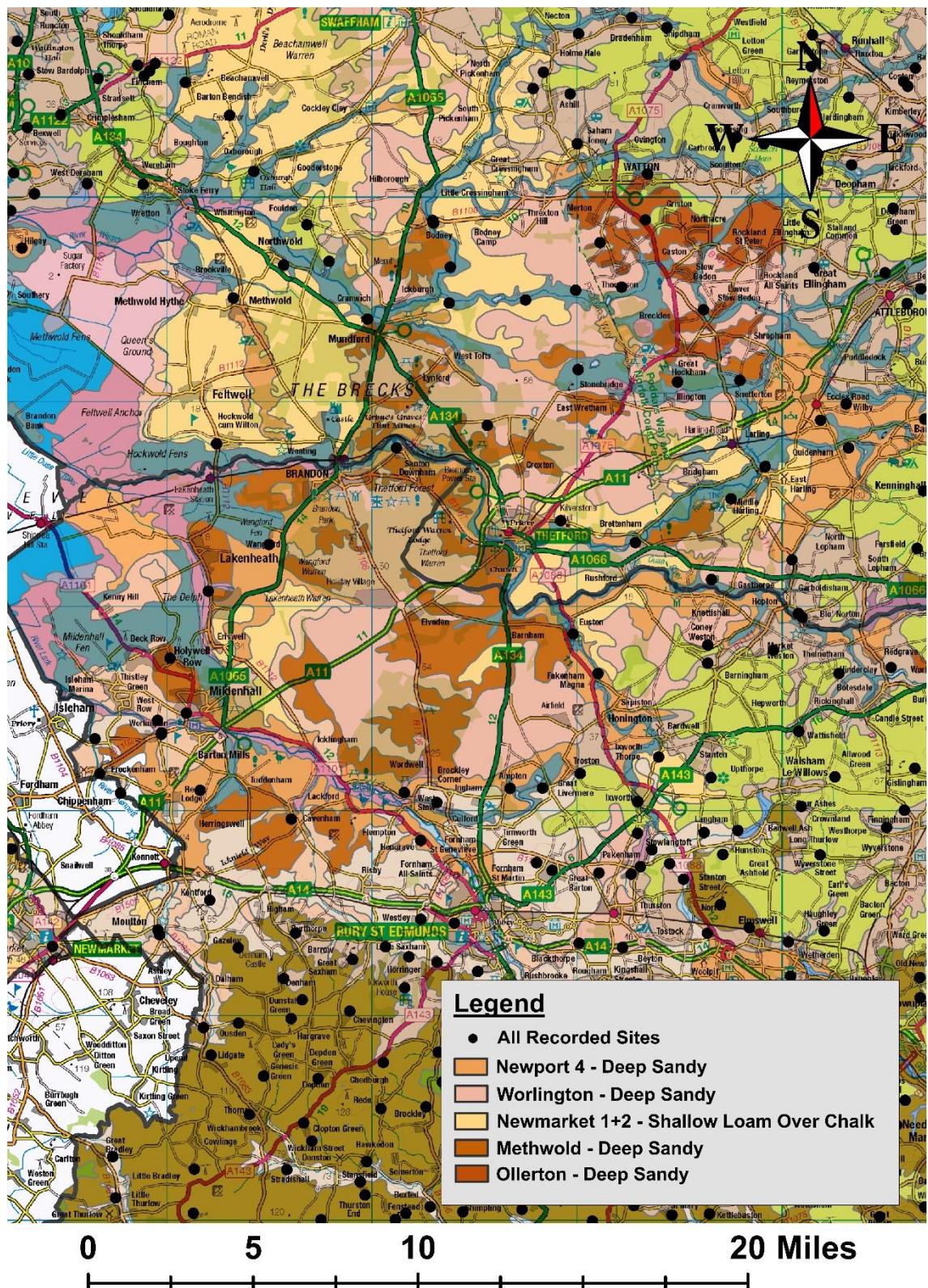


Fig. 3.08 - Distribution of sites in the Brecks, Norfolk

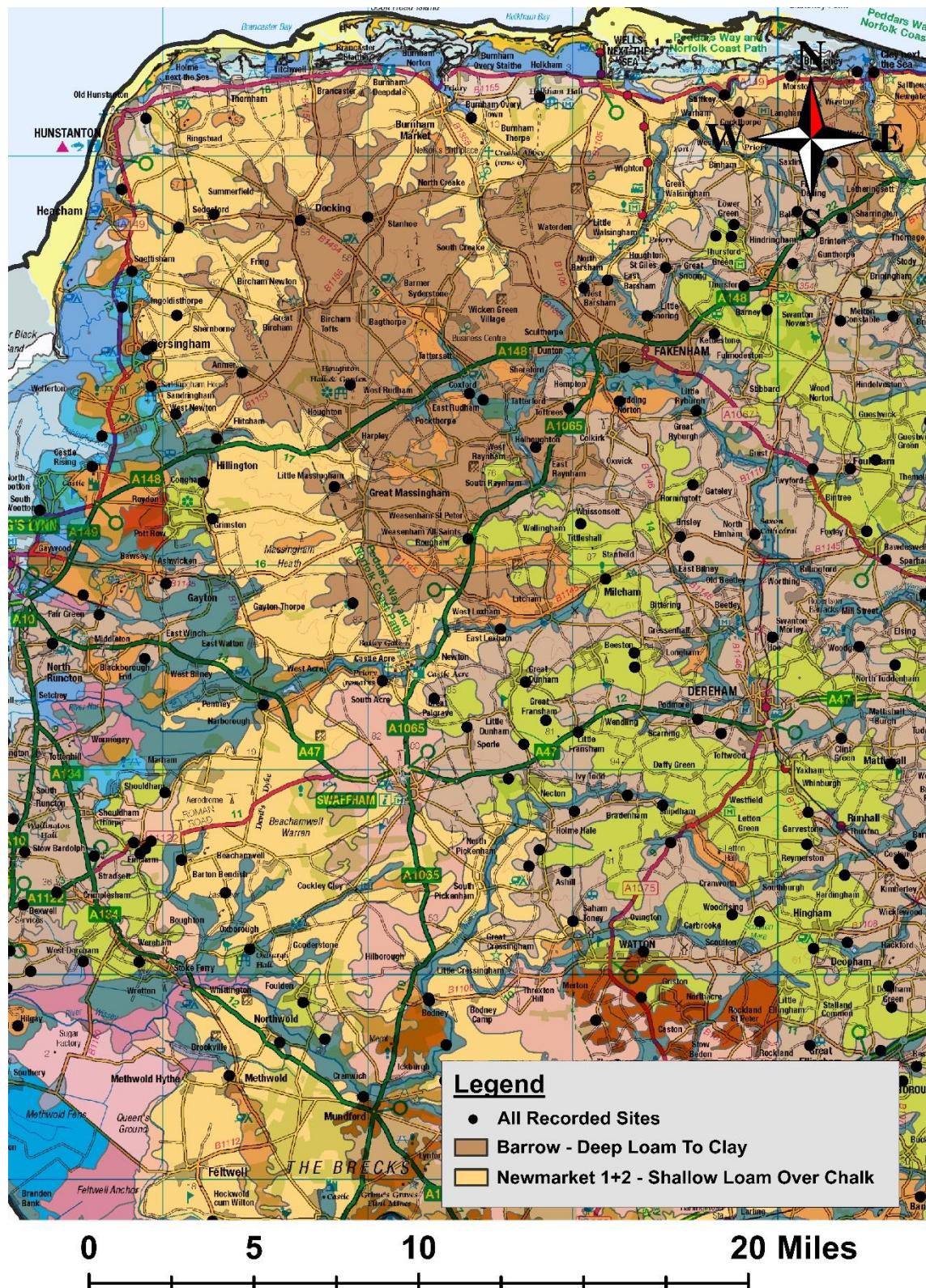


Fig. 3.09 - Distribution of sites in West Norfolk

### 3.2.3 - Rivers

Rivers also affected the regional distribution of designed landscapes. For this analysis, a dataset from the Ordnance Survey was downloaded, which consisted of polylines delineating rivers existing in the region. Of note is that this dataset contained current river networks and thus did not necessarily replicate those which existed in the sixteenth and seventeenth centuries. Nonetheless, this data was of acceptable accuracy to conduct both spatial and statistical analysis. The site distribution data was visualised together with the rivers' dataset in GIS in order to undertake spatial analysis (Fig. 3.10). The distances between each site and their nearest river were then calculated using the 'Generate Near Table' tool and the results exported into Excel for statistical analysis (Fig. 3.11).

Both spatial and statistical analyses confirmed a strong correlation between designed landscapes and rivers. Most landowners placed their sites close to rivers, typically around 100 to 200 metres distant with a notable decrease thereafter. John Parkinson wrote about how country houses should ideally be close to rivers:

*"As some those Places that are neare unto a river or brooke to be best for the pleasantness of the water, the ease of transportation of themselves, their friends and goods, as also for the fertility of the soyle, which is seldom bad neare unto a rivers side" (Parkinson, 1629, p.1).*

One aspect Parkinson mentioned involved how soils' fertility was characteristically better when close to rivers. Referring to the soil analysis, this helps explain why fewer sites resided within the Brecks, on the Newmarket and Barrow soils in West Norfolk, because rivers are absent in these areas. Both spatial and statistical analyses also verified that fewer sites existed at greater distances from rivers. Therefore, soils types and rivers collectively influenced where landowners built their estates. Another aspect Parkinson highlighted was how rivers provided key transportation routes. Although beneficial for moving goods to estates, people also used rivers for trade and distribution across the landscape, particularly of heavier yet lower-value freights like grain (Savage & Barker, 2012, p.21). Two notably popular rivers were the River Bure, in North-East Norfolk, and the River Waveney, along the Norfolk-Suffolk border. Both rivers began in Great Yarmouth, a major port, but a prevalent centre of the textile industry in the Waveney valley benefitted from the River Waveney during the post-medieval period (Spooner, 2012a, p.6).

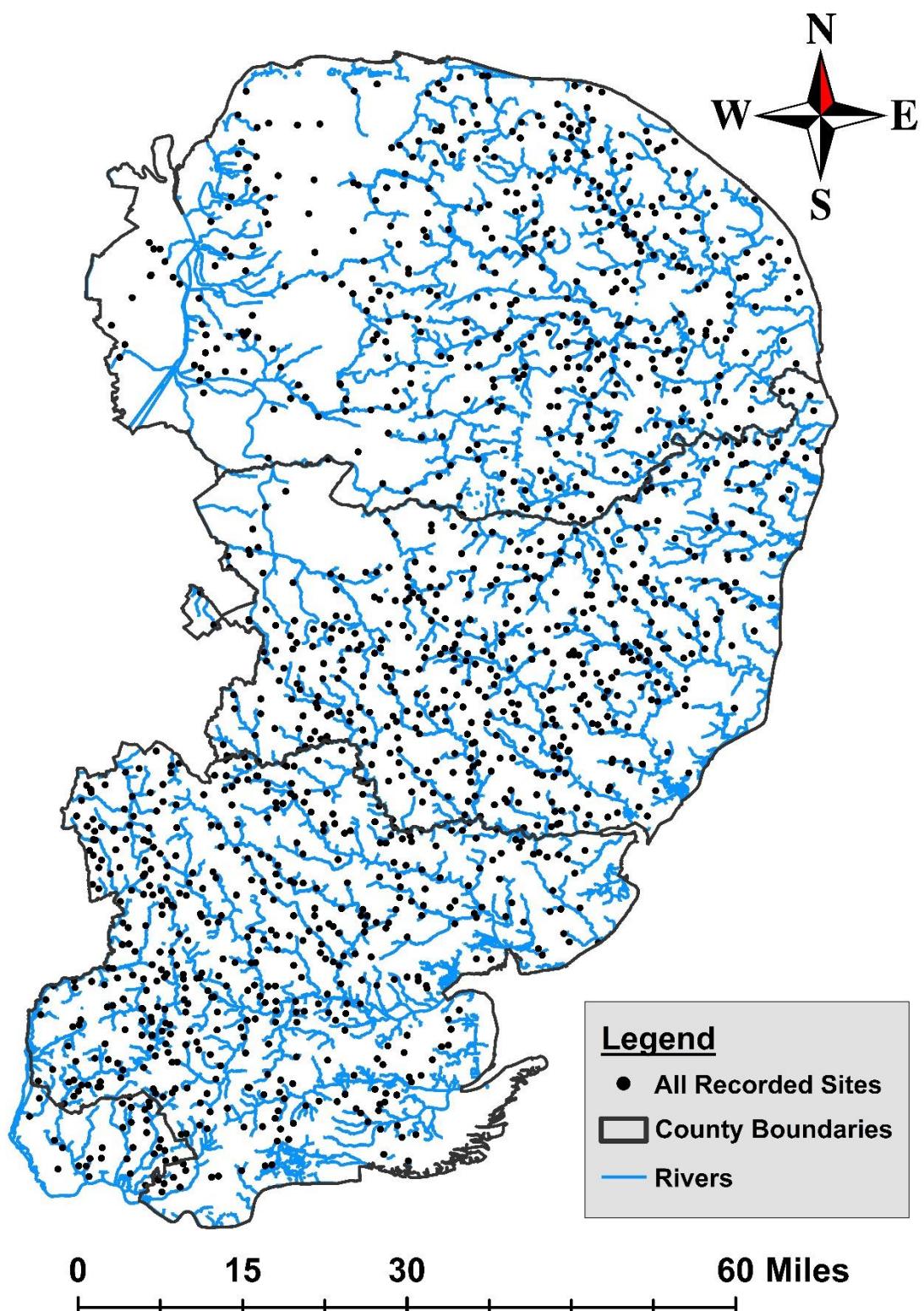
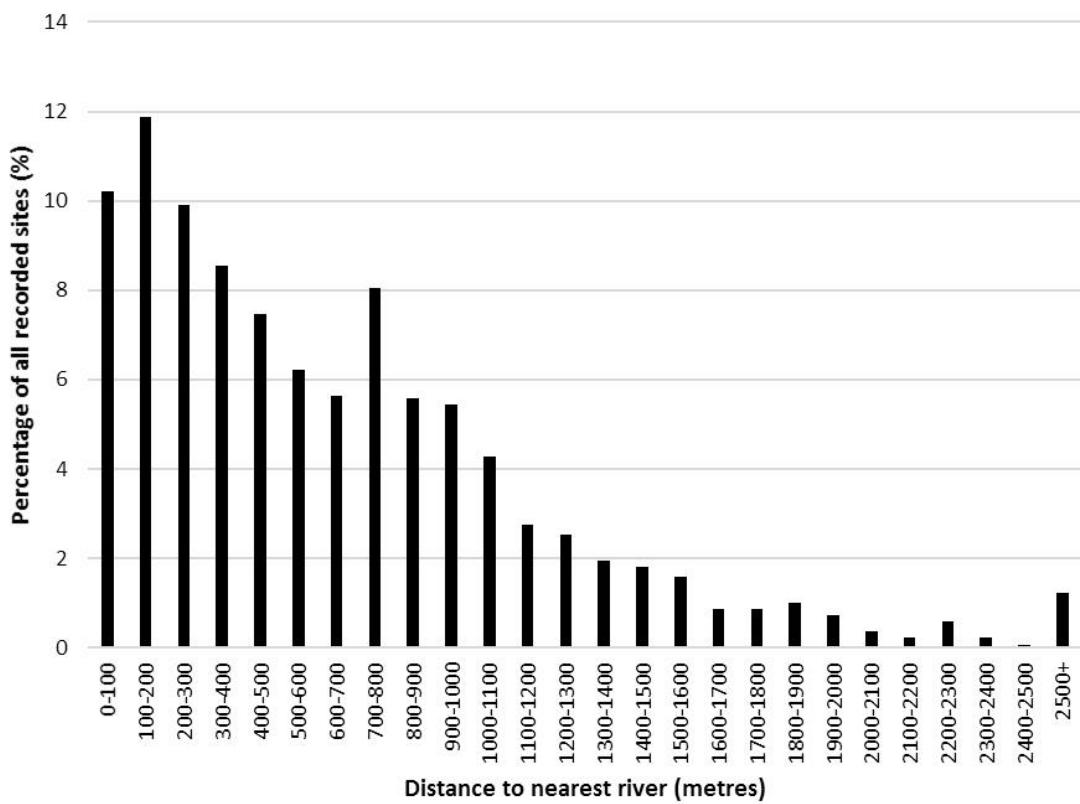


Fig. 3.10 - Distribution of sites by rivers

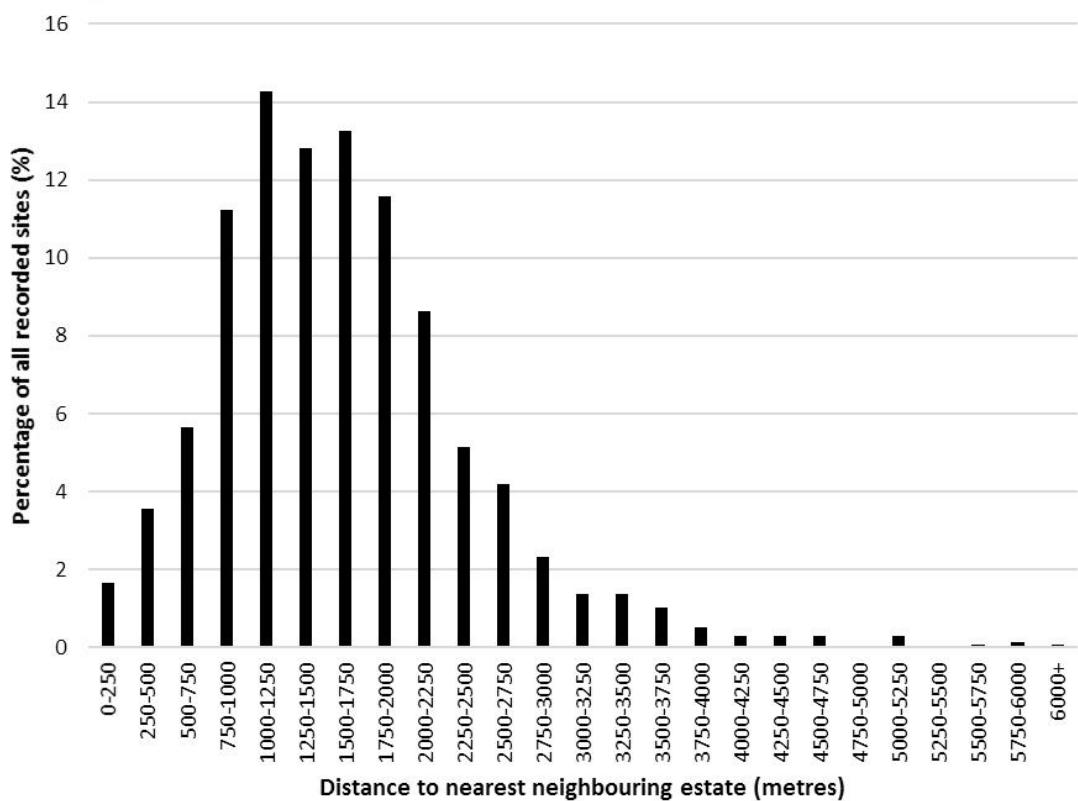


**Fig. 3.11 - Frequency of sites by proximity to nearest river**

On the other hand, in South Essex, there were fewer sites around the River Crouch, which correlated with unfavourable seasonally wet deep clays. Accordingly, the greater flood risk due to insufficient drainage dissuaded landowners from placing their designed landscapes near them. In different regional circumstances, however, being near rivers was ideal. Parkinson also claimed that water's pleasant nature within a prospect was a worthy reason for landowners to build their estates close to rivers. Collectively, these results confirmed that rivers influenced the regional distribution of designed landscapes in this period.

### **3.2.4 - Neighbours**

The proximity to neighbours, especially other estates, also affected the distribution of designed landscapes. For the statistical analysis, the distances between each point and their nearest neighbour were calculated using the 'Generate Near Table' tool in GIS. The results were subsequently exported into Excel for analysis (Fig. 3.12). As the results indicated, most sites were between 1,000 and 2,000 metres from their nearest neighbour, averaging 1,620 metres or 1 mile. Fewer estates were closer together, because "to build too neare a great Neighbour" was discouraged (Wotton, 1624, p.5), or further than 2,000



**Fig. 3.12 - Frequency of sites by proximity to nearest neighbouring estate**

metres distance. Therefore, within the confines of the region, estates were placed at reasonable distances from each other to avoid overcrowding whilst maintaining their own privacy. Sites residing more closely together likely reflected an increase in new wealthy landowners creating designed landscapes later in the period.

However, other regional factors influenced conglomerations of sites in certain locations. Using the 'Kernel Density' tool in GIS, a heatmap showing the spatial densities of sites was created to highlight whether other neighbouring geographical features potentially influenced their distribution (Fig. 3.13). This analysis visualised a high density of sites just south of Norwich, which correlates with Norwich becoming the next most important city to London during the reign of Elizabeth I (Dovey, 1996, p.63). Many sites also surrounded other towns including Bury St Edmunds and Ipswich, the two largest towns in Suffolk by population during the sixteenth and seventeenth centuries (Blackwood, 2001, p.5). Other dense areas were evident in West Essex, an area which Zillah Dovey determined was a popular route between London and Cambridge, which was journeyed on during the Elizabethan progress in 1579 (Dovey, 1996, p.22). Subsequently, 'the Cambridge connection' may partially be responsible for the higher number of sites

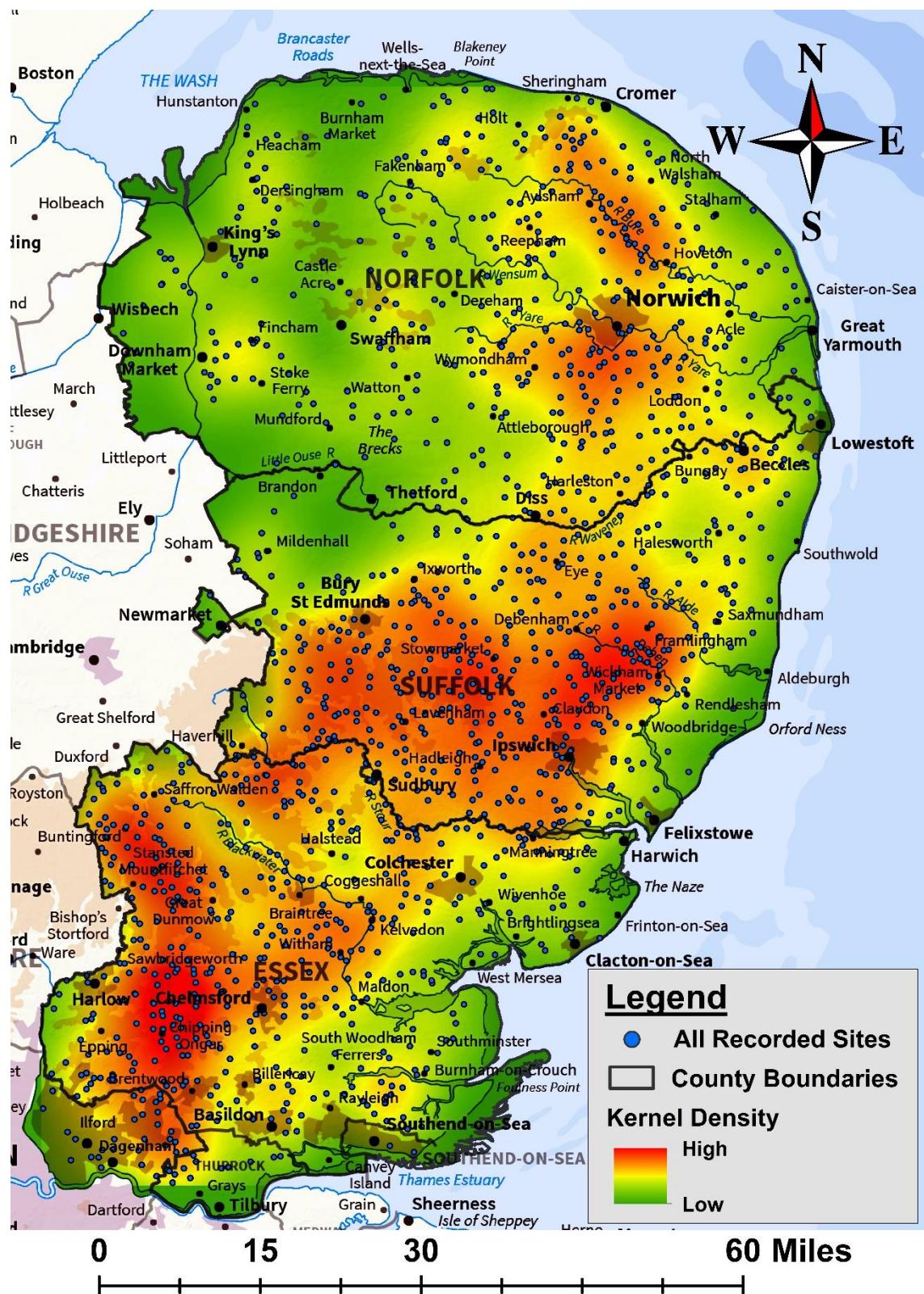


Fig. 3.13 - Distribution of sites by density

along this route. The infusion of Cambridge-educated men into government was prevalent at lower and middle levels of bureaucracy but also within established families including the Petres (Hudson, 1980, p.62), whose estates at Old Thorndon and Ingatestone were within this part of Essex. Also in Suffolk, designed landscapes congregated near to the residences of prominent families. The Howards, the Dukes of Norfolk, resided at Stoke-by-Nayland and Framlingham Castle in East Suffolk (MacCulloch, 1987, pp.53–55), and both estate were amongst these higher densities of sites. As a result, associations with prominent families potentially influenced the distribution of designed landscapes.

On the other hand, significantly fewer sites resided near Colchester in Essex, despite becoming a cloth trade centre under Elizabeth I (Edwards, 1964, p.7). One theory was that the Siege of Colchester of 1648, a key event in the Civil War, resulted in the demolition of many unrecorded sites (Searle, 1966, pp.12–3). Also devoid of sites were parts of West Norfolk and into North-West Suffolk, as well as South-East Suffolk into North-East Essex. Coincidentally, these areas were where the lowest population densities existed in medieval East Anglia (Martin, 2011, p.227). As medieval settlements expanded with growing populations during the sixteenth and seventeenth centuries, more designed landscapes emerged in the vicinity. Alternatively, lower numbers of sites corresponded scarce or under-developed medieval settlements. Therefore, population densities and the presence of established towns and villages affected the distribution of designed landscapes.

### **3.2.5 - Summary**

By combining spatial and statistical analyses, exploration of the regional impact on designed landscapes within Norfolk, Suffolk and Essex was achieved. A moderate topographical environment, with primarily fertile yet manageable soil types, and river access were some landscape qualities which landowners typically sought for their designed landscapes in this region. There were also particular associations with higher population areas where villages, towns and especially important cities influenced the distribution of sites in the region. Landowners also considered their proximity to prominent estates while ensuring they maintained adequate distance from their neighbours. By using 2D-GIS and Excel as platforms to help conduct multiple analyses into designed landscapes, greater clarity on these regional connections was attained.

### **3.3 - Recreating Designed Landscapes**

The next methodological stage focused on digitally recreating the designed landscapes. Out of the sites recorded within the database, a small selection of estates was exclusively chosen to become case studies. This part of the process involves these case studies being recreated amongst their wider contemporary landscape contexts, using evidence researched and collected from various sources and locations. These designed landscapes then became 3D-GIS visualisations by combining GIS and 3D models from CAD and photogrammetry softwares. The 3D-GIS recreations thus provided the foundations to analyse the prospects and promenades within them, which the next methodological phase shall address. However, these recreations and analyses required edited Digital Elevation Model (DEM) datasets, consisting of raster data representative of topographical elevations. Thus, this section revolves around producing the data needed to recreate these sites in 3D-GIS and prepare them for further analysis.

#### **3.3.1 - Selection Process**

First, designed landscapes were chosen from those recorded in the database to become case studies. In determining the eligibility of sites for this process, the 3D-GIS recreations first needed optimum DEM coverage. This study required two main types of DEM: Digital Terrain Model (DTM), for topography only, and Digital Surface Model (DSM), including above-ground standing features such as buildings and vegetation (Lillesand et al., 2015, p.37). At this stage, DTM data was necessary to provide the 3D-GIS recreations with topographical foundations during the construction process. To improve the quality of the recreations and subsequent analysis, the DTM needed to be of a high resolution. Therefore, the DTM used for this research was derived from LiDAR, one of the most accurate surveying methods of extracting topographical values as a high-resolution raster dataset (Campana, 2014, p.9). The site distribution data was overlaid onto a LiDAR coverage map, downloaded from the Environment Agency, to help determine which sites had enough LiDAR data to conduct the necessary research (Fig. 3.14). However, at the time of writing, LiDAR coverage was notably incomplete in Norfolk, Suffolk and Essex. LiDAR with 2-metre resolution had the best overall coverage and thus was chosen to increase the number of possibilities. Nevertheless, other criteria were addressed before selecting the final case studies.

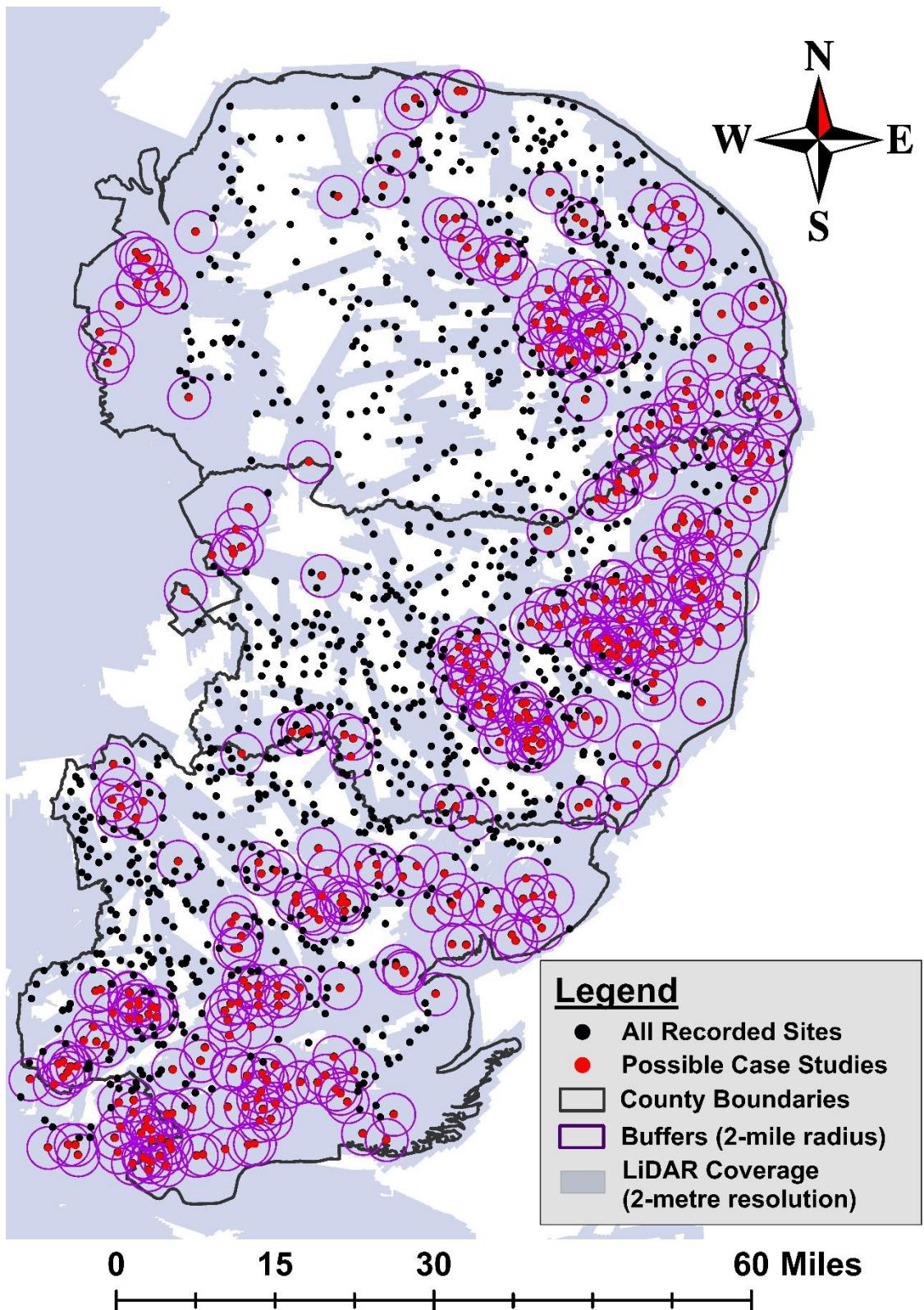


Fig. 3.14 - Site selection from available LiDAR-derived DTM

First, buffer zones were generated at a set radius around each site using the 'Buffer' tool in GIS. As a result, the buffers helped to determine which sites, including a suitable area of landscape context, had ample LiDAR coverage. The radius of these buffers was decided upon, first, in consideration of the regional proximity analysis to the nearest neighbouring estate. Although around 1 mile was, on average, the most common distance, there were still neighbouring sites at greater distances (Fig. 3.12). Therefore, 2-mile radial buffers sought to account for the presence of neighbouring estates, and thus there was potential to further investigate the impact of neighbours within the subsequent visual analyses. Second, an estimated 8,000 acres of landscape context was encompassed by each buffer. Recognising the acreages within these buffers was important when addressing the varying estate sizes in this period, which spanned from a couple of parishes to upwards of 10,000 acres (Clemenson, 1982, pp.7–9). Thus, 8,000 acres was a suitable area for analysing both the site and its landscape context, including potential neighbours. Finally, the technological capabilities of 3D-GIS were deliberated. A balance was sought between maintaining enough detail within the recreations and their subsequent analyses whilst also ensuring the software remained optimal in terms of navigability and rendering. In this study, a 2-mile radius thus maintained both the visual and technological qualities needed to conduct this research while also ensuring these analyses were meticulous and engaged with the wider estate landscape and surrounding countryside.

These 2-mile radial buffers were then used to determine the integrity of the LiDAR-derived DTM around each site in the distribution dataset. The main concern was ensuring that the data within the estate was intact because this was imperative in producing a seamless reconstruction of the site itself. Therefore, complete LiDAR coverage was necessary at the heart of these buffer zones. However, greater leniency was given if the outermost extremities was missing data. In total, 289 sites met this criterion and were thus eligible as possible case studies (Fig. 3.14). Out of these sites, five case studies were identified. Each site faced a different set of challenges which had previously hindered their analysis, yet they had the potential to contribute to a greater understanding of designed landscapes. Two sites were used to test parts of the methodology, whilst the other three were investigated for in-depth analysis. The final three case studies are presented within the following gazetteer and accompanying map (Fig. 3.15).

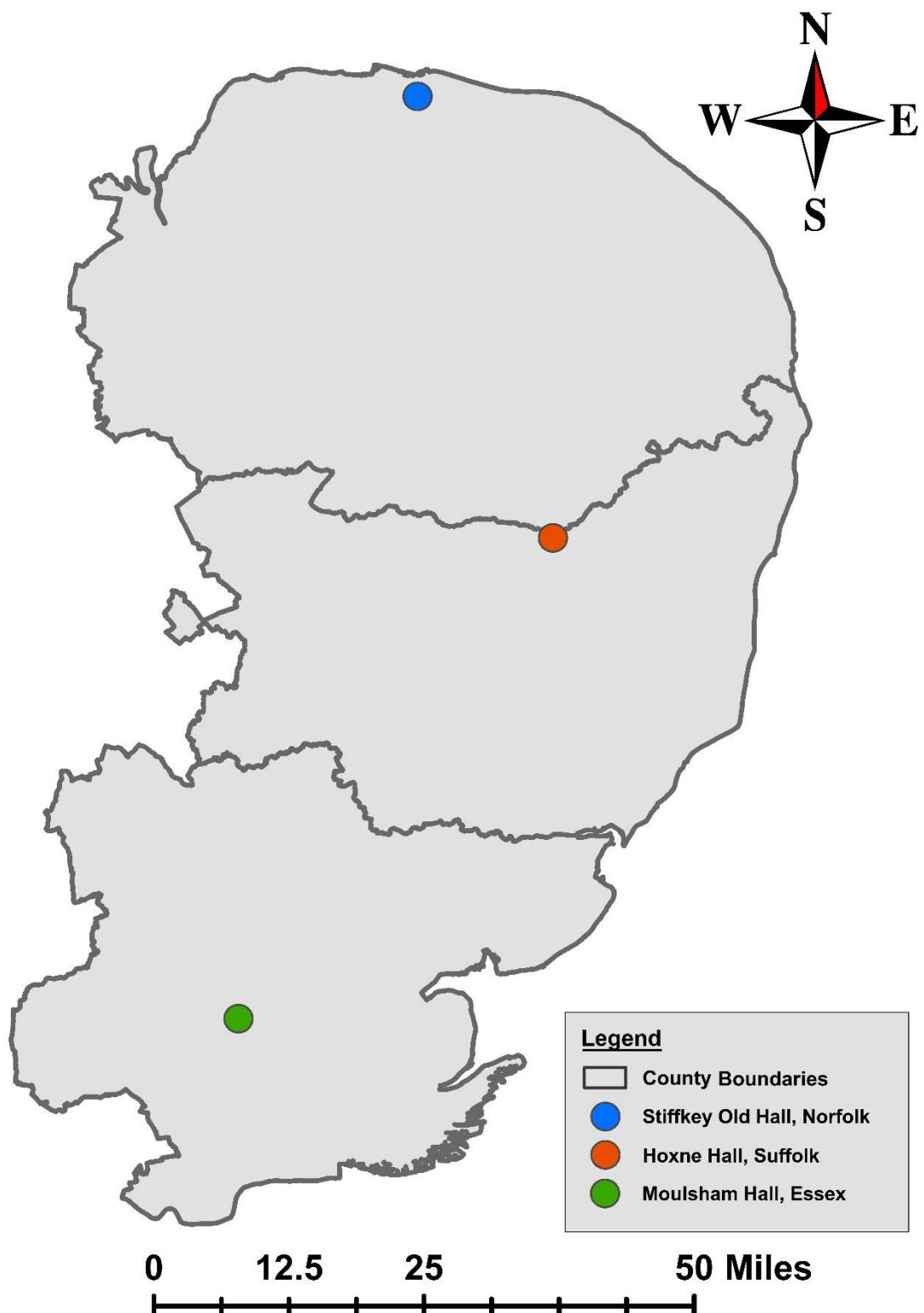


Fig. 3.15 - Locations of case studies in Norfolk, Suffolk and Essex

### **3.3.2 - Gazetteer: Case Studies**

**Stiffkey Old Hall, Norfolk (CD Appendix 1)**: Stiffkey Old Hall was a manor house owned by Sir Nathaniel Bacon, the second son of Sir Nicholas Bacon (Family Tree Appendix 1). Both father and son assisted in developing the site. Nathaniel retained many of his papers which recorded the process of constructing Stiffkey (Bacon, 1979; Bacon, 1983; Bacon, 1990; N. Bacon, 2000; Bacon, 2010). After Nathaniel died in 1622, the Townshends took possession of Stiffkey and concurrently commissioned an estate map (NRO HMN 7/227/1-2). However, the estate remained unoccupied and undeveloped. The house eventually became derelict, but still survives as a private residence. As a result, Stiffkey retains aspects of its sixteenth- and seventeenth-century landscape. Some parts of the house remain alongside the gatehouse, while the eastern terraced gardens survive as earthworks. Despite the wealth of landscape evidence, the estate is nonetheless inaccessible to the public. 3D-GIS can grant access to this data-rich site whilst enabling a greater understanding of the visual experiences within Stiffkey to be gained from the Bacons' perspective.

**Moulsham Hall, Essex (CD Appendix 2)**: Moulsham Hall was once one of the "greatest Esquire's building[s] within the county of Essex" (Nichols, 1823, pp.287-8 fn.2). From 1542, the Mildmays owned Moulsham (Family Tree Appendix 2) who later commissioned the Walkers to map their estate in 1591 (ERO D/DM P2). To some extent recondite, the Mildmays rose to prominence during the sixteenth century. They subsequently hosted many esteemed guests at Moulsham, including Elizabeth I on her progress in 1579. In 1638, the Mildmays received Charles I and his mother-in-law, Marie de Medici, which Jean Puget de la Serre documented in an engraving of Moulsham (Puget de la Serre, 1639). After facing difficulties during the Civil War, the Mildmays made alterations to Moulsham in the 1720s (ERO T/A 313/1; ERO T/M 446; Edwards, 1977). The estate declined after the family leased Moulsham Hall to the military during the Napoleonic Wars before its demolition in 1809. No landscape evidence survives because the suburbs of Chelmsford buried the entire site in the late-twentieth century. By analysing the visual experiences within Moulsham using 3D-GIS, this research provides a fresh opportunity to investigate this destroyed and under-resourced designed landscape while also exploring the prominent yet obscure Mildmay family.

**Hoxne Hall, Suffolk (CD Appendix 3):** Hoxne Hall was originally a medieval episcopal palace for the Bishops of Norwich. During the Dissolution, Henry VIII seized Hoxne before granting the estate to the Southwells in the 1540s (Family Tree Appendix 3). Little is known about the site and this family in part due to the lack of known documentary sources, except for a map recording the site's layout in 1619 (SRO(I) HD40/422). After this date, the Southwells left Hoxne and the estate underwent centuries of landscape modification, as recorded on eighteenth-century estate maps (SRO(I) HA68/484/752; SRO(I) HB21/280/1). As a result, no earlier landscape evidence survives. In the nineteenth century, Hoxne became Oakley Park before its demolition in the 1920s. Only the nineteenth-century stables remain as a private residence, thus rendering the site publicly inaccessible. 3D-GIS can help gain new insight into this demolished and private site, with few sources to evidence its original state, by analysing prospects and promenades within it. Hoxne also provides the opportunity to study the elusive Southwell family as well as their monastic predecessors, and thus how the episcopal palace potentially influenced the development of this designed landscape.

### **3.3.3 - Data Collection**

Three main areas of research were conducted to collate different types of information about each case study. First, desktop studies helped investigate secondary sources and online data to evidence the sites' historical and landscape contexts. Second, archival research involved investigating primary sources located in county archives and other similar establishments. Third, on-site investigations sought to record any extant features of interest whilst also experiencing the sites first-hand. Across all three phases, the aim was to compile all the necessary data, existing from miscellaneous sources distributed across several locations, to generate interpretations of each case study within 3D-GIS.

#### **Desktop Studies**

First, desktop studies involved the collation of the LiDAR-derived DTM data within the buffers, as mentioned earlier, designated for each site. Downloaded from Edina Digimap and the Environmental Agency, individual DTM tiles were merged into single datasets using the 'Merge' or 'Mosaic' tools. Preliminary analyses were then conducted on this data to determine whether each site necessarily required the 8,000-acre focus area depending on the horizon line, or

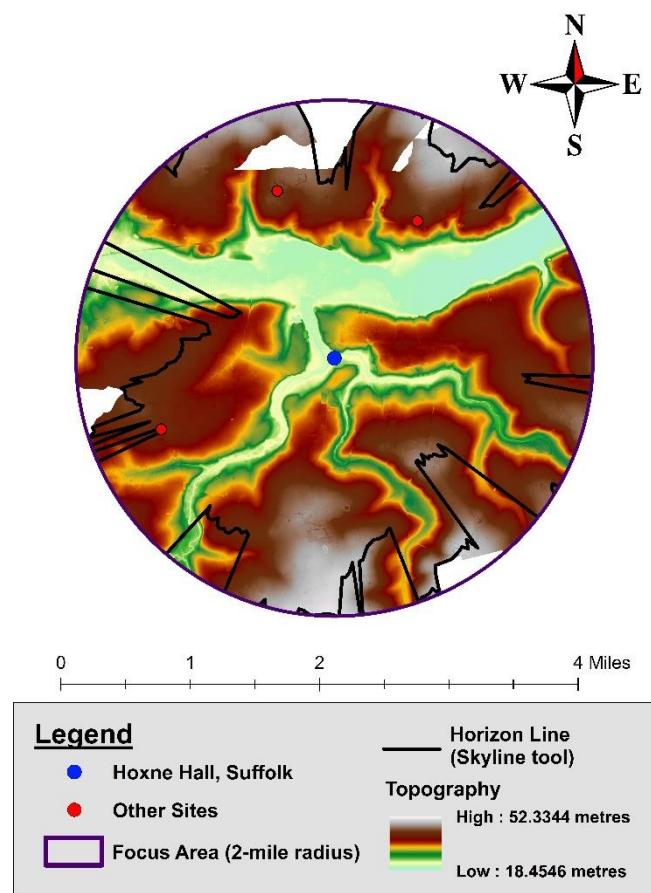


Fig. 3.16 - Focus area and skyline analysis of Hoxne Hall, Suffolk

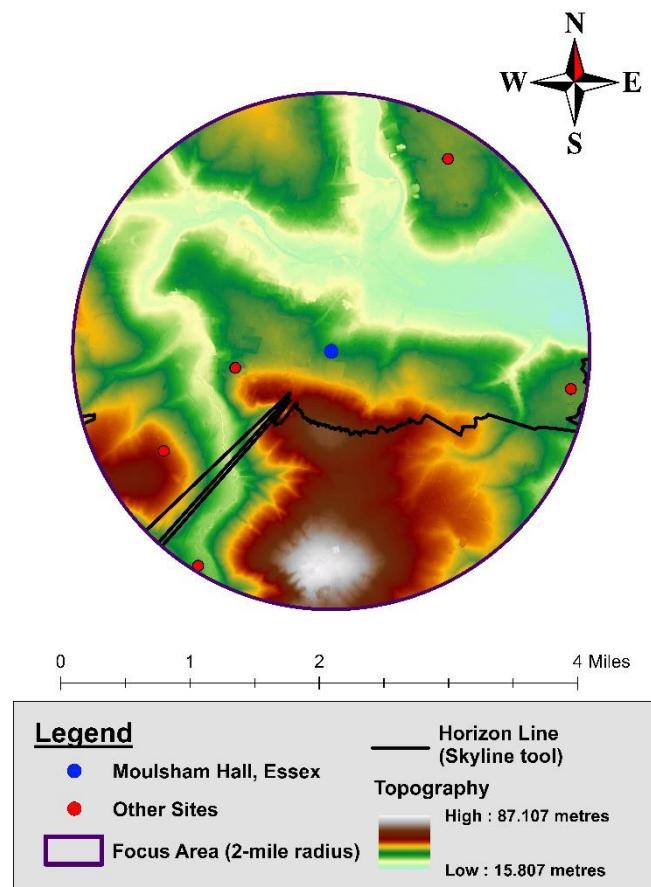
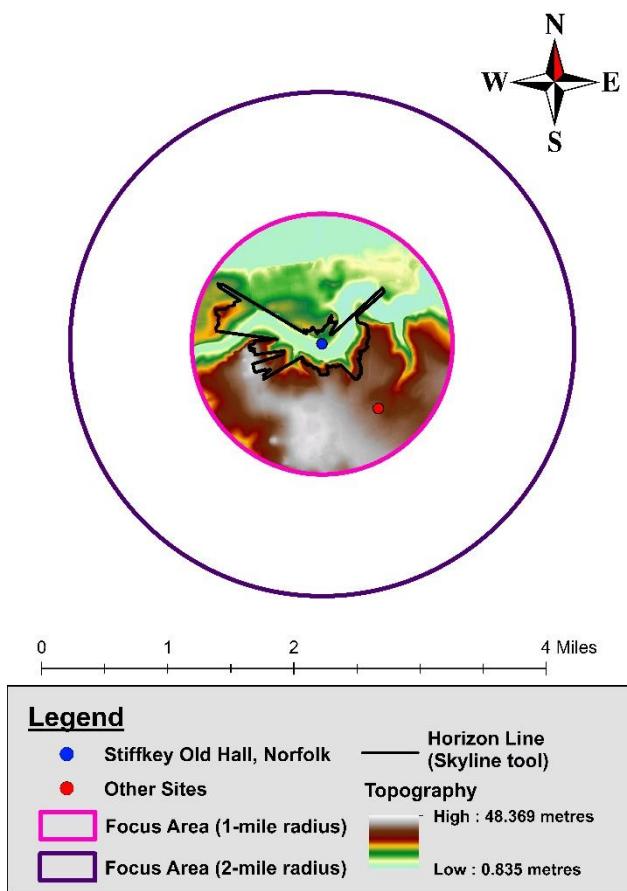


Fig. 3.17 - Focus area and skyline analysis of Moulsham Hall, Essex



**Fig. 3.18 - Focus area and skyline analysis of Stiffkey Old Hall, Norfolk**

the greatest possible viewing extent. Polyline delineating the horizon lines at each case study were generated using the 'Skyline' tool in GIS. These skylines were conducted from observer points set at 20 metres, representing an estimated height of country-house rooftops as the highest potential viewing platform. The horizon lines verified the greatest landscape area required to conduct effective analyses on the visual experiences within these sites. The final outputs confirmed that both Hoxne and Moulsham required the full extent of the 2-mile radius focus area (Fig. 3.16; 3.17). At Stiffkey, on the other hand, the horizon line was constrained to such an extent that there was no advantage to recreating 8,000 acres of landscape context based on this result (Fig. 3.18). Therefore, the focus area at Stiffkey was reduced to a 1-mile radius, providing about 2,000 acres for the 3D-GIS recreation.

Once the designated focus areas had been established, current knowledge of the sites and their surrounding landscapes was investigated. Online geographical data including modern OS maps and nineteenth-century historic OS maps were obtained from Edina Digimap. These maps were essential as base-maps for producing detailed landscape surveys, which is a key starting point for recreating historic landscapes (Rippon, 2012, p.160). From both Edina and Google Earth,

vertical aerial photography was accessed as another source for discovering extent archaeological features using non-destructive methods (Williamson, 1998b, p.1). The LiDAR-derived DTM data also helped to identify features imperceptible from the ground (Campana, 2014, p.9). Published and non-published secondary literature were also researched alongside online county Historic Environment Record (HER) databases. Information from these texts about the sites and their historical landscape context amongst the surrounding parishes was also collected. Also within these sources, other references were identified that led to other relevant primary sources for consultation in person at archives or on-site. The information obtained during these desktop studies was ultimately used as preparation for the subsequent stages of data collection.

### **Archival Research**

This next stage sought to verify the existence of archival sources ascertained during the desktop studies and consult them within the relevant repositories. Most sources were accessed at the county archives but also libraries, museums and HER offices in Norfolk, Suffolk and Essex. More rarely, sources were stored within country-house archives like at Melford Hall in Suffolk, one of the two additional sites investigated. However, there were other sources at national and international locations, including the Cheshire county archive, concerning Melford, and the Folger Shakespeare Library in Washington, D.C., about Stiffkey. From each repository, both written and visual evidence from historic sources were compiled about the sites and surrounding parishes. Maps, architectural plans and other iconographic evidence were copied or photographed while written documents, including estate accounts, inventories and other personal papers, were consulted. Modern sources, such as oblique aerial photographs, archaeological excavation reports and other grey literature, were also researched for additional background. If no evidence was found to provide landscape context, late-eighteenth-century maps such as William Faden's map of Norfolk from 1797 (Williamson & Macnair, 2010), Joseph Hodkinson's map of Suffolk from 1793 (Macnair, 2010), and an OS drawing of Chelmsford from 1799 (British Library OSD 139).

During this stage, several useful sources evidently existed at various repositories. However, the greater dispersion of these sources meant it was necessary to factor in additional time and resources to access each of them. Also,



**Fig. 3.19 - Photographic observations of landscape context at Stiffkey Old Hall (top) and parish church (bottom)**



**Fig. 3.20 - Photographic observation of view over Terrace Walk from Banqueting House, Melford Hall**

their diverse compositions and physical conditions meant that the data was hard to fathom as a collection. Therefore, as one reason for undertaking this research, the aim was to avoid consulting individual sources and to merge and host their data collectively within singular coherent digital landscape recreations in 3D-GIS.

### **On-Site Investigations**

One final research stage involved on-site investigations. While the desktop studies helped to determine the presence of possible extant features, this phase sought to explore, record and ultimately ground-truth them. However, as private or demolished sites, no direct access was possible to the three main case studies. Despite this hindrance, as a main reason for choosing these case studies, photographic observations were nonetheless undertaken at a distance. Extant features including other surviving contemporary aspects of the wider landscape were observed, whilst their geographical and topographical situations were also explored to help support the 3D-GIS recreations (Fig. 3.19). Site access was granted, nevertheless, to the two additional case studies: Melford Hall, Suffolk, and Oxnead Hall, Norfolk. Photographs of extant features but also potential prospects were taken whilst movement along promenades was captured in films (Fig. 3.20). This research ultimately added to the knowledge of these sites and how contemporaries experienced them.

Also undertaken at Melford and Oxnead were GPS surveys of surviving features (Fig. 3.21; 3.22). Two different GPS technologies were trialled: a Garmin Oregon 650 GPS handset and a Doogee S60 Rugged Smartphone with Polaris Navigation GPS mobile phone app. Two devices were used partially due to the occasional unavailability of the Garmin device. Nonetheless, this provided the opportunity to compare the accuracy between GPS handsets and personal mobile devices, although neither are considered professional, specialist or survey-grade. Both devices were used at Melford, where both sets of data showed levels of distortion in the results (Fig. 3.21). Obstructions from tall buildings and vegetation partly explain this lack of accuracy, but the satellite locations also affected the GPS signal (Eastmead, 2012, p.16). There were too few satellites, let alone ones situated preferably overhead, to guarantee accurate GPS results (Appendix 4). Nevertheless, the GPS data from the smartphone was as, if not more, accurate than that from the handset. This exercise also helped to ascertain the general locations of notable features but for accurately supporting the 3D-GIS recreations, this data was not reliable. Because the LiDAR-derived DTM data provided the foundations for the 3D-GIS recreations and the subsequent analyses, coherence between them was of paramount importance. Therefore, the OS base-maps were used because they were geo-referentially aligned to the DTM. Subsequently, these GPS surveys were only there for guidance.

Altogether, this research stage addressed and collated an array of resources and data. The desktop studies assisted in establishing the initial contemporary landscape context of these sites, both physically and digitally. These investigations subsequently helped to ascertain the locations of relevant archival sources to be recorded for easier consultation and analysis collectively. The data obtained then underwent further interrogation in combination with photographic observations and GPS surveys undertaken on-site and off-site. The GPS surveys helped to build a comprehensive understanding of these sites while photographic observations drew on phenomenological methods of immersion to assist in establishing contemporary views of these sites both physically and experientially. This research conclusively enabled all varieties and formats of sources containing contemporary landscape information about each site to be recorded, collated and interpreted in preparation for the next stage.

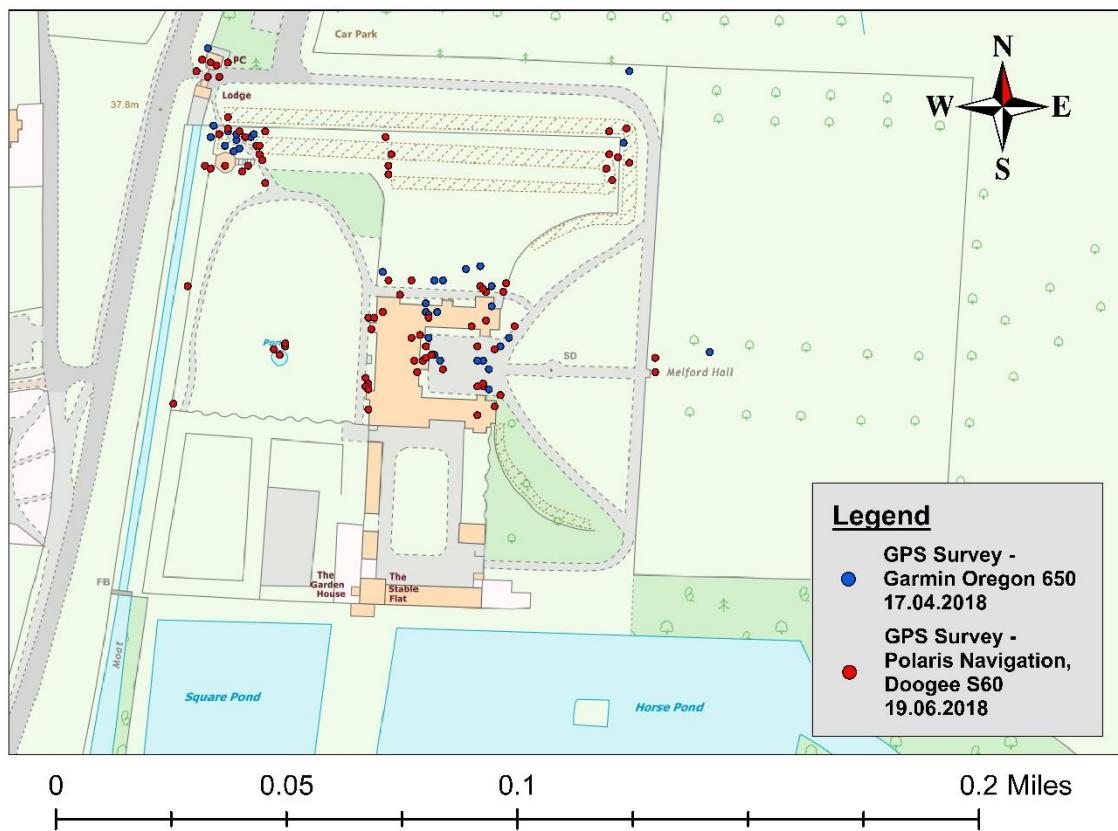


Fig. 3.21 - GPS surveys at Melford Hall, Suffolk

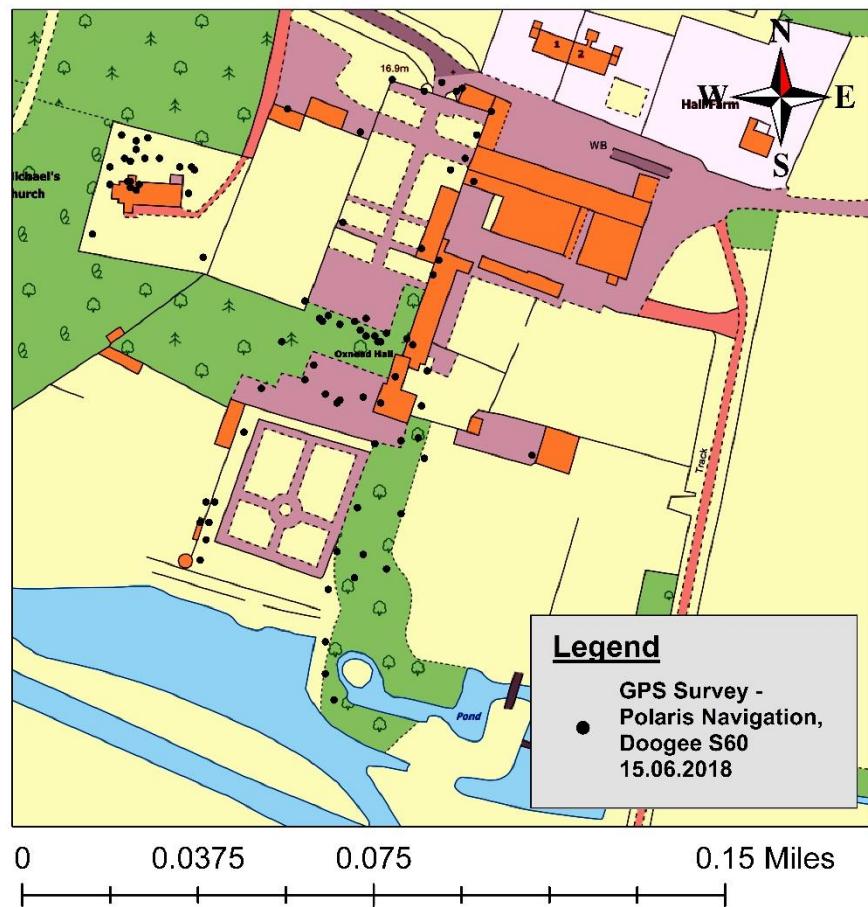


Fig. 3.22 - GPS surveys at Oxnead Hall, Norfolk

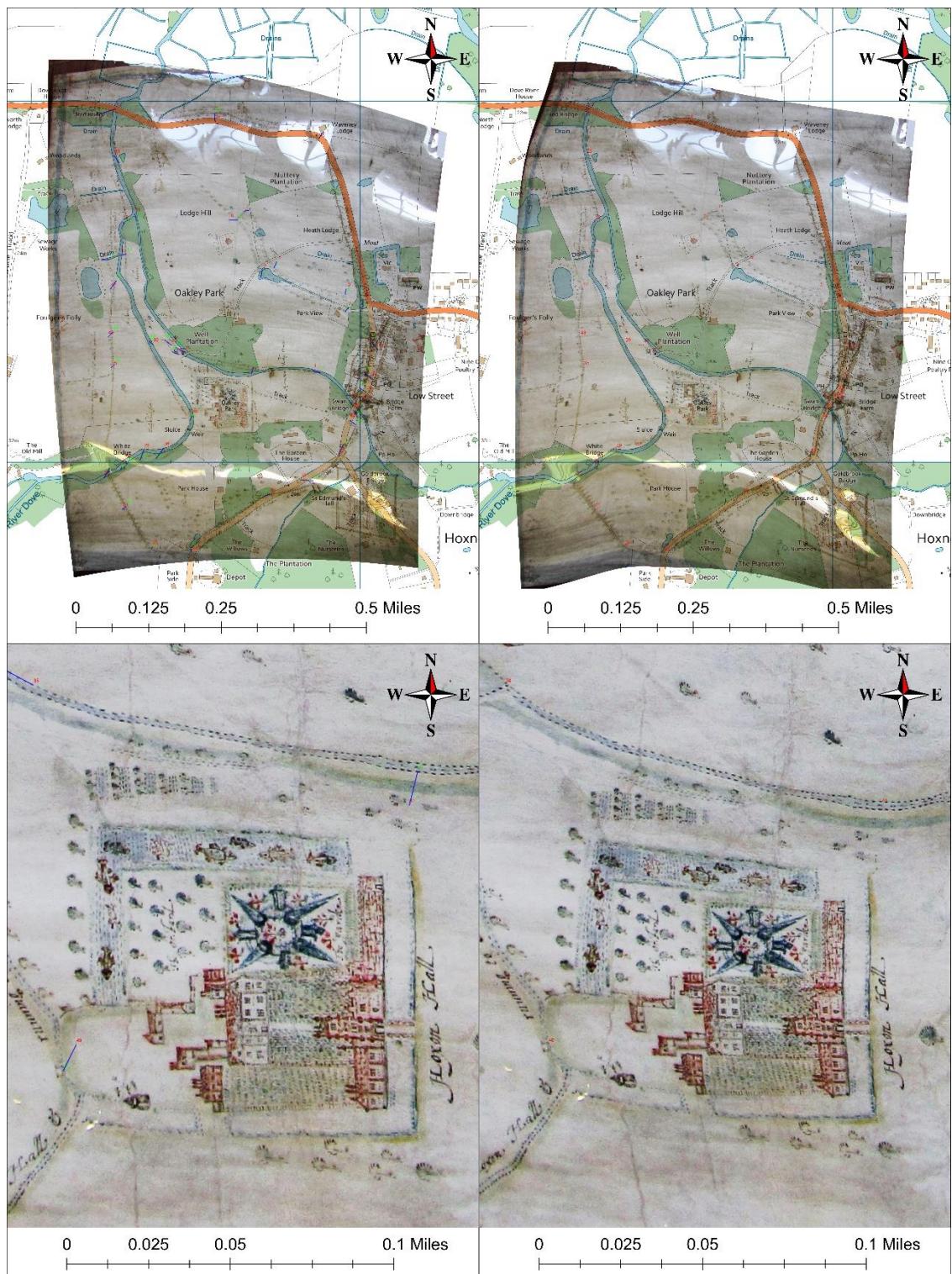
### **3.3.4 - Data Processing**

This stage involved processing and extracting collected landscape information into digital data within the 3D-GIS recreations. This involved geo-referencing visual sources and reproducing its data as polygons within 2D-GIS. These polygons thus represented the wider landscape beyond the sites but also provided the foundations for constructing the externally-created 3D models using CAD or photogrammetry softwares. 3D models added a new dimension to 2D-GIS by accounting for evidence from iconographic and documentary sources and visualising it in greater detail. Amalgamating polygons and 3D models thus created the 3D-GIS visualisations of each case study within their contemporary landscape contexts. This stage thus aimed to condense, rationalise and combine all available data about each site into individual digital landscape interpretations.

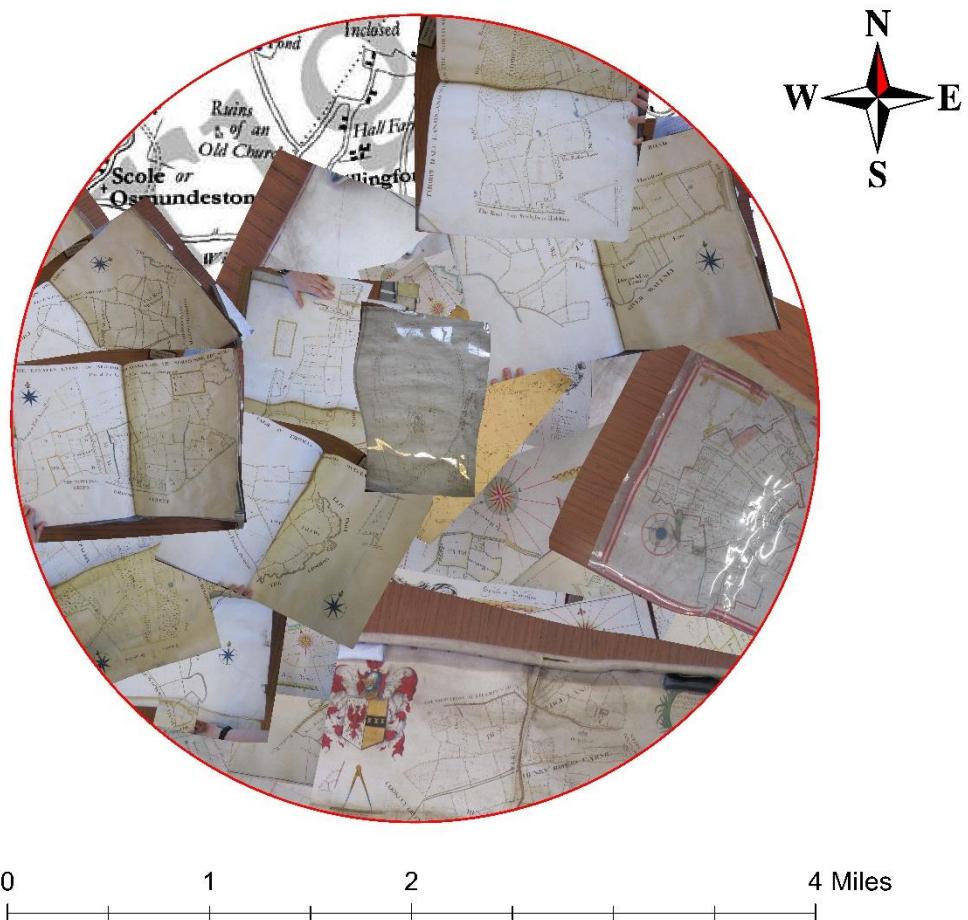
#### **2D-GIS - Geo-referencing and Digitising Polygons**

A defining capability of GIS is its ability to handle spatial data, including those geographically referenced, or 'geo-referenced', according to a coordinate system (Agugiaro, 2014, p.101). Downloaded data from the Ordnance Survey, Environment Agency and Edina were already geo-referenced for instant use within GIS. However, photographs or copies of pictorial archival sources containing identifiable geographical information required geo-referencing. This allowed their data to be inspected and extracted into their intended digital locations within GIS. Each site had different quantities of sources eligible for this process, from contemporary maps and architectural plans to more current resources such as archaeological excavation or earthwork plans. The OS base-maps were also required to establish geo-referenceable points, or common locations between what the source visualised and what the OS map recorded in the landscape. Accuracy was paramount during this process to ensure the sources' optimum alignment and conformity to the GIS environment.

However, problems were encountered when especially challenging sources proved difficult to geo-reference. These issues occurred when too few geo-referenceable points existed within a source or if the source lacked geometrical consistency or accuracy (Nobajas & Nadal, 2015, p.213). For example, the geo-referenced output of a map of Hoxne became warped, mainly around the house itself where geo-referenceable points were scarce (Fig. 3.23). Although adjusting



**Fig. 3.23 - Map of Hoxon Newe Park, by William Stokes, 1619 (SRO(I) HD40/422), georeferenced using 2<sup>nd</sup> Order Polynomial (left) and Spline (right) transformations**



**Fig. 3.24 - Geo-referenced sources compiled within focus area of Hoxne Hall**

the transformation settings improved the output, this hindered the investigation of the source's landscape data. Another complication was that some sites had numerous geo-referenceable items. Whilst individual sources became more coherent within their landscape context, multiple images engulfed the focus area and competed against others within the same digital space, which occurred with Hoxne (Fig. 3.24). As a result, the sources were of reduced readability, which thus hindered the ability to cross-reference the data with non-visual evidence. Whilst geo-referencing these sources was beneficial, additional data processing was required to create more precise landscape visualisations.

From these geo-referenced sources, the data were extracted and visualised as polygons, saved within shapefiles. These polygons demarcated individual landscape areas both on-site and throughout the wider landscape within GIS. Each polygon was drawn or sliced out of the focus area using the 'Cut Polygons' tool. The latter was favoured, which quickly and accurately divided up large areas, such as fields or parks, and more intricate features, like rivers, roads and hedgerows.

Trees, however, were duplicated using the ‘Copy’ tool and placed into their intended locations, derived primarily from geo-referenced maps but also from the Woodland Trust’s database of surviving and surveyed trees (The Woodland Trust, 2018). However, a “Multitude or Magnitude of Trees blown down, whole Parks ruin’d, fine Walks defac’d, and Orchards laid flat” after the Great Storm of 1703 (Defoe, 1705, p.70). Less than 40,000 old, ancient and traditionally-managed trees have been estimated to survive in Norfolk alone (Barnes & Williamson, 2011, p.11). The positions of trees were thus derived mainly from geo-referenced maps.

Each polygon was digitised concurrently with an attributes table, which was used to record names, feature types and any sources used to support its creation. The attributes data added an interactive element to these visualisations that aided later investigations of these sites. The features’ heights above ground-level, which applied to buildings, trees, hedgerows and woodland, were recorded in a Height field within their attributes. This Height field and a Priority field was necessary for future methodological stages. Once completed, the polygons were redistributed into different shapefiles, according to their feature type, and a universal symbology was assigned to visually differentiate between them.

These sites were thus transformed into 2D-GIS visualisations. These digital interpretations of the landscape using polygons provided greater clarity compared to the myriad of geo-referenced images (Fig. 3.25). Whilst this 2D output was beneficial, more complex spatial visualisations and analyses required the use of 3D (Agugiaro & Remondino, 2014, p.145). The use of the third dimension was considered imperative for understanding visual experiences within these landscapes because flat 2D environments, accessible only from a birds-eye perspective, ignore the concept of human perception (Richards-Rissetto, 2017b, p.16). Therefore, 3D-GIS visualisations would enable immersive exploration and comprehensive analysis of the prospects and promenades within these sites.

The finalised shapefiles were then imported into ESRI’s ArcScene 10.3, the 3D mapping software associated with ArcMap. ArcScene’s recognition of the Z-axis thus ensured the lengths, widths but also heights of features were recreated within its environment. Firstly, ArcScene visualised the polygons’ placement upon their intended topographical elevation, derived from the DTM within a Triangulated Irregular Network (TIN) dataset. TIN datasets helped create more seamless

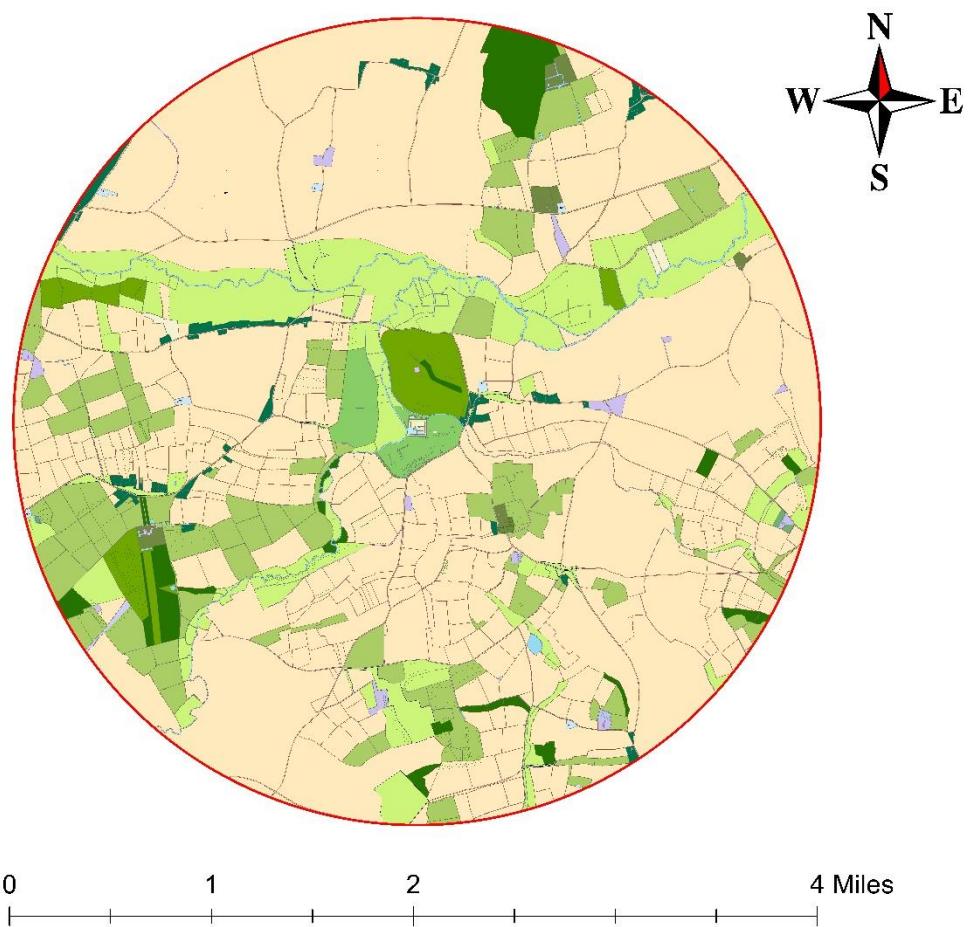


Fig. 3.25 - Data from geo-referenced sources extracted as polygons, Hoxne Hall

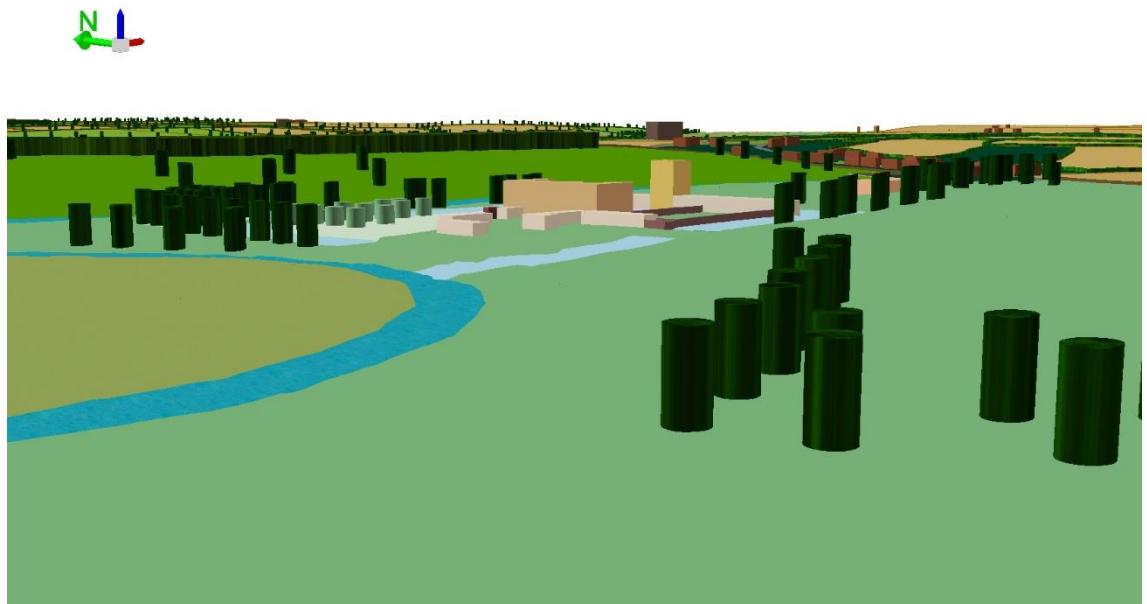


Fig. 3.26 - Polygons visualised in 2.5D environment, Hoxne Hall

landscape visualisations, yet increased the rendering and processing required to achieve those results. However, before assigning the base-heights of the polygons, some areas of the topographical datasets required editing to ensure the data more closely resembled the contemporary landscape, the process of which shall be discussed later (see Section 3.3.4 – DEMs). Once the topography was assigned, any polygons with a value recorded in the Height field were extruded to those specifications. Unlike 2D maps, these 3D landscape visualisations were navigable from a more immersive and realistic perspective (Fig. 3.26).

However, this manipulation of 2D polygon data extruded upon DTM data is not 3D-GIS, nor are these datasets classed as true 3D data (Abdul-Rahman & Pilouk, 2007, p.16). This output is recognised as 2.5D, meaning that aesthetic details, including architecture and garden designs, are not truly represented in a format necessary to understand human experience (Richards-Rissetto, 2017b, p.16). Therefore, this 2.5D perspective has limitations and thus creating 3D models and subsequently 3D-GIS visualisations was crucial.

### **3D-GIS - CAD and Photogrammetry**

3D models were constructed using two different kinds of software compatible with ArcScene. The primary one was CAD, specifically using Autodesk's 3ds Max. 3ds Max was used to recreate features that have been altered, modernised beyond recognition, demolished, or inaccessible. For demonstrative purposes, this method applied to the surviving yet altered gatehouse at Stiffkey Old Hall, Norfolk (Fig. 3.27). Firstly, the foundations for each CAD model were prepared, which helped ensure that they aligned with other models and more seamlessly integrated into the 3D-GIS environment overall. This stage required the polygons that were previously created, which represented areas of wider landscape context digitally but also outlined individual features within these designed landscapes designated for 3D models. The polygons were first imbued with TIN data using the 'Interpolate Polygon to Multipatch' tool, which ensured that the CAD models conformed to their designated area and topography. 3D multipatch files that were outputted matched the polygons' areas and adopted the topography recorded in the TIN datasets. Using the 'Multipatch to COLLADA' tool, the multipatch files were then converted into COLLADA files (.dae), which were compatible with 3ds Max.



**Fig. 3.27 - Photographic observation of Gatehouse, Stiffkey Old Hall**

Before the 3D modelling process began, there were certain data conditions that needed to be applied to ensure the 3D models imported successfully into ArcScene. Firstly, before importing the COLLADA files into 3ds Max, it was necessary to alter the Unit settings within 3ds Max. The software needed to be set to Meters (metres) whilst the COLLADA files upon importation into 3ds Max were adjusted to Centimeters (centimetres). These settings were important because they ensured the COLLADA files scaled correctly between GIS and CAD and vice-versa after importing the completed CAD models into 3D-GIS. Secondly, once imported in 3ds Max, the COLLADA files became separate triangulations within one file, but it was preferable to transform these into a single object to provide a solid foundation for these models. This problem was rectified by merging the triangulations using the 'Attach' function to create one object, which was easier to use. Thirdly, the finalised CAD models were saved within the same folder as its GIS-compatible versions and texture files, which ensured the software could read all the file paths necessary for ArcScene to generate these models correctly.

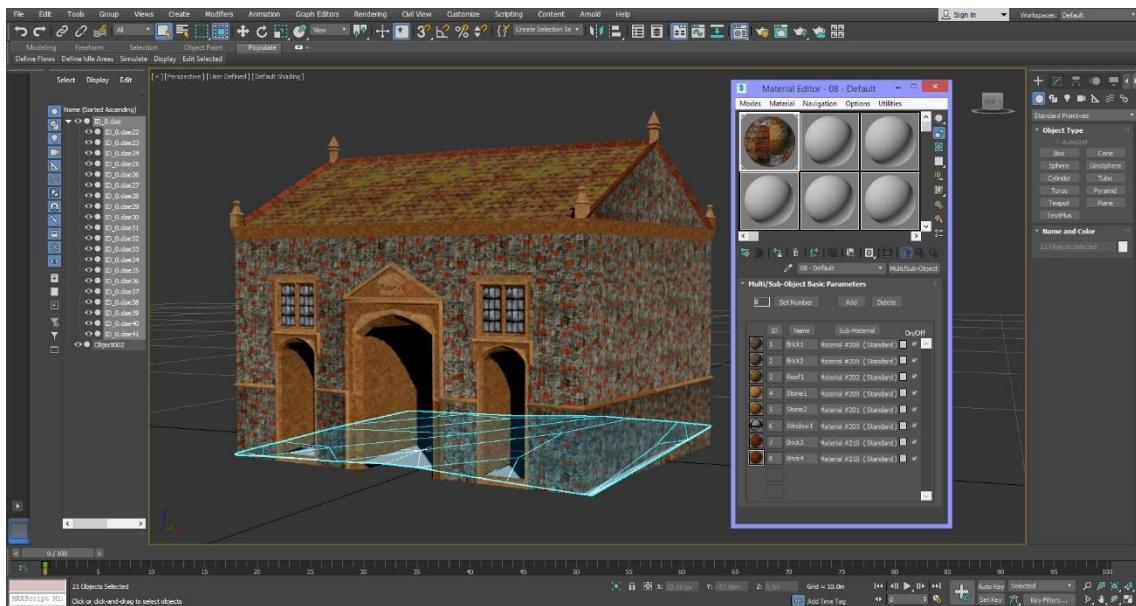


Fig. 3.28 - CAD model, upon COLLADA (.dae) file, of Gatehouse, Stiffkey Old Hall

The 3D models were then built upon the COLLADA files (Fig. 3.28). All the relevant information, researched and collated from written and visual sources, was represented within one model. A limit does exist on the number of overall faces and vertices within a model, due to the specifications of the GIS-compatible version of the models. Also, the increased file size associated with more complex models which resulted in decreased performance within 3D-GIS. This method was thus unsuitable for creating single models of entire landscapes. Instead, individual features were reconstructed as separate and simple models. Several objects were used and merged to become one model using the 'Attach' function. Merged models were necessary because they prevented the importation process into 3D-GIS from glitching, whereby different objects and the COLLADA files separated and relocated elsewhere within the digital space.

Once their main structures were modelled, textures were added. Only simple textures were compatible for rendering within ArcScene because the software did not recognise more realistic effects like masks and bump maps, frequently used for gaming purposes for example. Therefore, a collection of single JPEG (.jpeg/jpg) image files were used. Seamless textures were obtained from Textures.com, previously known as CGTextures.com (Textures.com, 2016). To create more detailed or enhanced images, these textures were edited within Paint.NET (Paint.NET, 2016). This image-editing software allowed different materials to be layered and merged into single images saved as JPEGs. Multiple JPEGs were then stored within a 'Multi/Sub-Object' material type in the 'Material

Editor' in 3ds Max. The textures were then assigned to the relevant faces of the models and manipulated into position using the 'UVW map' tool. This process increased the models' overall detail and quality whilst masking their structural simplicity. Upon completion, the models were ready for exportation into 3D-GIS.

This work primarily focused on recreating altered or demolished landscapes, but some features did survive intact. In these rare circumstances, recording them was beneficial for posterity before they became lost to us. Photogrammetry is a useful 3D modelling option in such cases. For this research, photogrammetric models were created using Autodesk's ReCap Photo software. ReCap Photo was used because of its student licensing, interoperability with 3ds Max, and ease of use compared to more advanced software. However, problems were encountered using ReCap Photo, which affected this part of the methodology. In the first instance, although ReCap Photo can produce detailed models of larger landscape areas, student licences only permit 100 photos per model. Therefore, only small features could be reproduced in enough detail using this licence.

Therefore, ReCap Photo was used to create photogrammetric models of sculptures at Oxnead Hall, Norfolk. Although the hall was demolished in the 1730s, a fountain and a statue of Hercules, both carved by Nicholas Stone, survived after the Hobarts of Blickling Hall purchased them from the Pastons (Edwards & Williamson, 2000, pp.22–3). Both pieces of stonework remain at Blickling and are conserved by the National Trust, who granted permission to create models of them (Fig. 3.29). Photographs were taken from different levels and angles with enough overlap between images to ensure optimum coverage. This process was more easily executed for the fountain, which resided within the open space of the main garden. The statue, on the other hand, leant against a wall in the Orangery and so complete coverage was not possible. The photographs were then uploaded to ReCap Photo to be rendered into 3D models. Once generated, further editing was required because all content was rendered including the surrounding landscape, which needed to be removed so only the features themselves remained. Also, any gaps due to missing photographic evidence, because of the wall behind the statue of Hercules for example, were amended within the software. The finalised photogrammetric models captured these features in high-resolution detail with realistic textures, thus demonstrating the benefits of this method (Fig. 3.30).



**Fig. 3.29 - Photographic observations of Fountain (left) and Statue of Hercules (right) from Oxnead Hall, currently at Blickling Hall, Norfolk**



**Fig. 3.30 - Photogrammetric models of Fountain (left) and Statue of Hercules (right)**

Once finalised, the CAD and photogrammetry models were ready to export. The process was more complicated for ReCap because its exportation files types were not directly compatible with ArcScene, which presented another issue with using ReCap. Therefore, the ReCap files were exported using Autodesk's Filmbox format (.fbx) into 3ds Max, from which both CAD and photogrammetry models were exported into a GIS-compatible file type called 3D Studio (.3ds). As mentioned earlier, this file type only recognised a limited number of faces and vertices and, therefore, complicated 3D models were not supported. As a result, this presented another problem for these high-resolution photogrammetric models. Using the 'Optimise' modifier in 3ds Max, the number of faces and vertices in the models were reduced to ensure their compatibility. However, this resulted in the final outputs being of lower quality in 3D-GIS. Although it is possible to introduce more detailed photogrammetric models into 3D-GIS (Richards-Rissetto, 2017a), this was not achievable using ReCap Photo and so other photogrammetric software like Agisoft PhotoScan has been recommended (Historic England, 2017).

The models generated using CAD and photogrammetry were then integrated amongst the polygons to complete the 3D-GIS visualisation. Both model types were imported using a similar methodological process. Before their importation, a geodatabase for each case study was required to recognise and store the models within ArcScene. A file geodatabase type was preferred because of its native data format, larger data limits, and cross-platform usability (Kennedy, 2009, p.216). The file geodatabases were set up to adopt the British National Grid and Newlyn as its coordinate systems, which ensured the 3D models were located and scaled correctly within ArcScene. Within the file geodatabase, multipatch files were created to host the .3ds files. Although possible to include multiple models within a single multipatch file, individual files were advantageous when using the GIS layers system. Layers were particularly useful, for example, when switching between the various house designs for Stiffkey Old Hall. Each model also had an attribute table, which was used to record each source that supported the models' reconstruction. Finally, the original multipatches, consisting of polygons embedded with TIN data, were also required. These files retained the exact coordinates of the models' intended locations and thus acted as guides to align the 3D models within ArcScene (Fig. 3.31). This next stage ensured optimum alignment of the COLLADA files embedded in the 3D models to the locations

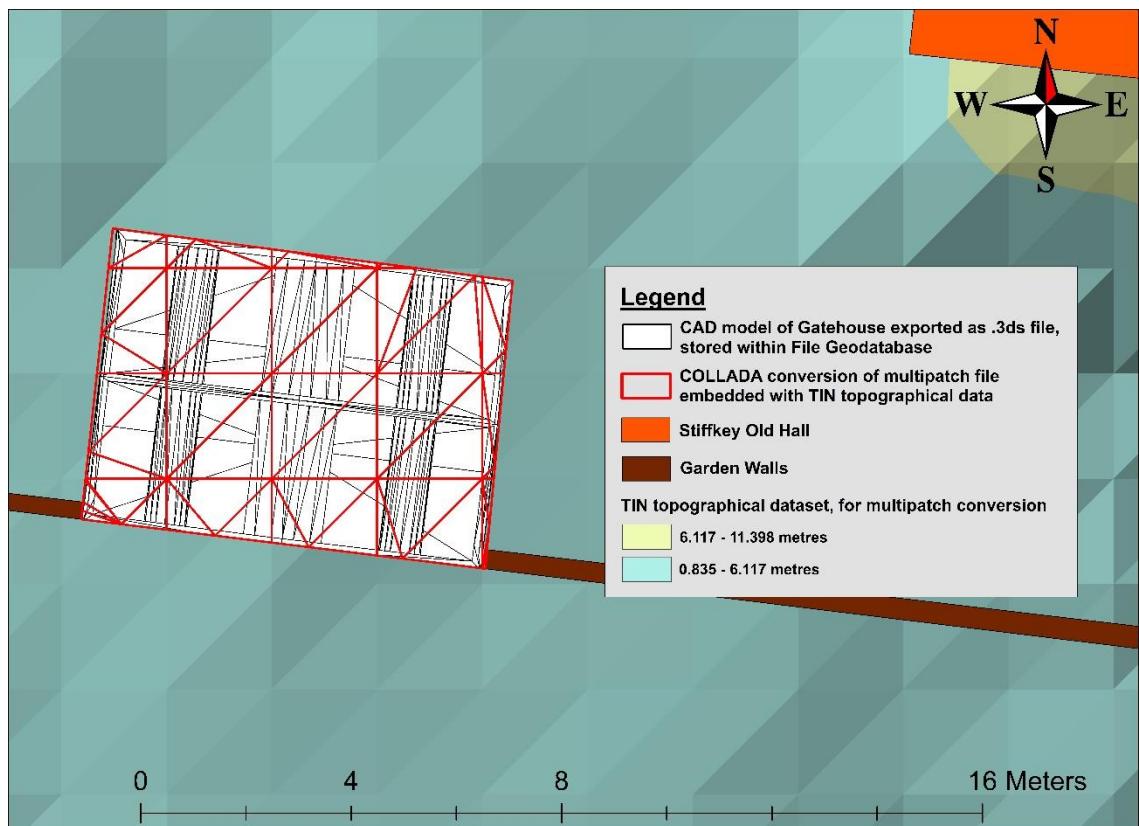


Fig. 3.31 - CAD model imported into ArcMap with COLLADA file as guide



Fig. 3.32 - 2.5D polygons (left) compared to CAD models (right) within ArcScene

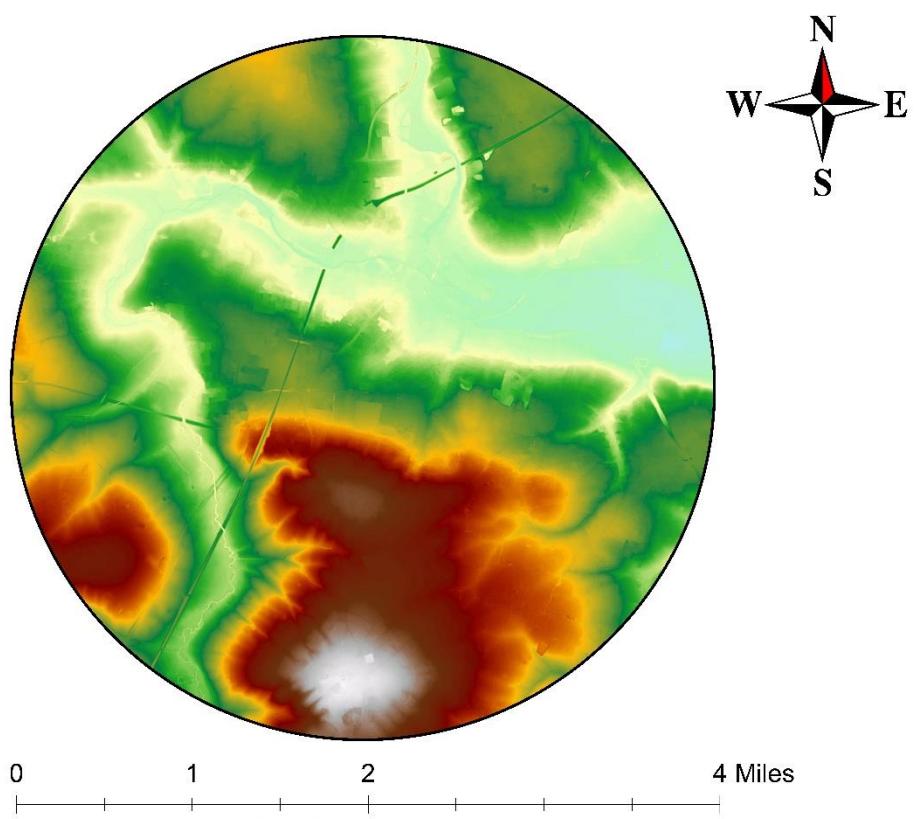
defined by multipatches. This process required alternating between ArcMap, to match the X and Y coordinates, and ArcScene, for the Z coordinates. Once correctly positioned, the models merged into the 3D-GIS environment and, compared to the 2.5D extruded polygons, created more authentic and detailed landscape interpretations (Fig. 3.32).

### **DEMs - Editing Topography and Adding Surface Features**

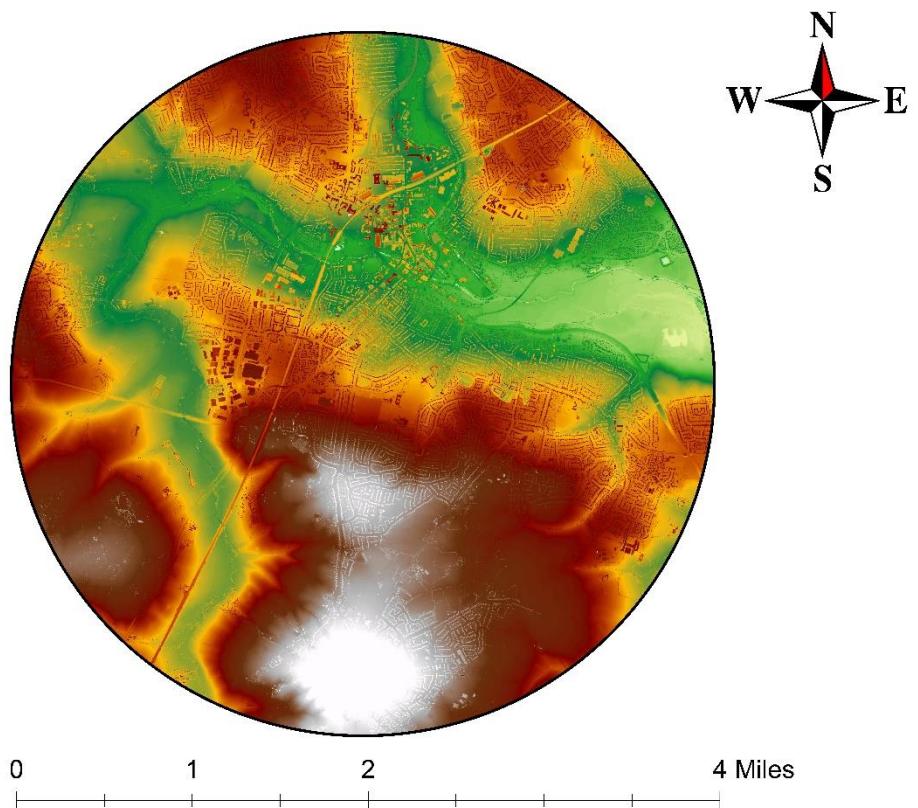
Another crucial stage was generating DEM datasets that represented of the sixteenth- to seventeenth-century landscape as opposed to our current one. DEMs were necessary not only for recreating the designed landscapes within 3D-GIS but also when analysing the visual experiences within them. Two kinds of DEM were required: a DTM, for only topographical data, and a DSM, for surface data upon the topography. Both datasets were processed using similar methods and thus are discussed collectively, but any notable differences are highlighted at each stage.

DTMs were converted into the TIN datasets, upon which the polygons were placed and extruded within ArcScene and the 3D models were constructed. Before they were usable, however, the DTMs required editing. DTM tiles were downloaded from Edina and merged into a single dataset for each case study. However, these datasets contained modern landscape information, as exemplified the DTM of Moulsham's landscape context which included motorways and overpasses within its urbanised landscape (Fig. 3.33). As a result, these features disrupted the natural topography and thus their presence within this dataset would affect the output of the 3D-GIS recreations and the subsequent visual analyses. Therefore, the DTMs needed editing to remove them completely so that they more closely resembled the original topography.

DSMs utilised the DTMs but with the addition of surface data. Modern DSM tiles from Edina were unusable because they contained modern and thus historically-inaccurate surface data, such as the suburbs of Chelmsford which engulfed Moulsham (Fig. 3.34). However, DSMs were needed to conduct more detailed analyses of prospects using viewshed analysis (see Section 3.4.2). DSMs were recommended because they accounted for all contemporary surface features as well as topography, which collectively became visual barriers that would affect the viewshed analyses (Bevan & Lake, 2013, p.245; Saunders, 2014, p.24). Therefore, DSMs were created from scratch using DTMs as base-maps.



**Fig. 3.33 - 2-metre DTM for Moulsham, showing motorways**



**Fig. 3.34 - 2-metre DSM for Moulsham, showing urbanisation of Chelmsford**

If amendments to the DTMs were needed, polygons were created upon the datasets that followed the topographical contours and gradations. The polygons contained new topographical values, stored within the Height field of their attribute tables, to replace the areas they overlaid. These values were obtained by extracting the numerical values from the raster pixels in the DTMs surrounding the area being edited. For editing the DSMs, the polygons used were those created previously which represented features of height, such as buildings and trees (see Section 3.3.4 – 2D-GIS). These polygons each had a Height field, which recorded the heights of individual landscape features from the surface of the topography, and a Priority field value of 1 or more. With a higher Priority value, those polygons were prioritised over the DTM and other intersecting polygons throughout the process. For editing both DTM and DSM datasets, the polygons were stored within single shapefiles to streamline the next stage.

These polygons were then converted into raster data using the 'Polygon to Raster' tool in GIS, which matched the format of the DTMs and DSMs. However, some important adjustments to the tool's settings were needed before processing the data. First, the Priority fields were chosen. Second, the cellsizes of these outputs were set to 2 in concordance with the 2-metre resolution of the LiDAR-derived DTMs. Third, 'Maximum\_Area' needed to be selected under 'Cell Assignment Type', to ensure features smaller than the 2-metre pixels of the DTMs were generated. Guaranteeing all surface features were represented within the DSM was prioritised despite the outputs extending beyond the boundaries of the polygons themselves. Ultimately, the accuracy of this process was dependent on the resolution of the DTMs. The tool subsequently generated single files containing rasterised polygons embedded with height data.

For editing the DTMs, the rasterised polygons could instantly be integrated into the original datasets. Duplicate files of the original DTMs were used because the integration process may render the DTMs unusable if the tool errors. The relevant areas of the original DTMs were overwritten by the rasterised polygons using the 'Mosaic' tool. Afterwards, the values of individual pixels were edited with the assistance of an add-on called 'Raster Edit Suite', created externally and thus not officially recognised by ESRI (Yu, 2017). The tool can amend the values of selected pixels, which helped to smooth the gradations between the topographical

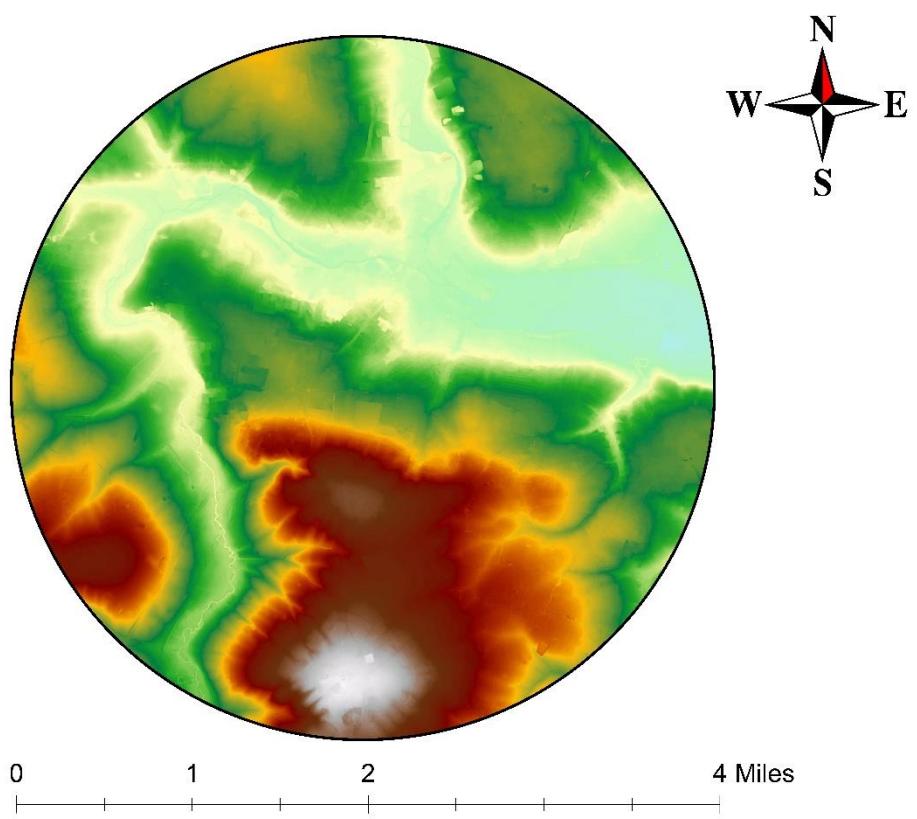


Fig. 3.35 - 2-metre DTM for Moulsham, with motorways removed

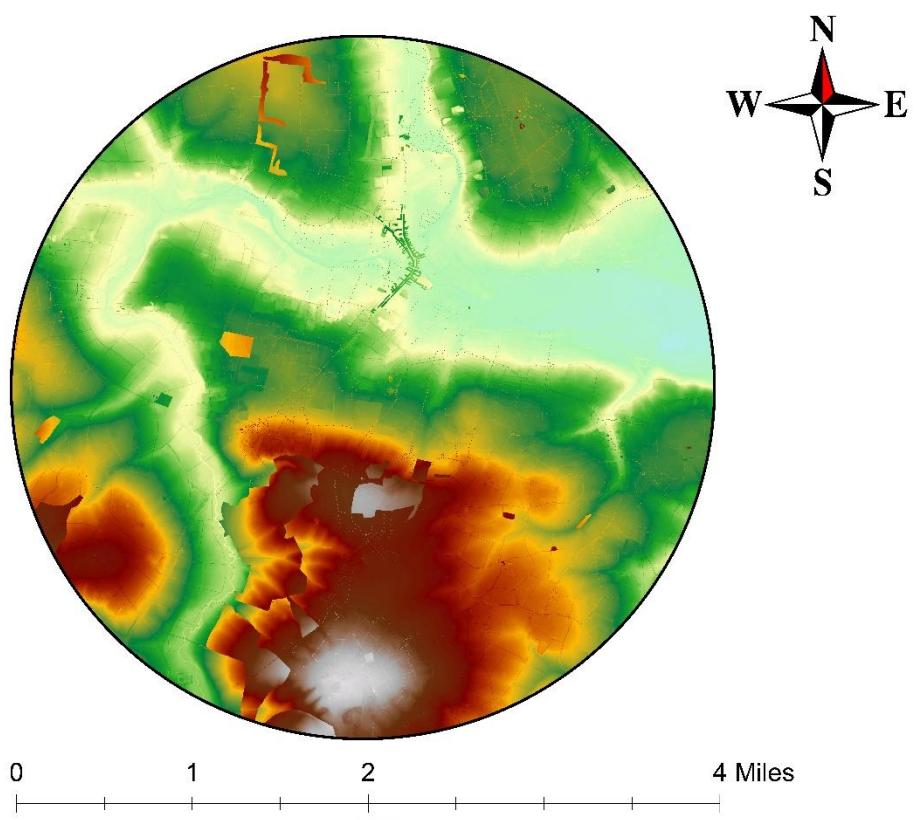


Fig. 3.36 - 2-metre DSM for Moulsham, with sixteenth- to seventeenth-century features included

contours and altogether produce more satisfactory results. Within the finalised DTM output of Moulsham, the motorways were removed and thus more closely represented the contemporary topographical landscape (Fig. 3.35). Using the ‘Raster to TIN’ tool, this edited DTM was then converted into a TIN dataset, which provided the base-heights for the polygons and the 3D models in ArcScene.

To create the DSMs, the process of introducing the rasterised polygons was more complex. The values within the polygons were of the features’ heights only and did not yet account for topography. Using the ‘Raster Calculator’ tool, the following formula added the height values in the rasterised polygons to the topographical values within the newly-edited DTM datasets:

*Con(IsNull("rasterised\_polygon"), "DTM", "DTM" + "rasterised\_polygon")*

If the topography required lowering by the value of rasterised polygons, to include the moat at Hoxne for example, the following formula was used:

*Con(IsNull("rasterised\_polygon"), "DTM", "DTM" - "rasterised\_polygon")*

These formulas calculated new outputs recognising these height changes across the datasets. After using the ‘Raster Edit Suite’ to improve their overall accuracy, the new DSMs bore closer resemblance to the contemporary landscapes recreated in 3D-GIS (Fig. 3.36). However, these outputs only generated the area containing rasterised polygons and thus the rest of the DTM in the focus area was lost. Merging the DSMs with DTM data was not possible without offsetting the other datasets in the GIS environment and thus reducing their reliability overall. Despite this, each DSM output provided enough landscape coverage within the focus area for the finalised DSM datasets to be used for their intended purposes.

### **3.4 - Recreating Prospects and Promenades**

This phase addressed the recreation of prospects and promenades. During this process, new data was created to capture the visibility and invisibility of features within the 3D-GIS environment. Such observations were undertaken from static vantage points, ascertained using viewshed analyses, or along designated routes, recorded within animations. What was produced was then subjected to analysis to provide interpretations of how landowners and their visitors visually-experienced Stiffkey, Moulsham and Hoxne.

### **3.4.1 - Data Collection**

First, the locations where prospects and promenades were likely experienced within each site were ascertained. This stage was undertaken concurrently with collecting data for the 3D-GIS recreations from desktop studies, archival research and on-site investigations (see Section 3.3.3). Within the case studies, the following vantage points and routes were recreated. The approach provided the opportunity for visitors to observe and garner their first impressions of these estates. Important internal rooms varied between each country house, but they were most frequently found on the *piano nobile*, or first floor. Although existing at other sites, viewing platforms upon their rooftops were not present at the chosen case studies. In some circumstances, gatehouses were adapted into more than porters' lodges with the inclusion of a viewing platform. Within the grounds, both natural and artificial features were designed with visual experiences in mind. Earth was manipulated into terraces, which became elevated walkways within the gardens. Viewing or prospect mounts were other pieces of landscape architecture designed explicitly with viewing platforms at their summits. Also, from banqueting houses and pavilions to park lodges and hunting towers, ornamental and recreational buildings were opportunely placed within gardens and parks so that contemporaries could admire their surroundings. These features were modelled into the 3D-GIS recreations in preparation for the next stages.

### **3.4.2 - Data Processing: Viewshed Analysis**

Observer points were first created as point data from which viewshed analyses were conducted in GIS. These points represented vantage points where landowners intended stationary views to be experienced. Within their attribute tables, each point contained an OFFSETA field, set to Double along with its Precision and Scale set to 5 to account for a range of possible height values. These OFFSETA fields contained the heights that the viewshed analyses should be calculated from. These values were either of the estimated heights of windows above ground-level, using the 3D-GIS recreations and topography for guidance, or from the eye-height of a contemporary person (Appendix 5). Studies of skeletons have determined that humans from the sixteenth and seventeenth centuries were 1.70-metres tall on average (Galofré-Vilà et al., 2018, p.14). Eye-heights were slightly lower and thus those OFFSETA values were set to 1.60 metres.

The viewshed analyses were then conducted to estimate the visibility and invisibility of landscape features represented within the newly-created DSM datasets. A tool called 'Viewshed' was used to produce viewsheds, or raster datasets which, based on a binary system, visualised the visibility or invisibility of every pixel within these DSMs from the observer points. The tool's settings also accounted for the Earth's curvature when processing this data. Once generated, the viewsheds were superimposed onto the 3D-GIS environment, using the DSMs to assign base-heights. Within the viewsheds' settings under 'Properties', their 'Raster resolution' values were increased to ensure greater quality and precision within the results once overlaid onto the DSM. Their 'Quality enhancement for raster images' settings under the 'Rendering' tab were set to High, which further improved the clarity of the viewsheds. The finalised viewsheds then indicated which features within each 3D-GIS recreation could be seen or not, thus providing a new source to help analyse and interpret prospects within these sites.

However, issues were encountered. First, viewsheds were only as accurate as the DSMs with only 2-metres raster resolution and thus they lacked accuracy compared to the 3D-GIS recreations. Second, this method cannot calculate views through objects with structural gaps, such as tree canopies or archways, so there were limitations to what viewsheds illuminated. Third, visualising the viewsheds within the 3D-GIS recreations was challenging to achieve without decreasing the clarity of the data. Although possible to navigate and interrogate details within the data, it was difficult to display the viewsheds in a coherent and legible manner concurrently with the 3D-GIS visualisations. The transparency and colour settings required to display the viewsheds subsequently affected the visibility of the recreations themselves. Although the results could still be accessed within the 3D-GIS recreations (CD Appendices 1-3), images were created using photo-editing software called Paint.NET. Image editing allowed the viewsheds to be layered onto the 3D-GIS recreations while maintaining their clarity so they could be analysed with greater certainty within the thesis (Fig. 3.37).

Another problem resulted from a software bug, which affected how viewsheds were visualised specifically within ArcScene. This bug rendered the results of the viewsheds differently to its actual output after topographical base-heights were applied. What was essentially displayed were parts of the viewshed

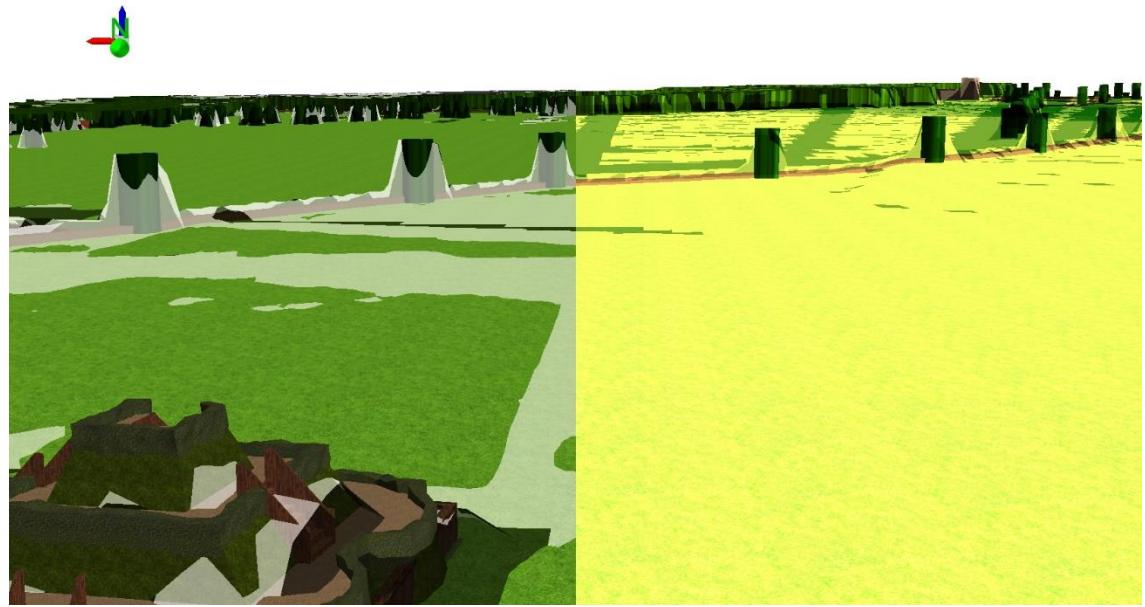


Fig. 3.37 - Comparing viewshed overlaid in GIS (left) with edited image (right)

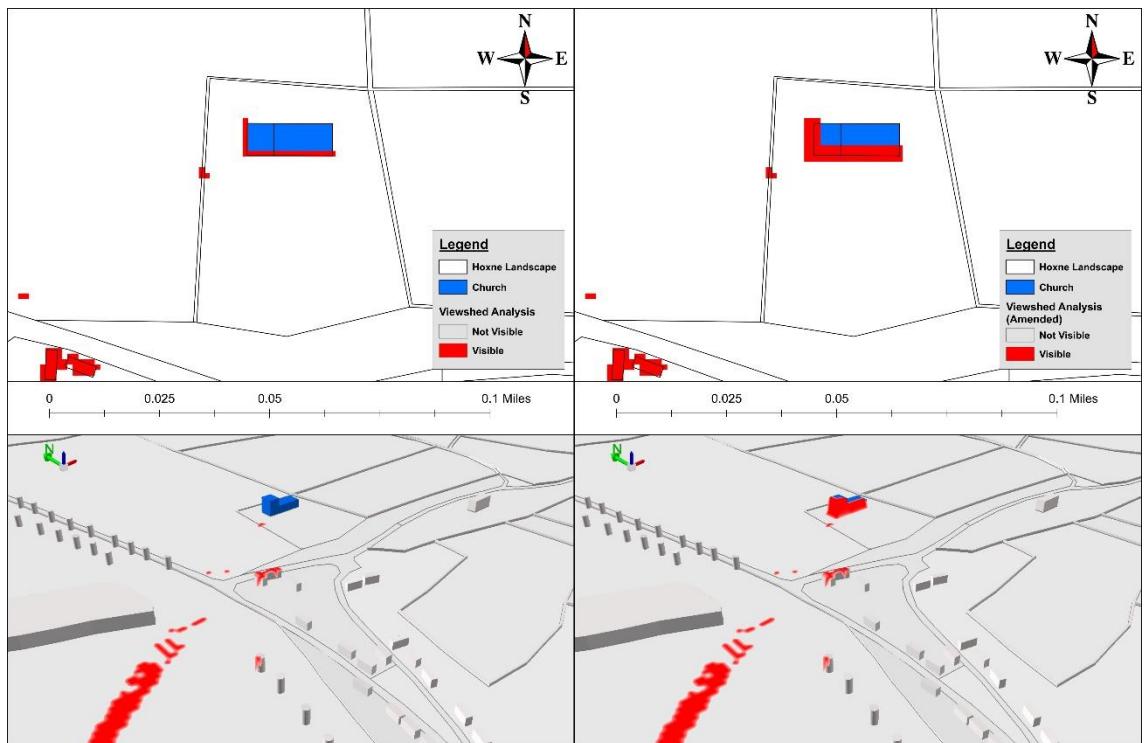


Fig. 3.38 - Visibility of Hoxne parish church within ArcMap (top) and ArcScene with base heights applied (bottom): Viewshed Bug (left) and solution (right)

averaged out visible and invisible areas. As a result, visibility of features was either reduced or, in extreme cases, entirely removed. This occurred in the viewshed analysing the visibility of the parish church at Hoxne (Fig. 3.38). The software bug was reported to ESRI for patching (ESRI Technical Support, 2018), but no solution was provided within the timescale of this thesis and so a workaround was needed. ESRI suggested using ArcPro but, because this software is primarily designed as an online GIS engine, the extensive amount of data needed for this research proved too cumbersome for ArcPro to handle. Instead, the best solution was to edit the pixels in the viewsheds themselves. Using 'Raster Edit Suite', previously utilised to edit the DTMs and DSMs (see Section 3.3.4), the pixel values associated with the problematic areas were individually changed to expand the range of visibility enough for ArcScene to register the data (Fig. 3.38).

### **3.4.3 - Data Processing: Animations**

Promenades were recreated using animations, which captured movement through the 3D-GIS environment and provided a more immersive perspective when studying these experiences. 3D modelling and GIS softwares can generate animations but within ArcScene, both 3D models and the landscape context produced in GIS could be visualised collectively within 3D-GIS. Using the 'Capture View' function, these animations were created as a sequential series of individual snapshots capturing real-time landscape views amongst the 3D-GIS recreations. This process required navigating the 3D-GIS environment and visualising each view of interest along the routes being analysed. The views were then recorded according to their coordinates along with azimuths, inclinations and other relevant settings. Each image was stored within animation tracks hosted in the 'Animation Manager'. The timings between image transitions and the overall animation lengths were later amended to create more realistic viewing experiences. Once saved, the animations were either replayed within ArcScene or exported into Audio Visual Interleave files (.avi) for external viewing (CD Appendix 1-3).

These animations provided not only a sense of the movement and perspective through these landscapes, but also a greater amount of visible detail compared what the viewsheds produced. On the other hand, invisible features were not recorded because animations were fixed to paths and thus, there was no freedom to explore beyond what the animations captured. Exploring and

analysing those hidden features required exiting the animations altogether. As a result, there were demonstrable advantages and disadvantages to using either viewshed analyses or animations. Both required time and effort to process and ensure their results were as accurate as possible. However, each had their own hindrances which affected their individual contributions to this research. Rather than utilising only one method of recreating visual experiences, using both viewsheds and animations concurrently meant that both aided this research while negating each other's weaknesses. Consequently, they helped create a more varied yet comprehensive methodology for analysing different visual experiences. Although ArcScene's animation technology requires improvement, creating geo-referenced simulations of promenades within 3D-GIS was nonetheless possible as support for the viewshed analyses of prospects within designed landscapes.

### **3.5 - Data Analysis: Results and Interpretation**

The viewsheds and animations collectively recorded the visibility and invisibility of landscape features within particular prospects and along certain promenades. This final stage of the methodology subsequently focused on interpreting those results. First, the lives and personalities of contemporaries were researched, specifically about the Bacons, Mildmays and Southwells who created and lived within Stiffkey, Moulsham and Hoxne but also members of their extended social network. Second, an adapted combination of phenomenology and reception theory was used to interpret what contemporaries perceived within the viewsheds and animations. Phenomenology derives meaning through human engagement with the landscape to grasp how they were experienced by past beings (Barrett & Ko, 2009, p.280). Reception theory seeks to determine how readers judged or were affected by what was written in texts, but it can also help elucidate how contemporaries interacted with designed landscapes and thus how they responded to and understood them (Hunt, 2013, p.13).

By using immersion and embodiment techniques to help assess what people directly perceived amongst these estates, as interpreted within the 3D-GIS recreations, how landowners potentially experienced and responded to these designed landscapes could be deliberated. These interpretations were supported by research into various aspects of these landowners' lives but also of other contemporaries' opinions regarding different landscape perceptions. Such

attitudes were recorded within literary texts but also artworks as well as other designed landscapes, which landowners potentially encountered or were inspired by during this period. Collectively, each of these research areas helped to establish the sixteenth- and seventeenth-century perspectives of people but especially those of the landowners who emulated their ideas, attitudes and opinions into the experiences they created within their estates.

### **3.5.1 - Establishing Perspectives**

First, it was necessary to understand who the people experiencing these designed landscapes were. As the medieval philosopher Meister Eckhart wrote, "Subtract the mind... and the eye is open to no purpose" (Eckhart, 1924, p.288). Reconstructing the minds of contemporaries was thus important in order to interpret what they visually experienced within these landscapes. Because the landowners lived within, designed and thus frequently experienced these estates, their perspectives were of special interest. As Williamson ascertained, "the way men lived, their attitudes to friends, neighbours, family, political allies and social inferiors, how they farmed and what they hunted: all these things were also of considerable significance in the moulding of a gentleman's grounds" (Williamson, 1998c, p.2). As a result, it was important to research and understand these landowners in all parts of their lives, such as their social interactions with their peers and other members of contemporary society, their professions and economic ventures, their religious inclinations or political leanings. More personal aspects were also explored, such as their spending habits, their family or friends, and their cultural experiences at home and abroad. These were recorded in the works of other researchers but also, if such evidence existed, in personal papers, letters, and other documents personally written by the landowners.

In rare circumstances, what contemporaries experienced within a designed landscape was also documented. However, these were typically written from visitors' perspectives, for example within letters describing "the terrestriall paradise" of Oxnead (Agnew, 2012, p.162) or how "mighty taken with" Melford they were (Boothman & Hyde Parker, 2005, pp.33-4). Therefore, addressing how the landscape was perceived by visitors and how the landowners influenced their experiences were also explored. Such visitors typically included members of their family and close friends, but also other social connections that these landowners

had established at Court and especially with the reigning monarch. All these areas of study helped create interpretations of who these people were. This research consequently aided in providing interpretations of what contemporaries but especially landowners plausibly experienced, according to their likes and dislikes towards different aspects of their estates and surrounding landscape.

### **3.5.2 - Phenomenology and Reception Theory**

The recreated prospects and promenades were first interpreted using immersion and embodiment methods derived from phenomenological studies. These approaches to phenomenology were more traditionally used by researchers who used their own bodies as mediums of engaging with these landscapes directly (Barrett & Ko, 2009, p.280). Within these 3D-GIS recreations, on the other hand, immersion and embodiment techniques provided albeit subjective interpretations of what was visually-experienced based on what was visible or invisible according to the viewshed analyses and the animations. These phenomenological methods nonetheless helped to anticipate and interpret the more likely or plausible human responses to different landscape features and compositions thereof. Subsequently, what contemporaries directly experienced within individual designed landscapes, as visualised in 3D-GIS, can be better understood.

What was interpreted was further evidenced using an adapted approach derived from reception theory. What potentially inspired landowners to design prospects and promenades to include or exclude certain landscape features was explored. This stage included research into literary texts and artworks, which landowners potentially owned or encountered. On rare occasions, surviving inventories listing landowners' possessions provided evidence to help ascertain what they owned and thus what likely influenced them. Other sites, however, have no supporting sources of this kind. Therefore, the scope of this research was expanded to include a broader range of contemporary texts and literature that were popular during this period. Although owners intervened with their ideas on how to design their estates, they also relied on the advice published by experts (Steane, 1987, p.210). From such prominent works likely encountered by landowners, the examination of the ideals and assumptions that were documented in these texts was necessary to understand the perceptions of the period (Machor & Goldstein, 2001, p.157). Artworks, on the other hand, were more unique

because they were often commissioned by individuals as opposed to being mass-produced. Therefore, whether contemporaries had access to them was more dependent on who owned them. Nevertheless, as art historians amongst others have explored, artworks provide insight into what varieties of features or entire landscape compositions were commonly captured and thus what contemporaries' tastes were (Ogden & Ogden, 1955, p.6). As a result, the attitudes that were emulated in these artworks were likely sought in reality within individual designed landscapes and throughout the surrounding countryside.

It was not only books and artworks that influenced these landowners' when creating and developing their designed landscapes and the experiences within them. Inspiration was also found in other people they encountered. For example, Nathaniel Bacon of Stiffkey was the half-brother of Francis Bacon, a renowned author of essays including *Of Building* and *Of Gardens* (Bacon, 1864b; Bacon, 1864c). Therefore, members of these landowners' social circles, including the estates they owned and designed, were amongst their greatest influences. Such places included royal residences, where many members of the elite attended on business or received their knighthoods, as well as the families' ancestral homes and estates belonging to other relatives and close friends.

Whilst researching what existed within other designed landscapes was beneficial, of greater benefit was recreating the experiences within them to compare with those analysed in the main case studies. Therefore, a designed landscape closely associated to each case study was recreated to only a 2D extent within GIS. These 2D-GIS visualisations thus provided comparative viewshed results to support the interpretations of the 3D-GIS recreations. Data for each site was compiled from geo-referenced maps while particularly important landscape features within them were digitised as polygons. Subsequently, basic DSMs were generated using the previously-defined process (see Section 3.3.4 - DEM).

Viewshed analyses were then calculated using these DSMs from predetermined locations defined by observer points (see Section 3.4.2). The outputted viewsheds thus contributed to the greater understanding of the main case studies and their owners by addressing any similarities and differences between the visual experiences at these sites. The comparison sites for the three main case studies is presented in the following gazetteer.

### 3.5.3 - Gazetteer: Comparison Studies

**Old Gorhambury House, Hertfordshire:** Old Gorhambury House was chosen as the comparison study for Stiffkey Old Hall. Old Gorhambury was the Bacons' family residence (Family Tree Appendix 1). Sir Nicholas Bacon, Nathaniel Bacon's father and Lord Keeper of the Seal to Elizabeth I, built Old Gorhambury in the 1560s. Francis Bacon, famous author and Nathaniel's younger half-brother, inherited the estate in 1601. A 2D reconstructive analysis of landscape change in St Albans included Old Gorhambury (Hunn, 1994) using an estate map from 1634 (HALS D/EV/P1). Old Gorhambury became ruined but remains within the new Gorhambury House estate built by Sir Robert Taylor in the late-eighteenth century.

**Terling Place, Essex:** Terling Place was the comparison site selected for Moulsham Hall. Terling was once a palace for the Bishops of Norwich which Henry VIII seized and later sold to the Mildmays in 1563 (Family Tree Appendix 2). An estate map, also completed by the Walkers contemporarily to the map of Moulsham in 1591, records the layout of Terling (ERO T/M 63/1). An eighteenth-century country house and landscape park replaced the original estate and still survives as a private residence bearing the same name, Terling Place.

**Oxburgh Hall, Norfolk:** Oxburgh Hall provided the comparison for Hoxne Hall. Oxburgh belonged to the Bedingfields, who married into the Southwell family in the sixteenth century (Family Tree Appendix 3). Despite being modified over the years, the moated courtyard hall including gatehouse still survives and retains its late-medieval architecture. The grounds, however, have been altered. Some contemporary evidence survives including an inventory from 1598 (NRO JER 269, 55X1), but only two maps dating to the early-eighteenth century provide cartographic evidence of this estate (NRO BRA 2524/1; NRO BRA 2524/2). Despite their later dates, these maps nonetheless provide a good indication of the contemporary layout of the hall and grounds. Oxburgh is open to the public under the joint ownership of the Bedingfields and the National Trust.

This final methodological stage established who these contemporaries were, what they experienced and how they responded to those experiences. The aforementioned study areas have each provided evidence to support the interpretations of what people visually experienced within different prospects and promenades throughout the chosen case studies. These investigations further

demonstrated the benefit of using multiple disciplinary approaches to study this phenomenon. As a result, this research provided a greater understanding of what landowners intended themselves and their guests to perceive within their designed landscapes in the sixteenth and seventeenth centuries.

### **3.6 - Conclusion**

This chapter sought to document the methodology behind this research while demonstrating how each phase contributed to a greater understanding of English designed landscapes. Using 2D-GIS and Microsoft Excel, the spatial and statistical analyses established regional trends amongst the distribution of sites in Norfolk, Suffolk and Essex and provided contemporary context to support this study of designed landscapes. The process of recreating certain sites thus demonstrated the ability of 3D-GIS in extracting, collating and displaying a diverse yet physically-dispersed range of data into unique interrogable digital resources. Subsequently, these 3D-GIS recreations provided the contemporary landscape context to analyse the visual experiences within designed landscapes, using viewsheds and animations to support these observations. A combined approach using aspects from phenomenology and reception theory thus evidenced the interpretations behind the prospects and promenades that landowners and their visitors experienced. This complex yet well-informed and versatile methodology ultimately provided the chosen case studies with fresh opportunities to contribute to our current understanding of English designed landscapes and their owners in the sixteenth and seventeenth centuries.

## Chapter 4 - Stiffkey Old Hall, Norfolk

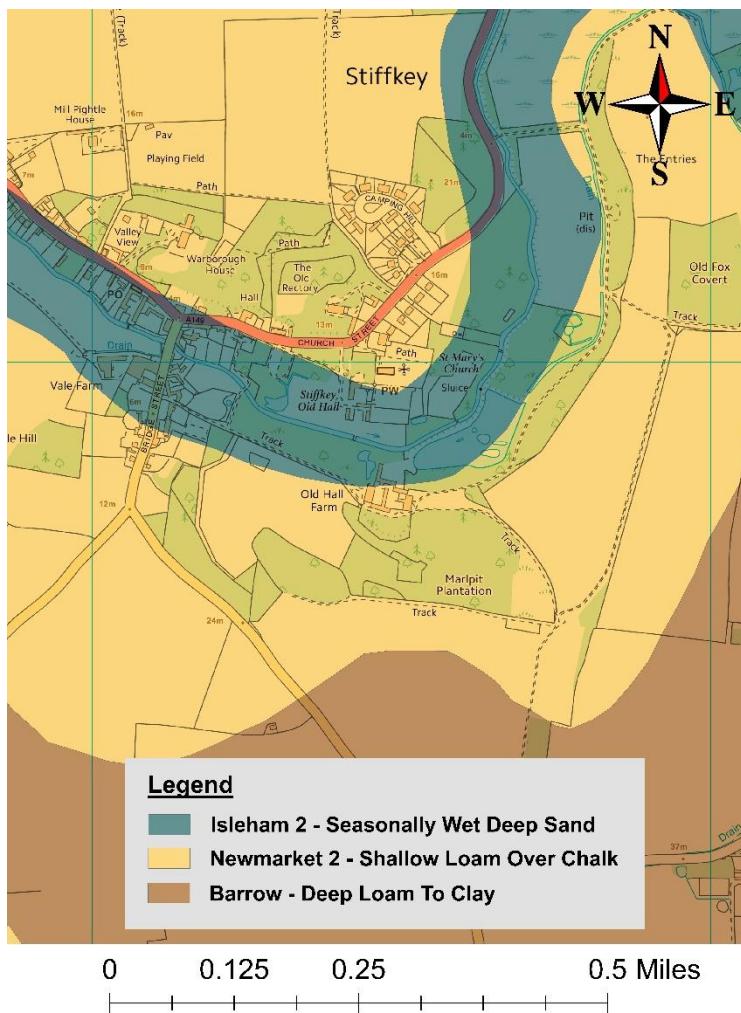
### 4.1 - Introduction



**Fig. 4.01 - 3D-GIS recreation of Stiffkey Old Hall, Norfolk**

This chapter presents the case study of Stiffkey Old Hall, a manor house near the North-Norfolk coast (Fig. 4.01). Referring to the regional variation analysis, Stiffkey correlated with a few of the popular attributes identified. Stiffkey was 1,097 metres from its nearest neighbour and thus within the most popular range ascertained in the statistical analysis. The undulating topography in the area also reduced the chance of overlooking neighbours, which the Skyline tool previously demonstrated (Fig. 3.18). Stiffkey resided near the sea yet sheltered within the seclusion of the river valley (Herbert Jones, 1879, p.148; Taylor, 1989, p.214; Dallas et al., 2013, p.378). As a result, Stiffkey was less-favourably placed 8.5 metres above sea level yet resided 77 metres from its nearest river, which was more common. However, not all the soil types and classifications in its vicinity were ideal (Fig. 4.02). The chalky Newmarket 2 soils were amongst the least favourable soils to build a country-house estate. The Isleham 2 soils, nonetheless, had the benefits of seasonal waterlogging and peaty subsoils which increased its overall popularity in East Anglia. Nevertheless, these soils were less desirable compared to others identified in the regional analysis.

This case study helped to demonstrate the effectiveness of 3D-GIS under special circumstances. A greater number of archival records associated with Stiffkey survive alongside extant features within the landscape. Information in



**Fig. 4.02 - Soil distribution, Stiffkey Old Hall**

documents are substantial and those sources survive in good condition. The landscape evidence, on the other hand, is incomplete because Stiffkey became ruined after suffering centuries of neglect. Before Stiffkey falls further into ruin, 3D-GIS can help capture what physical evidence survives and thus beneficially act as both a reconstructive tool and a conservational one. Despite certain data limitations, enough evidence exists to create a comprehensive 3D-GIS recreation of Stiffkey for undertaking further visual analyses. This case study thus sets a precedent for demonstrating the effectiveness of 3D-GIS to handle different data conditions, in terms of variety, quantity and quality. Subsequently, the analysis of Stiffkey will determine to what extent 3D-GIS can improve our current knowledge of a data-rich site but also of the renowned Bacon family.

Despite its current state, Stiffkey is a functioning but private residence with no public admittance. As a result, both access to extant features and experiencing the estate first-hand are not possible, despite what evidence still survives. Nevertheless, previous researchers have investigated the landscape evidence at

Stiffkey Old Hall (Sandeen, 1959; Taigel & Williamson, 1991, pp.94–97; Smith, 2002), yet their observations and interpretations have not been trialled and tested within the landscape context of Stiffkey. Therefore, using 3D-GIS, access to a private residence like Stiffkey is possible. 3D-GIS thus provides a new opportunity to help evaluate the conclusions previously presented by other researchers.

Addressing the bias towards renowned or grander sites within previous studies was another reason to choose Stiffkey as a case study. Despite being from one of the most prominent families in Elizabethan England, a second son and thus a member of the lesser gentry owned Stiffkey. Consequently, one aim is to allow a greater range of sites in terms of social status to contribute to the wider conversation of designed landscapes, which 3D-GIS can help achieve. Compared to the other families explored in this thesis, the Bacons associated with Stiffkey were well-known within sixteenth-century England and thus within current scholarship. This case study thus sets a precedent for demonstrating how 3D-GIS can improve our knowledge of a recognised family within the context of designed landscapes.

Based on the dateable evidence used to recreate Stiffkey, the 3D-GIS recreation represents the landscape dating primarily from the 1590s to the 1620s. The aim will be to address and rectify the problems above but also to rekindle research into Stiffkey Old Hall by gaining new insight into what visual experiences were possible within the estate. Alfred Hassell Smith believed that Sir Nathaniel Bacon, the owner of Stiffkey, “cared little about the aesthetic quality of his environment” unlike his father, Sir Nicholas Bacon (Smith, 2002, p.184). Studying Stiffkey will thus help to verify if this observation by Smith was accurate. Ernest Sandeen argued that although this site has decayed over time and not housed great families except one, Stiffkey still deserves our attention (Sandeen, 1959, p.159).

#### **4.2 - History and Context**

In 1571, the Bacons purchased the Stiffkey estate and demolished the original medieval hall before starting the construction of Stiffkey Old Hall in 1576 (Airs, 1998, p.26). Sir Nicholas Bacon predominantly designed Stiffkey for his second son, Sir Nathaniel Bacon (Family Tree Appendix 1). When Nathaniel and Anne Gresham, his first wife, asked for help in acquiring a home of their own (Taylor, 1989, p.35), Nicholas bought Stiffkey for them. Nicholas wished to launch Nathaniel into Norfolk because, outside of London, East Anglia was the “wealthiest

and most vigorous" region in England (Simpson, 1961, p.31). Nicholas and Nathaniel constructed Stiffkey together, and Nathaniel then continued after his father's death in 1579. Only one generation of the Bacon family lived at Stiffkey because Nathaniel died without a male heir in 1622 (Smith, 2002, p.160). The estate passed to their relatives, the Townshends of Raynham Hall in Norfolk. Subsequently, Stiffkey declined in status (Edwards & Williamson, 2000, p.22; Smith, 2002, p.160). The hall became partially-ruined by 1780, according to a sketch by landscape designer Humphry Repton (Fig. 4.03). Today, most of the house and some garden earthworks have survived because they avoided being replaced by the following eras of landscape design (Fig. 4.04).

Unlike other contemporary designed landscapes, a comparatively small and constricted 8-acre plot surrounded Stiffkey Old Hall. The boundary of the grounds followed the River Stiffkey to the south and the coastal road to the north. The village of Stiffkey abutted the grounds' western boundary whilst St John's Church and graveyard leading into pasture lay east of the property. Despite the grounds residing within this confined space, 1374 acres of land in Stiffkey encompassed the hall, of which Nathaniel would only have held 600 acres after 1583 (Taylor, 1989, p.4). A 1620s map of the parish defined different land divisions and their owners within Stiffkey, although Nathaniel's demesne is not discernible (NRO HMN 7/227/1-2). Nicholas had also bestowed the manors of Stanford and Eccles in Norfolk upon Nathaniel. Also, Thomas Gresham gifted Nathaniel and his illegitimate daughter, Anne, the manors of Morston [Merston], Langham and Hemsby in Norfolk as well as Combs in Suffolk (Simpson, 1961, p.96). Thomas Gresham was Nathaniel's father-in-law (Family Tree Appendix 1) but also a long-established friend of both Nicholas Bacon and William Cecil, 1<sup>st</sup> Baron Burghley (Smith, 1974, p.169; Hesselby, 1996, p.26). Each of the manors bestowed onto Nathaniel, including Stiffkey, were predominantly situated within a sheep-corn husbandry region of Norfolk (Stiffkey Local History Group, 2013, pp.62-4). Altogether, Nathaniel's "modest" estate was estimated to have been about 4,500 acres in the sixteenth century (Taylor, 1989, p.4). In this period, whilst great landowners were understood to own a minimum of 5,000 acres but typically between 8,000 to 9,000 acres, the Stiffkey estate was nonetheless of a substantial size for a member of the lesser gentry like Nathaniel Bacon.

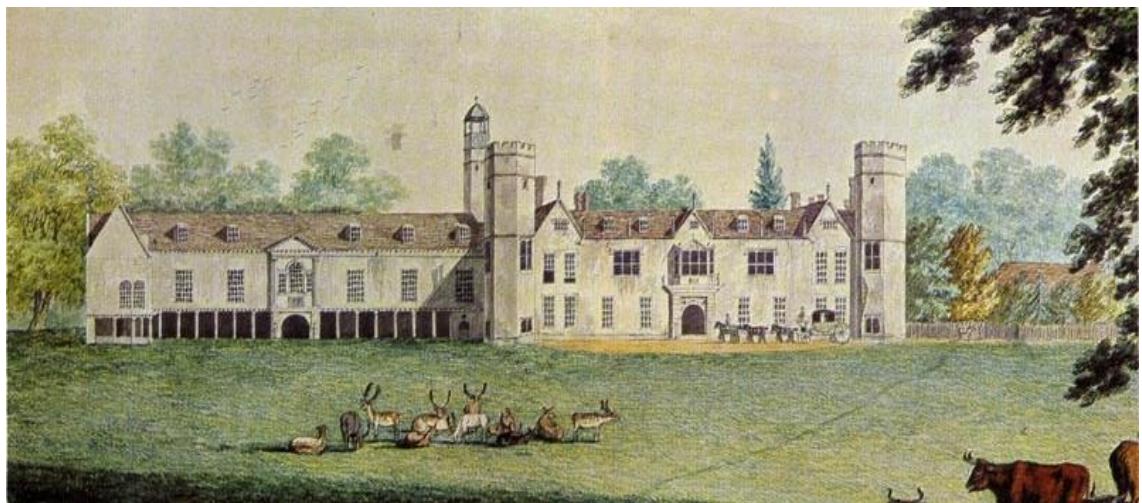


Fig. 4.03 - Sketch of Stiffkey Old Hall, by Humphry Repton, c.1780 (reproduced from Herbert Jones, 1879)



Fig. 4.04 - Aerial photograph of Stiffkey Old Hall ©John Fielding

#### **4.3 - Prospects and Promenades**



**Fig. 4.05 - Old Gorhambury House, Hertfordshire (Anonymous, 18th century)**

At Stiffkey, contemporaries enjoyed prospects and promenades at various prominent locations within the house and grounds. The approach provided visitors with a first impression of the estate upon their arrival. The gallery was the most important room within the house but, because of a compromise, Nathaniel Bacon built it in a different location to where it was proposed. A comparative analysis of the prospects from the intended and actual galleries will help gain insight into this change. Other important rooms existed, such as the hall, parlour, great parlour and great (dining) chamber. Within the gardens, a long terrace walk acted as an external promenade which provided access to another advantageous vantage point within a banqueting house at its terminus.

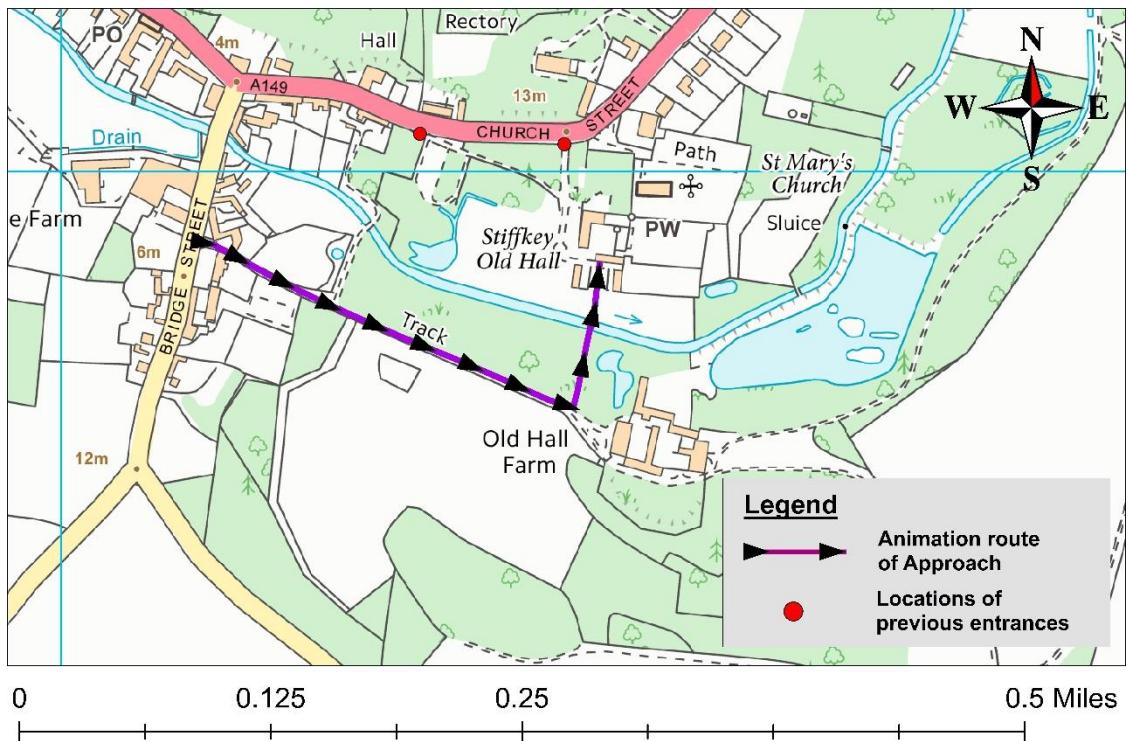
3D-GIS helped analyse the prospects and promenades from these locations within the recreation of Stiffkey. For comparison, views were created in 2D-GIS from corresponding locations at one of Nicholas Bacon's other building projects called Old Gorhambury House, which became the Bacons' primary seat in Hertfordshire. Nicholas completed the majority of building works between 1563 and 1568 except for the gallery added by 1576 (Sandeen, 1959, p.133). Nicholas built Old Gorhambury not long before construction started at Stiffkey. At his death in 1579, Nicholas Bacon bequeathed the estate to Anthony Bacon, who then passed it to Sir Francis Bacon in 1601. Both Anthony and Francis were Nathaniel Bacon's half-brothers (Bacon, 1983, p.26; Family Tree Appendix 1). However, it was Francis who redesigned the hall and estate, which included creating the water gardens, in the seventeenth century. Although ruined fragments still exist in the landscape, an eighteenth-century painting immortalised Old Gorhambury and

depicts how Nicholas' country house once bore similarities to Stiffkey (Fig. 4.05). Therefore, Old Gorhambury inspired Nicholas' and Nathaniel's design and development of Stiffkey and thus suits as a comparative site to support the analyses of Stiffkey. This study will help provide new and informative perspectives on Stiffkey and potentially Old Gorhambury. As a result, there is potential to gain fresh insight into Nathaniel Bacon and Nicholas Bacon by assessing how they experienced both designed landscapes.

#### **4.3.1 - The Approach**

North of the property, two gates granted access to the estate from Church Street, which runs through the village and becomes the coastal road (Fig. 4.06). These entrances were original to the medieval estate owned by the Banyards, who sold Stiffkey to the Bacons. However, under the Bacons' ownership, these gates only provided entry to the outbuildings situated in the north-west corner of the grounds (NRO HMN 7/227/1-2). Instead, the Bacons created a new approach accessed from Bridge Street, which runs through the southern half of the village. This new approach ran perpendicular to the estate's southern boundary, using an old public road privatised by *inquisition ad quod damnum* in 1579 to allow Nathaniel Bacon to "enlarge his dwelling {mansum} in Stiffkey" (Bacon, 1983, p.79). The Bacons manipulated this closed road into an approach to the hall from the south. The approach still survives as a private track today (Fig. 4.06).

As Harry Lawrence Bradfer-Lawrence explained, Church Street was a common way in the sixteenth century. This may provide one reason why the Bacons relocated the approach because they likely considered these northern entrances to be unsuitable for that purpose. As a result, these gates were relegated in importance and became service entrances. On the other hand, Bridge Street was increasingly used for a more meaningful purpose as a route to two prestigious ecclesiastical buildings and renowned pilgrimage sites at Binham and Walsingham (Bradfer-Lawrence, 1929, p.317). This road's significance may have influenced the Bacons' decision to orientate the entrance of the new house southwards in anticipation of this new approach. However, what contemporaries experienced when arriving at the hall from the north more likely influenced the Bacons to move the approach elsewhere. The common road but also the village encroaching upon the grounds were likely unappealing, and so the new approach provided a more



**Fig. 4.06 - Animation route of Approach, Stiffkey Old Hall**

landowners did favour an “orchestrated” approach extending over the countryside, which prolonged the visitors’ experience including their admiration of the house (Henderson, 2005, p.35). The experience along this new approach, as captured within an animation, is analysed and interpreted together with a comparative viewshed calculated along the approach to Old Gorhambury.

### Analysis

The approach began within the outskirts of the village. This initial stage of this route followed the line of the valley floor, enclosed on both sides by houses. Within the animation, this composition appeared overbearing and thus created an unappealing and claustrophobic atmosphere. However, once the path emerged from the village, the animation captured the transition into a more open space consisting of meadows and pastures.<sup>3</sup> Smith had argued that one inspiration behind the creation of the scheme at Stiffkey was the works of Leon Battista Alberti (Smith, 2002, p.172). Alberti was an architect famous for his treatise *De Re Aedificatoria* or ‘On the Art of Building in Ten Books’, published in 1485. In a chapter from his work entitled *The Proportion, Fashion and Construction of great Ways, and private Ones*, Alberti advised how private country ways “ought to be spacious and open, so as a Man may see all about him; free and clear from all

<sup>3</sup> This observation presented in the animation at timecode [00:01] (CD Appendix 1).

Manner of Impediments" (Alberti, 1755, p.246). From the original approach to the north, too many 'impediments' prevented such views. Emulating the experience from Alberti's description, the 'spacious' and 'open' prospect created along the new approach likely influenced the Bacons' decision to relocate it here.

The visitors' curiosities of what lay beyond the village were satisfied when the house emerged, although only its western façade was first visible above the orchard.<sup>4</sup> Circular towers, appearing squat and militaristic in style, adorned most corners of the house (Smith, 2002, p.161). These towers emulated a medieval castle, which had remained a symbol of noble dignity and ancestry into the Renaissance period (Liddiard, 2005, pp.66; 145). Because Nathaniel Bacon was a lesser noble at a new site, Nicholas Bacon implemented this design to create the illusion of Nathaniel's long-established residency at Stiffkey. Although simple and subtle, these towers resembled the more ostentatious ones designed into Old Gorhambury House (Fig. 4.05), which visitors to Old Gorhambury admired on approach (Fig. 4.07). This display confirmed the familial connections and ancestral lineage of Nathaniel at Stiffkey to Nicholas at Old Gorhambury. Perhaps coincidentally, the towers at Stiffkey also mimicked the height of the church to the north. From this perspective, a sense of architectural cohesion thus displayed the importance of both structures. A similar effect is evident in the view from the approach to Layer Marney Tower in Essex, whose church also resided near the residence (Fig. 4.08). Therefore, these sixteenth-century landowners utilised medievalist architecture, possibly cohesively with churches, to create appealing yet symbolic compositions that portrayed their apparent longevity at these sites.

Despite the grounds' confinement, the approach provided visitors with an extended viewing platform which subsequently aggrandised estate's true size. The course of the approach ran perpendicular to the property and conveniently followed the line of the estate's longest axis, parallel to the flow of the River Stiffkey through the valley.<sup>5</sup> As a result, despite Stiffkey's small and constricted area, this resourceful design for the approach not only helped to create the illusion of a much grander estate, but also a more prolonged and dramatic first impression to be experienced and enjoyed by contemporaries (Henderson, 2005, p.35).

---

<sup>4</sup> [00:06]

<sup>5</sup> [00:06-00:49]

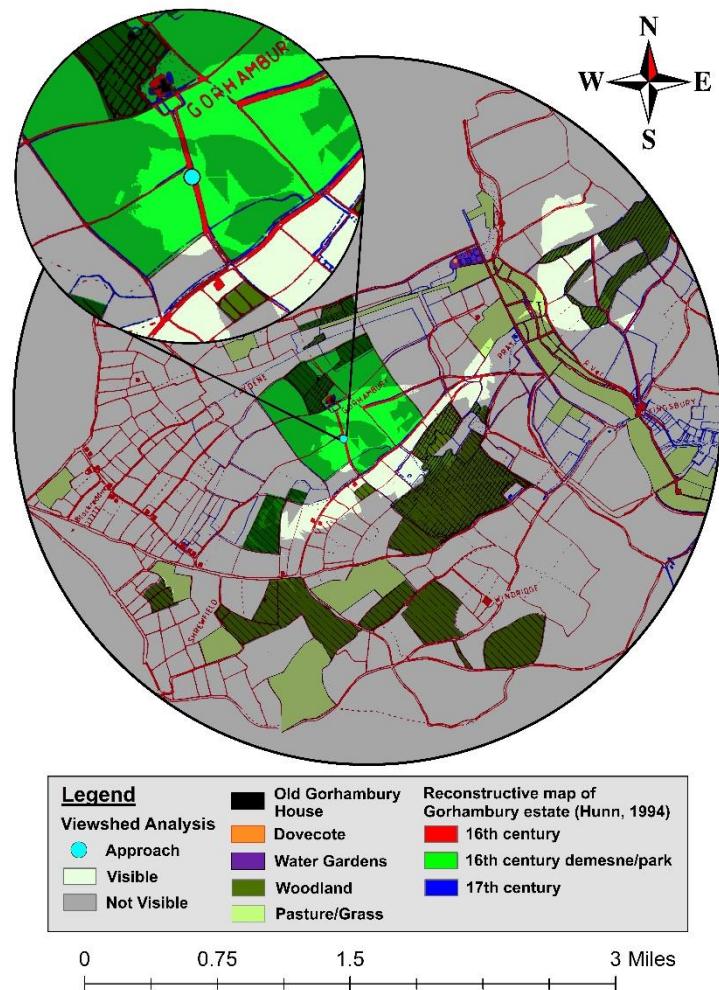


Fig. 4.07 - Viewshed results from Approach, Old Gorhambury House



Fig. 4.08 - Approach to Layer Marney Tower, Essex, 1927 (Lloyd, 1927)

Directly ahead along the approach was the farm, possibly including stables.<sup>6</sup> These were the subject of Nathaniel Bacon's renovation and construction efforts in the period between Nicholas Bacon's death in 1579 and the recommencement of the hall's construction around 1589 (Stiffkey Local History Group, 2013, p.53). Therefore, Nathaniel improved these buildings into more visually-appealing additions within the view from the approach.

Apart from these structures, no immediate obstructions were evident that would have distracted the attention of visitors from the surrounding meadows and pastures. After Nathaniel's death, an inventory of books at Stiffkey, dating to 1625, recorded his ownership of the works of Francis Bacon, his younger half-brother (Fehrenbach, 1992, pp.120–1). Although Francis was only eighteen when Stiffkey was under construction, his family's enterprises potentially inspired his essays. In *Of Gardens*, Francis advised "a green in the entrance" because "nothing is more pleasing to the eye than green grass" (Bacon, 1864c, p.239). However, Francis intended this 'green' to be an extensive garden court of four acres. This description is believed to have been created concurrently to Holdenby House in Northamptonshire, which Francis likely recalled when writing this essay (Allen, 1969, pp.15–16; Henderson, 2005, p.88). Holdenby was potentially inspired by William Cecil, who adopted this design for the entrance court at Theobalds in Hertfordshire (Husselby, 1996, p.171), which was evident on the estate map of Theobalds (Fig. 4.09). Cecil was friends with Nicholas, and they kept up with each other's building activities, but Cecil also became Nicholas' brother-in-law and thus uncle to Nathaniel and Francis (Family Tree Appendix 1). Nevertheless, the smaller estate of Stiffkey utilised the meadows and pastures to serve this purpose, with the axial approach replicating the "fair alley in the middle [which] will be long" (Bacon, 1864c, p.239).

Also, Nathaniel and Nicholas approved only essential re-thatching for certain houses in 1574 "before they shalbe all plucked down" (Bacon, 1979, pp.118–119). Local historians have suggested that these demolished houses resided within the pastureland south of the approach (Stiffkey Local History Group, 2013, pp.58–9). Earthworks survive indicating the presence of medieval tofts and crofts to support this theory (Fig. 4.10). As Phillip Sidney described in

---

<sup>6</sup> [00:17]

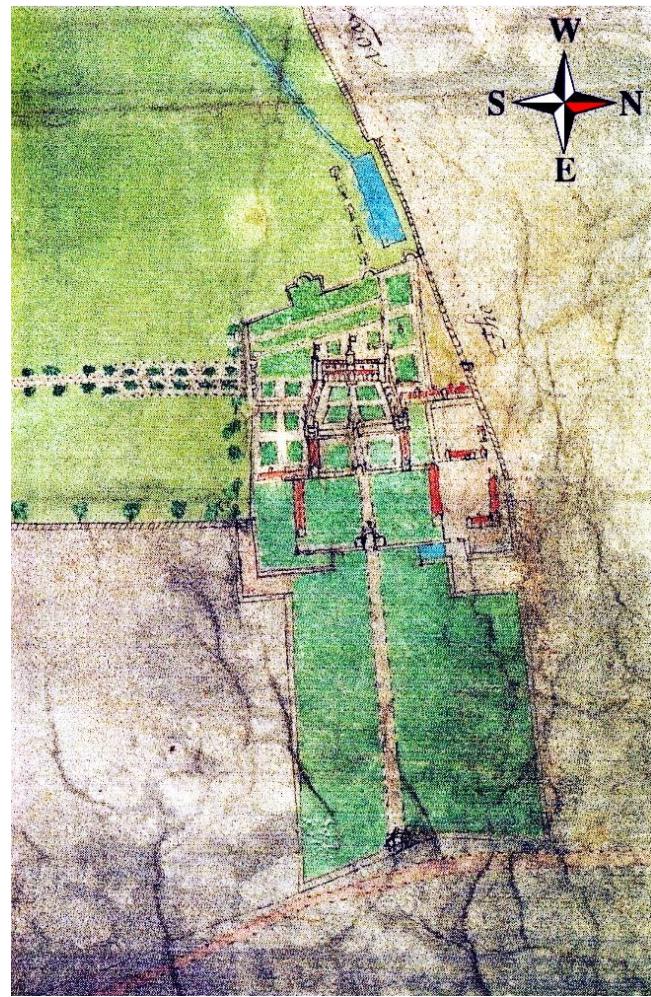


Fig. 4.09 - Theobalds Palace, Hertfordshire, on map of Cheshunt Park by John Thorpe, 1611 (reproduced from Henderson, 2005, fig. 28)

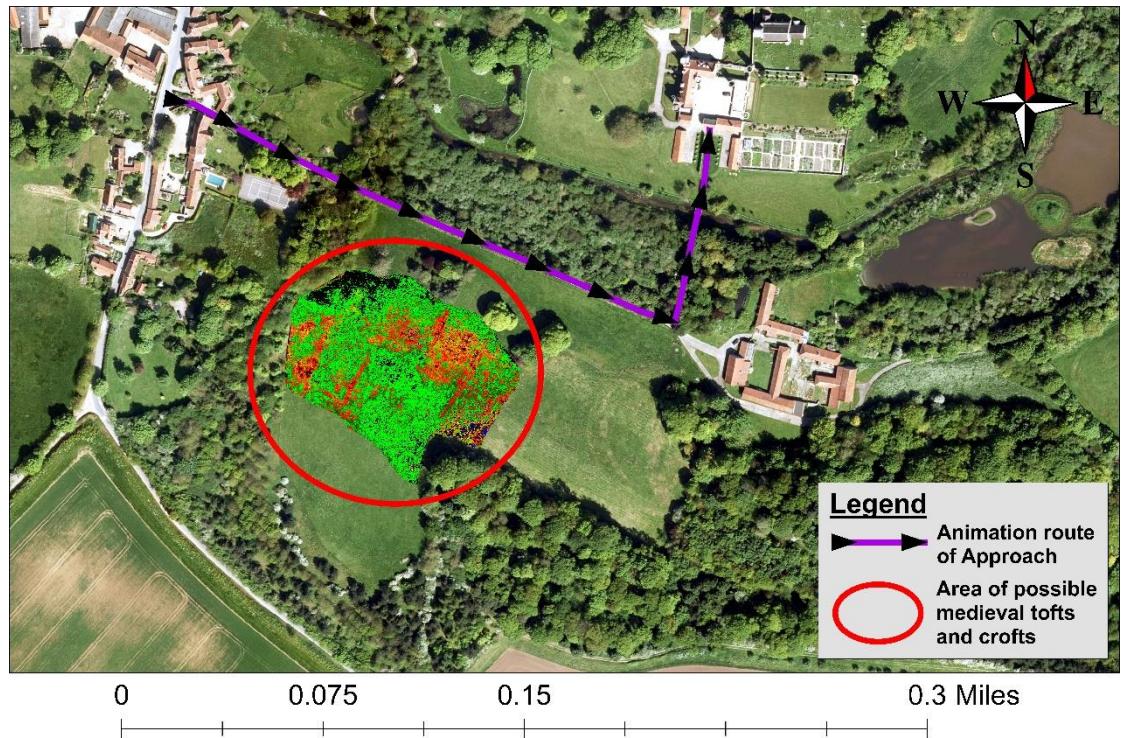


Fig. 4.10 - Earthworks of medieval tofts and crofts, Stiffkey (NHER 30712)

*Arcadia*, “a wanton rich man... throwes down his neighbours houses, to make himself the better prospecte” (Sidney, 1590, p.271). The Bacons emulated this action at Stiffkey by demolishing these buildings, which ensure the village became less overbearing while expanding the ‘green’ space along this approach.<sup>7</sup>

At the junction, the approach then changed orientation northwards, so visitors faced the main entrance façade of the house and enjoyed its geometrically-symmetrical design.<sup>8</sup> Guests along the approach to Old Gorhambury House also admired the hall’s entrance front from the same perspective (Fig. 4.05; 4.07). Alberti advised how “the private [ways] should be... built exactly in strait Lines, which will answer better to the Corners of the Building, and the Divisions and Parts of the Houses” (Alberti, 1755, p.249). Therefore, the Bacons recognised and adhered to Alberti’s advice when designing both approaches and the views along them. At Stiffkey, the walled courts further complemented the hall’s geometric design within an opportune display upon the hillside.<sup>9</sup> Had visitors approached from the north, they would not have seen the visual impact of this composition.

As visitors drew nearer the house, the village became partially obscured by the orchard.<sup>10</sup> The Bacons desired to segregate themselves from the congested village, as evident in their redesign of the approach to create a more spacious and private transition into the estate grounds. Whilst the outbuildings were hidden behind the orchard, the dovecote remained consistently visible from the start of the approach<sup>11</sup> until the orchard ensured only the rooftop was seen.<sup>12</sup> Like the orchard, the dovecote existed before the Bacons purchased Stiffkey (Bacon, 1979, p.110). A dovecote was a “manorial monopoly” and evoked landowners’ high statuses when visible close to country houses (Williamson, 2007, p.9). Under the Banyards’ ownership, the dovecote was near the original approach and thus visitors entering Stiffkey Old Hall’s medieval predecessor observed this symbolism. Therefore, ensuring the dovecote remained visible from this new approach would have impressed the status of the Bacon family upon any visitors. However, little of the distant landscape eastwards was visible.<sup>13</sup> The garden walls coupled with the

---

<sup>7</sup> [00:18]

<sup>8</sup> [00:50]

<sup>9</sup> [00:28-01:21]

<sup>10</sup> [00:59; 01:56; 03:10]

<sup>11</sup> [00:08]

<sup>12</sup> [00:59; 01:54; 03:08]

<sup>13</sup> [01:13]

farm buildings obscured either side of the river, which remained visible as it wound through grassland. With hindered westerly and easterly views, visitors' attentions thus focused on a prospect of the immediate grounds.

The approach continued towards the bridges crossing the river before the garden courts.<sup>14</sup> From the bridges, visitors admired in greater detail the hall's awe-inspiring architecture, which evoked power and authority upon its elevated platform. Due to the topography, steps allowed visitors to ascend the terraced garden in the outer courtyard.<sup>15</sup> A similar composition involving a terraced base court with stone steps existed at Burghley House in Northamptonshire, another of William Cecil's residences which Nicholas Bacon had visited (Husselby, 1996, p.91). Cecil's base court at Burghley potentially inspired the Bacons to implement its design so guests could ascend the hillside to Stiffkey Old Hall.

Atop the terraces, the gatehouse granted visitors access to the hall.<sup>16</sup> This gatehouse survives today relatively intact due to conservation efforts (Fig. 3.27). Nathaniel Bacon built the gatehouse to commemorate his knighthood in 1604 (Bacon, 2010, pp.105–6). Nathaniel did not design this gatehouse for military or defensive purposes, like its medieval predecessors, but as a lodge which prioritised decoration and symbolism, a typical display during this period (Henderson, 2005, p.36). Nevertheless, Nathaniel adopted the medieval practice of emblazoning heraldry by presenting the Bacons' heraldic beast, the boar, within a pediment above the gatehouse's archway. This design displayed a medieval status symbol with a "large and massy frontstone [pediment]" that was a Roman Italianate status symbol only granted "as an honour, or reward of merit" (North et al., 1981, p.60). Therefore, visitors waiting for admittance to Stiffkey had ample time to pause and identify the family's ancestral lineage and status within this heraldic display (Johnson, 2013, p.74). Moreover, inside the pediment on the opposing façade of the gatehouse, which contemporaries perceived from the inner courtyard<sup>17</sup>, a heraldic shield displayed the impaled crests of the Bacons and the Hoptons, the family of Nathaniel Bacon's second wife, Dorothy (Herbert Jones, 1879, p.146). At Old Gorhambury, Nicholas Bacon similarly displayed heraldry upon the double-

---

<sup>14</sup> [01:39]

<sup>15</sup> [03:26]

<sup>16</sup> [03:32]

<sup>17</sup> [05:04]



**Fig. 4.11 - Entrance porch, Old Gorhambury House**

height Italianate-style entrance porch within its inner courtyard, which is one of the few surviving remnants of the old hall (Fig. 4.11). With Nicholas Bacon's heraldry upon the porch, visitors could discern the owner upon entering Old Gorhambury. Finally, visitors admired the magnificence of both Old Gorhambury House and Stiffkey Old Hall as they ended their journeys.

The animation used for this analysis has helped draw certain conclusions about the approach the Bacons created at Stiffkey. Visitors enjoyed views beneficially orientated towards open spaces and beautified landscape elements. The Bacons also utilised perspective to create the illusion of an estate much grander than Stiffkey genuinely was. Important features or ones with appealing visual details were thus displayed and even framed for further emphasis. Including and adapting the immediate rural landscape also improved the scheme considering contemporary fashions in landscape design. Finally, the Bacons displayed their prestige prominently using heraldry and other symbolic devices. Compared to the original approach, entered through a more common, enclosed and unsatisfactory landscape composition, the Bacons expertly tailored this new approach to aggrandise visitors' perceptions of both Stiffkey and Nathaniel.

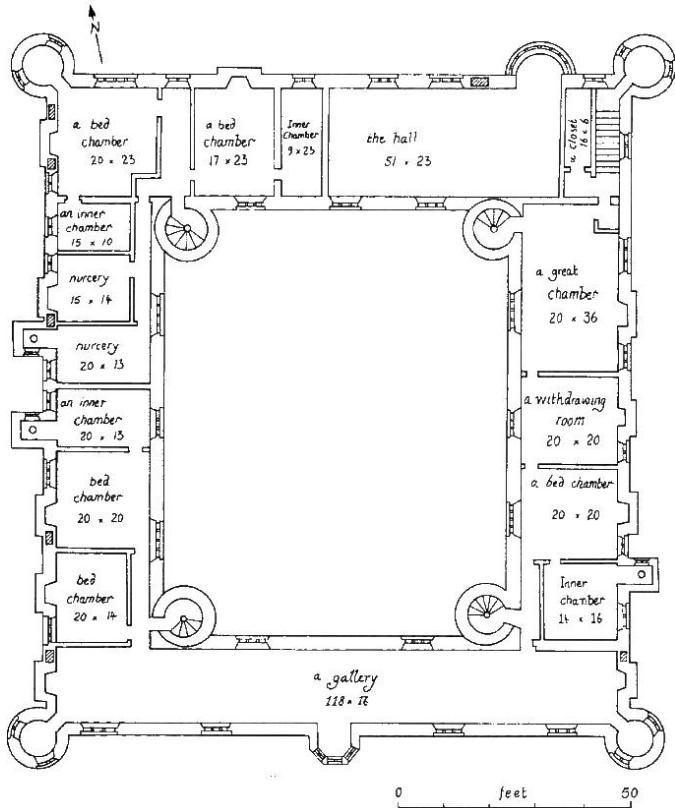
#### **4.3.2 - The Gallery**

The architectural plan for Stiffkey Old Hall evolved during its construction. Nicholas Bacon's original design for Stiffkey never fully came to fruition and became a different building when finally completed by Nathaniel Bacon. Financial difficulties were one reason but differing opinions between father and son may also have influenced this change. However, the Bacons undoubtedly considered the prospect during the planning stages. Nicholas asked Nathaniel to "go into the highest chamber of the howse", from what was Banyard's house, "and loke how farre you may se[e] without beying let by hilles" (Bacon, 1979, p.110). Therefore, as this correspondence documents, the prospect was integral to the survey of the original estate and likely affected the design of the new hall.

Stiffkey Old Hall's reconfigured design primarily affected the gallery, one of its grandest rooms. Nathaniel never built the gallery where Nicholas had proposed and instead moved it elsewhere within the hall. Therefore, the gallery's retention was, in part, because Nathaniel needed to display his prestige and, as Girouard ascertained, galleries were status symbols (Girouard, 1978, p.102). As a result, the prospect from the gallery also changed. This analysis will thus compare two viewsheds, one from the gallery Nicholas intended and another from the gallery Nathaniel built. Comparing the views from both galleries will be beneficial because Nicholas' original intentions for the prospect can be ascertained but also how Nathaniel's alterations altered this experience from the gallery. Therefore, this comparative analysis seeks to establish a greater comprehension of the impact that this compromise had at Stiffkey. Subsequently, there is potential to gain a new understanding of both Nicholas' and Nathaniel's personalities.

#### **Intended Gallery**

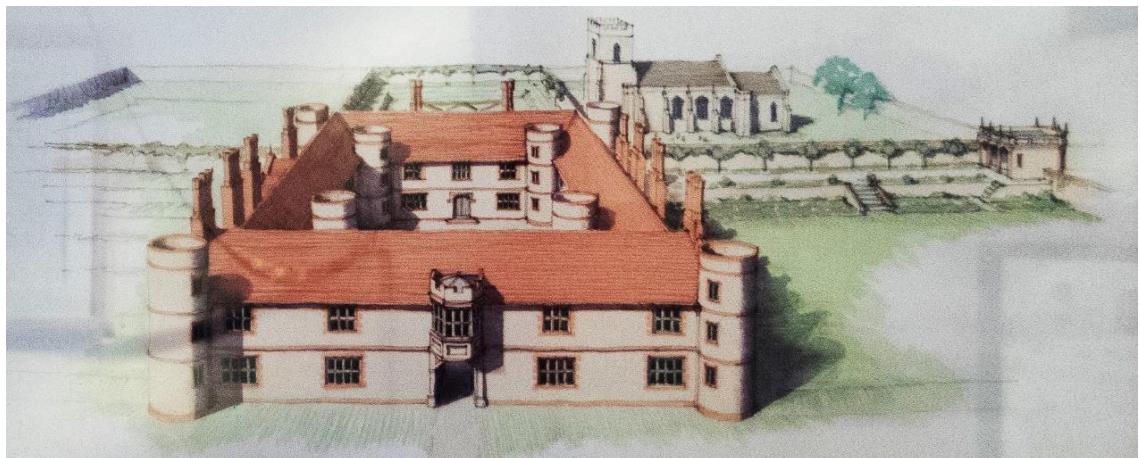
Although the Bacons purchased Stiffkey in 1570 (Bacon, 1979, pp.13–14), an architectural plan or 'plat' was not drafted until 1573, by architect John Osborne under Nicholas Bacon's instruction (Bacon, 1979, pp.89–90). On this surviving 'plat', Nicholas proposed a long and closed gallery upon the first floor of the south wing (Fig. 4.12). Although some galleries simply provided access between different rooms, this gallery was likely for exercise and also benefitted from its southerly orientation so the room could absorb sunlight and warmth for people's enjoyment in wintertime (Girouard, 1978, p.100). However, Nicholas evidently



**Fig. 4.12 - Reproduction of a 'plat' for the first floor of Stiffkey Old Hall, c.1573**  
**(NRO RH 6/50; reproduced from Smith, 2002, fig. 7)**

considered the prospect because he designed a central oriel or bay statement window into his gallery. Francis Bacon described how “inbowed windows” provided “pretty retiring places” which also kept “both the wind and sun off” (Bacon, 1864b, p.233). William Cecil also included similar windows at Theobalds and along the gallery at Burghley (Husselby, 1996, fig. 2.11). At Stiffkey, this style of window intended for the gallery also became part of the double-height Elizabethan-style entrance porch in the south range (Smith, 2002, pp.163–64).

However, despite its grandeur, this gallery design was never executed. In 1576, the construction of the hall began upon the cellars of the previous residence (Bacon, 1979, p.201). By 1578, the north and west wings were nearing completion (Kenworthy-Browne, 1981, p.190; Smith, 2002, p.182). In the south-east corner of the west wing, architectural remains of brick tooting still survives as evidence of preparations to attach the southern extension of the hall (Smith, 2002, fig. 6). At this point, the intention was still to build the south range including the gallery. However, Nathaniel Bacon had been facing financial difficulties from the start. In 1576, Nathaniel informed Nicholas that “the charge is to[o] great for my present [e]stat[e]” (Bacon, 1979, p.202). Regardless, Nathaniel continued to build Stiffkey until Nicholas’ death in 1579, after which he only received a small inheritance of



**Fig. 4.13 - Reconstructive drawing of intended plan for Stiffkey Old Hall, displayed in St John's Church, Stiffkey**

£200 “towards the buyldynge of his howse at Stiffkey” (Bacon, 1983, p.28).

Afterwards, progress slowed on the site and only in 1592 was the east wing finally completed (Taylor, 1989, p.57; Smith, 2002, p.183). However, Nathaniel never built the south range. In 1604, he built the gatehouse where the south range should have been and thus Nicholas’ original plan for the gallery was unexecuted. Nonetheless, an interpretation of Stiffkey Old Hall, including this south range and intended gallery, appears on a modern reconstructive drawing (Fig. 4.13).

By examining the prospect from this central window of this intended gallery, new insight can be gained about a room that was designed but which never became a reality. Specifically, this analysis will seek to ascertain the objectives of Nicholas Bacon, as the originator of this design, for the gallery’s prospect.

Interpreting this prospect will also benefit from a comparative study at Old Gorhambury House. Between 1574 and 1576, contemporary to the building of Stiffkey, Nicholas also built a gallery at Old Gorhambury. Its construction occurred after Elizabeth I commented on Nicholas’ “little house” on her progress in 1572 (Bacon, 1864a, p.357). In preparation for Elizabeth’s next visit in 1577, Nicholas built the gallery as an additional wing to the house upon a loggia or cloister walkway (Fig. 4.14). It was also soon after Nicholas’ encounter with Elizabeth I that the plan for Stiffkey was drawn up. Her comments may have also influenced his decision to include an extravagant gallery at Stiffkey. Furthermore, William McClung has suggested that Francis Bacon, who wrote about “stately galleries” in his essay *Of Building* (Bacon, 1864b, p.230), found inspiration in the gallery at Old Gorhambury (McClung, 1977, pp.82–3). As a result, the family evidently had positive opinions towards galleries, and thus it was desirable to include one at

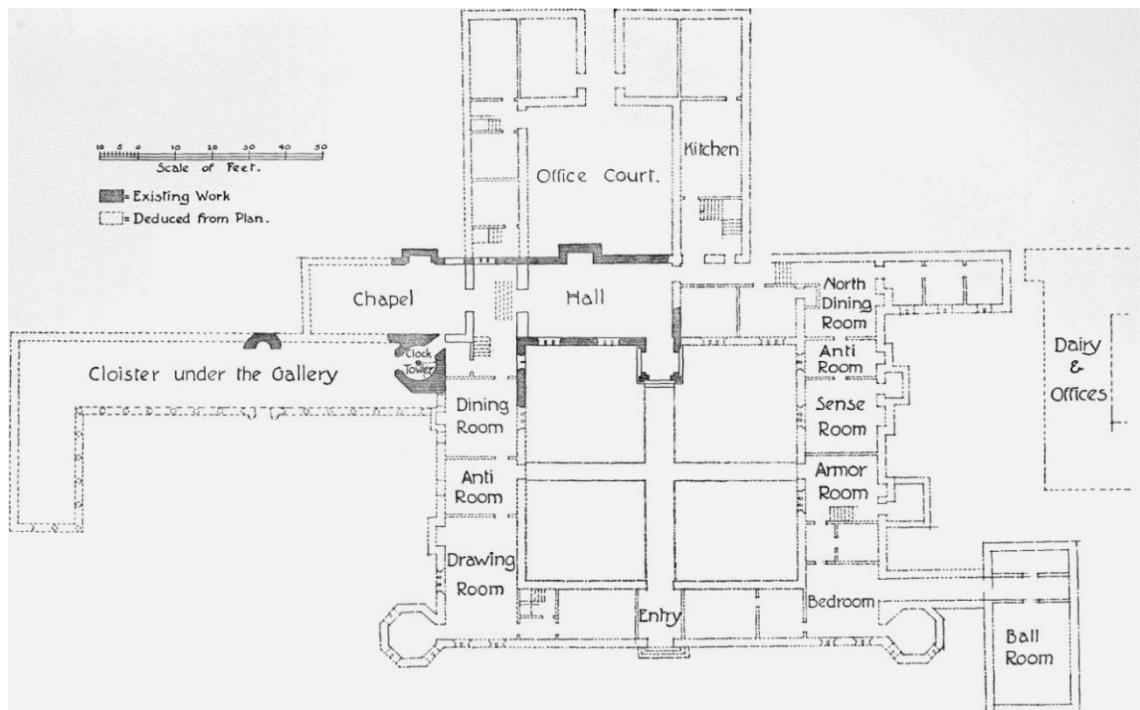


Fig. 4.14 - Ground floor plan of Old Gorhambury House (Page, 1821)

Stiffkey. All that remains of the gallery at Old Gorhambury are the painted glass window panels, depicting flora, fauna and other rural scenes (Rogers, 1936, p.48). This comparative analysis examined a viewshed conducted from only the gallery's southern front at Old Gorhambury. According to Aubrey, only the gallery's south front had windows, with its painted glass panels, while the north front had none and instead had pictures hanging (Aubrey, 1898, p.82). This comparison provides another source to help determine any common attributes that Nicholas desired to include or exclude when compared with the prospect from the gallery at Stiffkey.

### Analysis

Within the viewshed analysis results (Fig. 4.15), the immediate focus of the prospect from the intended gallery was on the southern terraced entrance court. The analysis at Old Gorhambury also confirmed that the centrepiece window of the south-facing gallery provided views across most of the garden designs in its two entrance courts (Fig. 4.16), as supported by the painting and plan (Fig. 4.05; 4.14). Galleries were frequently built “to take prospect and freshness of the garden” (Bacon, 1864b, p.234). However, it was not unusual for galleries to overlook the entrances, as exemplified by Gawthorpe Hall, Lancashire (NT DDKS 38/16), and Hatfield House, Hertfordshire (Coope, 1986, p.53). Nonetheless, Nicholas Bacon designed and thus particularly desired for the galleries at both Old Gorhambury and Stiffkey to face south, overlooking the entrances.



Fig. 4.15 - Viewshed results from Intended Gallery, Stiffkey Old Hall (Immediate Grounds)

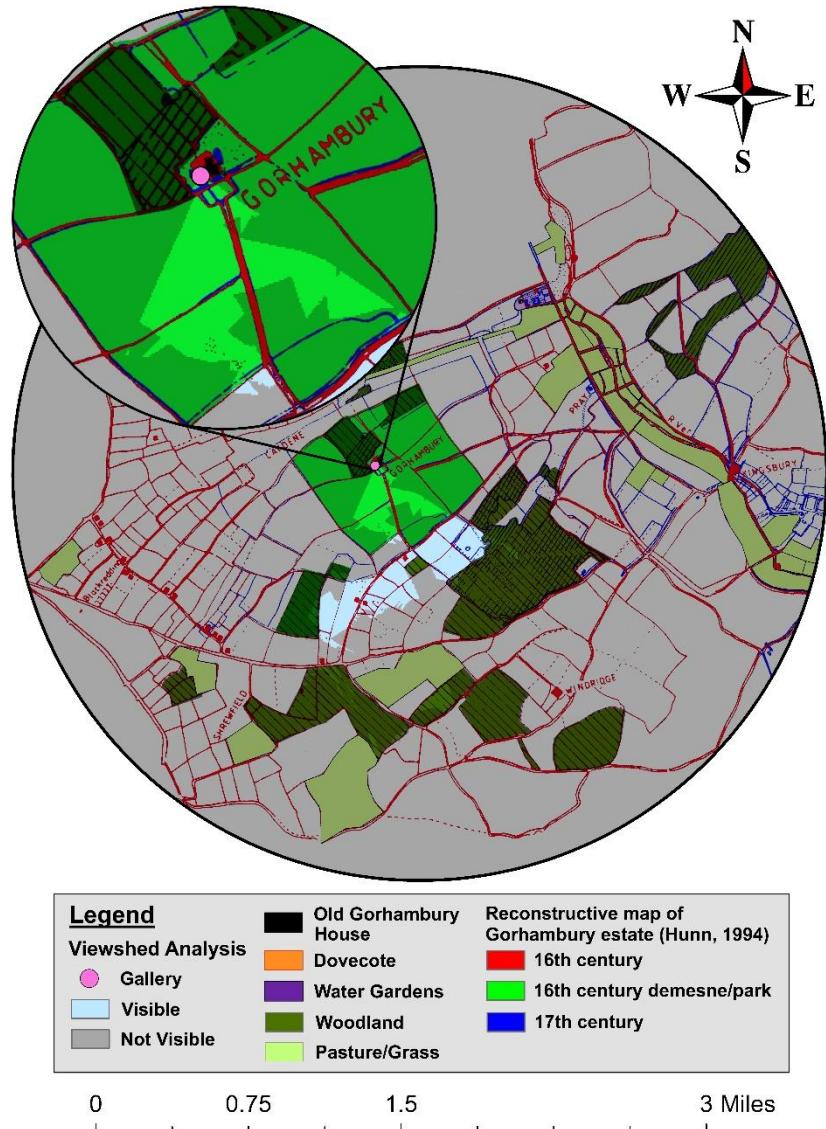


Fig. 4.16 - Viewshed results from Gallery, Old Gorhambury House

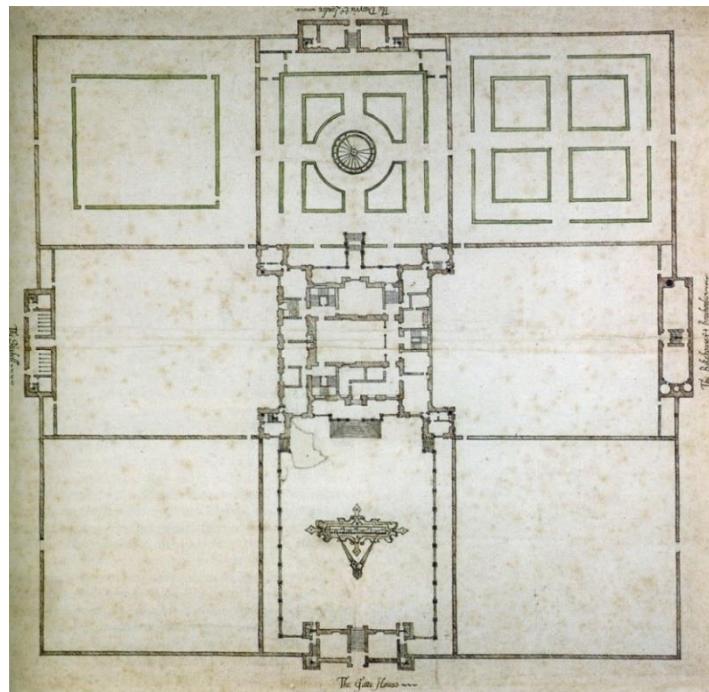


Fig. 4.17 - Plan of Wollaton Hall, Northamptonshire (Smythson, 1580)

Abutting either side of the entrance court at Stiffkey, two walled gardens broadly mirrored each other. The eastern garden was the bowling green but what resided in the western court is currently unknown yet could have been a kitchen or fruit garden. These three courts formed the southern end of a geometrically-inspired scheme which surrounded the hall, designed by Nicholas Bacon. This cohesive geometric landscape design was a popular contemporary layout created by architects like Robert Smythson (Smith, 1994, pp.157–9), who planned a similar arrangement around an Elizabethan ‘prodigy house’ called Wollaton Hall in Nottinghamshire (Fig. 4.17). At Stiffkey, although the eastern gardens were wider than the western gardens, the pathway of the entrance court delineated the central axis and aligned with the intended gallery’s centrepiece window. At Burghley House, the “imposing nature of the frontispiece itself” helped “impose symmetry” and demarcated the centralised alignment of the house to the approach (Husselby, 1996, p.190). At Stiffkey, since its window marked the scheme’s central axis, the gallery thus provided the best vantage point for people to admire the southern part of Nicholas’ geometric landscape design.

Beyond the walled gardens, the landscape retained geometric elements yet became progressively untamed. These increasingly natural features began with trees, in the western orchard which was part of the Banyards’ estate (Bacon, 1979, pp.163–165) and a suspected dairy orchard to the east (Smith, 2002, p.172, fig. 9). There were potentially geometrically-inspired “allees” within the west orchard

(FSL E.b.2, pp.45–6). However, of interest is the River Stiffkey. Although the local topography dictated the river's natural course, the Bacons canalised the river after construction began on the hall (Bacon, 1979, p.196). As a result, a new river ran exactly parallel to the site and thus the length of the intended gallery. After this development, the Bacons ensured the bridges aligned centrally to the house (Taigel & Williamson, 1991, p.95; Dallas et al., 2013, p.381). A similar undertaking by Nicholas Bacon occurred at Redgrave Hall in Suffolk. Before Stiffkey and Old Gorhambury, Redgrave was Nicholas' first building project (Sandeen, 1959, p.1). After his death in 1579, Nicholas passed Redgrave to his eldest son, also called Nicholas (Herbert Jones, 1879, pp.151–2; Family Tree Appendix 1). Nicholas, Nathaniel's father, created "a newe river" because he desired "the mydest of my water be juste against the mydest of my house, as the bridge is" (MacCulloch, 2007, p.30). At both Stiffkey and Redgrave, Nicholas' priority was to ensure the rivers complemented his geometric schemes and thus emphasised the importance of geometry to Nicholas' landscape designs. Furthermore, the river served a more symbolic purpose. Alberti described how "the Kings of Sparta were allowed, by way of Dignity, to have a Lake of Water before the Doors of their Houses" (Alberti, 1755, p.706), which Nicholas and Nathaniel may have desired to emulate by purposefully incorporating water across the entrance of the house. Although no water features existed near Old Gorhambury House, due to the free-draining soils in the local area (Hertfordshire County Council, 2001, p.26), the Bacons acknowledged the value of water and desired to manipulate it at both Stiffkey and Redgrave. Visitors to Stiffkey thus appreciated the canalised river from the approach but they best admired its geometric design from the intended gallery.

The approach was visible before the bridges crossing the river.

Concurrently with planning the intended gallery in 1576, both this approach and Church Road were still public roads. At this time, visitors would have witnessed unappealing views of "ill ways", which Francis Bacon believed contributed to an "ill seat" (Bacon, 1864b, p.257). As the coastal road running through the northern end of the village, Church Road was impossible to privatise. However, Nicholas and Nathaniel were granted an *inquisition ad quod damnum* in 1579 (Bacon, 1983, p.79) for the road which would become the approach from the south. The Bacons planned accordingly for visitors to enjoy a private view from the gallery over this approach, thus improving this country seat overall.



**Fig. 4.18 - Viewshed results from Intended Gallery, Stiffkey Old Hall (Wider Landscape)**

Other notable landscape compositions were visible beyond the immediate grounds (Fig. 4.18). Firstly, pastures and meadows were predominant in the prospect. The Bacons almost certainly owned them for sheep farming purposes. In 1570, Nicholas entered into agreements with the Banyards regarding “the purchase of their lands”, including the house but also “all their sheep pastured in Stiffkey” and where “the grownde is good for any kynde of she[e]pe” (Bacon, 1979, pp.14–15). Also visible amongst the pastures were the farm buildings, potentially designated for animal husbandry like sheep but also cows and horses, as indicated in the Townshends’ 1639 inventory (NRO BL/T 10/12). In the sixteenth and seventeenth centuries, a transition from arable to pasture farming occurred but sheep particularly increased in popularity (Overton, 1993, p.47). In 1565, Dutch and Walloon immigrants created new draperies in Norwich, which revived the Norfolk cloth industry and increased demand for Norfolk wool (Allison, 1995, p.iii). However, sheep-farming was also a prominent family business for the Bacons. Nicholas Bacon owned 4,000 sheep, potentially held within the park he created at Old Gorhambury in 1569 (Simpson, 1961, pp.64–5; Hunn, 1994, p.110). From the gallery at Old Gorhambury, the prospect included part of this parkland and thus views of grazing sheep were possible (Fig. 4.16). Therefore, from both galleries which Nicholas designed at Old Gorhambury and Stiffkey, the views of sheep pasture would have helped promote the estates’ productivity and the Bacons’ status and wealth (Overton, 1993, p.78; Simpson, 1961, p.64). The family’s

investment in sheep also explains why Nathaniel was interested in their economic value (Bacon, 1979, pp.48–49) and also oversaw the construction of foldcourses amongst the meadows and pastures within Stiffkey (Bacon, 1990, pp.289–290). However, Nathaniel was not self-indulgent but was concerned with and invested in his local community. He sold wool in smaller batches to individual local cloth workers over other dealers, which amounted to 166 stone in 1625 (Smith, 1974, p.170). Therefore, Nathaniel perhaps saw grazing sheep not as a source of profit, wealth and status, but simply as part of Stiffkey's community and local landscape.

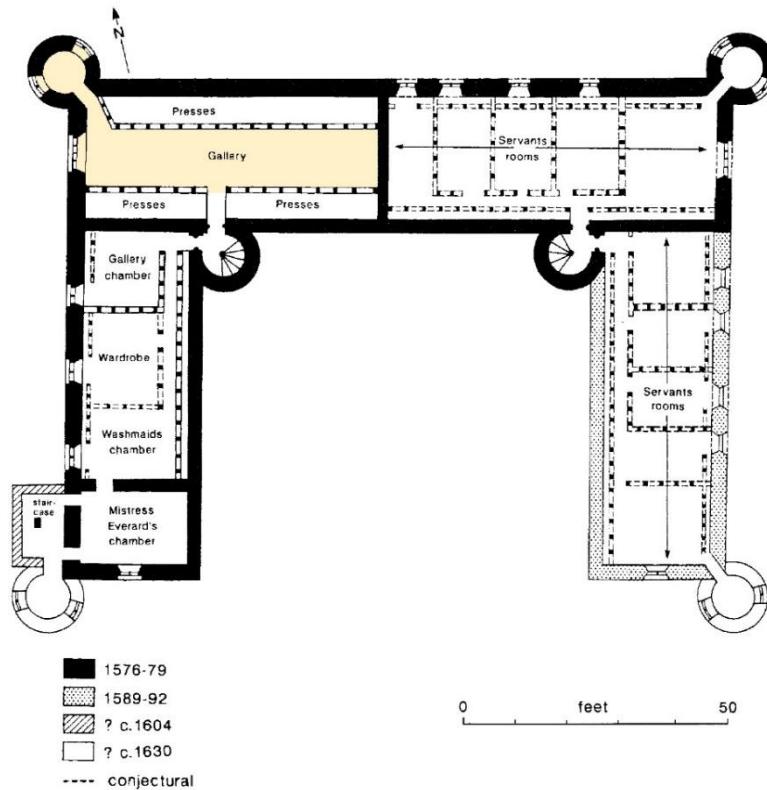
Further west, visitors only glimpsed the southernmost extent of the village and its roads. Alberti advised his readers about the influence of an “ill Neighbourhood” (Alberti, 1755, p.289). As previously mentioned, the removal of some village houses (Fig. 4.10) improved the prospect from the approach but also that from this gallery. As Francis wrote, “ill markets [and] ill neighbours” also contributed to an “ill seat” (Bacon, 1864b, p.229). At Old Gorhambury House, the village to the west lay out of sight from the gallery (Fig. 4.16). Therefore, this opinion could have been instilled in Francis by Nicholas' and Nathaniel's decision to demolish particular houses that were directly visible from the intended gallery.

Beyond the village, agricultural fields were only partially visible, but this fragmentary view was not intentional nor a sign of the Bacons' disinterest in land management within Stiffkey. On the contrary, Nicholas vigilantly supervised Nathaniel's endeavours (Simpson, 1961, p.96). However, the agricultural fields at Stiffkey were still being leased at this time, meaning that Nathaniel did not become heavily involved with arable farming, even after the 1580s (Taylor, 1989, pp.56; 266; Smith, 2002, p.179). The poorer nature of the chalky Newmarket 2 soils (Fig. 4.02) would have produced lower agricultural yields and thus reduced overall profitability of arable land in this region. Consequently, rather than farm the land themselves, the Bacons subleased it instead (Stiffkey Local History Group, 2013, p.61). The estate map certainly depicts separate linear partitions of land or 'strips' in this area (NRO HMN 7/227/1-2). Within Norfolk's sheep-corn husbandry region, these strips typically indicated an open field system, where individually-farmed strips were subjected to the same crop-rotation system and required close cooperation between the landlord and tenants (Allison, 1957, p.20). As a result, whilst there was a reason to desire a view of sheep upon pastures, the arable fields were nonetheless integral to the Stiffkey estate.

## Actual Gallery

Despite never building the galleried south range that Nicholas Bacon intended, Nathaniel Bacon still created a gallery, according to the 1639 inventory (NRO BL/T 10/12). However, establishing this gallery's location has proven challenging, which the conflicting arguments of both Sandeen and Smith make apparent. Nevertheless, a plausible location for the gallery has been ascertained by comparing information researched from various sources. A contract dating to 1580 was issued to "laie the bordes of the gallerie as they now and to fynishe the compasse roufe" (Bacon, 1983, p.151). This contract was written one year after Nathaniel received a small inheritance from Nicholas' will (Bacon, 1983, p.28). It was at this moment that Nathaniel decided he was financially unable to construct the south range, including Nicholas' gallery, and thus built the gallery elsewhere. The aforementioned contract also determined that roof renovations occurred in concordance with work on this alternative gallery. Therefore, both Sandeen and Smith concurred that the gallery resided on the second floor, or the attic storey. Galleries were popularly placed on this storey during this period, for example at Montecute House in Somerset which was built contemporarily to Stiffkey (Girouard, 1978, p.102). However, Sandeen argued that the gallery was most likely located in the east wing (Sandeen, 1959, p.225), whereas Smith placed the gallery within the hall's north-west corner (Smith, 2002, p.164). However, in 1577, only the north and west ranges were under construction (Bacon, 1979, p.266). The east wing remained unfinished until 1592, after the estate accounts documented a rise in wages for workers including "the plummer" and "the glas[s]er" from 1589 (FSL E.b.2, p.3). This timeline of documentary evidence thus disproves Sandeen's interpretation, which means that Nathaniel more likely placed the gallery upon the second floor within the north or west ranges.

Moreover, correspondence between Nicholas and Nathaniel in 1577 indicated that, although concurrently built, the west range had progressed further than the north range (Bacon, 1979, p.266). Therefore, Nathaniel more likely placed the gallery within the north wing rather than the nearly-completed west wing. Furthermore, amongst the architectural remains of the hall, brick tooothing survives within the inner corner of the west front's southern façade, which indicates preparations for attaching the south range (Smith, 2002, p.167). This evidence thus makes it unlikely that Nathaniel placed the gallery within the west



**Fig. 4.19 – Location of Actual Gallery, on reconstructive plan of attic floor, Stiffkey Old Hall (Smith, 2002, fig. 3)**

wing while still intending to construct the galleried south wing. Therefore, the gallery was plausibly placed within the north range, which the previously-mentioned datable evidence supports.

However, Sandeen recognised that this north range was split centrally by a fire wall retained from the previous building (Sandeen, 1959, p.226).

Consequently, the gallery would have to be placed on one side of the fire wall rather than along this range's entire length. To determine which end the gallery resided, an agreement dating to 1580, the same year as the contract mentioned above, indicated that there were different numbers of chimneys for the hall and the gallery (Bacon, 1983, p.180). It would thus be illogical to interpret that the gallery was above the hall, which resided in the eastern half of the north range (Fig. 4.12). As it stands, the evidence indicates that the gallery existed upon the second floor at the western end of the north range. Smith's interpretation of the gallery is thus more likely and shall be analysed (Fig. 4.19).

Compared to the southerly prospect from the intended gallery, contemporaries within the new gallery enjoyed a view through one large mullioned window facing west. As a result, the entire composition of the view changed. Additionally, this gallery's north front did not have any windows let

alone the ones that Nicholas originally designed along the intended gallery's southern façade, which altogether indicates that an undesirable view existed to the north. What can be analysed here is the difference between Nicholas, according to his original design, and Nathaniel, who built this new gallery after Nicholas' death. Although considered a compromise, the gallery and thus the prospect which Nathaniel implemented may provide insight into how his opinions differed from his father's on how visitors should visually experience Stiffkey. This analysis, therefore, has the potential to reveal new insight into these two individuals.

### **Analysis**

Looking first within the grounds (Fig. 4.20), the foreground of the prospect contained a walled garden court. Its purpose is uncertain because no known archival records contain information attributable to this garden while the archaeological evidence has been disturbed by the presence of later farm buildings (Taigel & Williamson, 1991, p.97; Smith, 1994, p.157). Smith has suggested that a terraced garden mirroring the eastern gardens is plausible (Smith, 2002, fig. 9). However, because Nathaniel kept no records about this court, this may indicate this garden's unimportance or lack of beautification and upkeep. As a result, the view of this walled court from the off-centre gallery window unlikely met the same aesthetic specifications as the prospect from the intended gallery.

Behind this garden court was the orchard, which became a wilderness in 1595 (FSL E.b.2, p.45; Bacon, 1979, p.99). This feature provided, firstly, an area of productivity where fruit trees were kept close to the service rooms within the hall's west wing. Secondly, the orchard added to the aesthetics of the estate. When productivity and aesthetics were combined, this garden would have saved both money and space around the house (Spooner, 2005, pp.13–14). The whole composition of this prospect was reminiscent of the 'three natures' Francis Bacon described in his essay *Of Gardens*. The walled garden was the "maine garden", followed by the "heath" represented by the wilderness, and the "greene" consisting of the grassed beyond (Bacon, 1864c, p.239). The prospect captured the walled garden's formality contrasting against the untamed orchard-cum-wilderness before a background of grass. The presence of the three natures at Stiffkey thus demonstrated that the Bacons recognised and adopted the continental fashions of the time (Henderson, 2008, p.68).



Fig. 4.20 - Viewshed results from Actual Gallery, Stiffkey Old Hall (Immediate Grounds)

Wildernesses also provided different experiences. Walking amongst them encouraged discovery and exploration, a popular concept within designed landscapes but especially wildernesses that included 'the Desert' behind Old Gorhambury House (Henderson, 2005, p.139). The fashion emerged during Elizabeth I's reign after many successful ventures across the globe, including to the New World. This certainly interested Nathaniel Bacon, who owned not only two maps of the world but also the work of a pioneering explorer amongst the first to circumnavigate the globe, *The Expeditions of Francis Drake* (Taylor, 1989, p.389; NRO RH Box 33, p.118). Explorations of the New World also intrigued Nicholas Bacon, who had tobacco plants and turkey cocks from the New World, amongst imagery representing other known continents at the time, emblazoned on the window glass surviving from the long gallery at Old Gorhambury (Bacon, 1977, p.17). Based on this evidence, Nathaniel desired to implement these concepts of exploration and discovery at Stiffkey, including the paving and gravelling of "allees" in the orchard to create routes to explore the wilderness (FSL E.b.2, pp.45-6). Upon observing the orchard's designs, visitors were inspired or encouraged to venture into the wilderness and experience Nathaniel's interests and curiosities.

Through the wilderness, the walks plausibly led visitors to the water garden, created in 1595 (FSL E.b.2, p.44). Water and trees were a popularly beautiful combination, as depicted in Jacques Androuet du Cerceau's *Les Plus Excellent Bastiments de France* (Du Cerceau, 1576; Du Cerceau, 1579) which

allegedly inspired Nicholas Bacon's unified and symmetrical scheme at Stiffkey (Smith, 1994, p.157). At Old Gorhambury, Francis Bacon also paired the orchard with a water garden, which he created in the early seventeenth century (Henderson, 1992a, p.122). However, from the galleries at both Old Gorhambury and Stiffkey (Fig. 4.16; 4.20), these water gardens were not visible but not because the Bacons disliked them. In both circumstances, the water gardens provided their own experiences but were placed distantly for convenience, to allow the River Ver at Old Gorhambury and the River Stiffkey at Stiffkey to feed their networks of water features nearby. Thus, the invisibility of the water gardens from these galleries was not because the Bacons believed they would create an unpleasant visual impact on these prospects. Instead, this added to the allure of exploring the orchard-cum-wilderness before discovering the water garden hidden behind it.

North of the orchard, Nathaniel levelled an area of ground to create a kitchen garden (FSL E.b.2, p.49). Its exact location is unknown but was likely near the dovecote with easy access to the west range with its service rooms (Taigel & Williamson, 1991, p.97). Therefore, the kitchen garden was plausibly visible from the gallery, thus altering the aesthetics of this view (Fig. 4.20). Interestingly, Nathaniel created this garden in 1597, after completing the east wing in 1592 (Smith, 2002, p.183) and the east gardens in 1595 (FSL E.b.2, pp.43–48). However, the geometric scheme remained incomplete around the hall's north-west corner, which was visible from the gallery. Theoretically, after Nathaniel completed and beautified the eastern grounds, this gallery with its westerly view was demoted thereafter. As a result, Nathaniel demonstrate favour towards these new easterly prospects over those from the gallery that he compromised on.

The view from this gallery also contained various agricultural buildings. Including service buildings within a prospect was not desirable compared to other features. Many landowners segregated their working buildings from the rest of the estate because of health and sanitation reasons (Henderson, 2005, p.13). At Stiffkey, the distanced placement of these buildings was enough to subdue their visual impact whilst ensuring their smells did not interfere with the overall experience from the gallery. Nicholas had a similar view, as evidenced in a letter to William Cecil where he criticised the building work at Cecil's London home, Cecil House. Nicholas commented on the privy, concerned that it was “to nere ye lo[d]gying to nere an hoven and too nere a lytle lardre, I think you had been better

to have offended yo[u]r ey[e] outw[a]rds then yo[u]r nose inward" (Husselby, 1996, p.93). Jillian Husselby claimed this quote emphasised that Nicholas prioritised commodity before beauty, but this also indicates that he believed both smell and sight were "offended" by such inclusions. Nicholas' opinion may thus apply to these outbuildings at Stiffkey, which would not have been visible from Nicholas' intended gallery (Fig. 4.15). At Old Gorhambury, Nicholas placed the gallery on the opposite side of the house to the dairy and other offices (Fig. 4.14). As a result, Nicholas ensured these visually-unsuitable outbuildings were hidden from the gallery's view (Fig. 4.16). The Bacons thus maintained a fine balance between commodity and beauty at both Old Gorhambury and Stiffkey.

Dovecotes, however, were functional features but also emblems of status (Williamson, 2007, p.9). Despite this, Nicholas and Francis Bacon did not necessarily consider dovecotes as beautiful inclusions for their prospects, yet Nathaniel may have had a different opinion. The dovecote alongside the working buildings, pre-existing from the medieval estate (Bacon, 1979, p.110), likely dictated the orientation and architectural design of Stiffkey Old Hall. There was no reason to move the dovecote elsewhere because its current location was already suitable, but its visual impact on other prospects was still considered. As a result, the dovecote remained hidden from view of Nicholas' intended gallery (Fig. 4.15). Additionally, Nicholas did not have a dovecote at Old Gorhambury, but Francis built one next to his new water gardens out of sight from the house (Fig. 4.16). Interestingly, Francis disliked dovecotes or aviaries yet included them in his interpretation of a "princely garden" (Bacon, 1864c, p.244). Nathaniel, on the other hand, was either indifferent or even had a greater interest in dovecotes, which he managed at Cockthorpe Hall, his former manor house near Binham in Norfolk (Bacon, 1979, p.73). A gallery with a view of a dovecote was also not unheard of, as demonstrated in the 3D-GIS analysis of Blickling Hall (Stewart, 2015, p.133). However, it was Nathaniel's architectural compromise concerning the gallery's location at Stiffkey that resulted in the dovecote's inclusion within the prospect (Fig. 4.20) as opposed to this view being his choice from the beginning.

Beyond the grounds, the prospect continued west, following the river as it ran through the valley (Fig. 4.21). This view captured a greater "extent and varietie" of features (Wotton, 1624, p.4). Areas of pasture and meadow to the south still retained some visibility, but not to the same extent as the view from the



**Fig. 4.21 - Viewshed results from Actual Gallery, Stiffkey Old Hall (Wider Landscape)**

intended gallery (Fig. 4.15). Therefore, this prospect still highlighted the Bacons' interests in sheep, its profitability, and the symbolism associated with that landscape. However, unlike the previous viewshed, more arable fields were visible (Fig. 4.21). These fields resided predominantly on Newmarket 2 soils (Fig. 4.02), typically used to grow barley today (Hodge et al., 1984, p.269) but also during the sixteenth century at part of Norfolk's sheep-corn region (Allison, 1957, p.13). Thomas Gresham devoted more than 70% of his demesne at Intwood Hall, in Norfolk, to barley (Overton, 1993, p.57). In 1572, Nathaniel Bacon conversed with Gresham and learnt about the yields possible from barley at Stiffkey (Bacon, 1979, p.49). Foldcourses also helped improve the landscape by increasing manuring for fertiliser and so ploughed fields became a display of fertility (Ogden & Ogden, 1955, p.36). Therefore, Nathaniel had prominent interests in the economic value and investment in arable land at Stiffkey, even though he leased these parts of his demesne. From the gallery at Old Gorhambury, the prospect included certain agricultural fields, some of which became the park after 1569 (Fig. 4.16). At both Old Gorhambury and Stiffkey, agricultural fields thus displayed the prosperity and profitability of the estate as part of the Bacons' demesne.

The roads and village in Stiffkey were more visible in this prospect (Fig. 4.21), compared to the view from the intended gallery (Fig. 4.15) while such areas were hidden entirely at Old Gorhambury (Fig. 4.16). Smith argued that Nathaniel was more concerned with the well-being of his community (Smith, 1974, p.170).

The erection of new houses within the village was a testament to this, and some dwellings still survive today (Stiffkey Local History Group, 2013, pp.58–9).

Therefore, a prospect of this recently-developed village may be interpreted by visitors as an expression of Nathaniel's paternalism towards his tenants while demonstrating his status and wealth by providing for and supporting them. These are undoubtedly admirable traits to emphasise. On the other hand, the demolition of houses within the view from Nicholas' intended gallery indicated a desire to neaten and subsequently restrict a prospect of the village (Fig. 4.18). The view from Nathaniel's gallery thus contradicted his opinion, thereby theoretically indicating differences between Nicholas and Nathaniel. Nathaniel sought to improve the village and prospect thereof to portray his altruism to any visitor. Nicholas Bacon, on the other hand, did not desire to include villages within the more private prospects he intended at Stiffkey and Old Gorhambury.

Another feature prominent in the view from the gallery was woodland (Fig. 4.21), which was not as visible to the same extent from the intended gallery (Fig. 4.18). Especially along the horizon, this beautiful composition of woodland was fashionable in landscape paintings (Ogden & Ogden, 1955, p.2). However, Nathaniel also invested in woodland management, as the Steward's accounts document the "making of the wood in Baryne Wood" and the "layeing of a Belt [of trees]" in 1590 (NRO RH Box 33, pp.116; 120). Trees in the Stiffkey estate were subsequently felled for timber and tree toppings were sold for fuel (Bacon, 1979, p.63). Nathaniel purchased William West's book called *Symbolaegraphia*, which outlined the procedures for felling trees and making faggots (West, 1590, pp.58–59; Taylor, 1989, p.380). Therefore, Nathaniel considered woods to be beautiful inclusions as well as assets that promoted the estate's economic value within this view, especially since Stiffkey was devoid of trees according to the estate map (NRO HMN 7/227/1-2).

On the other hand, obscured by the valley ridge, an area of common land was hidden from the gallery. Adam Moore described how "the barrenesse of Commons" was a "blemish in the beauty" of the landscape; commons were "deformities" which contemporaries should "cleanse and purge" along with "vermin" or commoners who resided there (Moore, 1653). Nathaniel concurred with his peers, who was himself accused of "abuse in surcharging of our small common with his sheepe... against all coullour of law equitye or reason" by the

inhabitants of Alethorpe, Norfolk (Bacon, 2010, p.112). The common at Stiffkey, however, was not enclosed until 1793 (Chambers, 1829, p.598). Although Nathaniel was unable to enclose the common, topography obscured it from view of the gallery rather than as a result of Nathaniel's direct actions. Regardless, the common did not affect the prospect from this gallery or from the intended gallery (Fig. 4.18), while no areas of common land existed near to Old Gorhambury. Both Nicholas and Nathaniel thus likely shared this negative opinion of commons.

### **Conclusion**

In conclusion, from the intended and actual gallery, the compositions of their views have notable differences. The intended gallery's view was preferred, where visitors could enjoy not only the warmth from the room's southerly orientation but also a tranquil prospect of a geometric scheme within a private landscape, improved by a closed public road and acres of grassland. As Markham determined, the "cheifest rooms" should "have their prospect into your garden, to the South", whilst "inferior offices may stand to the North" with "coldness bringing unto them" (Markham, 1613, p.A4r). Nicholas had intended this composition at Stiffkey. However, when Nathaniel moved the gallery to the north, the room was subjected to an unintended westerly prospect containing less-appealing views of outbuildings, the village and its public road. Consequently, with no windows facing towards colder north winds, the gallery managed to retain some comfort and privacy as well as its symbolism of status. However, this room did not fulfil the expectations of its intended view and thus lacked grandeur and prestige. With the emergence of superior eastern prospects, this gallery declined in importance thereafter. Altogether, the compositions of these prospects demonstrate how the aesthetically-pleasing and private southern landscape was favoured by the Bacons. However, this analysis also emphasised how important the prospect was determining the significance of, in this case, the gallery.

#### **4.3.3 - The Principal Rooms**

Other prominent rooms were used for entertaining guests, which included enjoying a prospect. On the 1573 'plat' (Fig. 4.12), Nicholas Bacon placed the hall within the house's north-east corner. Nicholas most likely intended a double-height hall because this 'plat' was only of the first floor and no internal doors provided access to the room. However, since Nathaniel Bacon already amended



**Fig. 4.22 - Architectural remains of north-east section, Stiffkey Old Hall (Plunkett, 1984)**

the plan regarding the gallery, this part of the house may also have altered. Nevertheless, a prospect was logically enjoyed through the was a double-height bay window marking the 'dais', or the high-end of the hall. This window not only provided a "pretty retiring place" (Bacon, 1864b, p.233) but also greater viewing potential over the landscape compared with the other standard mullioned or transomed windows. Unfortunately, this eastern half of the house has become ruinous (Fig. 4.22) and thus the floor plan including the hall, its statement window and the prospect from it cannot be ascertained.

As a result, there are discrepancies between the interpreted room layouts by Sandeen (Fig. 4.23) and Smith (Fig. 4.24). Supported by the 1639 inventory (NRO BL/T 10/12), both historians agreed that the principal rooms were located to the eastern side of the house, segregated from the western range where the servants, as well as lesser family members, resided (Sandeen, 1959, p.218; Smith, 2002, p.161). They also deliberated that the hall was on the ground floor of the north range's eastern half. However, instead of a double-height hall, Sandeen believed the parlour resided on the first floor above the hall (Sandeen, 1959, p.219). Smith, on the other hand, placed the hall-end chamber above the hall while the parlour resided on the ground floor in the east range.

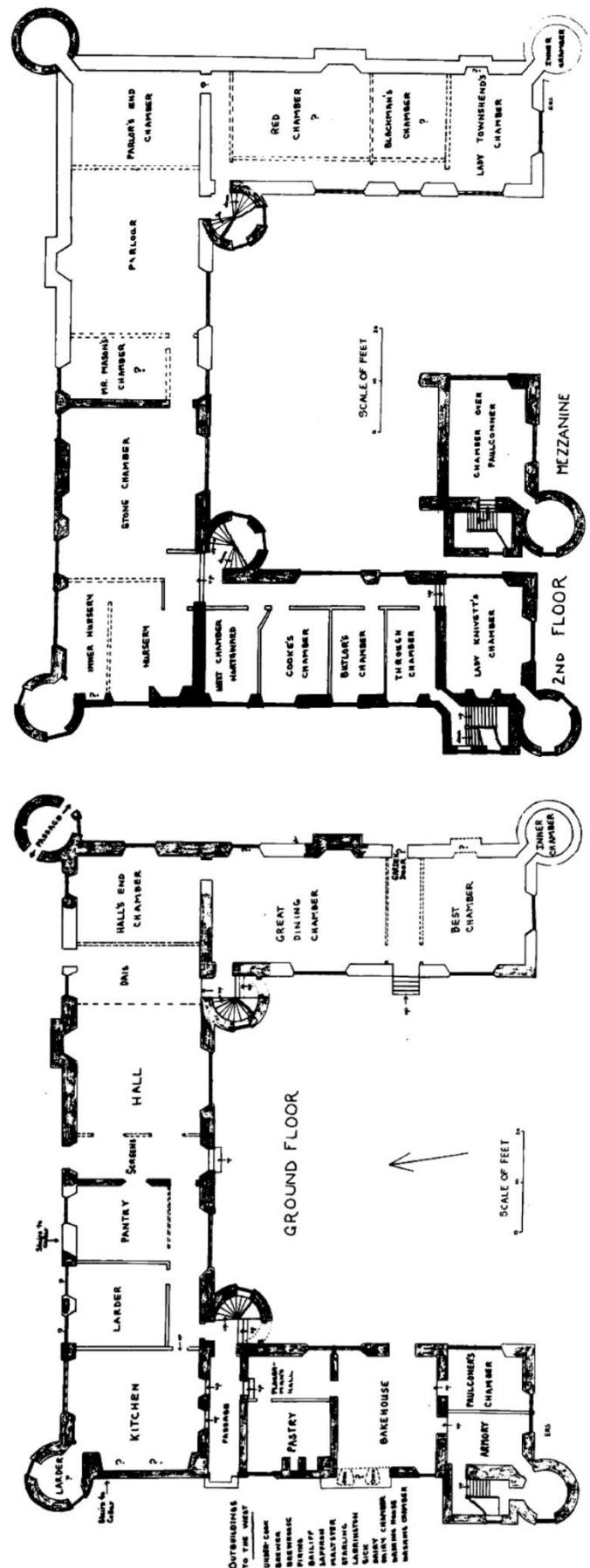


Fig. 4.23 - Reconstructive plans of ground and first floors of Stiffkey Old Hall, by Ernest Sandeen (Sandeen, 1959, figs. 15a-15b)

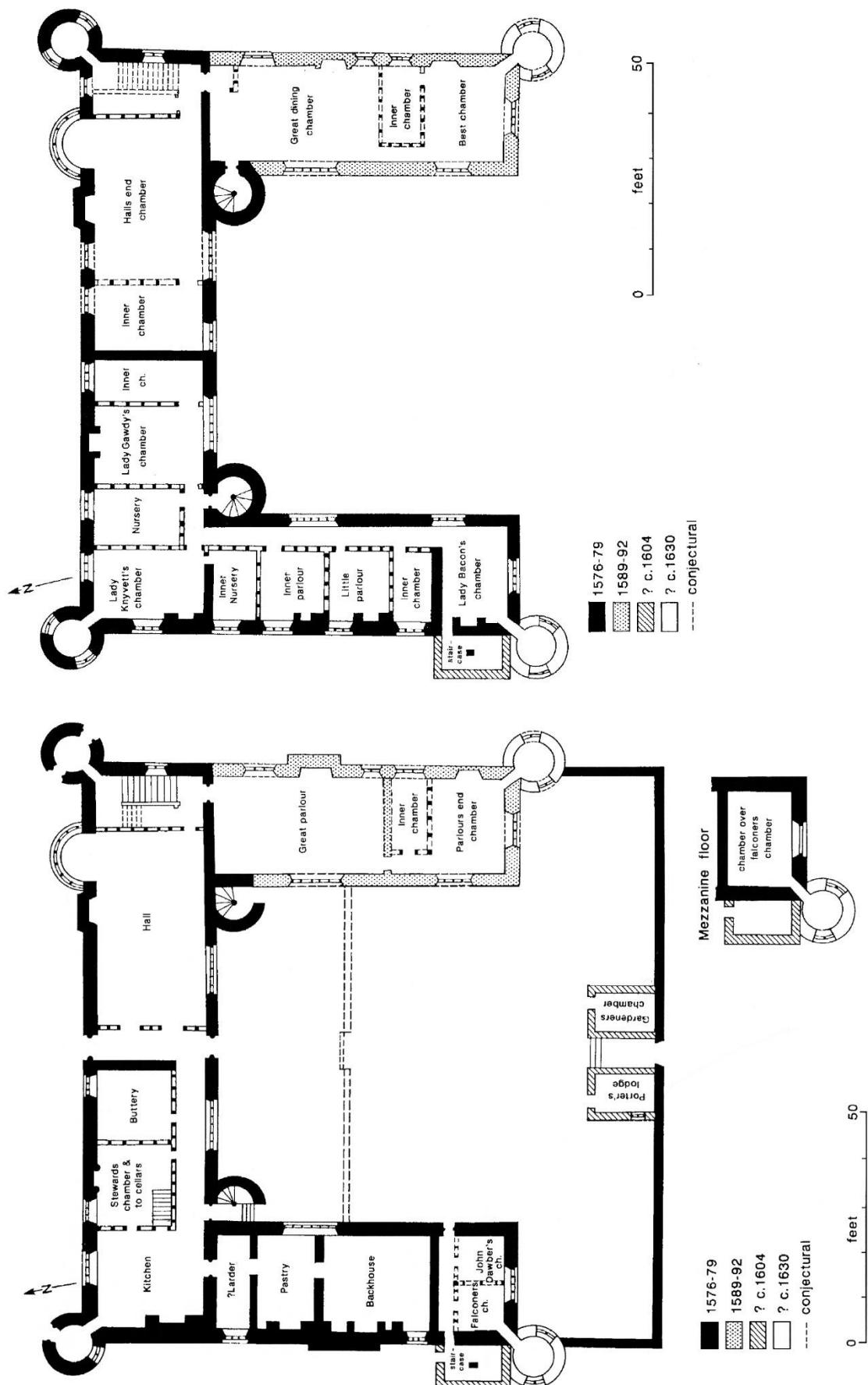


Fig. 4.24 – Reconstructive plans of ground and first floors of Stiffkey Old Hall, by Alfred Hassell Smith (Smith, 2002 figs. 1-2)

Looking at the documentary and architectural evidence, however, the reasonings behind both Sandeen's and Smith's interpretations are inconsistent. One involves the parlour. Smith determined that the estate accounts (FSL E.b.2) indicated that the east range was under construction between 1589 and 1592 (Smith, 2002, p.183). However, these same accounts reference "the parlo[u]r" in May 1589 (FSL E.b.2, p.2), which thus suggests a parlour existed before the east range was under construction. Smith did not identify this parlour in his interpretation, but Sandeen did. Also, after Nathaniel completed the east range, both a parlour and great parlour existed in the summer of 1593 (FSL E.b.2, p.38). Therefore, Nathaniel plausibly built the great parlour within the east range, while keeping the original parlour in the north range. In this instance, Smith but not Sandeen recognised the great parlour. As a result, the great parlour likely resided in the east range either above or below the great chamber documented in 1597 (FSL E.b.2, p.47). However, the dining function of great chambers was increasingly important until these rooms became known as great dining chambers (Girouard, 1978, p.88). As a result, the great chamber logically became the great dining chamber recorded in the 1637 inventory (NRO BL/T 10/12). Smith, therefore, placed the great (dining) chamber on the east range's upper floor, as the 1573 'plat' indicated (Fig. 4.12). Sandeen, however, deemed it implausible to place this room on an upper floor (Sandeen, 1959, p.220). However, architect John Thorpe designed a 'great chamber' above the parlour within one of his unknown houses and a 'chamber for dining' on another of his first-floor plans (Thorpe, 1966, plates 19-T41 and 88-T192). Having this room on the first floor was thus not implausible as Sandeen believed. Altogether, while it is possible to draw certain conclusions, the definite layout of these rooms at Stiffkey remains open to interpretation.

To summarise, this interpretation includes the hall residing below the parlour in the house's north-east corner. Within the east range, the great (dining) chamber adjoined the hall on the ground floor whilst the great parlour abutted the parlour on the storey above. Therefore, two viewsheds will be calculated and analysed. The first prospect to be addressed is that from the north-facing statement window of the hall and parlour, followed by the prospect from the east-facing windows of the great (dining) chamber and great parlour in the east range. In both instances, however, the prospects from the *piano nobile* or first floor will be calculated as the highest vantage points possible in these instances.

### Analysis - The Hall and Parlour



**Fig. 4.25 - Viewshed results from Hall/Parlour, Stiffkey Old Hall (Immediate Grounds)**

The prospect from the statement window of the hall and parlour (Fig. 4.25) immediately focused on the north garden court directly below. Initially, a neighbour owned the land containing this garden. In 1573, the same year John Osbourne drew up the 'plat', the Bacons bargained the purchase of a "parcel [of land] which adjoyneth to the house of Styfkey" (Bacon, 1979, p.84). Its purchase was necessary to alleviate constraints on the site and implement the geometric scheme (Smith, 2002, pp.175–6). However, this new addition to the estate also benefitted the composition of the prospect from the statement window. Instead of overlooking a neighbour, which Francis Bacon advised against (Bacon, 1864b, p.229), Nathaniel Bacon enjoyed a more appealing prospect of a private garden. A geometric parterre or knot was likely at its centre, possibly displaying the entwined initials of Nathaniel and his wife, Anne Gresham, whom he cared for greatly (Bacon, 1979, pp.22–3). Linking letters was a long-established idea (Strong, 2000, p.6) which became popular amongst contemporary landscape designers like Jacques Boyceau in France (Boyceau, 1638). Within the text *Symbolaegraphia*, embroidered letters potentially inspired Nathaniel (West, 1590). The north garden's formal centrepiece was sunken, surrounded on three sides by terrace, which still survives as earthworks today (Taigel & Williamson, 1991, p.96; Smith, 2002, p.172). This terrace provided another elevated platform from which visitors could admire these garden designs.



**Fig. 4.26 - Nathaniel Bacon's monument at St John's Church, Stiffkey, c.17<sup>th</sup> century**

Within the peripheries of the prospect, the church was the prominent feature to the east. Religious connotations were mainly evident. Nathaniel Bacon was a Puritan and made significant efforts to persuade well-known Puritans to accept the benefice at Stiffkey after the death of the previous rector in 1574 (Bacon, 1979, pp.xvii; 111). After Nathaniel's death, a monument modestly memorialised him and the Bacons' ancestral lineage, which still exists within the church today (Fig. 4.26). However, the church also alluded to the manorial lordship which Nathaniel exercised over Stiffkey. The Steward's accounts recorded that Nathaniel generously made payments "towarde the repairing of the church" (NRO RH Box 33, pp.35; 120), thus demonstrating his paternalism and dedication to maintaining the structural integrity of the parish church. Nicholas Bacon also needed the churchyard for aesthetic reasons, in order to complete his geometric scheme by balancing the ratios and proportions of the other garden courts which surrounded the house. Deliberately including a church with a garden plan like this was rare. Nevertheless, churches were integrated into the overall geometric schemes of these estates where the church resided near the hall, which

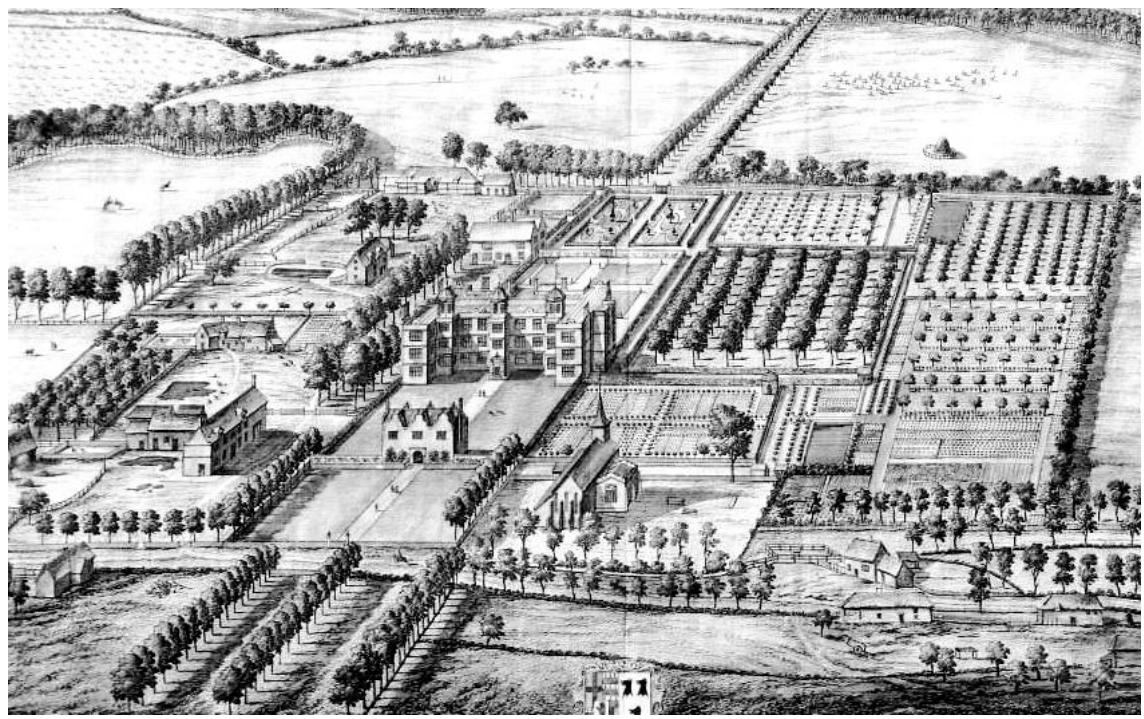


Fig. 4.27 - Doddington Hall, Lincolnshire (Knyff & Kip, 1707; McKee, 2004, plate 63)



Fig. 4.28 - Viewshed results from Hall/Parlour, Stiffkey Old Hall (Wider Landscape)

occurred at another prodigy house by Smythson called Doddington Hall in Lincolnshire (Fig. 4.27). At both Doddington and Stiffkey, the landowners used these churches to extend their designed landscapes and improve their fashionable geometric schemes. As a result, the prospect from the statement window at Stiffkey included this composition while displaying the church's symbolism.

However, whilst the north-west tower of the hall obscured the dovecote, the garden wall hid the agricultural buildings except their rooftops to the west. Looking further into the wider landscape (Fig. 4.28), only small areas of roads and village were visible beyond the outbuildings. The northerly view beyond the grounds was also limited because of the garden wall as well as the rising topography. The view to the east was hindered by the hall's north-east turret, thus preventing views of the eastern gardens, as well as the church, which effectively hid the coastal road. Only a small area of the agricultural fields framed by woodland was visible in the peripherals of the prospect. Although the statement window's design provided the opportunity to observe a greater extent of the valley, the Bacons altogether maintained their privacy from this vantage point.

Compared to those from the intended and actual galleries, this prospect from the hall and parlour was more enclosed and confined and would have been even more so when viewed from the ground floor. Whilst landowners intended some gardens to be highly visible, others were more private yet still appealing and full of symbolism to appease observers (Dix, 2011, p.169). As a result, this restricted prospect indicated that Bacons primarily desired privacy within this north garden and thus within the hall and parlour. Despite the windows' design, a great prospect was unattainable because of hindrances like the garden walls, the hall's turrets, the church tower and the rising topography in the hall's vicinity. Nevertheless, this statement window may instead indicate not only the high-end of the hall but also the importance of the north garden to the Bacons. This window projected into the garden and thus allowed observers to better engage with its display. As a result, it was increasingly likely that the design of this garden had a special significance that the Bacons wished for only their guests and no one from the village nearby could observe. This sense of privacy within the view would also support the theory that this prospect was enjoyed from the parlour, as an increasingly popular room for more private affairs over other state rooms in the sixteenth century (Girouard, 1978, p.104).

### Analysis – Great Parlour and Great (Dining) Chamber



**Fig. 4.29 - Viewshed results from Great Parlour/Great (Dining) Chamber, Stiffkey Old Hall (Immediate Grounds)**

According to the viewshed results from the east wing, the terraced gardens were predominantly in view (Fig. 4.29). Terracing was popular in garden design as a method of landscape manipulation that expressed man's control over nature. Like at Kenilworth Castle in Warwickshire, these terraces thus demonstrated to any visitors the intellect and power of the owners over the landscape (Woodhouse, 2008, p.99). Directly beneath the window, visitors admired the main terraced garden called the 'Nether Terris'. Its formal design was intended to be viewed from above so that guests could appreciate the layout and its intricacies (Wilson, 1991, p.23). Alberti also indicated that this opinion materialised during the Italian Renaissance before it became popular in England: "Let him have the Delights of Gardens... close under his eye" (Alberti, 1755, p.335). Visitors looking out from the great (dining) chamber, therefore, enjoyed these gardens from an opportune vantage point.

Archival evidence established that the Bacons' heraldic colours of black and white adorned the 'Nether Terris'. A substantial amount of "oyell lamblacke and whight lead" was purchased to "coler the nethe[r] terries in the garden" (NRO RH Box 33, p.327) including the "postes in the garden" (NRO RH Box 33, p.277). This information indicates that Nathaniel Bacon intended to paint these colours onto the paving as well as the posts for displaying heraldic beasts; both were popular



Fig. 4.30 - The Royal Garden at Whitehall Palace, from Family of Henry VIII (British School, 1545)

decorations within gardens at that time. The family portrait of Henry VIII depicts a similar garden design at Whitehall Palace, London (Fig. 4.30). The head gardener at Whitehall was reportedly tipped handsomely by Nathaniel on his visit to Parliament in 1593 (Taigel & Williamson, 1991, p.96). Therefore, Nathaniel was potentially inspired by the gardens at Whitehall to create a fashionable design rich in symbolism for his guests to admire at Stiffkey. In this instance, the display of black and white emphasised the Bacons' lineage, status and wealth.

However, another heraldic interpretation involving this use of black and white within this garden involves Anne Gresham. The Gresham family crest also contains these colours. Nathaniel had previously thwarted his father's attempts to find him a suitable wife, which altogether suggests that Nathaniel considered romance to be important as opposed to simply finding an advantageous match (Taylor, 1989, p.128). Nathaniel potentially designed the gardens for Anne, who also bore him five children, but she died unexpectedly as the gardens neared completion in 1594 (Taigel & Williamson, 1991, p.95). In the same year, undeniably affected by her death, Nathaniel planted rosemary within the gardens

(NRO RH Box 33, p.277). During this period, rosemary had a special significance which Shakespeare wrote about in his tragedy *Hamlet*, “There’s rosemary, that’s for remembrance” (Shakespeare, 1903a, p.156). Although the Steward’s accounts do not specify which gardens, rosemary plausibly featured in the eastern terraced gardens and the north garden at Stiffkey. Thus, the gardens’ symbolism altered, from being a romantic gesture by Nathaniel into a memorial to his wife. Markham encouraged heraldry, specifically regarding knots, for “the memory of any friend” (Markham, 1613, p.125). Therefore, any visitors viewing this heraldic display within these gardens were encouraged to contemplate as well as remember Anne.

Also visible against the churchyard’s wall was the upper terrace, which likely mimicked the style of the ‘Nether Terris’. The view extended along this terrace to the banqueting house, which abutted the wall dividing the gardens from the churchyard. As a result, visitors observed whomever were promenading across the terrace from this vantage point. Contemporaries also observed part of the church; thus the aforementioned religious, ancestral and paternalistic connotations were similarly portrayed in this view. However, some of the churchyard also featured in this view, meaning that this side of Nicholas’ geometric scheme became symmetrically and proportionally visible from above.

To the south, the lowest terrace within a walled court was almost completely visible from this vantage point. This terrace was likely to be a bowling green, as supported by evidence in Nathaniel’s estate accounts which suggest that construction of the “Bowling Alley” (FSL E.b.2, p.45) was underway shortly after the “Nether Terris” and “Bancketting Howse” neared completion (FSL E.b.2, pp.42–44). To have a Bowling Alley was “a pleasure”, according to William Lawson (Lawson, 1617, p.71), but Francis Bacon was also aware that bowling was good for health and exercise (Bacon, 1864d, p.253). From the windows of the east range, therefore, visitors could observe games of bowls, perhaps between Nathaniel and Francis, as Bradfer-Lawrence imagined (Bradfer-Lawrence, 1929, p.318). As a result, these terraces were filled with both beauty and activity to engage visitors.

Beyond the garden walls, the prospect continued past the river towards meadows and pastures across the valley (Fig. 4.31). According to Nathaniel’s papers, the landscape “against the seate of the manor” including “Arminglondes Closse” were under the foldcourse contemporarily to the completion of the east



**Fig. 4.31 - Viewshed results from Great Parlour/Great (Dining) Chamber, Stiffkey Old Hall (Wider Landscape)**

wing in 1594 (Bacon, 1990, pp.289–90). Thus, the symbolism of grazing sheep, especially their economic value as the Bacons' main husbandry animal, was also displayed within this prospect. Combined with the Italianate style of the terraces cascading down the slope as well as the overall geometric scheme, the valley itself provided a “pleasant and delightful prospect” like those found in parts of Tuscany, as described in Nathaniel’s copy of Robert Dallington’s *A survey of the great dukes state of Tuscany* (Dallington, 1605, p.30; Fehrenbach, 1992, p.130). As a result, the gardens and across the rural landscape within the valley, this composition at Stiffkey emulated an Italianate landscape for visitors to admire.

Finally, the desire for privacy was still evident. The landscape beyond the churchyard, including the coastal road and the village, was obscured and only the farm buildings and orchard were visible south of the river. As for the river itself, a good proportion of its length could be observed. Unlike the artificially-manipulated canalised part of it immediately south of the hall, the river’s course remained natural as it wound through the pastures and meadows in the valley. Collectively, this view focused primarily on the rural landscape as a contrast to the geometric and formal designs in the gardens. This composition was becoming popular within landscape paintings during this period, because the “natural” and “artificial” were distinct and different yet worked harmoniously together (Ogden & Ogden, 1955, p.2). Within this composition, therefore, Nathaniel demonstrated his attention to contemporary fashions regarding landscapes and aesthetics.

#### **4.3.4 - The Terrace Walk and Banqueting House**

After completing the east range in 1592, Nathaniel constructed a complex of three terraces cutting into the slope from the churchyard to the river (Smith, 2002, p.183). These Italianate terraces coordinated with the dimensions of the house and the churchyard abutting them and thus respected the axial layout and harmonic ratios of Nicholas Bacon's geometrically-inspired scheme (Smith, 2002, pp.163, 173). While the original garden designs upon the terraces have long since disappeared, the estate accounts frequently record aspects of their construction and maintenance (FSL E.b.2; NRO RH Box 33). Fortunately, the earthworks of these terraces still survive for the archaeological record (Taigel & Williamson, 1991, p.96) as part of the gardens of the private residence today (Fig. 4.04).

The uppermost terrace became a terrace walk accessible from the hall's north-east turret. Flowerbeds adorned either side of a pathway along its length and steps lead down to the lower terraces. This terrace walk therefore resembled "the first Accesse" to the garden in the form of "a high walke" which Wotton described, as a place for contemporaries to promenade and thus enjoy the surrounding landscape views (Wotton, 1624, pp.109–110). Forming its eastern terminus was a "bancketting howse", first recorded in May 1594 (FSL E.b.2, p.42). Terraces and banqueting houses were a common combination, as seen at Blickling Hall (Stewart, 2015, p.88). Other surviving examples at Hales Place, Kent, and Old Campden House, Gloucestershire, have banqueting houses terminating at both ends of their terraces (Tipping, 1929, p.xxvii; Henderson, 2005, fig. 147). At Stiffkey, however, only one banqueting house was built partially into the churchyard wall at the eastern end of the terrace. Although ruinous, the banqueting house's locally-sourced flint and brick walls and the window frames on its eastern front survive, projecting beyond the garden wall (Fig. 4.32).

According to a modern interpretation of Stiffkey's intended landscape plan (Fig. 4.13), the banqueting house's design would have displayed popular Italianate and Renaissance features seen in other forms of garden architecture in this period. Its entrance façade towards the terrace walk consisted of three Italianate archways, each divided by columns or pilasters beneath a panelled frieze. Upon the flat wooden roof, projecting finials decorated its edges. The eastern end of the building that projected beyond the garden formed three sides of an octagon and



Fig. 4.32 - Photographic observation of Banqueting House, Stiffkey Old Hall



Fig. 4.33 - Animation route of Terrace Walk, Stiffkey Old Hall

each face had a mullioned window. Octagons were popular geometric shapes to utilise within architecture during this period. Also on the North-Norfolk coast, an octagonal banqueting house existed within the parkland of Hunstanton Hall (Stewart, 2015, pp.94–99).

The combination of the terrace walk and the banqueting house provided an ideal platform to experience prospects and promenades, thus requiring an animation as well as viewsheds for this analysis. The animation recreated the promenade along the terrace walk (Fig. 4.33). Viewsheds calculated two different prospects from the banqueting house: from its western façade, through the entrance archways, and from the eastern projection, through its windows. For comparison, Francis Bacon created several garden buildings at Old Gorhambury after he inherited the estate in 1601. These buildings no longer survive, but John Aubrey visited the estate in 1656 and described “a curious banqueting-house of Roman architecture” within the central island of Francis’ water gardens. Francis built this banqueting house nine years before building Verulam House, a large summer house overlooking the entire pond complex (Rogers, 1936, p.57; Henderson, 1992a, p.117). Whilst Francis’ texts *Of Gardens* and *Of Building* demonstrated his interest in designed landscapes, a scientific treatise called *The New Organon* documented his attitude that “all interpretation of nature begins from the senses” and “sight holds first place amongst the senses” (F. Bacon, 2000, pp.170–71). Therefore, by comparing the prospects from the banqueting houses at Stiffkey and Old Gorhambury, new insight can be gained into not only Nathaniel and Nicholas but also Francis Bacon.

### Analysis

The westerly prospect from the entrance of the banqueting house was primarily of the ‘Nether Terris’ (Fig. 4.34), which also remained prominent along the length of the terrace walk.<sup>18</sup> As Wotton wrote, these kinds of terrace allowed visitors to enjoy “a general view of the whole Plott below” (Wotton, 1624, p.109). Fragrances from the rosemary as well as lavender (NRO RH Box 33, pp.481; 485) and hyssop (FSL E.b.2, p.45) would also have enhanced the visitors’ experience within the garden. On the other hand, the prospect from the banqueting house at Old Gorhambury (Fig. 4.35) focused on the water gardens that surrounded the

---

<sup>18</sup> This observation presented in the animation at timecode [00:04] (CD Appendix 1).



Fig. 4.34 - Viewshed results from West Front of Banqueting House, Stiffkey Old Hall (Immediate Grounds)

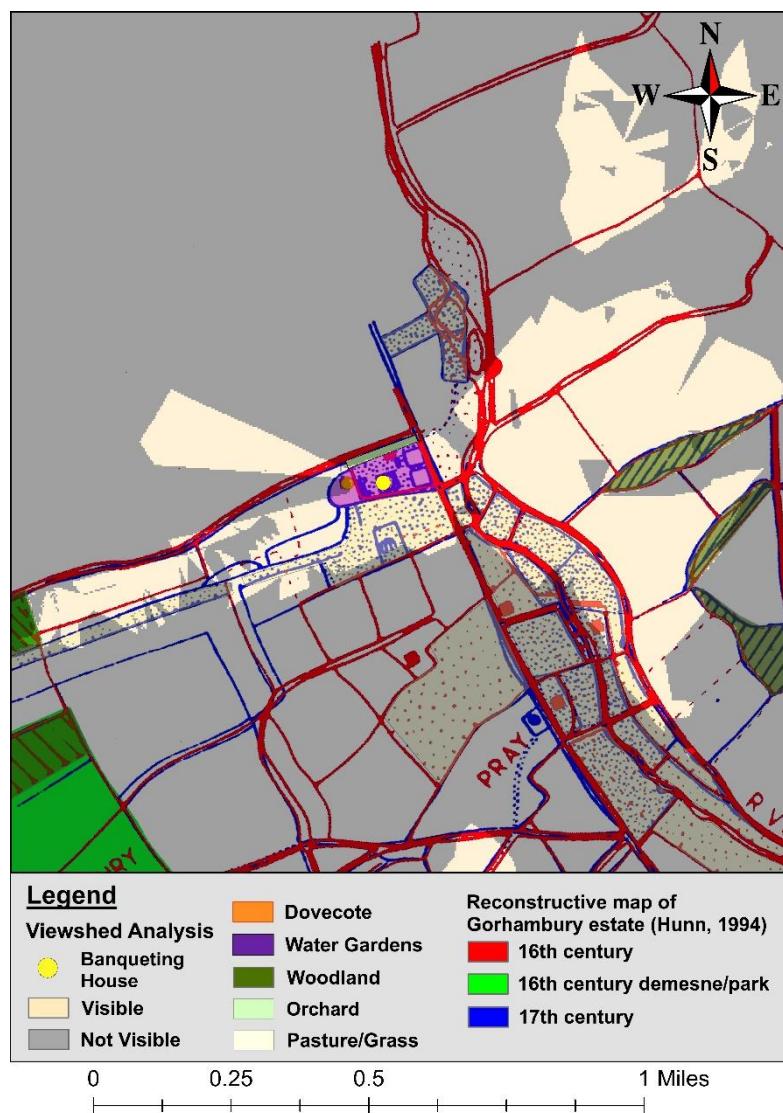


Fig. 4.35 - Viewshed results from Banqueting House, Old Gorhambury House

building in the foreground. The Bacons endeavoured to ensure that their visitors could view the respective geometric garden designs at both Stiffkey and Old Gorhambury from above in accordance with this fashionable concept.

Additionally, the family colours of black and white were paved throughout the banqueting house at Old Gorhambury (Henderson, 1992a, p.122). Therefore, the Bacons' ancestry and status was prominently displayed here as the colourful heraldic design of the 'Nether Terris' did at Stiffkey.

Above the northernmost garden wall, the church tower was visible (Fig. 4.34).<sup>19</sup> The religious, ancestral, manorial and paternalistic connections emulated by the church remained meaningful in this view whilst also becoming another architectural feature to add interest and thus beautify the prospect. However, the east front of Stiffkey Old Hall provided an architectural backdrop that contrasted against the gardens.<sup>20</sup> The hall adopted a vernacular style by using flint and brick rubble as well as the building techniques of local craftsmen (Smith, 1994, pp.155–157). This style was not necessarily typical when building country houses, where the house's size and architectural composition was an indicator of power and ambition which contemporaries could predict or interpret visually (Girouard, 1978, p.3). However, this may not have been the case for Nathaniel Bacon, who appeared to have never sought positions at Court, in office, or central administration since his residency at Stiffkey. Instead, he was a prominent county figure, accepting the positions of Justice of the Peace, Knight of the Shire, and Sheriff of Norfolk (Bacon, 1979, pp.xvi–xvii). His lack of status and fortune potentially prohibited Nathaniel from using more expensive materials and alternative craftsmen. Since vernacular architecture was representative of local traditions, the use of this style at Stiffkey thus may have intentionally been used to display Nathaniel's local connections and influences. On the other hand, Francis Bacon preferred the garden, as "the purest of human pleasures" (Bacon, 1864c, p.235), over the house because, as "gross handiworks" (Bacon, 1864c, p.235), "houses are built to live in, and not to look on" (Bacon, 1864b, p.228). Both Nathaniel and Francis potentially agreed and thus Nathaniel ensured the gardens took precedence in these prospects.

---

<sup>19</sup> [00:40]

<sup>20</sup> [00:01]

However, neither prospect from the terrace walk or the banqueting house included the lowest terrace in the complex (Fig. 4.34).<sup>21</sup> The Bacons may have considered the bowling green unworthy for the prospect, but there is another more plausible theory. As evident in the other garden courts, the 'Nether Terris' aligned geometrically with the ratios of the scheme. The projection of the terrace therefore conformed to the scheme yet also needed to account for the steepness of the valley slope. The completed terrace thus projected to such an extent that the subsequent drop down to the lower terrace resulted in the bowling green becoming obscured from view. Therefore, the prospect indicated that is that the Bacons prioritised the geometric scheme over a view of the bowling green from the terrace walk and banqueting house. Additionally, as Hunt described, exploration of these gardens would have been encouraged in the ascents and descents through the terraces (Hunt, 2003, p.195). However, because of the invisibility of the lower terrace, visitors thus expected to experience a moment of discovery as they ventured down the terraces before being "magically transported into a new garden" (Wotton, 1624, p.110). Similarly identified in the western orchard, Nathaniel's interest in exploration was evident here.

Beyond the bowling green, guest observed the landscape across the river to where the approach emerged within the pastures (Fig. 4.35).<sup>22</sup> Similarly noted from the intended gallery, the whole view remained secluded because of the successful privatisation of the public road which became the approach. Also, the hall ensured the village remained hidden, thus solidifying the Bacons' intentions for privacy. At Old Gorhambury, Francis also hid the banqueting house from similar environments and public areas (Fig. 4.35). At Stiffkey, spacious views of the natural landscape were instead possible from the banqueting house's west front (Fig. 4.36)<sup>23</sup> but especially from its east front (Fig. 4.37). Although no parkland existed at Stiffkey, the uncultivated pastures and meadows nonetheless created a pleasing contrast to the gardens' formal designs to the same effect (Williamson, 1995, p.24). With horses "for the saddle" recorded in the 1637 inventory (NRO BL/T 10/12), this landscape was also a likely setting for riding, which visitors could observe. This natural view was further complemented by the

---

<sup>21</sup> [00:33]

<sup>22</sup> [00:33]

<sup>23</sup> [00:19-00:31]



Fig. 4.36 - Viewshed results from West Front of Banqueting House, Stiffkey Old Hall (Wider Landscape)

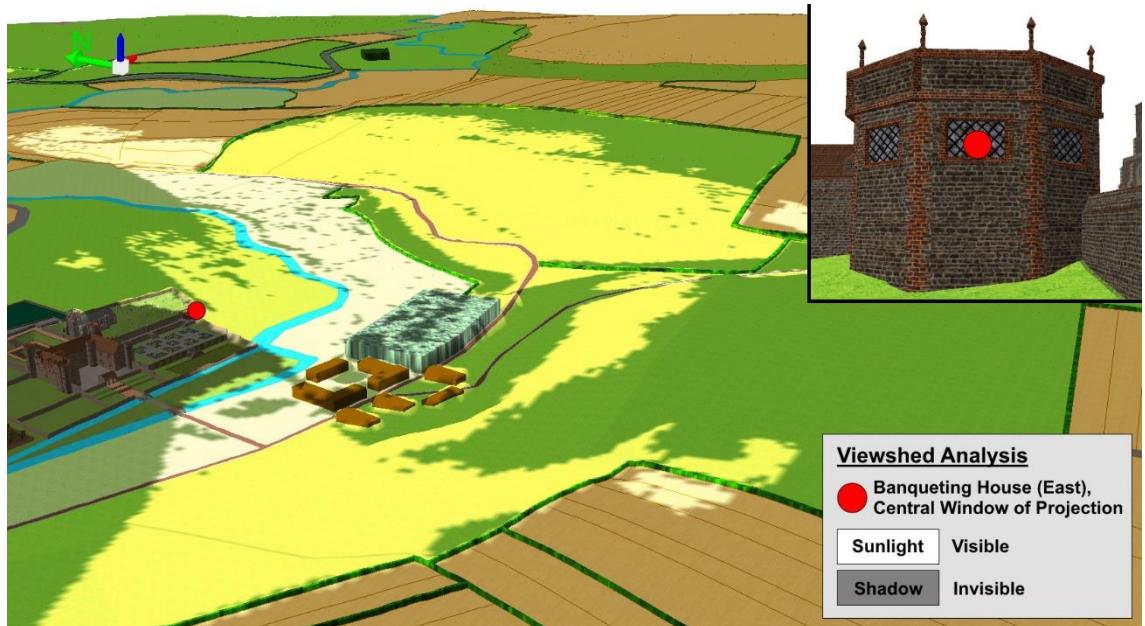


Fig. 4.37 - Viewshed results from East Front of Banqueting House, Stiffkey Old Hall

river, which was not rigidly geometric but free to wind untamed through the valley. A similar composition also existed at Old Gorhambury, where the water gardens were situated before a background of pastures and meadows with the river running through them (Fig. 4.35). Within its island, the banqueting house thus established a secluded setting far from Old Gorhambury House for visitors to retreat towards for solitude and contemplation (Henderson, 1992a, pp.120–1).

Altogether, the prospects from the banqueting house and along the promenade of the terrace walk provided experiences which enabled both the gardens' geometric formality and the untamed countryside to be harmoniously perceived. Of further interest is that the sense of privacy was still significant, despite the range of possible views. The prospect from the terrace walk certainly imitated that from the intended gallery, which indicates that this terrace walk replaced Nicholas' intended gallery as an external one that ensured visitors could still enjoy the secluded prospects southwards. Consequently, the visual prevalence of these south-easterly landscapes indicates that the Bacons preferred these areas over the north-western areas including the village. As a result, the terrace walk and banqueting house both served as beneficial adjuncts that showcased the uncongested and open landscape within this part of the estate.

#### **4.3.5 - Summary**

The analyses conducted within Stiffkey and Old Gorhambury demonstrate how the Bacons considered the potential impact of visual experiences within their designed landscapes. Their attention to the design and construction of the immediate grounds as well as recognition of the wider landscape ultimately created awe-inspiring views for their visitors. However, the physical constrictions upon Stiffkey coupled with Nathaniel Bacon's financial hindrances certainly affected the final configuration of the estate and thus the experiences within it. Nevertheless, what the Bacons designed and achieved at Stiffkey and Old Gorhambury displayed their opinions and preferences towards the landscape.

The only prospect which had a notably different composition at Stiffkey was the gallery within the house's north-west corner. The western gardens, including the orchard and water garden, were appealing but the agricultural buildings, the incomplete geometric scheme, and the village reduced the prospect's overall quality. As a result, comparing the prospect from Nathaniel's gallery with that

from Nicholas Bacon's intended gallery did not truly demonstrate a difference in opinion between Nathaniel and Nicholas as initially thought. Nathaniel's gallery was the result of a compromise and, compared to other prospects possible at Stiffkey, its view did not meet the same aesthetic standards as the prospects east of the estate. With the creation of the great parlour and great (dining) chamber, the gallery became redundant, since parlours fulfilled similar functions to galleries (Girouard, 1978, p.103). As a result, visitors enjoyed the best experiences where the Bacons utilised both expense and effort within the eastern gardens.

Nevertheless, the completed aspects of the geometric scheme were integral at Stiffkey and the Bacons encouraged views of this scheme from every elevated vantage point. From the house's *piano nobile*, the prospects demonstrated the strong relationship between the house and its gardens. However, for Nathaniel especially, the gardens had a special significance as a memorial for his wife, Anne Gresham. Italianate inspirations in the geometric scheme also seeped into the terraces, the banqueting house and the valley beyond. These influences were also part of the experience within Francis Bacon's water garden. Although within a more gradual topographical setting compared to what surrounded Italian villas, the terraced gardens at Stiffkey were nonetheless dramatic while encouraging experiences through movement, especially of exploration and discovery.

Using medieval symbolism was also of paramount importance to the Bacons, from the castellated house designs that Stiffkey Old Hall shared with Old Gorhambury House to the frequent use of heraldic imagery within both estate grounds. As a member of the lesser gentry, Nathaniel desired to create the sense of lineage, but it was also essential to create a visually-dominant building that advertised seigneurial presence, like its medieval predecessors (Liddiard, 2005, p.127). However, it was the display of heraldry and their associated colours which indicated Stiffkey's connection to the Bacons based at Old Gorhambury, and therefore the prestige associated with that family. These inclusions sought to boost Nathaniel's indication of status amongst the ranks of contemporary society. The aggrandisement of Stiffkey and thus Nathaniel's prestige was also evident along the approach, which followed the estate's longest axis through the valley and manipulated visitors' perceptions of Stiffkey advantageously. Although its size did not compare to Old Gorhambury, Stiffkey nonetheless made a strong impression onto contemporaries.

The main trend throughout these prospects at Stiffkey was the Bacons' intent to maintain a private and secluded landscape. Privacy was more easily attainable within the large and secluded estate of Old Gorhambury compared to the smaller and more confined estate of Stiffkey. Nonetheless, secluded experiences were achieved within the enclosed gardens and grounds or by directing views over areas of open grassland. Nathaniel's desire for country life was apparent (Taylor, 1989, p.82), and so the views were to satisfy this aspect of his personality. Despite his paternalistic attitudes, which did feature in some parts of these prospects, overlooking the neighbours was mostly avoided with the views orientated away from the landscapes where the commoners resided, which included the village, roads, open fields and common. Even though the topography obscured the common, the Bacons nonetheless preferred to avoid a westerly view where such features posed a potential risk to any experiences within the Stiffkey estate. This same appreciation towards maintaining privacy was also prevalent within Nicholas' and Francis' designs at Old Gorhambury, thus demonstrating how each member of the Bacon family sought to achieve this objective within their designed landscapes. Despite the difficulties posed at Stiffkey, Nathaniel nonetheless created for himself a private estate.

In summary, with the input of Nicholas Bacon, Nathaniel Bacon had designed an estate that fully what he desired his peers to experience visually. This observation thus contradicts Smith's opinion that Nathaniel "cared little" about the environment in which he lived (Smith, 2002, p.184). What this case study has also demonstrated is that the lesser elite were equally if not more concerned about the experiences within their designed landscapes because they had more to prove by compared to other higher-status members of contemporary society. As Alberti advised, it was unnecessary "for the Gentleman's House to stand in the most fruitful Part of his whole Estate", which was already challenging to achieve within the confines of Stiffkey, but was best placed where "the most Honourable... can uncontrolled enjoy all the Pleasures and Conveniencies of Air, Sun, and fine Prospects" (Alberti, 1755, p.335). Based on the viewshed results and animations created within the 3D-GIS recreation of Stiffkey, each location where the Bacons intended experiences of notable prospects and promenades ensured that the attributes outlined by Alberti were attainable at Stiffkey.

#### **4.4 - Conclusion**

This case study demonstrated many benefits of 3D-GIS to the studies of designed landscapes and of the visual experiences within them. To begin with, the variety of sources attributed to Stiffkey all have their benefits, but the 3D-GIS recreation created a platform to consult the information they contained equally. By combining all available archival evidence, recording any extant features for posterity, and considering the landscape context, the 3D-GIS recreation has demonstrated its ability to handle a substantial amount of data within one coherent interpretation. As a result, the 3D-GIS recreation helped to assess and rationalise the previous observations of other historians, who used more traditional research methods. The unique history of Stiffkey also provided 3D-GIS with the opportunity to show that it is possible to explore landscapes which did exist but also planned ones that never became a reality. Previous studies tend to fixate on the proposed plans as a single source rather than acknowledge that these designs were intended to become part of an estate. 3D-GIS, however, opens the possibilities of understanding not only proposed designed landscapes within their landscape context but also of the intended experiences within them. Furthermore, there are significant benefits to using the third dimension, which other studies rarely utilise. From detailing and textures on the buildings to the extravagant garden designs, 3D allowed greater comprehension of what visitors experienced even more so than 2.5D extrusions. Using this perspective within 3D-GIS also helped visualise topography as well as artificial topographical manipulations in the terraced gardens. Ultimately, compared to 2D maps or archive-based research, 3D provided a perspective previously unfathomable using more typical research methods and thus changed our perception of these landscapes significantly. Subsequently, 3D-GIS has more proficiently assisted research into the visual experiences within Stiffkey compared to previous studies undertaken. 3D-GIS has successfully brought a lower-status site into the wider historiographical conversation of designed landscapes and proven that Stiffkey is worthy of our attention (Sandeen, 1959, p.159). Stiffkey thus sets a precedent for demonstrating the abilities of 3D-GIS in improving our knowledge of designed landscapes and experiences within them.

## Chapter 5 - Moulsham Hall, Essex

### 5.1 - Introduction



**Fig. 5.01 - 3D-GIS recreation of Moulsham Hall, Essex**

For the second case study, Moulsham Hall in Essex was chosen (Fig. 5.01). Moulsham resided just south of Chelmsford.<sup>24</sup> According to the regional variation analyses, Moulsham was 35 metres above sea level, which was upon an open, gentle incline leading up from the river through Chelmsford to the hill southwards. Moulsham was around 1,209 metres from its nearest neighbouring estate, which corresponded with the most popular distances ascertained in the statistical analysis. On the other hand, Moulsham resided on the Windsor soil classification, a seasonally wet deep clay (Fig. 5.02). Although amongst the more prominent classifications in East Anglia, Windsor soils were not popular for building an estate upon. Furthermore, the nearest river was roughly 1,129 metres from Moulsham, thus further away than many sites analysed. As a result, Moulsham had some but not all the ideal conditions for a well-situated country-house estate.

This case study provides a different set of challenges that have been identified within the current historiography of designed landscapes. One hindrance that studies of Moulsham Hall have previously faced concerns the current state of the site today. Unlike Stiffkey, the entirety of the Moulsham estate no longer exists. After military requisitioning during the Napoleonic Wars, Moulsham Hall was demolished unusually early, considering that most country-

<sup>24</sup> Not to be confused with Moulsham Hall near Great Leighs, 10-miles north of Chelmsford, Essex.



**Fig. 5.02 - Soil distribution, Moulsham Hall**

house demolitions in the aftermath of military use happened during the twentieth century (Greaves, 2014; Robinson, 2014). As for the grounds of the estate, suburban expansions from the local town, now city, of Chelmsford replaced them. Urbanisation not only affected the composition of the estate but also what was originally the countryside surrounding Moulsham Hall. Consequently, the sixteenth- to seventeenth-century landscape context of this site is unrecognisable, which renders the prospects within them equally so. Due to its condition, researchers have yet to thoroughly investigate Moulsham, which has thus prevented this estate from being effectively included in scholarly discourse on designed landscapes.

This lack of evidence also extends to other primary sources with information about Moulsham Hall. Two main sources, which are cartographic (ERO D/DM P2) and iconographic in nature (Puget de la Serre, 1639), do record aspects of the estate's appearance. However, these sources do contradict each other, which previous researchers have identified, and this has led to further hindrances while attempting to understand this site. Nevertheless, an

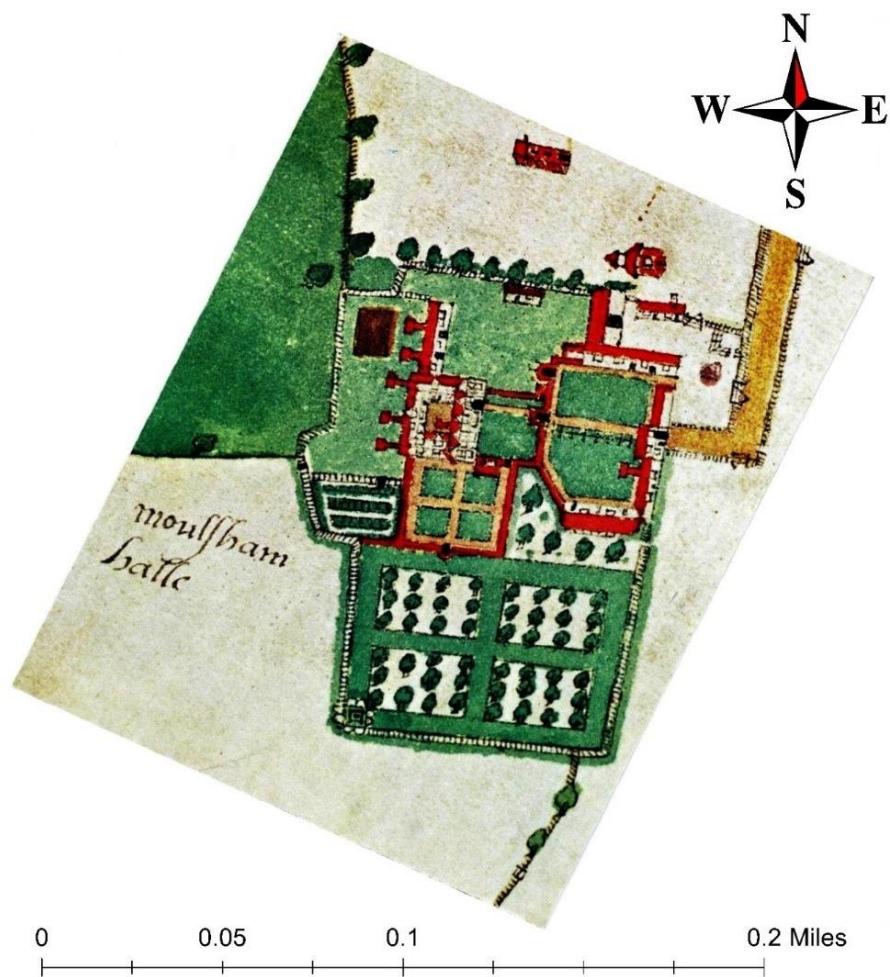
archaeological excavation provided further supporting evidence to combat this (Heppell, 2014). Also, documents have provided some additional yet fragmentary information about the site, but these date to the eighteenth century during the remodelling of Moulsham Hall (Edwards, 1977). Collectively, significantly less evidence exists about Moulsham compared to the previous case study, Stiffkey.

As a result, knowledge of the personal lives of the Mildmays, the residing family at Moulsham, has also been affected. By comparison, the Petres were as equally prominent in Essex as the Mildmays yet have been well-researched (Edwards, 1975, p.22). However, more primary sources are available and thus more secondary literature exists about the Petres, including about their residences and gardens (Stubbings, 2002, p.5). On the other hand, the Mildmays have not received the same attention despite being one of wealthiest families, who even received royalty at Moulsham.

Ultimately, Moulsham has a considerable number of challenging circumstances which 3D-GIS will aim to combat. This case study will test whether 3D-GIS can improve research into a site with fewer available sources. Subsequently, 3D-GIS will demonstrate its potential use as a platform to rationalise incomplete or contradictory data and create a reliable landscape interpretation for analysis successfully. This analysis will further attempt to uncover the personalities of an eminent yet presently obscure Essex family. 3D-GIS thus has the capabilities to improve our comprehension of a designed landscape and a family both worthy of greater scholarly recognition.

## **5.2 - History and Context**

A now-lost written survey, which accompanied an estate map by the Walkers dating to 1591 (Fig. 5.03), described Moulsham Hall as the “greatest Esquire’s building within the county of Essex” (Nichols, 1823, pp.287–8 fn.2). Moulsham belonged to the Mildmay family. Before the family rose to prominence during the sixteenth century, their ancestor, Thomas Mildmay of Chelmsford, was a mercer trading in silks and other textiles (Family Tree Appendix 2). In the medieval period, the abbot of Westminster owned the manor of Moulsham, which contained 1,300 acres (Morris, 1983, p.6:14; Grieve, 1988, p.93; Stubbings, 2002, p.7). The estate became one of several sites which Thomas Mildmay Esquire [Esq.], son of Thomas Mildmay of Chelmsford, helped seize as Auditor to King



**Fig. 5.03 - Moulsham Hall, on estate map by John Walker (senior), 1591 (ERO D/DM P2)**

Henry VIII during the Reformation (Bindoff, 1982a, pp.600–1). Thomas Mildmay Esq. then purchased the manor, tore down the house, and built Moulsham Hall in 1542 (Grieve, 1988, pp.93–4). However, it was his son, Thomas Mildmay Knight [Knt.] I, who “much bettered, augmented, and beautified” Moulsham (Nichols, 1823, pp.287–8 fn.2) after he inherited the estate in 1566 (Grieve, 1988, p.112).

Over the next century, the Mildmays became one of the leading Essex families alongside their close friends, the Petres (Edwards & Newton, 1984, p.16). The Petres resided primarily at Old Thorndon Hall (Fig. 5.04) but also Ingatestone Hall (Fig. 5.05) and visited the Mildmays at Moulsham (Edwards, 1975, p.23). The Mildmays also entertained royal guests, including Elizabeth I on her progress in 1579 (Nichols, 1823, p.287). In 1638, author Jean Puget de la Serre engraved the royal visit of Charles I and Marie de Medici, Charles’ mother-in-law and wife of King Henry VI of France (Fig. 5.06). Puget de la Serre later published the travels of the French royals, including his engraving, and described Moulsham as a “chateau” of “agreeable magnificence” (Puget de la Serre, 1639).

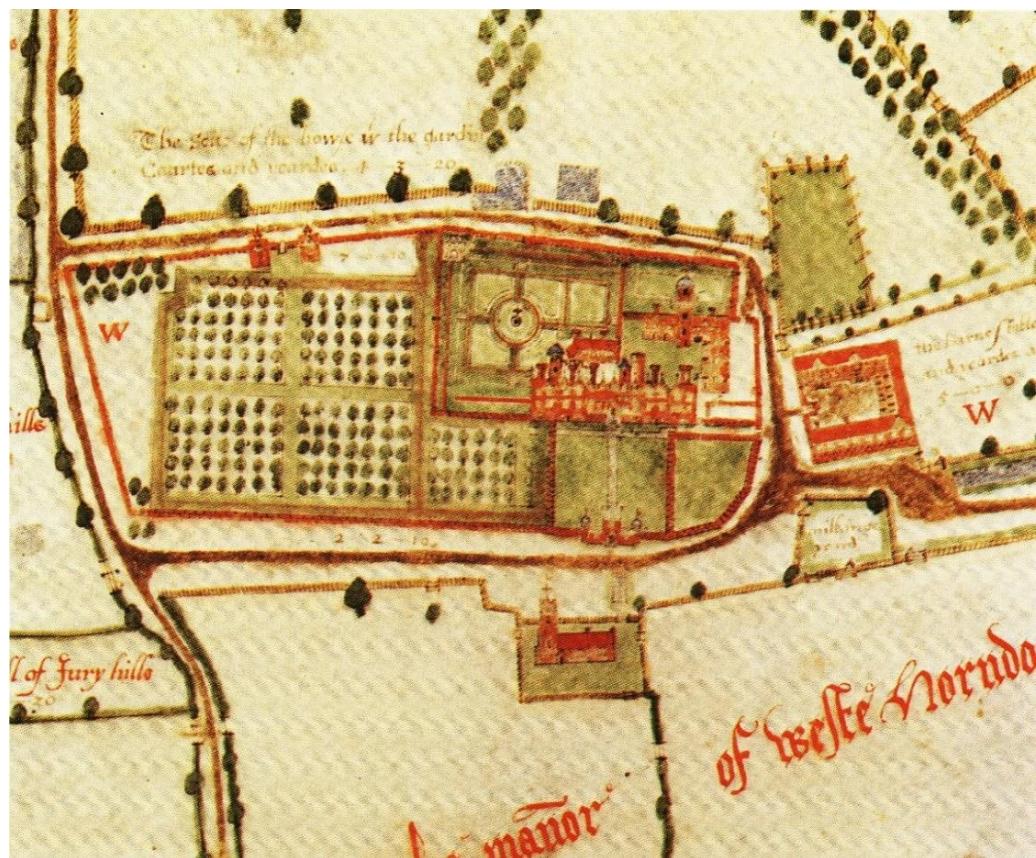


Fig. 5.04 - Old Thorndon Hall, Essex, on estate map by John Walker (senior), c.1598  
(ERO D/DP P5)

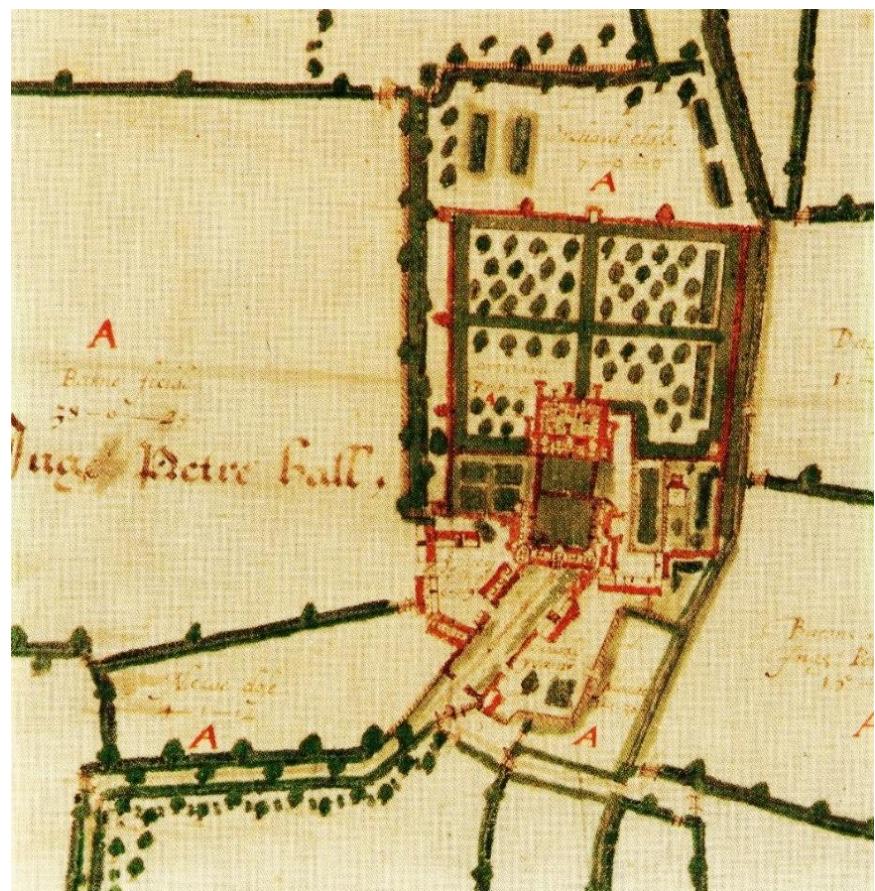


Fig. 5.05 - Ingatestone Hall, Essex, on estate map by John Walker (senior and junior), 1605 (Edwards & Newton, 1984, plate XVII)

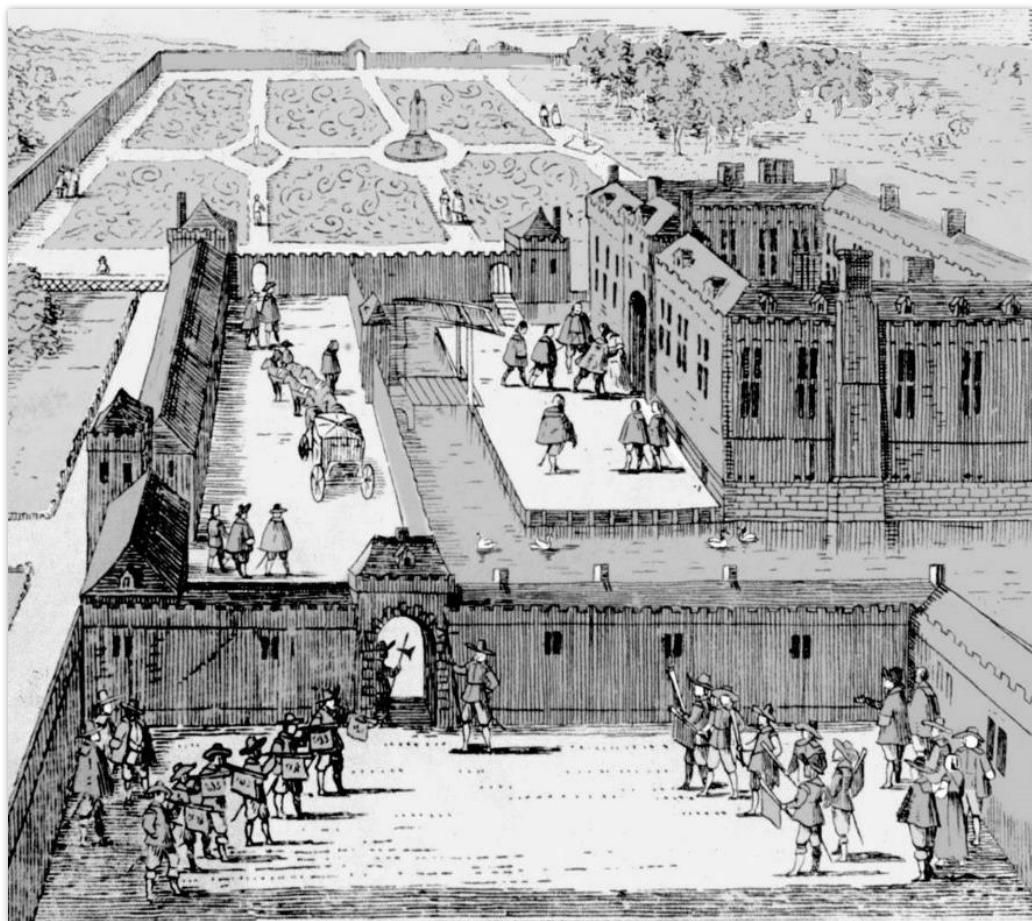


Fig. 5.06 - Engraving of Moulsham Hall, c.1638 (Puget de la Serre, 1639)



Fig. 5.07 - Engraving of Moulsham Hall, c.1776 (ERO I/Mb 74/1/131)



Fig. 5.08 - Moulsham Hall, on county map of Essex, by John Chapman and Peter André, 1777 (Chapman & André, 1777)

During the Civil War, the estate declined as the Mildmays faced financial difficulties, imprisonments and bereavements (Grieve, 1994, p.67). In 1728, Benjamin Mildmay, who later became Viscount Harwich and Earl Fitzwalter in 1730, bought the estate from his widowed sister-in-law, the Dowager Lady Fitzwalter (Edwards, 1977, pp.28–9). Benjamin replaced the original house with one of Italianate inspiration, designed by architect Giacomo Leoni (ERO T/A 313/1, p.9; ERO T/M 446). In an engraving from 1776 (Fig. 5.07) and on a 1777 county map of Essex (Fig. 5.08), both sources record the extent that this new hall and what resembles a landscape park had obscured the original sixteenth-century site by the eighteenth century.

Towards the end of the eighteenth century, the Moulsham line of Mildmays was dying out (Edwards, 1977, p.x). The manor passed from Benjamin to the descendants of William Mildmay of Springfield Barnes, who was the brother of Thomas Mildmay Esq. (Family Tree Appendix 2). In 1804, when Chelmsford became a military centre during the Napoleonic Wars, the Mildmays leased Moulsham to the army to help protect London amidst fears of an invasion along the Essex coast. Once the army's four-year lease ended, Moulsham Hall had



**Fig. 5.09 - Estate map of Moulsham, 1591 (ERO D/DM P2) overlaid onto OS 1:2000 map**

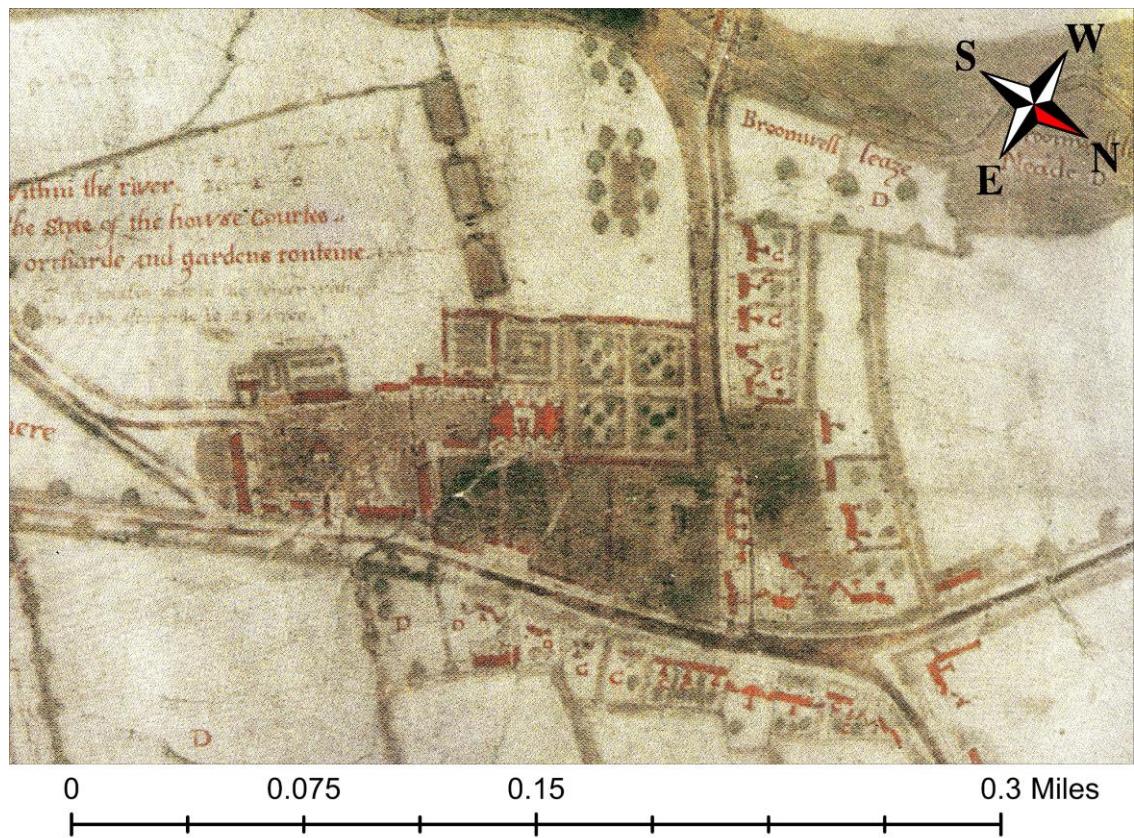
deteriorated to such a great extent that the family sold the hall for demolition in 1809 (Grieve, 1994, pp.240–1). By the mid-twentieth century, the suburban expansions of Chelmsford engulfed the estate. As a result, there is little to no trace of the Moulsham estate in the landscape today (Fig. 5.09).

Along with Moulsham, Thomas Mildmay Esq. purchased the manor of Chelmsford including Bishop's Hall in 1563 (Grieve, 1988, p.108), previously owned by the Bishops of London until 1545 (Emmison, 1976, p.208). In 1591, the Walkers surveyed both Moulsham and Chelmsford, under commission by Thomas Mildmay Knt. I (ERO D/DM P1; ERO D/DM P2). With 1,706 acres in Moulsham and 598 acres in Chelmsford, both maps collectively documented 2,304 acres within the Moulsham estate (Edwards & Newton, 1984, pp.45–8). However, according to Thomas Mildmay Knt. I's will of 1608, over twenty other parishes contained lands and tenements under his ownership, including Boreham, Bromefield, Great and Little Baddow, Springfield, Widford and Writtle, which all neighboured Moulsham (TNA PROB 11/112/528). While currently hard to determine an exact acreage of the Mildmays' demesne, it is nonetheless evident that Moulsham had become a great Essex estate and the Mildmays dominated the area surrounding Moulsham.

A 3D-GIS visualisation of Moulsham has been created using a small number of surviving contemporary sources, including the Walkers' estate map, along with its now-lost survey, dating to 1591 (ERO D/DM P2; Nichols, 1823, pp.287–8 fn.2) and the engraving of the royal visit in 1638 (Fig. 5.07). However, difficulties arose due to the contradictory information between the map and the engraving. Historians consider the Walkers' map to be the most reliable, because their cartographic abilities were precise with only a "negligible margin of error" (Edwards & Newton, 1984, pp.82–85). The map's accuracy was evident during its geo-referencing and its data further verified using evidence from an archaeological excavation undertaken in the 1990s, which was specifically interested in the gardens at Moulsham (Heppell, 2014, p.125). However, there is still reason to doubt the map's reliability. For example, after geo-referencing, the map recorded the dovecote's height to be 27-metres high. This was improbable because the tallest known dovecote at Culham Manor, Oxfordshire (Historic England, 2018b), was around 10-metres high, according to LiDAR data. Therefore, whilst the map's cartographic aspects were accurate, the heights and elevations of structures were less so. On the other hand, the engraving has been considered "questionable", "inaccurate" and potentially drawn either from "an imperfect memory" or by the "aesthetic decision of the illustrator" (Edwards & Newton, 1984, p.84; Heppell, 2014, p.123). Therefore, the map is main source of evidence, but the engraving and other sites provide further inspiration to ultimately create a more reliable interpretation of Moulsham Hall in 3D-GIS. As a result, the 3D-GIS recreation including its wider landscape context is primarily attributed to the 1590s.

### **5.3 - Prospects and Promenades**

A variety of prospects and promenades existed at Moulsham. Visitors garnered their first impressions of the estate as they were granted entry along the approach. With no surviving floor plan of the hall, this analysis will thus seek to identify where the Mildmays plausibly placed the prominent rooms upon the *piano nobile* by recreating the prospects from the outward-facing windows of each range. In the grounds, two locations provided visitors with vantage points. One of these features has been interpreted as a viewing mount, which existed in a far corner of the orchard. Residing north beyond the gardens, the other structure was a pleasure building, hunting lodge or outlook tower. Each prospect and promenade from these locations will be recreated and analysed in this chapter.



**Fig. 5.10 - Terling Hall, Essex, on estate map by John Walker (senior), 1591**  
**(Edwards & Newton, 1984, plate IX)**

For a comparison study, Bishop's Hall was not considered appropriate in this instance because the Mildmays leased it as a demesne farm to a yeoman tenant and thus was not physically occupied by the Mildmays (Grieve, 1988, p.112). Instead, this analysis used another Essex residence called Terling Hall, also known as Terling Place (Fig. 5.10). Once a palace for the Bishops of Norwich, Henry VIII acquired Terling during the Dissolution and Terling became his residence temporarily before he sold it to Thomas Mildmay Esq. in 1563 (Wright, 1831, p.230). Rather than keeping Terling for his descendants, Thomas Mildmay Esq. gave it to John Mildmay (Mildmay, 1913, p.27), who was one of his younger brothers (Family Tree Appendix 2). Although it remained in the family, Terling was decidedly not the Mildmays' main country seat. Nevertheless, in the will of Thomas Mildmay Knt. I, land within Terling was bequeathed to his son, Thomas Mildmay Knt. II, after 1608 (TNA PROB 11/112/528). This reference to Terling in this will may have referred to the estate or just to surrounding demesne land, but it nonetheless confirmed that the parish of Terling remained integral to the Mildmays at Moulsham. Terling provides a useful comparison to Moulsham and will help to gain insight into why Moulsham became the main family seat over

Terling. Although an eighteenth-century hall replaced the original one, the Walkers immortalised the sixteenth-century estate in an estate map. Dating to 1591, this map is also contemporary to those of Moulsham and Chelmsford, which will additionally benefit the comparative analysis of both sites. However, the map of Terling remains under private ownership and has faded considerably over time. As a result, only secondary images and blurred photocopies were obtainable (ERO T/M 63/1; Edwards & Newton, 1984, plate IX). Nevertheless, by using 2D-GIS to geo-reference the map and extract its data as polygons, the map can be read with greater clarity. Collectively, using digital methods in this manner will subsequently benefit our comprehension as well the investigation of Terling. Using Terling as a comparison site will thus serve to support the analysis of different prospects and promenades at Moulsham.

### **5.3.1 - The Approach**

According to the Walkers' map, visitors gained entrance to the estate from the north near Chelmsford, starting at London Way. The approach then curved through the estate to reach the gatehouse, before it turned westward and continued straight towards the entrance of the house (Fig. 5.11). It is possible that this approach already existed from the medieval manor, but the Mildmays may also have specially created it perhaps by adapting existing roads. Regardless of this, the Mildmays did enjoy an elongated approach which allowed visitors to Moulsham ample time to observe and appreciate their surroundings.

However, what was perceived by contemporaries along this approach cannot be determined with the landscape today. The development of road networks and the construction of suburban housing radiating out from Chelmsford has severely disrupted the route of the original approach, except a section of St John's Road. Nevertheless, the cartographic evidence does indicate that the approach to Moulsham was more grandiose than that at Terling. The approach to Terling was merely a short, straight path from the gatehouse abutting the main road through the local village (Fig. 5.10). From this observation, the approach at Moulsham had the potential to provide guests with a more profound and impactful visual experience within which to exhibit the Mildmays' main country seat. This analysis thus explores the movement along the approach within an animation and compared with a viewshed conducted from the approach at Terling.



**Fig. 5.11 - Animation Route of Approach, Moulsham Hall**

### Analysis

Firstly, where the approach began is of interest. Instead of entering the estate from the south, towards London and thus the Court, the approach started north, nearer Chelmsford. This entrance may have been original to the medieval manor and conveniently kept for local trade and business purposes. However, the Mildmays were Chelmsford's proprietors and invested in the town, but they also had ancestral connections. The family were originally from more humble beginnings when, in 1506, mercer Thomas Mildmay of Chelmsford erected a stall in Chelmsford's marketplace. The Mildmays later became one of the wealthiest Essex families and gained jurisdiction over Chelmsford (Grieve, 1988, pp.90–1; Grieve, 1994, p.3; Heppell, 2014, p.122). Over a century later, Thomas Mildmay Knt. I referred to Chelmsford as "mine owne town", indicating a long-established personal connection (Grieve, 1994, p.3). Therefore, the Mildmays' desire to maintain, even highlight, their Chelmsford roots encouraged them to establish Moulsham as their main seat over Terling, and thus the entrance to the Moulsham estate remained near to Chelmsford. The subsequent progression along the approach thus symbolised both the physical mobility of the Mildmays from market stall to country house and their social mobility from mercer to gentleman.

The animation along the approach first captured the gentle rise of the topography before a beautiful prospect of the estate emerged to the south.<sup>25</sup> Drawing visitors' attentions, the house next to the tower projected upwards to pierce the horizon line. As a result, these imposing structures dominated the view, meaning that visitors could anticipate what awaited them at the end of the approach. From this distance, however, guests could not view the grounds of the estate with great clarity. Nonetheless, with flatter topography and few obstructive landscape features, the countryside became the focus of these expansive prospects.

Along the first stretch of the approach, visitors looking north-east observed a myriad of enclosed fields, extending towards meadowland along the horizon.<sup>26</sup> In the sixteenth century, a wave of enclosures occurred "at the lords pleasure" (Fitzherbert, 1523, p.2). In Moulsham, almost all agricultural strip-systems were removed, except for an area near Moulsham Meade (ERO D/DM P2). The Mildmays almost certainly, yet this remains unconfirmed, enclosed these demesne fields with hedges. Prominently displayed along the approach, these fields demonstrated the Mildmays's power in accomplishing this scale of land consolidation. At Terling, enclosed fields were also present yet, because Terling was within the valley and densely surrounded by the village, no substantial views of them were possible from the approach (Fig. 5.12). Therefore, Moulsham more opportunely showcased the extent of the Mildmays' agricultural demesne.

Arable fields also symbolised prosperity. Of this opinion was Mildmay Fane, a relative of the Mildmays residing at Apethorpe Hall in Northamptonshire during the seventeenth century (Family Tree Appendix 2). A famous writer of country-house poems and masques, Mildmay Fane wrote about this interpretation of the fields' symbolism in his poem, *To Retiredness*:

*"Then turning over nature's leaf  
I mark the glory of the sheaf:  
For every field's a several page,  
Deciphering the Golden Age:  
So that without a miner's pains,  
Or Indie's reach, here plenty reigns"*  
(Fane, 1648b, p.173).

---

<sup>25</sup> This observation presented in the animation at timecode [00:04] (CD Appendix 2).

<sup>26</sup> [00:16-00:36]

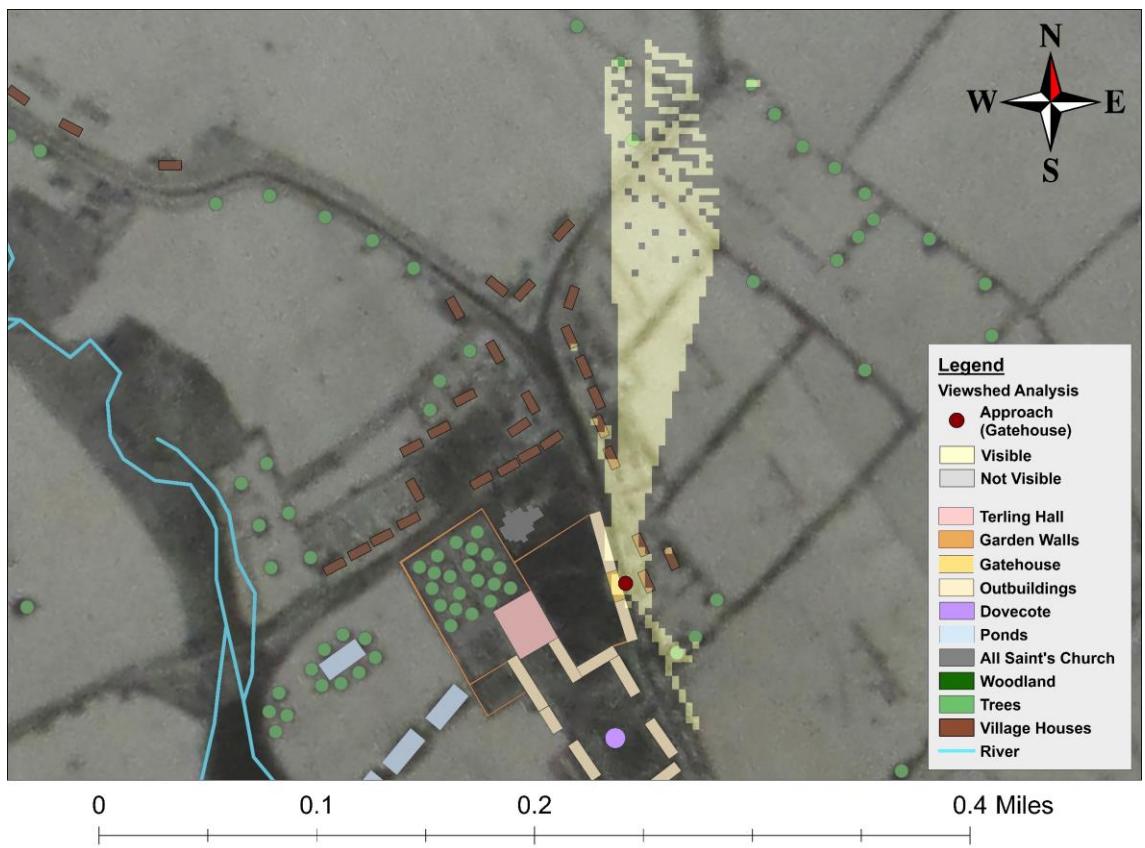


Fig. 5.12 - Viewshed results from Approach (Gatehouse), Terling Hall



Fig. 5.13 - Viewshed results from Approach (Forecourt), Terling Hall

The Mildmays at Moulsham may have shared his opinion. However, in the 1590s, failing harvests and famine occurred involving a shortage of corn in Essex, which Thomas Mildmay Knt. I and John Petre fought to resolve (Emmison, 1976, pp.182–4). The approach thus provided the opportunity for the Mildmays to primarily showcase an 'improved' and prestigious estate, rather than fertile and prosperous fields at this moment in time.

Chelmsford became less prominent as the approach neared the 'deare park' to the east, which included the 'shooting grounds' and 'warren' (ERO D/DM P2).<sup>27</sup> The transition from urban townscape, to rural fields, to private grassland and elite parkland reinforced the notion of the Mildmays' physical and social progression. Control over both man and nature was also evident here. This notion grew as the dovecote became increasingly visible when visitors neared the hall, alongside far off glimpses of fishponds, the warren and the park.<sup>28</sup> Collectively, the Mildmays potentially retained each of these features from the medieval manor. Nevertheless, keeping animals, especially deer and rabbits but also doves and fish, retained the medieval symbolism of aristocratic control over animals that became a visual display of power when landowners successfully contained them (Pluskowski, 2007, p.71). Although Terling had a park, dovecote and fishponds, these features resided behind the hall or within the service yards, thus hidden from view of the approach (Fig. 5.12; 5.13). As a result, the display of dominance over nature was inadequate at Terling, thus potentially influencing the Mildmays' decision to have their main country seat at Moulsham.

Control over nature was also observable in woodland. According to the map of Terling, there were no sizable woods or forests known in the vicinity of the estate (ERO T/M 63/1). At Moulsham, however, the Mildmays had acquired within the medieval manor a profitable area of woodland called Moulsham Frith [Thrift], which was worth £622 53s 8d (Grieve, 1988, p.93). Upon the hillside and engulfing the horizon line, this great expanse of woodland was visible to the south from the approach.<sup>29</sup> Moulsham thus had all the necessary estate components effectively on display, which best showcased the Mildmays' mastery over nature as well as their prowess in land management to any visitors.

---

<sup>27</sup> [00:39]

<sup>28</sup> [00:58; 01:13]

<sup>29</sup> [01:24]



**Fig. 5.14 - Mildmay Monument, 1571, at Chelmsford Cathedral (Church of St Mary the Virgin)**

As the curved section of the approach ended, the gatehouse became the focus of the view.<sup>30</sup> According to the iconographic evidence, the gatehouse was moderately-sized and plain with few embellishments (Fig. 5.03; 5.06). Therefore, no evidence exists to confirm whether the gatehouse displayed heraldic devices to increase its visual impact, which was plausible since Thomas Mildmay Knt. I emblazoned the family's coat-of-arms on his parents' memorial monument within Chelmsford's parish church (Fig. 5.14). Flanking service buildings further aggrandised the gatehouse, which ultimately created a commanding entrance. The Petres at Ingatestone (Fig. 5.05) and the Mildmays at Terling (Fig. 5.10) also advantageously used this technique. Although faded, the map depicts a taller and grander gatehouse at Terling compared to that at Moulsham. One reason was because of Terling's history as a medieval bishops' palace before Henry VIII owned the estate (Wright, 1831, p.259), meaning that Terling was originally of higher-status than Moulsham. However, there were also different landscape circumstances to consider. People had a notably restricted range of visibility when

---

<sup>30</sup> [01:33]

observing the landscape at Terling, resulting in the gatehouse itself becoming the dominant source of visual emphasis within these confined prospects (Fig. 5.12; 5.13). Another reason for a larger gatehouse was to obscure and segregate the Terling estate from the village and its onlooking inhabitants. On the other hand, the Mildmays did not require a grander gatehouse at Moulsham because the estate was more spacious, secluded and far away from prying eyes in Chelmsford. Therefore, while the Mildmays at Terling needed to exert dominance and authority over the landscape, this was less of a concern for the family at Moulsham where the open landscape sufficiently showcased the estate's prominence.

As the animation continued beyond the gatehouse, the view opened out across a forecourt.<sup>31</sup> Similar to that at Terling, what was most likely lodgings rather than service buildings surrounded the entrance court, a common layout in the mid-sixteenth century (Henderson, 2005, p.31). These lodgings were likely embellished with pleasing architectural façades for visitors to admire, while they also ensured that the squalid conditions of the service yard and its associated buildings behind them remained hidden from view.

Two archways provided snapshots of different landscapes beyond this forecourt. One archway captured a view northwards, over lawns before parkland as well as hedged and tree-lined fields in the background.<sup>32</sup> The other archway directed visitors into a second forecourt.<sup>33</sup> After entering this new forecourt, guests could look back through that archway and view the first forecourt before the gatehouse.<sup>34</sup> Two more archways captured landscape views from the second forecourt. Through the northern arch, contemporaries admired a view of the lawned grounds beneath the tower with Chelmsford visible in the distance.<sup>35</sup> In the opposite direction, another arch framed a view of the southern gardens, with the orchard's canopy visible over the garden wall.<sup>36</sup> Each of these arches provided a different landscape view to intrigue visitors. During this period, interconnecting spaces linked by vistas became prominent (Strong, 1998, p.11). Arches served this purpose by providing access between landscape areas but also framing different

---

<sup>31</sup> [01:47]

<sup>32</sup> [01:50]

<sup>33</sup> [02:02; 02:15]

<sup>34</sup> [02:45]

<sup>35</sup> [02:22]

<sup>36</sup> [02:34]

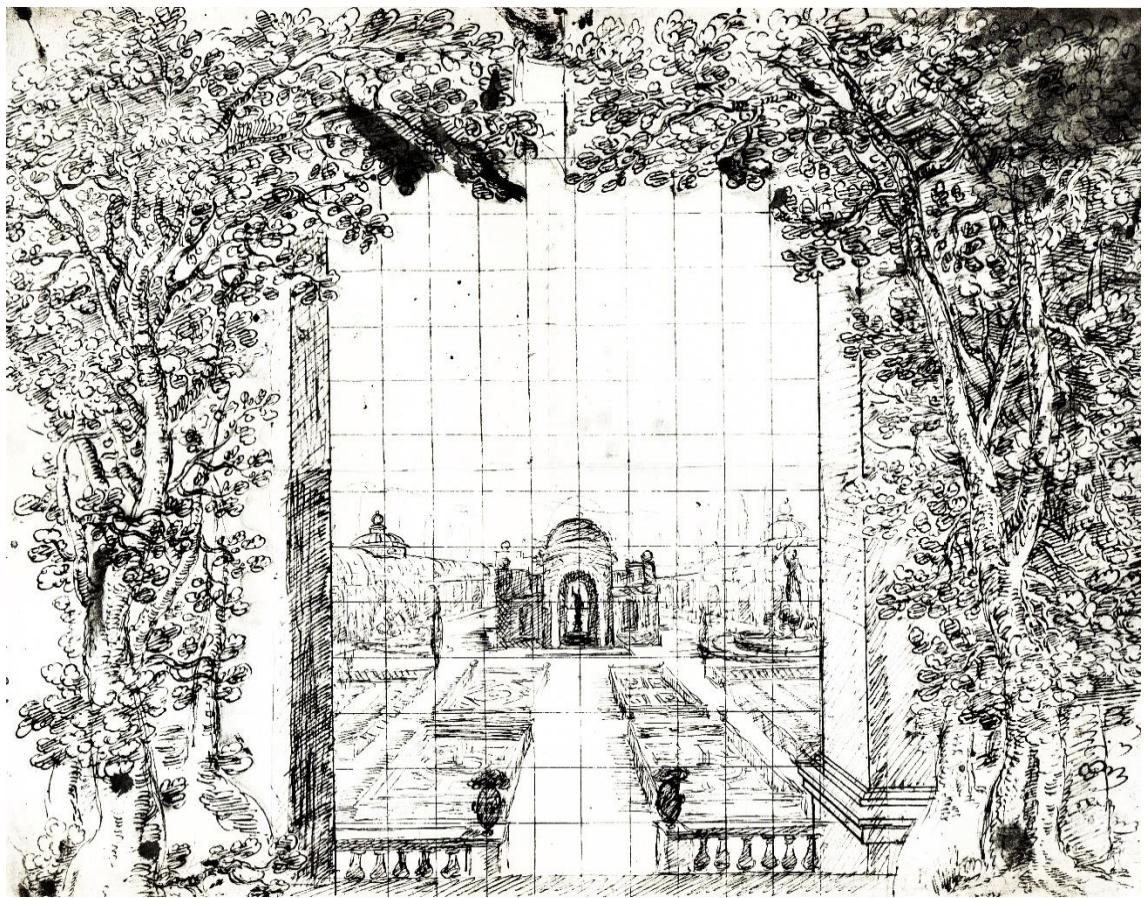


Fig. 5.15 - Inigo Jones' stage design from the masque *Florimène*, 1635 (Strong & Wragg, 1967, fig. 73)

prospects of them, a technique similarly used in stage designs for masques (Fig. 5.15). Thomas Mildmay Knt. I especially enjoyed theatrical entertainment. His marriage to Frances Radcliffe in 1566 became a masque-oration performed in the Queen's presence (Archer et al., 2007, p.243). He also greeted actor Will Kemp on his journey to Chelmsford in 1600 (Kemp, 1600, p.7). Enjoyment of theatrics became a family trait because Mildmay Fane and his sister, Rachel Fane, both wrote country-house masques, performed at Apethorpe Hall (O'Connor, 2006, p.90; Trevisan, 2013, p.34) and inspired by Benjamin Jonson (Fane, 1648a; O'Connor, 2006, p.93). The Mildmays' enjoyment of theatre may thus have inspired the creation of these framed prospects through arches, which provided visitors with entertaining experiences along the approach at Moulsham.

Arches were also an artistic device in paintings, including the portraits of prestigious families. The Mildmays were well-connected with members of the elite, including the Petres, but also had frequent interactions with the monarchy. Thomas Mildmay Esq. was Auditor for the Court of Augmentations to Henry VIII and thus had established useful connections through his profession. However,

Thomas Mildmay Knt. I not only received the Queen, at his wedding and on progress, but later gained his knighthood in the royal garden at Whitehall Palace on 23<sup>rd</sup> July 1603, during James I's coronation progress (Shaw, 1906, p.115). It is unknown whether the Mildmays visited before this date, but Whitehall may still have inspired their landscape designs at Moulsham. Painted into Henry VIII's family portrait, archways framed vistas of the gardens at Whitehall before the rooftops of London (Fig. 4.30). Therefore, the similar use of arches at Moulsham could indicate the Mildmays' knowledge of landscape fashions and an appreciation of art, thus emphasising their social status and connections to their peers.

From these forecourts, the hall became the dominant feature.<sup>37</sup> As previously mentioned, there are inconsistencies between sources, although the map was deemed more reliable (see Section 5.2). Consequently, the architectural design of the hall has been difficult to determine. Moulsham Hall was probably a five-bay house, which appeared symmetrical together with its distribution of windows. However, an off-centre porch resided in the second-to-last bay towards the hall's northernmost end. This design indicates that the Mildmays may have retained the original medieval building plan, as opposed to tearing it down completely and building a new hall entirely as Hilda Grieve had thought (Grieve, 1988, p.94). Nevertheless, some country houses did not have a central porch. The Mildmays potentially retained the medieval plan from the bishops' palace at Terling, where the entrance was placed off-centre within the east wing's southernmost gable end (Fig. 5.10). Another example existed at Apethorpe Hall when owned in the sixteenth century by Sir Walter Mildmay, who was the younger brother of Thomas Mildmay Esq. (Family Tree Appendix 2). Apethorpe's original courtyard plan also had an off-centre porch towards the northern end of its east-facing entrance range (Fig. 5.16). As a result, the transition between the two forecourts at Moulsham was not centralised on the hall yet this approach created an elongated and entertaining experience towards the hall's entrance.

Another inconsistency between sources involved Moulsham Hall's roofscape. The Walkers' map of Moulsham depicted a gabled house, but Puget de la Serre's engraving showed crenellations and dormer windows. One possibility is that Moulsham adopted stepped gables from Ingatestone Hall (Fig. 5.17). This

---

<sup>37</sup> [01:47; 02:32]

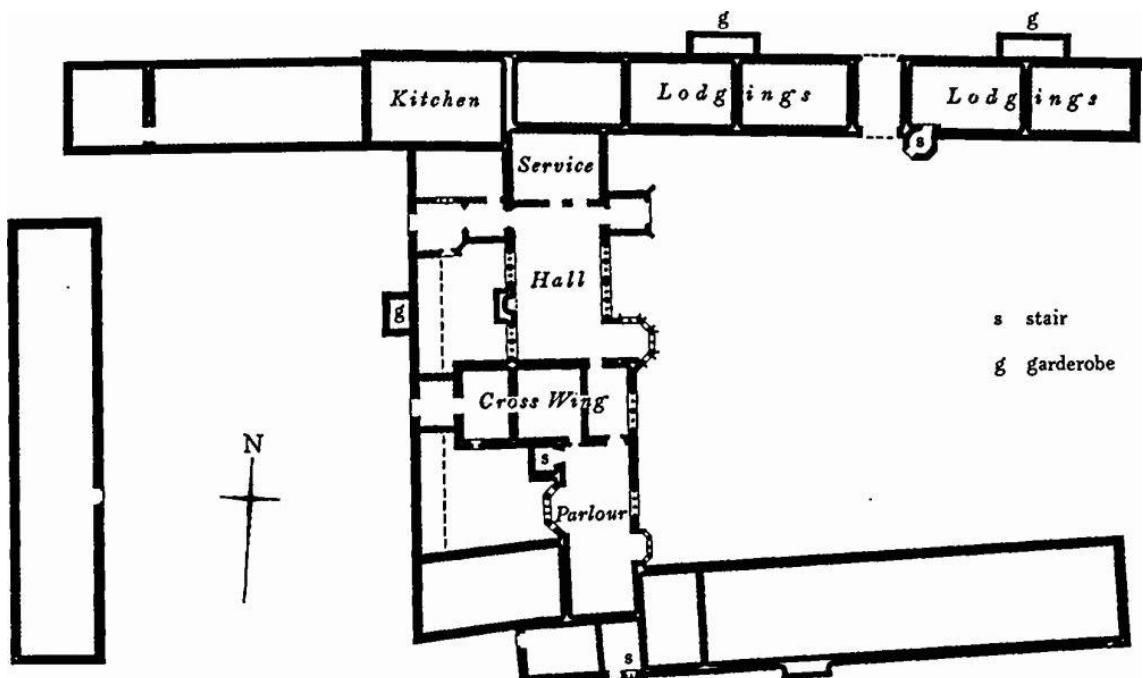


Fig. 5.16 - Ground floor reconstruction of Apethorpe Hall, Northamptonshire, 16<sup>th</sup> century (RCHME, 1984, fig. 21)



Fig. 5.17 - South façade of Ingatestone Hall

design potentially bolstered the Mildmays' status by association with the Petres. However, crenellations may too have existed. Along with the inclusion of the gatehouse, introducing medievalist architecture was symbolic of good ancestry and lineage. However, with the family's origins as mercers, there was a reason to believe the Mildmays wished to fabricate an ancient lineage (Bindoff, 1982a, p.600). According to research about Sir Walter Mildmay by Stanford Lehmberg, Walter "descended of a howse unedefemyd [undefined]", which indicates that the Mildmays' true lineage was undocumented (Lehmberg, 2014, pp.3-4). Therefore, if medieval devices such as crenellations existed at Moulsham, as the engraving suggests, they would have added to the pretence that the family had a long-established pedigree. Heraldry would also have achieved this, but the only surviving evidence of heraldry used at Moulsham is a carved-stone family crest, which resided within the pediment above the entrance of Leoni's eighteenth-century hall (Fig. 5.07). The Mildmays may also have displayed their heraldic beast, the greyhound (Grieve, 1988, p.95). This aristocratic animal was also a heraldic beast of the Tudor family, namely Henry VIII, Mary and Elizabeth I (Gough, 1847, pp.24-5). If the sixteenth-century hall had heraldry emblazoned upon it, this display would have provided another opportunity for visitors arriving at Moulsham to discern who the prestigious Mildmays were.

According to the engraving, a drawbridge crossing a moat provided entry to the hall (Fig. 5.06). The composition would have further embellished the medievalist and militaristic aspects of the house, but the map shows no evidence to support the existence of either a moat or drawbridge (Fig. 5.03). Arthur Edwards and Kenneth Newton believed that a moat at Moulsham was improbable because of difficulties in connecting a water supply during its rebuilding in the 1730s (Edwards & Newton, 1984, p.84). However, the Walkers' survey of 1591 contradicts this assessment because the Mildmays "hath conveyance brought into the house, and each office, of very good wholesome spring water abundantly" (Nichols, 1823, pp.287-8 fn.2). Furthermore, Moulsham resides upon a slowly permeable and seasonally-waterlogged clayey Windsor soil (Fig. 5.02). This soil classification helped sustain moats at other sites, such as at Heron Hall situated 10 miles south-west of Moulsham (Hodge et al., 1984, pp.358-61; Historic England, 2018c). Although a moat was theoretically possible at Moulsham, the Walkers' survey stated that Moulsham was "not mo[ated]" (Nichols, 1823, pp.287-8 fn.2).

Therefore, relying on this evidence, a moat was omitted from the 3D-GIS recreation. Finally, visitors arrived at the front door of the hall, marking the end of the approach and thus the animation.

The approach to Moulsham Hall did ultimately demonstrate to visitors that the Mildmays belonged amongst the upper echelons of contemporary society. A connection to Chelmsford was maintained, but this was perhaps unbeknownst to guests. Instead, a variety of landscape areas were encountered that promoted the Mildmays as a powerful and influential family with a supposedly long-established lineage. Control over nature was particularly evident within this landscape as a popular and influential contemporary notion. A knowledge of fashions in architecture, theatrics and art were also integrated into different stages of the approach, which subsequently prolonged the overall experience. The Mildmays were unable to achieve the same visual and intellectual impact within the prospects along the approach at Terling, thus solidifying their decision to choose Moulsham as their main family seat.

### **5.3.2 - The *Piano Nobile***

The map illustrated that Moulsham Hall had two main storeys beneath an attic floor with sufficient fenestration on each level (Fig. 5.03). While the hall's exterior architecture can be interpreted, where the rooms resided upon the *piano nobile* remains uncertain at Moulsham but also Terling. No recovered archival sources currently provide conclusive evidence of their sixteenth-century internal layouts. Over twenty-one years, Benjamin Mildmay remodelled Moulsham Hall entirely in the eighteenth century. Upon the original sixteenth-century foundations, Giacomo Leoni's design sporadically replaced the hall after the consecutive demolition of each range. As a result, the eighteenth-century hall retained the sixteenth-century courtyard structure, but not necessarily the floor plan (Edwards & Newton, 1984, p.84; Wilson & Mackley, 2000, p.283). The archaeological excavations during the 1990s did not include the hall because suburban housing had already covered its site (Heppell, 2014, fig. 2). Nevertheless, because the Mildmays hosted the Elizabethan progress for four days in 1579 (Nichols, 1823, p.287) as well as the Medici entourage in 1638 (Fig. 5.06), Moulsham Hall was logically spacious and well-equipped with principal rooms appropriate for hosting these royal guests.

Although unconfirmable, an interpretation of Moulsham Hall's floor plan is possible using evidence from other typical medieval layouts, such as that present at Apethorpe Hall (Fig. 5.16). Within the main range of Apethorpe, the great hall faced the approach and had a statement window marking the dais at the centre of the house's façade. The hall's southern end abutted increasingly important rooms, such as the parlour, whilst its northern end met the projecting porch off the screens passage before the service rooms (Pevsner, 1960, pp.2–3). Therefore, Moulsham potentially adopted a similar layout, with a great hall centralised within the east-facing entrance front. The off-centre porch with screens passage marked the transition between the great hall and the service quarters in the north range, whilst the south range contained the prominent rooms beyond the hall's dais. Beyond this, the exact placement, identity and purpose of the rooms, especially on the *piano nobile*, cannot be ascertained. This section will thus analyse viewsheds recreated from each range at both Moulsham and Terling to establish the most likely locations of the prominent rooms upon the *piano nobile*.

### **Analysis - South Range**

According to the viewshed results calculated from the south range at Moulsham, the primary feature in view was a garden court directly below (Fig. 5.18). The Walkers described the gardens at Moulsham as "fair", or pleasant to behold (Nichols, 1823, p.288 fn.2). However, the map depicted this particular court as a formal garden, divided into four equal quadrants by pathways (Fig. 5.03). At Terling, a formal garden containing a knot or maze was directly visible from its western range (Fig. 5.19). Both gardens were of the Renaissance tradition, where axiality, symmetry, and other geometric principles featured (Allen, 1969, p.133). However, the engraving captured in greater detail the formal garden design at Moulsham (Fig. 5.06). An elaborate yet intricate parterre divided by pathways reinforced notions of geometry within this garden. A central fountain also became a common garden addition to emphasise these geometric designs by the 1620s (Strong, 2005, p.45). However, the fountain also provided playful entertainment which subsequently demonstrated the landowners' power by manipulating the natural force of water (Spooner, 2005, pp.58; 60–4). On his sixteenth-century map of London, Ralph Agas depicted a similar composition within the gardens at Whitehall (Fig. 5.20). However, the engraving of Moulsham displays a French style of parterre, which the Mildmays may have introduced in



Fig. 5.18 - Viewshed results from *Piano Nobile*, South Range, Moulsham Hall (Immediate Grounds)

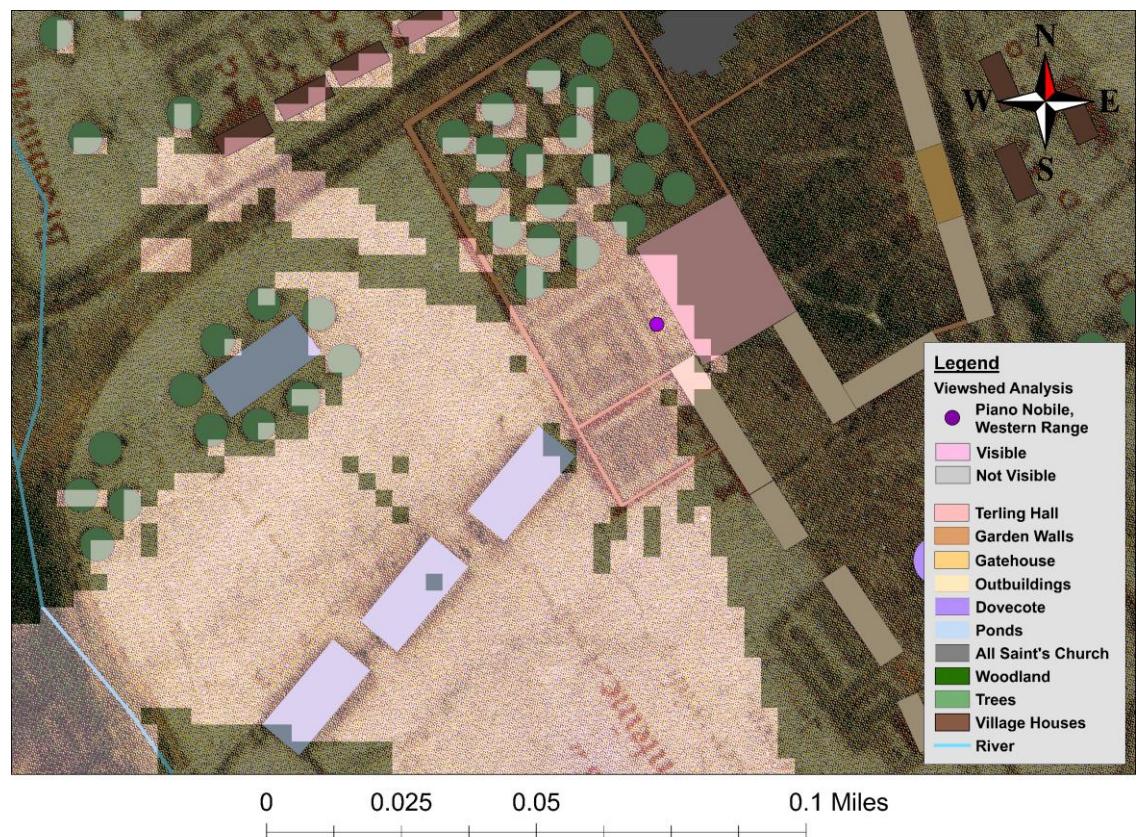


Fig. 5.19 - Viewshed results from *Piano Nobile*, Western Range, Terling Hall (Immediate Grounds)

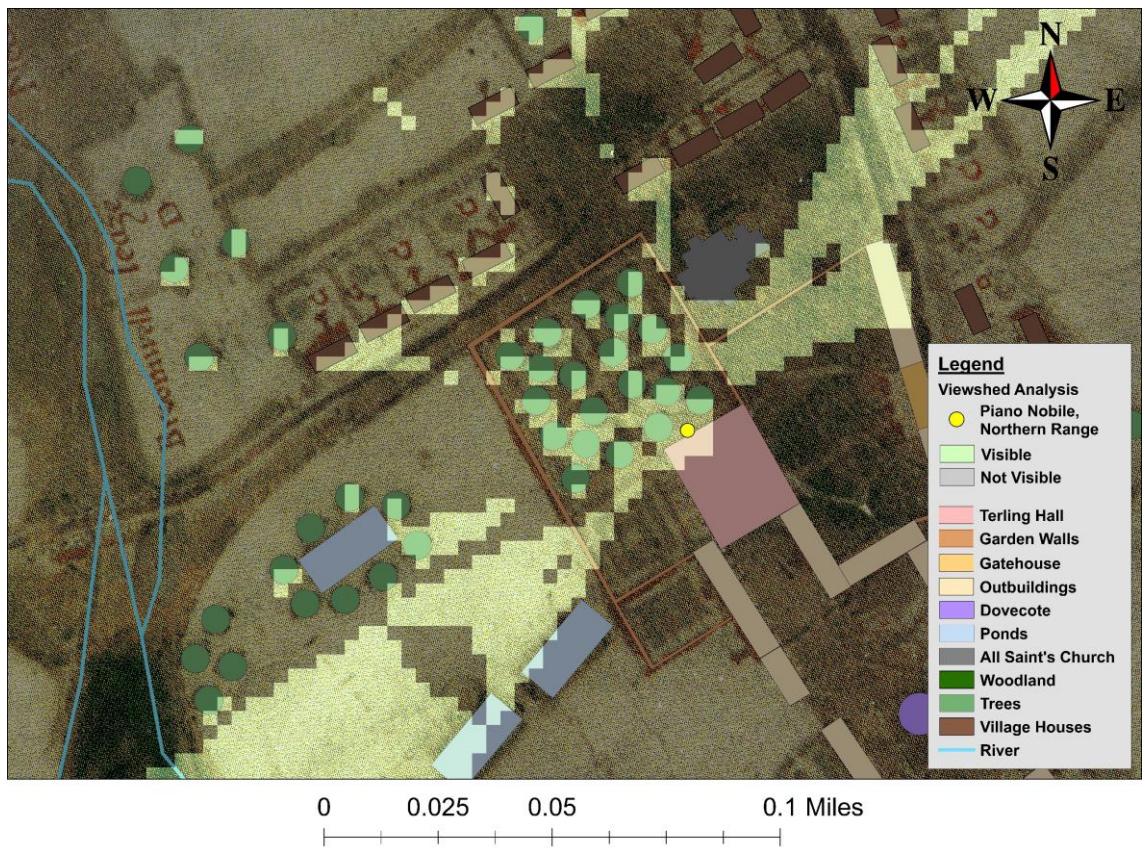


Fig. 5.20 - Whitehall Palace, on Ralph Agas' map *Civitas Londinum*, 1560 (Agas, 1560)

anticipation of receiving Marie de Medici, as a prominent member of the French royal family. Another theory is that Puget de la Serre embellished this garden in his engraving and thus, it bore no true likeness. Nevertheless, the Mildmays plausibly favoured these natural, intertwining and colourful designs because they featured upon the Mildmays' monument (Fig. 5.14). Therefore, the Mildmays likely implemented this style within the formal garden of their own volition.

These views demonstrated that a strong physical and visual connection existed between the hall and the gardens, which became important during this period (Strong, 1998, p.15). Both the formal gardens at Moulsham and Terling were private spaces and from no other vantage point could this relationship be viewed with such clarity. From the *piano nobile*, the sensual quality of the gardens would have enchanted the onlooker and delighted their senses (Dix, 2011, pp.162–3). The locations of the formal gardens thus increased the likelihood that the west range at Terling and the south range at Moulsham contained the best rooms, so that esteemed guests could take advantage of these viewing opportunities.

At Moulsham, visitors enjoyed a view of the orchard, which adjoined the formal garden's south boundary (Fig. 5.18). In one corner, a suspected viewing mount potentially piqued visitors' interests and encouraged them to venture into the orchard and discover this mount. However, the combination of the orchard and the formal garden was especially noticeable within this view. This pairing was considered essential to Conrad Heresbach, who described that when "my Garden



**Fig. 5.21 - Viewshed results from *Piano Nobile*, Northern Range, Terling Hall (Immediate Grounds)**

and my Orchard are adjoining... the sweete smell of the floures, and the fayre beautie of the trees... bringeth both health and pleasure (Heresbach, 1577, p.10). Furthermore, having the “Orchard and Garden on the south side” of the hall was recommended by Ralph Austen because “the house will be a shelter to [the orchard] from the north” whilst also creating the “sweetest and most pleasant prospect” (Austen, 1657, p.118). At Terling, the orchard also resided next to the formal garden yet, compared to Moulsham, featured less prominently within the prospect from the west range (Fig. 5.19). Instead, the north range provided guests with a better view of the orchard (Fig. 5.21). Placing the orchard on this side of Terling Hall helped the Mildmays establish privacy from the village, which extended behind the church abutting the estate’s north corner. At Holdenby House, Dix noted how plantations similarly helped maintain the landowner’s privacy from the workers in the neighbouring fields (Dix, 2011, p.166). However, the Moulsham estate was already distanced and secluded from Chelmsford, which ensured the Mildmays’ privacy. They were thus at liberty to create a designed landscape as they wished, which included placing the aesthetically-pleasing combination of garden and orchard on the hall’s south side, away from Chelmsford.



**Fig. 5.22 - Viewshed results from *Piano Nobile*, South Range, Moulsham Hall (Wider Landscape)**

Beyond the orchard at Moulsham, pastures dominated the view with few interruptions (Fig. 5.22). The contrast between gardens and grassland was ideal, which was also evident within the prospect from Terling's western range (Fig. 5.19). However, while grassland extended into parkland beyond the formal garden at Terling, past the orchard at Moulsham were enclosed pastures called "Upper Stamps" and "Lower Stamps" (ERO D/DM P2), whose names indicated the presence of grazing husbandry animals, either sheep or cattle. Despite the corn shortage, displaying these other agricultural practices together with woodland in Moulsham Frith would have displayed a wealthy and profitable estate. Projecting above the treeline was the steeple of the chapel (Fig. 5.22). The chapel combined with the woodland and pastures was altogether pleasing within the prospect. This view was similarly captured in contemporary artworks, such as that by Paul Rubens (Fig. 5.23). As this painting demonstrated, the south range at Moulsham had access to a view with contemporary aesthetic appeal.

The entire landscape composition within this view also resembled another popular landscape concept called the 'three natures', derived from Cicero and preached by Francis Bacon (Bacon, 1864c, pp.239–40). Issac de Caus notably designed the three natures into the gardens of Wilton House, Wiltshire (Fig. 5.24), which bears some similarities to the layout of Moulsham. The 'main garden' acted as one of these natures. Adjoining the garden was the 'heath', or a natural wilderness, which the orchard at Moulsham emulated. Finally, the pastures and



Fig. 5.23 - A Landscape with a Shepherd and his Flock (Rubens, 1638)

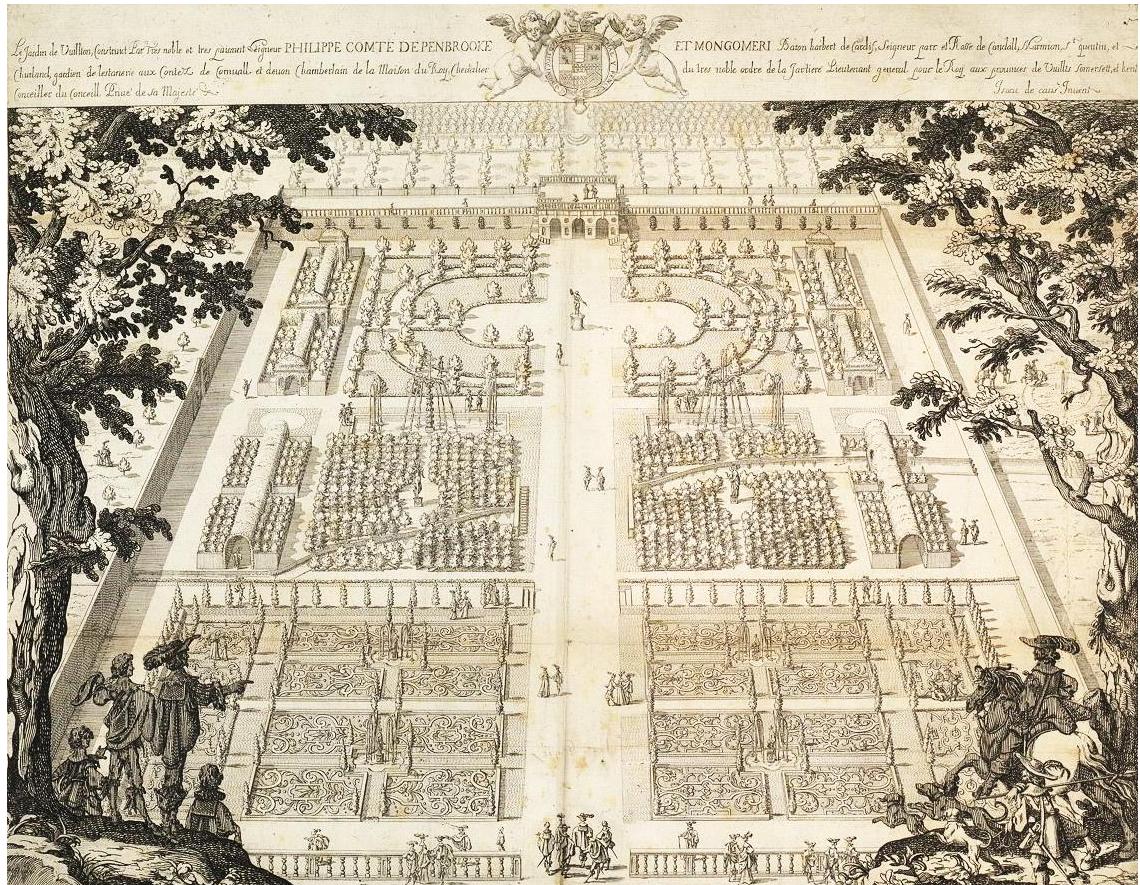


Fig. 5.24 - Gardens of Wilton House, Wiltshire (Caus, 1640)

woodland represented the ‘greene’, a cultural and theatrical landscape. Altogether, a strong collection of many visually-pleasing landscape features was visible from the south range at Moulsham. The viewshed results would thus certify that visitors likely enjoyed this prospect from within the best rooms of the house. Furthermore, North believed that the best rooms should be “due south if possible” so that they “have the prospect” but also the light and warmth from the sun in both summer and winter (North et al., 1981, p.89). The Mildmays likely shared this opinion and thus ensured their principal rooms resided within the south range so that their important visitors could enjoy this prospect.

### **Analysis - West Range**

According to the viewshed results from the west range of Moulsham Hall, views extended over a composition of other “fair gardens” in the foreground (Fig. 5.25). The Walkers’ map depicted these gardens as being almost entirely laid to grass (Fig. 5.03). As Francis Bacon described, grass “kept finely shorn” was “appealing to the eye” (Bacon, 1864c, p.239). However, this lawn also included a suspected pond, which was quadrangular in shape and thus likely geometrically-inspired. Its secure location within the grounds may indicate that this was a ‘servatorium’, or holding pond for fish (Currie, 1990, pp.22–3), especially since the main complex of fishponds were far to the north-east of the estate (ERO D/DM P2). Nevertheless, these fishponds retained an ornamental function, even into the eighteenth century (North, 1713, p.21). However, a pond near the house was not necessarily suitable for a prospect because the “flies and frogs” would “make the garden unwholesome” (Bacon, 1864c, p.241). Ponds were not close upon the house at Terling (Fig. 5.10), Old Thorndon (Fig. 5.04) or Ingatestone (Fig. 5.05). Although uncommon, some owners did have opposite opinions on this subject, as evident at Hampton Court where three ponds lay directly beneath the windows of the outer court (Henderson, 2005, p.128). Therefore, despite being close upon Moulsham Hall, this pond was likely considered beautiful when viewed in conjunction with the lawns, amongst other features, within this prospect.

Visitors also enjoyed an elevated view of the kitchen garden, planted in rows within an irregularly-shaped enclosure (Fig. 5.25). As well as the orchard, the kitchen garden likely contained the “great store of good, and some rare kinds of fruits and herbs” that the Walkers surveyed (Nichols, 1823, pp.287–8 fn.2). As



Fig. 5.25 - Viewshed results from *Piano Nobile*, West Range, Moulsham Hall (Immediate Grounds)



Fig. 5.26 - Viewshed results from *Piano Nobile*, West Range, Moulsham Hall (Wider Landscape)

Markham wrote, a kitchen garden's appearance did not define "the perfect nourserie", but rather the species bred, matured, and ripened within it, for "health or recreation" according to the landowner's "own judgement" and "contentment" (Markham, 1614b, pp.47–8). Although not directly visible from this vantage point, the kitchen garden likely served an aesthetic purpose but also a symbolic one. Parkinson emphasised that a kitchen garden "is not of the least respect belonging to any mans house" because of the "many utilities" this garden provided "for the Masters profit and pleasure" (Parkinson, 1629, p.461). Therefore, the 'great store' of 'good' and 'rare' plants at Moulsham were worth displaying to enhance the sense of the Mildmays' prosperity.

The prospect extended beyond the paled boundary into an area of parkland called 'Great Wannells' (Fig. 5.26). The Walkers did not define this area as parkland but shaded it green to indicate meadowland (ERO D/DM P2). Nevertheless, as Kemp travelled along London Way towards Chelmsford, he passed the western boundary of this park and encountered Thomas Mildmay Knt. I "standing at his Parke pale" (Kemp, 1600, p.7). It is possible, therefore, that this meadowland had the aesthetic benefits associated with being a park or pleasure ground. Nonetheless, meadowland also had economic benefits in producing hay and straw, which the 1726 accounts record (ERO T/A 313/1, p.1).

However, despite abutting the westernmost boundary of 'Great Wannells', London Way was hidden from view because of a line of trees within the park (Fig. 5.26). The Mildmays may have intentionally planted these trees as a belt or they were the remains of a previous boundary surviving from the medieval manor. Nevertheless, the Mildmays' retention or planting of these trees was likely with aesthetic improvement and privacy in mind. As a result, the road but also the wider landscape beyond were primarily hidden from view of the west range. The Mildmays did own land in this direction, such as the pastures noted previously, which would not have affected the prospect. However, there was also a neighbouring estate called Highlands residing to the south-west of the estate, yet the viewshed confirmed that this estate remained out of sight from Moulsham Hall. Under different circumstances, the flat topography and altogether open landscape would have meant that roads and neighbours were naturally perceptible, but the trees helped the Mildmays ensure their privacy whilst focusing the visitors' attention on the grounds and parkland at Moulsham.

## Analysis - North Range



**Fig. 5.27 - Viewshed results from *Piano Nobile*, North Range, Moulsham Hall (Immediate Grounds)**

Compared to the previous results, the viewshed from the north range defined a more restricted prospect (Fig. 5.27). The only feature prominently visible were the lawns directly below. Beyond this garden, little was observable because of several obstructions, including the hall's north-west extension, various outbuildings and a tree belt along the grounds' northern boundary. Guests did not experience a sense of seclusion for enjoying tranquil views, because these visual barriers were imposing and refused prospects past this enclosed space. Consequently, this initial observation suggests that there were lower-ranking rooms upon the *piano nobile* in this range at Moulsham.

The hall's extension was likely a kitchen, because its chimneys indicated fireplaces for possible ovens and also by projecting out from the main house, there was a reduced risk of fire damage to the main hall (Emmison, 1976, p.2). Also, easy access to the 'servatorium' on the extension's western side further supports this interpretation. At William Cecil's estate at Burghley, Baron Waldstein observed a similar composition: "at the entrance to the mansion, there is a really fine fish-pond, and the great kitchen is a place fit to cook a banquet for a king" (Waldstein, 1981, p.111). Like at Moulsham, the kitchen at Burghley projected outwards from the entrance front (Husselby, 1996, fig. 13). However, there were other reasons to have the kitchen distanced from the house. Alberti

recommended, first, that the kitchens “ought to be neither just under the Noses of our Guests” (Alberti, 1755, p.342), where smoke and food waste produced strong and rife smells (Henderson, 2005, p.14). Second, if the kitchen resided away from guests, “the Noise of the Scullions, with the Clatter of their Pans, Dishes and other Utensils, may not be troublesome” (Alberti, 1755, p.342). These observations help explain why Cecil put the great chamber and long gallery on the opposite side of Burghley House to the kitchen (Husselby, 1996, fig. 20). Therefore, the Mildmays likely adopted a similar layout at Moulsham, resulting in the north range unlikely containing prominent rooms so that visitors avoided this unappealing experience.

The theory that the kitchen resided in the north extension of Moulsham Hall is further supported by its proximity to service buildings, visible within the eastern periphery of the view (Fig. 5.27). From brewhouses and bakehouses to stables and coach houses, different kinds of working building were often placed together. Although these buildings obscured the view, their placement diagonally to the house meant they were out of the direct line of sight. As a result, guests upon the *piano nobile* could not overlook any activities within the service yard surrounded by these buildings. This view most closely resembled that from the south range at Terling, although contemporaries more directly overlooked the service buildings encompassing the yard (Fig. 5.28). Within this view, despite the view of a prestigious dovecote placed at the centre of the yard, the overall landscape composition visible lacked aesthetic appeal. Therefore, Terling’s south range almost certainly contained the kitchens amongst other service rooms.

Despite the tree belt at Moulsham, guests within the north range could still glimpse parts of Chelmsford in the distance (Fig. 5.29). Although the Mildmays had professional and even personal connections to the town, the tree belt indicated that they did not desire to overlook Chelmsford nor the River Can that ran through it. During the medieval period, the River Chelmer was bridged in Chelmsford so that people could avoid going to Writtle further west (Grieve, 1988, p.5). As a result, Chelmsford became a trade centre but also a popular place for travellers. This development likely furthered the Mildmays’ resolve to obscure the town from view. Fortunately, Moulsham Hall was advantageously distanced from Chelmsford, thus preventing significant physical interruptions to these prospects. The neighbouring village to Terling, on the other hand, encroached upon the estate’s north and west boundaries. The congested nature of this village likely dissuaded

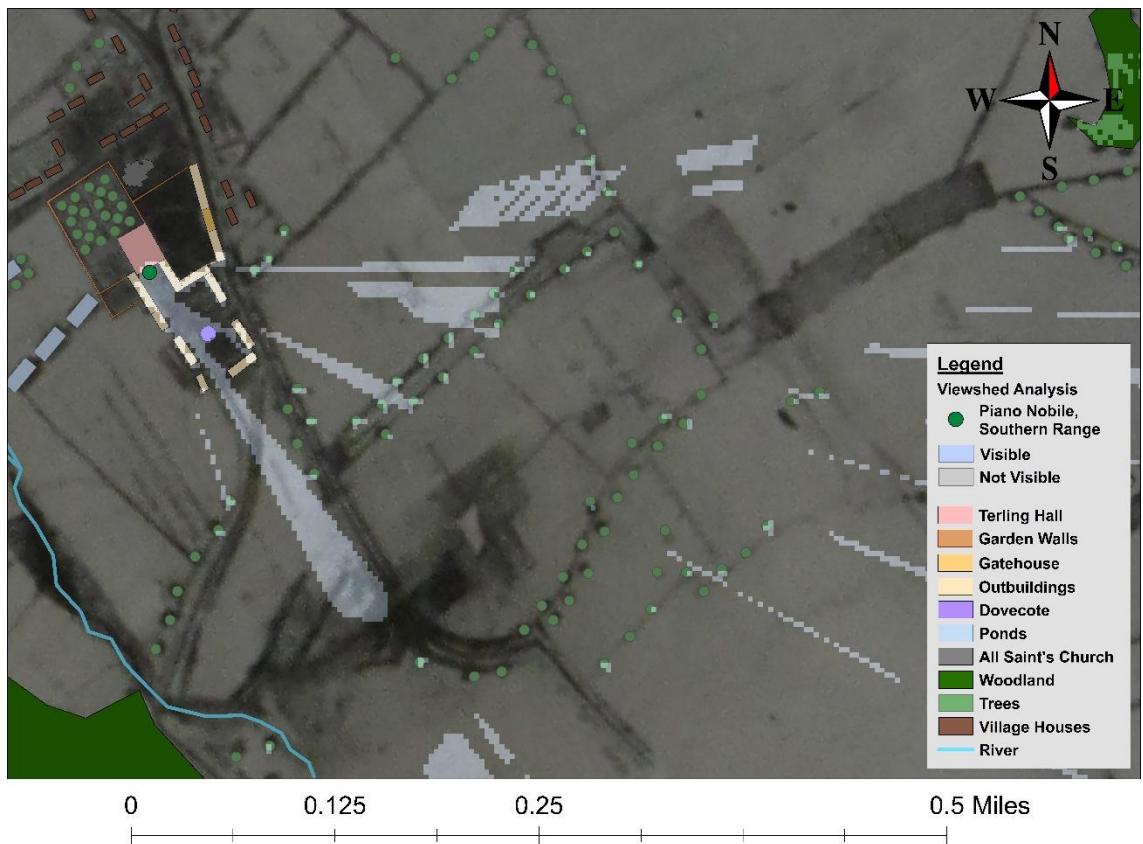


Fig. 5.28 - Viewshed results from *Piano Nobile*, Southern Range, Terling Hall (Wider Landscape)

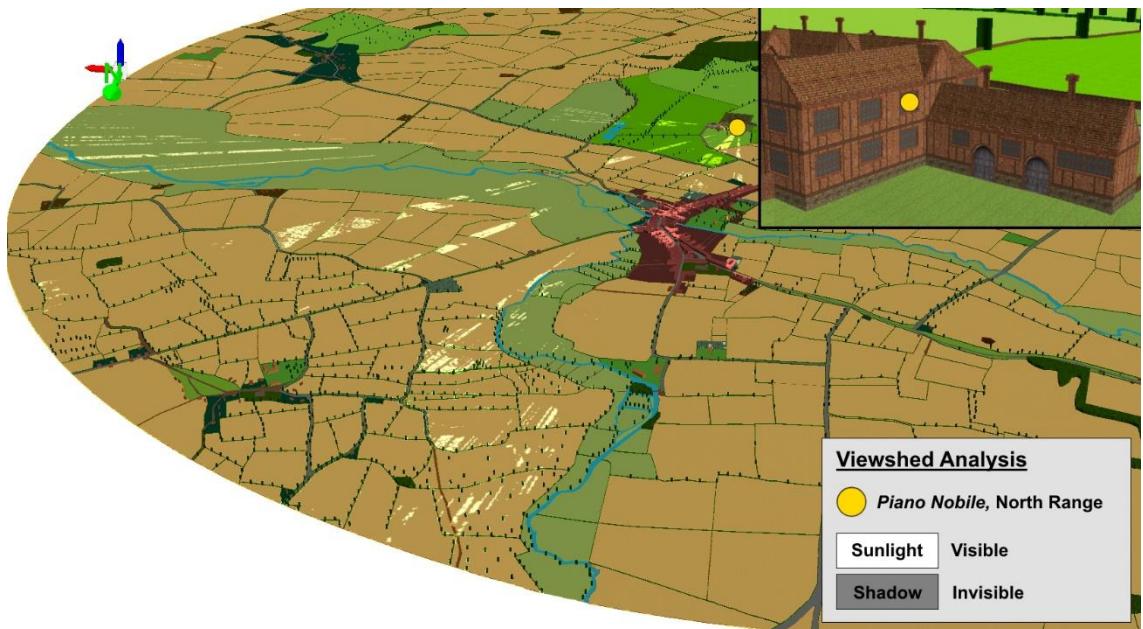


Fig. 5.29 - Viewshed results from *Piano Nobile*, North Range, Moulsham Hall (Wider Landscape)

the Mildmays from placing the most prominent rooms in the wings which overlooked them. As Francis Bacon believed, views over “ill neighbours” including “ill ways” and “ill markets” were unfavourable (Bacon, 1864b, p.229). Interpreting the viewsheds conducted at both Terling and Moulsham demonstrated that the Mildmays at both estates likely shared Bacon’s opinion. As a result, this interrupted view northwards indicates that the Mildmays plausibly placed their less important chambers in Moulsham Hall’s north range.

### **Analysis - East Range**

The east-facing rooms upon the *piano nobile* at Moulsham overlooked the grassed entrance forecourts (Fig. 5.30), whilst one forecourt was visible from Terling’s east range (Fig. 5.31). The single court at Terling did provide a view of beautiful grass, but it did not have the visual impact that two forecourts created at Moulsham. Furthermore, only the grandest houses had more than one forecourt (Henderson, 2005, p.35). Although visitors enjoyed a more immersive experience of these forecourts individually along the approach (see Section 5.3.1), the *piano nobile* provided guests with the opportunity to observe the forecourts’ grandeur jointly from above. As a result, a more impressive view existed over the entrance at Moulsham compared to Terling. The Petres also displayed a preference of forecourts amongst their residences. While the Petres lived mostly at their newly-acquired Old Thorndon with one forecourt (Fig. 5.04), two forecourts existed at Ingatestone (Fig. 5.05), which was the Petres’ famous ancestral home (Clutton & Mackay, 1970, p.27). Therefore, the double forecourts at both Ingatestone and Moulsham best displayed the status of these leading Essex families.

Visitors to Moulsham also admired the orchard to the south concurrently with the tower and dovecote further north (Fig. 5.30). However, in the direct line of sight lay the ‘deare park’, yet only within a few vistas (Fig. 5.32). The forecourt’s buildings and trees prevented the park, including the warren and fishponds as well as the wider landscape, from being viewed extensively (Fig. 5.33). Therefore, whilst glimpses of natural parkland aesthetically enhanced the view, it was unlikely that visitors spectated any activities within the park from this vantage point. The entrance front at Terling, on the other hand, faced the village yet the forecourt buildings helped obscure the village rather than hindered the beauty of the prospect (Fig. 5.31). Subsequently, the principal rooms may have existed in



Fig. 5.30 - Viewshed results from *Piano Nobile*, East Range, Moulsham Hall (Immediate Grounds)



Fig. 5.31 - Viewshed results from *Piano Nobile*, Eastern Range, Terling Hall (Wider Landscape)



Fig. 5.32 - Viewshed results from *Piano Nobile*, East Range, Moulsham Hall (Parkland)

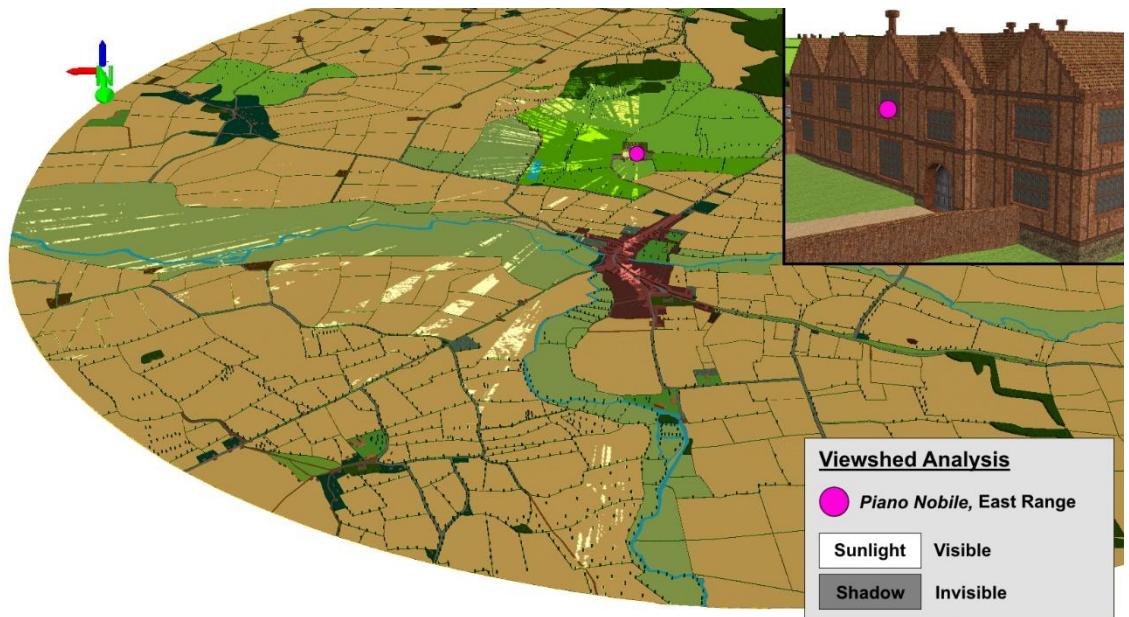
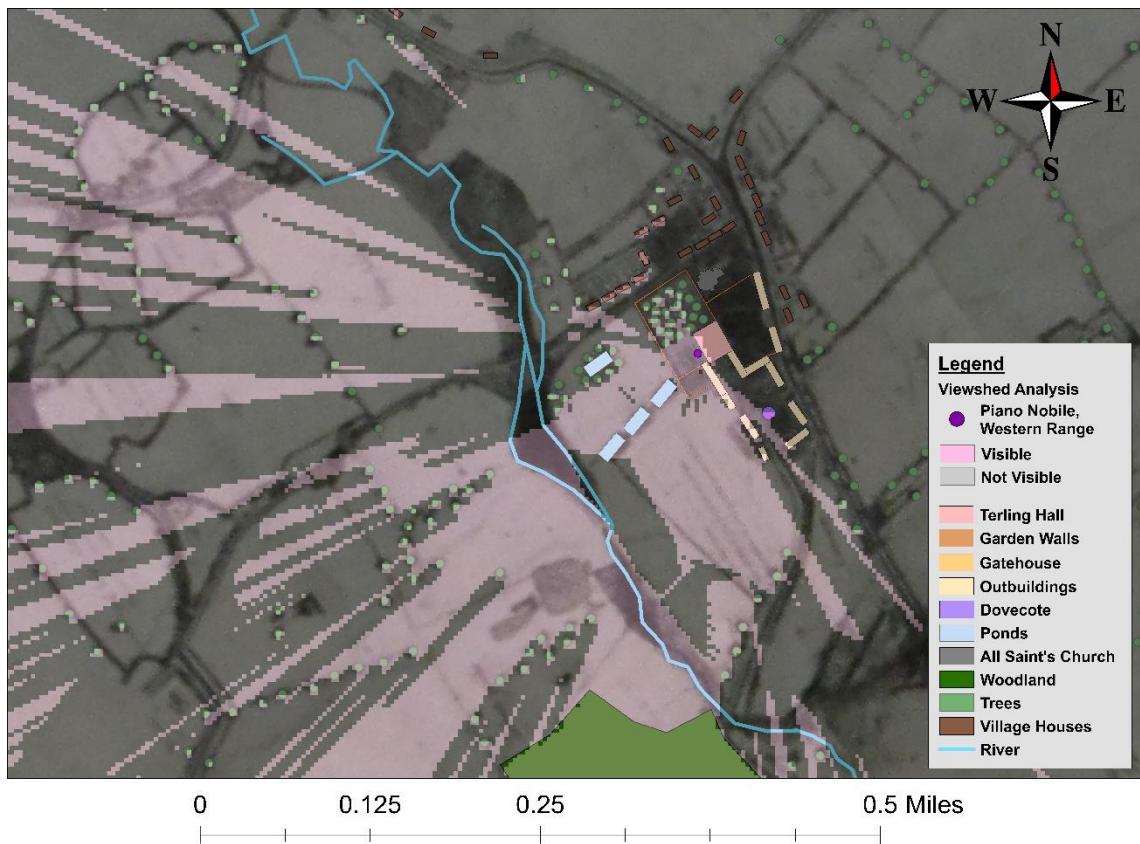


Fig. 5.33 - Viewshed results from *Piano Nobile*, East Range, Moulsham Hall (Wider Landscape)



**Fig. 5.34 - Viewshed results from *Piano Nobile*, Western Range, Terling Hall (Wider Landscape)**

Terling's east range. On the other hand, a more extensive view was possible from the west range, which also included parkland in conjunction with the formal gardens (Fig. 5.34). This more superior prospect had all the components to better display the Mildmays' wealth and status. Thus, the rooms in the east range were less likely of greater importance than those in the west range.

Although visitors did not enjoy extensive prospects from the entrance ranges at both Moulsham and Terling, they admired other beautiful elements primarily within the immediate grounds but with a few vistas of the wider landscape. However, the prospect at Moulsham contained glimpses of the "fair gardens" and "orchards" as well as the "dovecote", "a fair game of deer imparked", "a great warren", "private ponds" and "common river", which were all the "necessary provisions" for a grand estate (Nichols, 1823, p.288, fn.2). Thus, from the east range at Moulsham, a more beneficial prospect was accessible that contained every worthy aspect of the Mildmays' estate for visitors to survey. This prospect was not achievable to the same extent at Terling, which further enhanced the appeal of Moulsham as the main family seat to the Mildmays.

## Summary

The south range at Moulsham and the west range at Terling were plausibly where the Mildmays placed their most important rooms. Visitors enjoyed private and unhindered prospects over formal gardens upon a background of open grassland. At Moulsham, however, the orchard with distant views of the chapel and woodland provided an aesthetic advantage. These features collectively improved the landscape composition over that at Terling. The west and east ranges at Moulsham also had access to secluded and tranquil views of the grounds and parkland. As a result, these ranges potentially included other principal rooms, yet those prospects lacked extent and variety which may have influenced the Mildmays to place more important rooms within the aforementioned ranges. The prospect from the north range at Moulsham and the south range at Terling, on the other hand, did not meet the same scope or quality. These ranges contended with unpleasing scents and noises occurring within the estates' working areas. As a result, it was improbable that principal rooms resided in those ranges whilst visitors could view more enticing prospects of the main gardens existed from the opposite side of the hall.

In terms of the kinds of rooms that existed at Moulsham, a long gallery likely existed, potentially imitating one created for the Petres at Ingatestone (Coope, 1986, p.50) and thus ensuring the Mildmays secured their place amongst the elite. The Mildmays also plausibly created state apartments at Moulsham in anticipation for royal visits, which influenced Walter Mildmay to create these rooms at Apethorpe for the Queen's visit in 1562 (Heward & Taylor, 1996, p.63). The long gallery and the state apartments likely resided within the south or west range at Moulsham where visitors enjoyed advantageous views over the gardens and pleasure grounds. As for the rooms in the entrance range, a great chamber above the great hall was one possibility. As another prominent room featuring in country houses, the great chamber was frequently heavily decorated and ideal for entertaining guests (Girouard, 1978, p.90). The great chamber's grandeur may thus have compensated for the prospect's lack of visual extent, yet the more private view nonetheless displayed ideal aspects of the Mildmays' prosperous estate. However, the north range at Moulsham and the south range at Terling probably contained the servants' quarters, service rooms and other less-ornate chambers, where beautiful views were inaccessible and unnecessary.

### **5.3.3 - The Viewing Mount**

According to the 1591 map, a structure stood within the south-west corner of the orchard (Fig. 5.03). This feature was not excavated by archaeologists in the late 1990s because the area resided where Princes Road is today (Heppell, 2014, fig. 6). It is therefore difficult to determine what this structure was using the map alone. Edwards and Newton had previously suggested that this structure was a pleached arbour (Edwards & Newton, 1984, p.84). This theory is understandable when acknowledging the design of the arbour present at Old Thorndon (Fig. 5.35), which does contain some structural similarities to the feature at Moulsham. However, judging from the evidence in certain sources, a different interpretation of a viewing mount has been proposed here.

Firstly, the Walkers drew this feature from a bird's eye view and coloured it in green, which would indicate a more natural landscape feature. If this structure was architectural in nature, like a building, it would have been drawn correct to its front elevations and placement of the baselines (Edwards & Newton, 1984, p.81). An example of this can be observed on the Walkers' map of Old Thorndon, where a garden building stood in one corner of the formal garden (Fig. 5.04). Therefore, the feature at Moulsham was not a building or similar standing structure, like the arbour at Old Thorndon, but more likely a piece of artificial landscape architecture.

Secondly, looking at the location and design of the feature itself, it does resemble the plan for multi-tiered, quadrilateral 'viewing mounts' placed in the corners of Lawson's ideal garden (Fig. 5.36). When viewed in perspective, the one at Moulsham potentially looked like the viewing mount at New College, Oxford (Fig. 5.37). However, in Puget de la Serre's engraving of Moulsham, there was no visual evidence of this structure to verify its identity (Fig. 5.06). Its absence was not because it did not exist but that it was the aesthetic preference of the artist, who engraved it during the seventeenth century when the viewing mount declined in favour (Hunt, 1975, p.51).

However, the most concrete evidence verifying the viewing mount's existence survives in Benjamin Mildmay's eighteenth-century accounts. In September 1734, six labourers were paid to "remove the mount to the farthest end of the garden next the stray piece" and to continue "the elm hedge up to the place where the mount now is" (Edwards, 1977, p.54). Benjamin Mildmay instructed the

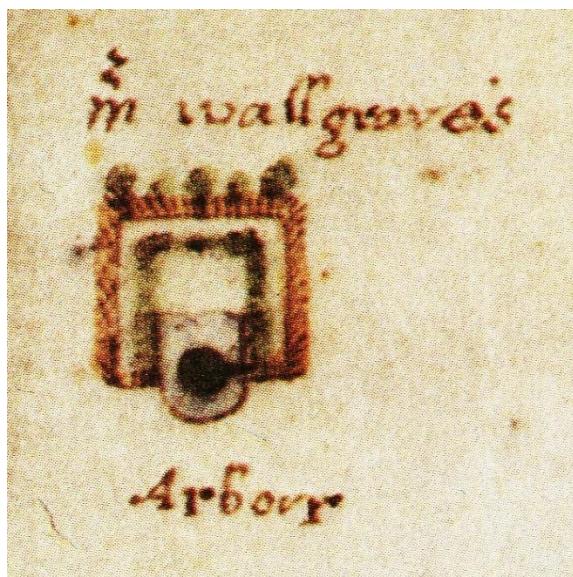


Fig. 5.35 - Arbour, on estate map of Old Thorndon, by John Walker (senior), c.1598 (Edwards & Newton, 1984, plate X)

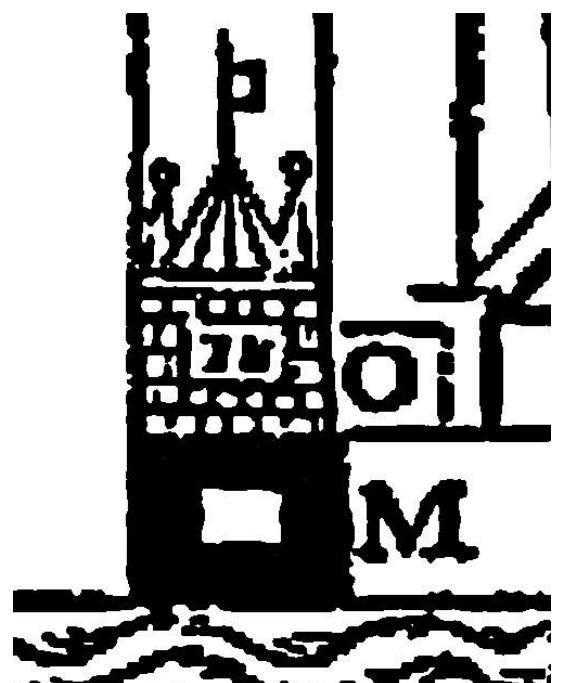


Fig. 5.36 – Viewing Mount with Banqueting House, on William Lawson's plan for a garden (Lawson, 1617, p.13)

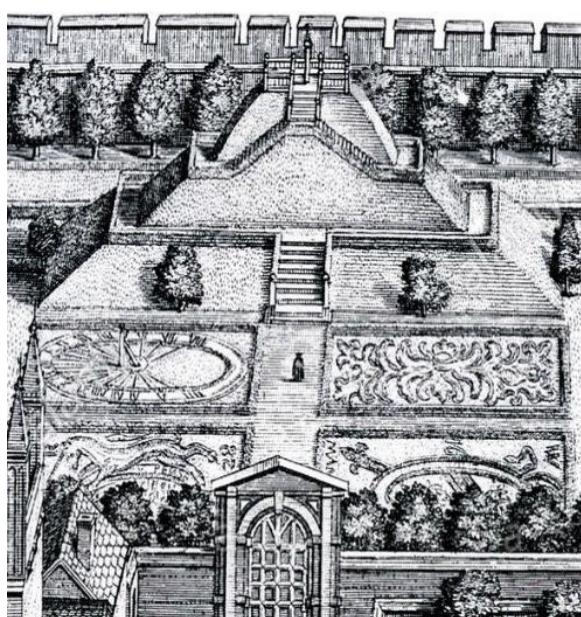


Fig. 5.37 - Viewing Mount at New College, Oxford (Seeber, 2012, fig. 4)

men to dismantle the mount and rebuild it elsewhere, but he did not record its original location. Unlike at Blickling Hall, where the demolished viewing mount partially survived in a Victorian bastion (Stewart, 2015, p.70), no landscape or archaeological data certifies the mount's location at Moulsham. Nevertheless, the aforementioned evidence does support the interpretation that the feature on the map was the viewing mount in its original sixteenth-century location.

If the Walkers accurately drew it on the map, the mount was around 10-metres or 30-feet wide and thus half the area of the one interpreted at Blickling (Stewart, 2015, CD Appendix 1). Consequently, the mount at Moulsham was unlikely "thirty foot high", as Francis Bacon desired mounts to be (Bacon, 1864c, p.241). Nevertheless, Benjamin Mildmay employed six labourers to work on the mount, so its height but also complexity may have required more workers. As well as the mount's multi-tiered design, semi-circular projections extended from the lowest tier into the neighbouring field. Moreover, it was customary to have plants and manicured hedges to prevent erosion and stairs or spiral pathways for visitors to reach a platform at the top (Henderson, 2005, p.127). Collectively, this viewing mount has been interpreted as triple-tiered with bastions, planting, and paths leading to a platform roughly 6 metres, or 20 feet, above the ground. This section will analyse the prospect from the summit of the viewing mount and thus whether this structure gave contemporaries access to advantageous visual experiences.

### **Analysis**

Mounts typically allowed contemporaries to appreciate any formally-designed garden from above (Henderson, 2008, p.73). Placing mounts within formal gardens was thus popular, as the Mount Garden at Hampton Court demonstrated (Strong, 1998, p.28). However, at Moulsham, the mount was placed far from the house in the south-west corner of the orchard, where it was not possible to observe the formal garden, lawns or entrance courts from the mount (Fig. 5.38). Therefore, the mount served a different purpose for the Mildmays.

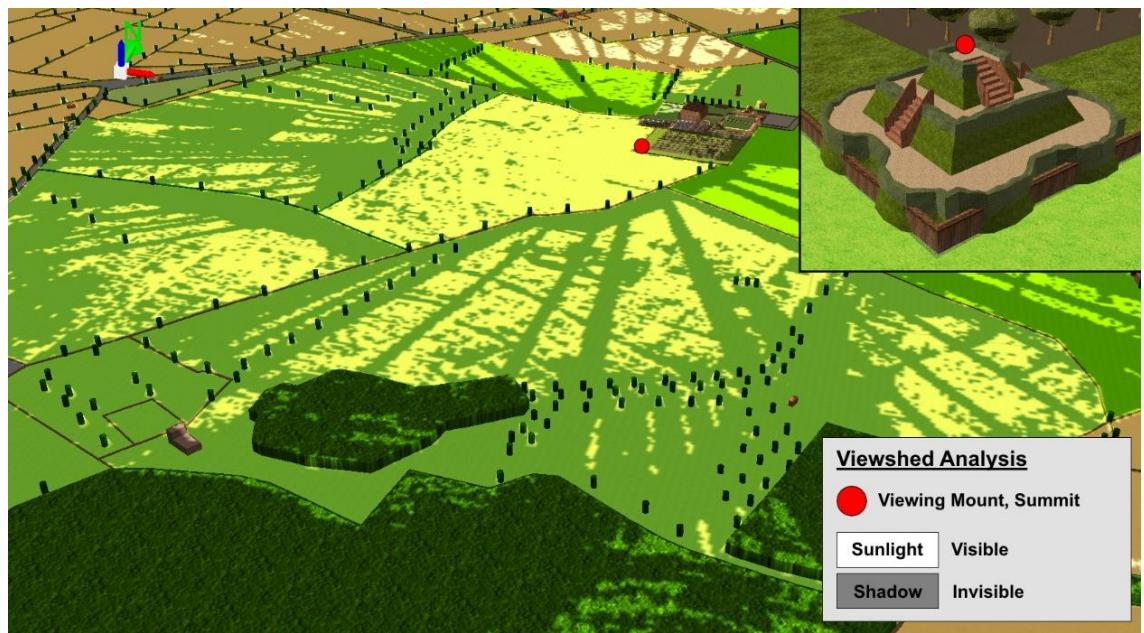
Rather than formal gardens, the orchard dominated the prospect. As previously observed from the *piano nobile* (see Section 5.3.2), the orchard was undoubtedly a beautiful addition to any prospect (Markham, 1613, p.33), within which visitors identified the viewing mount as a destination to discover as they explored the orchard-cum-wilderness. A similar experience was evident at



**Fig. 5.38 - Viewshed results from Viewing Mount, Moulsham Hall (Immediate Grounds)**

Lyveden New Bield in Northamptonshire, where a sense of discovery began at the house and ended at the mounts surrounding a moated orchard (Dix, 2011, p.171). To reach the mount at Moulsham, visitors navigated through the orchard's spacious walks between a regular and ordered planting scheme of trees. Its design would have appealed to Lawson, who praised "trees standing in comely order which way soever you looke" and "large walkes, broad and long" (Lawson, 1617, p.71). The orchard also contained a rich source of fruits and because the trees were sufficiently spaced, a greater variety of cultivatable species could grow tall and more substantial (Dallas et al., 2015, p.34). Therefore, the Mildmays displayed their knowledge and diligence, which was necessary when maintaining a productive orchard (Anonymous, 1594). The orchard's entire layout could altogether be appreciated from the mount. However, whether the mount projected above the treeline is unattested, and thus if views were possible of the landscape beyond the orchard. In theory, if these trees hindered the prospect, it would have defeated the purpose of the viewing mount. The viewshed has thus been calculated within the scenario where the mount was taller than the orchard.

As a result, visitors observed a prospect of the house, another popular view to enjoy from a viewing mount at this time (Spooner, 2005, p.48). Although there is little evidence of the hall's architectural design, the view would nonetheless have captured its geometric principles. Evident in its five-bayed façade and its windows, the building emphasised proportion and symmetry that collectively



**Fig. 5.39 - Viewshed results from Viewing Mount, Moulsham Hall (Wider Landscape)**

created a “harmonie in Sight” to be admired from a distance (Wotton, 1624, p.53). Moreover, because the south range was in view, which likely contained the more important rooms of the house (see Section 5.3.2), this façade potentially had additional architectural embellishments to reflect the grandeur of its interior chambers. The hall's dominance subsequently distracted contemporaries' attentions away from the rooftops of the outbuildings, including the gatehouse and dovecote, which were visible to the north-east (Fig. 3.38).

Of greater interest, however, were the landscapes surrounding the hall (Fig. 5.39). Much of the prospect concentrated on the Mildmays' demesne in the estate. To the north-west, 'Great Wannells' park was prominently visible, while glimpses of the 'deare park', fishponds and warren were possible eastwards. These were all aesthetic features (Dallas et al., 2015, p.31) as well as utilitarian ones that contributed to the estate's prosperity. As previously mentioned, the meadowland within 'Great Wannells' park provided faggots, hay and straw for the estate (see Section 5.3.2). Profitable animals were displayed in the 'deare park', the warren of 'conies', or rabbits, the ponds containing fish, and the dovecote housing pigeons (Manning, 1993, p.128). However, the most significant markers of status were the deer. Members of the elite frequent gifted venison to help expand their social networks by demonstrating the merit of the giver to the receiver (Heal, 2014, p.41). The Mildmays thus had another opportunity to display their dominance over nature and their integrity and stature amongst their peers. The mount itself

became a symbol of power after royalty introduced the feature at Hampton Court in 1529 (Seeber, 2012, p.11). The act of creating the mount, by manipulating the landscape and shifting a significant amount of earth, exercised and thus emphasised power (Strong, 1998, p.14). Therefore, the Mildmays displayed these visually-appealing yet productive, managed, and controlled aspects of their estate through this collection of features, including the mount itself.

However, the southerly prospect extended unhindered with expanse over pastures, which surrounded the mount over the orchard's boundary. From the mount, "to look abroad into fields" was recommended by Francis Bacon (Bacon, 1864c, p.244). With pastures before woodland upon the hill, this landscape composition resembled a view Giralamo Brusoni described in his play *Arnaldo*:

*"I came into a place that had an Ascent; from which there represented it self to my eye the prospect of a great Plain, in form of an artificial Theater, which, incircled on every side by the Forrest, dignified its Center with a stately Pallace..."* (Brusoni, 1660, pp.2-3).

As Brusoni emphasised, the landscape created a theatrical experience for explicit enjoyment from the 'Ascent', which the viewing mount emulated at Moulsham. Contemporaries frequently used mounts for entertainment and theatre. A mount was integral to the anonymously-written *Masque of Flowers* performed at Gray's Inn on Twelfth Night in 1614 (Strong, 1998, p.113). Also, in his country-house poem about Penshurst, Jonson described the viewing mount as a place for feasting:

*"Thou hast thy walkes for health, as well as sport:  
Thy Mount, to which the Dryads doe resort,  
Where Pan and Bacchus their high feasts have made,  
Beneath the broad beech, and the chest-nut shade"*  
(Jonson, 1640b, p.47).

Therefore, amongst the orchard trees, the Mildmays potentially intended to use the mount for hosting feasts whilst also allowing guests to enjoy the view.

Immediately next to the mount was 'Perry Field', meaning "land on which pears were grown" (Field, 1972, p.164). The pear trees once in this field were probably medieval, when cider-making, including pear cider, became prominent even within monastic landscapes after the Norman Conquest (Bond, 2004, pp.163-4). Producing perry cider would have further increased the profitability of the

estate (Lawson, 1617, p.36). However, by the time the Walkers drew the map in 1591, Perry Field was devoid of trees and thus was no longer used for cultivating pears under the Mildmays' ownership. Subsequently, the view opened up significantly to the south and grassland became prominent, which contemporaries considered a sight of aesthetic delight (Bacon, 1864c, p.239).

The view also extended to the woodland of Moulsham Frith, which framed a beautiful view of the chapel riddled with historical value. Originally part of the Abbot of Westminster's manor, the chapel was never replaced by a church and so Moulsham remained a hamlet within the parish of Chelmsford (Grieve, 1988, p.5). This chapel thus did not symbolise the Mildmays' ancestral lineage, because the parish church at Chelmsford was where they displayed their family monument (Fig. 5.14). Nonetheless, the chapel was still prominent in the view from the mount and thus was symbolic for different reasons.

One theory involves the religious connotations evident in the selected combination of the orchard and chapel. John Norden described how those who did not live near churches and other similar establishments were "ignorant of God" (Norden, 1607, pp.98–99). As for the orchard, whilst the Book of Genesis described its trees to be "pleasant to the sight, and good for food" (God, 1560, Genesis 2:9), other references existed regarding the Trees of Knowledge and Life within the Garden of Eden (Bartos, 2010, p.188; Dix, 2011, p.171). Therefore, contemporaries including Lawson compared orchards to Paradise (Lawson, 1617, p.69). The viewing mount was also potentially symbolic. Contemporarily to Moulsham, stepped and spiral mounts surrounded the orchard at Lyveden New Bield, built by devout Catholic Sir Thomas Tresham, to symbolise the Passion locations (Eburne, 2008, p.129). Dix observed that "the series of ascents and carefully arranged planting guided the individual sinner towards redemption" (Dix, 2011, p.154). Subsequently, religion may have inspired the Mildmays' use of the mount at Moulsham. As evidence, their family motto 'Alla Ta Hara' translates to 'God My Help' (Elvin, 1860, p.8). Other visitors to Moulsham likely experienced religious revelations, such as the Petres, who were Catholic (Edwards, 1975, p.21), and Sir Walter Mildmay, a Protestant (Lehmburg, 2014, p.71). On the other hand, Joel Samaha believed that Thomas Mildmay Knt. I was actually "nonreligious" and "uncommitted" (Samaha, 2013, p.69). As a result, religion may not be the reason why the Mildmays designed this mount and thus its prospect.

The Mildmays thus most likely intended the mount to become an intellectual space for visitors. Alongside the Petres, the Mildmays had an “educational zeal”, were heavily invested in education and thus “fanatically loyal” to Essex (Emmison, 1973, p.318). Although invented in the medieval period, viewing mounts developed during the sixteenth and seventeenth centuries into places of inspiration and learning (Henderson, 2005, p.101; Seeber, 2012, p.5). As the viewshed results at Moulsham show, both intellectual and cultural symbols were present. The Renaissance style of the hall was a statement of intellect derived from learning rules of architectural theory within texts (Airs, 1998, p.38). The orchard emphasised an awareness of fashionable planting schemes, knowledge of cultivation, and demonstration of effective tree management to help to increase the orchard’s profitability and fruitfulness (Bacon, 1864b, p.229). Mildmay Fane also described how trees provided places for meditation:

*“Here I can sit, and sitting under  
Some portions of his works of wonder,  
Whose all are such, observe by reason,  
Why every plant obeys its season;  
How the sap rises, and the fall,  
Wherein they shake off leaves and all;  
Then how again they bud and spring,  
Are laden for an offering;  
Which whilst my contemplation sees,  
I am taught thankfulness from the trees”*  
(Fane, 1648b, p.172).

As for the chapel, it was a symbol of religion and God, but also civility (Norden, 1607, pp.98–99) and wisdom (Horace, 1567). The expanses of pastureland and woodland were also equally symbolic. As mentioned previously (see Section 5.3.2), these pasture fields and woodland areas defined the ‘second nature’, one of Cicero’s ‘three natures’ (Hunt, 2000, p.33), and they provided an intellectual and cultural background to the orchard and chapel (Hunt, 1994, p.3). This landscape was thus devoid of distractions from elaborate garden designs, building complexes, interrupting road networks or sprawling settlements. The Mildmays thus created a tranquil setting where observers could contemplate and appreciate the prospect from the mount within peaceful and secluded surroundings.

To conclude, the Mildmays did not design this viewing mount to observe complicated garden designs from above. The mount instead provided a platform for the Mildmays to demonstrate their skills in architectural design and theory, understanding of arboriculture, and practices in estate management. These features all showed the Mildmays' power at Moulsham, but particularly over nature. However, based on this analysis, the Mildmays more likely intended visitors to use the mount for more experiential reasons beyond the visual. One experience involved theatricality and display when entertaining guests. Another was a more private experience, concerned with reaching a higher level of either religious or intellectual understanding for contemporaries to achieve in seclusion. Within these more natural surroundings and with few external intrusions, nothing would have distracted the observer. Altogether, the viewing mount provided a platform for visitors to engage with the visual beauty of the estate. However, the mount also created opportunities for the Mildmays to entertain close friends or as an intellectual place for individuals to contemplate, reflect and gain inspiration.

#### **5.3.4 - The Tower**

On their map, the Walkers depicted a tower-like structure just north of the grounds (Fig. 5.03). However, its purpose is undocumented within the map's legend or its accompanying survey. Nevertheless, the Walkers did capture aspects of its architectural design. The building had a doorway accessed from the ground floor on its eastern side with two fenestrated floors above. On the rooftop, a beam projected out of its northern side, which suggests a viewing platform existed. Consequently, considering its height and potential roof access, the Mildmays probably designed this tower with a prospect in mind.

To support the interpretation of the tower's design and purpose at Moulsham, Freston Tower in Suffolk is a surviving contemporary structure which bears some architectural resemblance (Fig. 5.40). With six storeys and a balconied rooftop, Freston could have served many potential functions, including as an outlook tower, park standing or folly (Henderson, 2005, p.234; The Landmark Trust, 2018). Therefore, the tower at Moulsham potentially provided one or a combination of these functions. For the 3D-GIS recreation of the tower, although the Walkers depicted it to be 25-metres high, this was unlikely because that made this tower much taller than six-storeyed Freston Tower. On the other hand, the



**Fig. 5.40 - Freston Tower, Suffolk (The Landmark Trust, 2018)**

four-storeyed gatehouse at Sissinghurst Castle, Kent, was 15-metres tall, which acted as a guide for interpreting the tower's height. By visualising the prospect from this tower using viewshed analysis, new insight may be gained of its intended purpose and thus of the Moulsham estate under the Mildmays' ownership.

### Analysis

In the first instance, the tower provided an excellent opportunity to observe the grounds from an elevated vantage point (Fig. 5.41). It is plausible that the Mildmays were educated in studies of perspective, which became increasingly popular within architectural and landscape art during this period. Sixteenth-century panoramas, such as of Hampton Court by Anthonis van den Wyngaerde, progressed to seventeenth-century bird's-eye views, including Jan Siberecht's work on Wollaton Hall, before being championed in the eighteenth century by Jan Kip and Leonard Knyff (McKee, 2004, p.3). However, contemporaries mainly understood concepts of perspective as well as continental fashions in England through French but also Italian and Dutch literature (Skelton, 2015, p.107). Thomas Mildmay Esq. certainly had links to the English monarchy but he also had French business connections through his work, for example, at Calais and Boulogne (Bindoff, 1982a, p.600). The Mildmays thus potentially created the



Fig. 5.41 - Viewshed results from Tower at 15 metres, Moulsham Hall (Immediate Grounds)



Fig. 5.42 - Viewshed results from Tower at 25 metres, Moulsham Hall (Immediate Grounds)

tower so that their guests could access this fashionable and flattering elevated perspective over the estate, which the engraving captured (Fig. 5.06). Judging by the viewing inclination and the landscape composition depicted in the engraving, the prospect from this tower likely inspired Puget de la Serre's work.

The engraving did contain some similarities to the tower's prospect. For example, the hall's courtyard layout was prominently visible and appeared grander when observed from this perspective. However, there were also discrepancies between the engraving and this prospect, thus demonstrating the engraving's unreliability compared to what contemporaries really experienced. The tree belt, hall and outbuildings hid most of the lawns and entrance courts but especially the formal garden. As a result, Puget de la Serre's engraved view of the formal garden was not possible, even if the tower was 25-metres high as the Walkers' map indicated (Fig. 5.42). If the Mildmays wished to admire the gardens' aesthetics from this elevated perspective, then the tower would have been more opportunely placed. However, placing the tower elsewhere potentially risked interfering with the views from the *piano nobile* or the viewing mount. Therefore, the Mildmays likely created this tower for a different purpose.

Another interpretation is that the tower acted as a deterrent for thieves whilst also enabling observers to monitor the estate. Views extended towards different entrances into the grounds, including an archway that provided access to the lawns near the kitchen garden and the gatehouse which granted access to visitors travelling along the approach (Fig. 5.41). This observation thus raises the possibility that the tower's purpose was as a lookout to protect vulnerable areas of the estate. For example, the dovecote resided within the same enclosure as the tower. Dovecotes had transformed from its medieval use as a larder to a beautiful Elizabethan estate building which landowners proudly displayed as a status symbol (Williamson, 2007, p.9). Pigeons or doves thus became useful and precious commodities at risk from poaching (Manning, 1993, p.128), which may explain why the tower stood intimidatingly over the dovecote so as to discourage thieves.

Along with the dovecote, the 'deare park', warren and fishponds to the east also contained animals that were profitable targets of poaching. An indictment recorded an incident in 1569, when two men entered the warren and hunted the rabbits illegally (ERO Q/SR 30/26). Although the tower existed in 1591, whether



**Fig. 5.43 - Viewshed results from Tower, Moulsham Hall (Parkland)**

the Mildmays built it before or after the theft cannot be confirmed. Nevertheless, because the estate was at risk, the Mildmays likely considered this tower to be a necessity. Another vulnerability was London Way, the road abutting the westernmost end of 'Great Wannells' park. The tower may have deterred travellers along London Way but the road's visibility from the tower also helped observers monitor the boundary and ensure the estate's security. Visitors also recognised the tower's prominence from the entrance to the approach further north (see Section 5.3.1), which was also visible from this tower. This intimidating structure thus provided access to a prospect which encompassed many of the Mildmays' prized possessions as well as any potential security weaknesses, which therefore supports the theory that this was an outlook tower.

However, the view was particularly extensive over both areas of parkland: the 'deare park' and 'Great Wannells' (Fig. 5.43). Visitors looking out from the tower thus collectively admired these elite landscape features owned by the Mildmays to their greatest advantage. Thus, the Mildmays likely intended for the tower become a viewing platform to observe the parkland, which indicated that its purpose was a hunting tower or park standing. The Petres also owned parkland called the 'Oulde Park' at Old Thorndon (Clutton & Mackay, 1970, p.28), while another one existed at Ingatestone until its disparkment in 1602 (Robey, 1991, p.54). Sir John and Lady Petre hunted using crossbows, although not necessarily of deer, and John was also an experienced hawker (Edwards, 1975, p.49). When the Petres visited

Moulsham, they likely hunted in the 'deare park' with the Mildmays who also logically hunted with greyhounds, as the family's heraldic beast (Grieve, 1988, p.95). This tower thus provided the best location for guests, including the Petres, to spectate the sport.

At Terling, a hunting lodge resided within parkland that Henry VIII created in 1540 (Wright, 1831, p.230). Due to its location upon the summit of the hill, the lodge only had good visibility of the park within its immediate vicinity (Fig. 5.44). Therefore, within an area of flatter ground, the tower at Moulsham provided a better vantage point and viewing extent for the Mildmays to showcase their parkland while allowing their guests to observe the activities occurring within them. As a result, the tower was plausibly a hunting tower or park standing, even if the building did not reside within the park as exemplified by the one at Chatsworth (Henderson, 2005, p.169).

Because of the tower's greater height compared to the other vantage points previously analysed, visitors enjoyed a more extensive and exceptional view of the countryside (Fig. 5.45). The pastures, chapel and woodland along the horizon line comprised the southern prospect, while northerly views included large areas of enclosed arable fields alongside meadowland near the river through Chelmsford. The Mildmays greatly expanded their demesne within the Moulsham estate, as the main country seat, while also establishing themselves as proprietors over Chelmsford. The entire landscape composition within this prospect helped the Mildmays demonstrate their power, success and authority to their peers. This experience resembles Geoffrey Whitney's description in his country-house poem, 'To Richard Cotton, Esq.', first published in his work *A Choice of Emblemes*:

*"There, fertile fields; there, meadows large extend:  
There, store of grain: with water, and with wood.  
And, in this place, your golden time you spend  
Unto your praise, and to your country's good:  
This is the hive; your tenants are the bees:  
And, in the same, have places by degrees"*  
(Whitney, 1586, p.201).

As this poem emphasised, a landscape view containing these ideal areas best showcased a functioning estate and an influential family. Moulsham Hall represented the 'hive' as the Mildmays' family seat from which they effectively

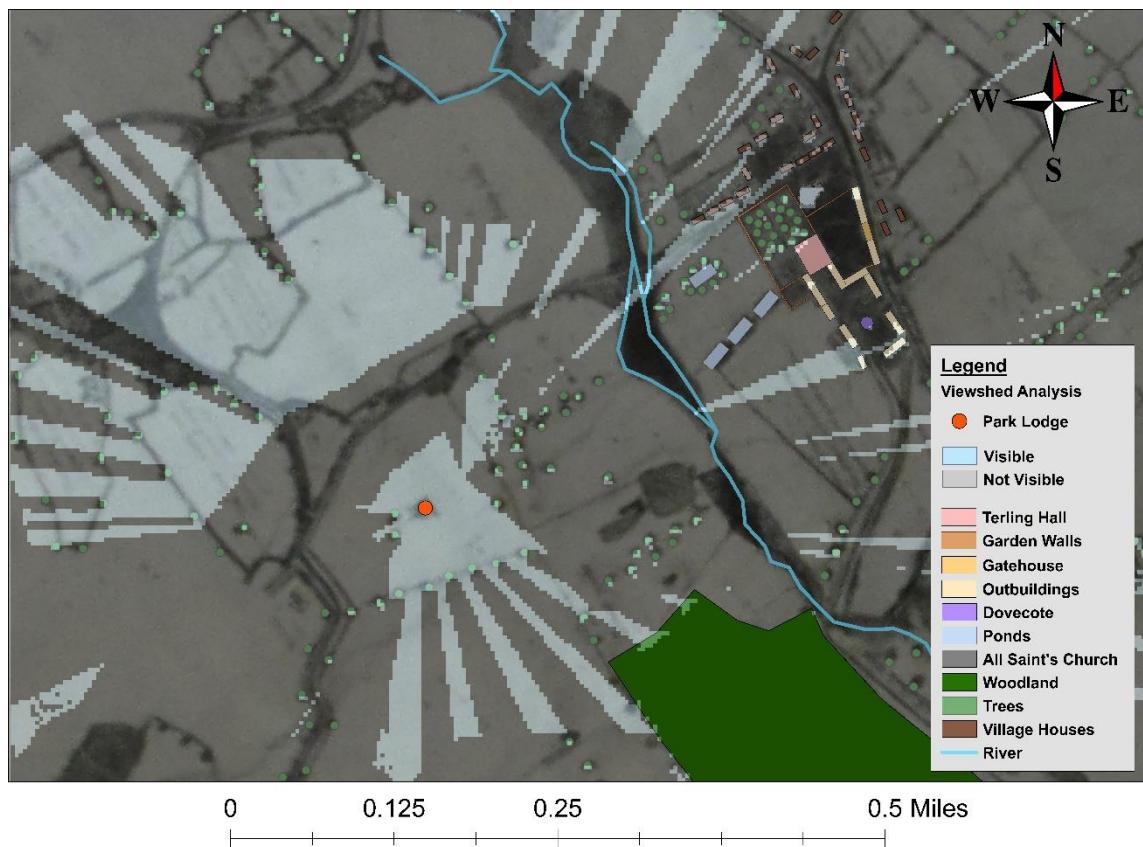


Fig. 5.44 - Viewshed results from Park Lodge, Terling Hall

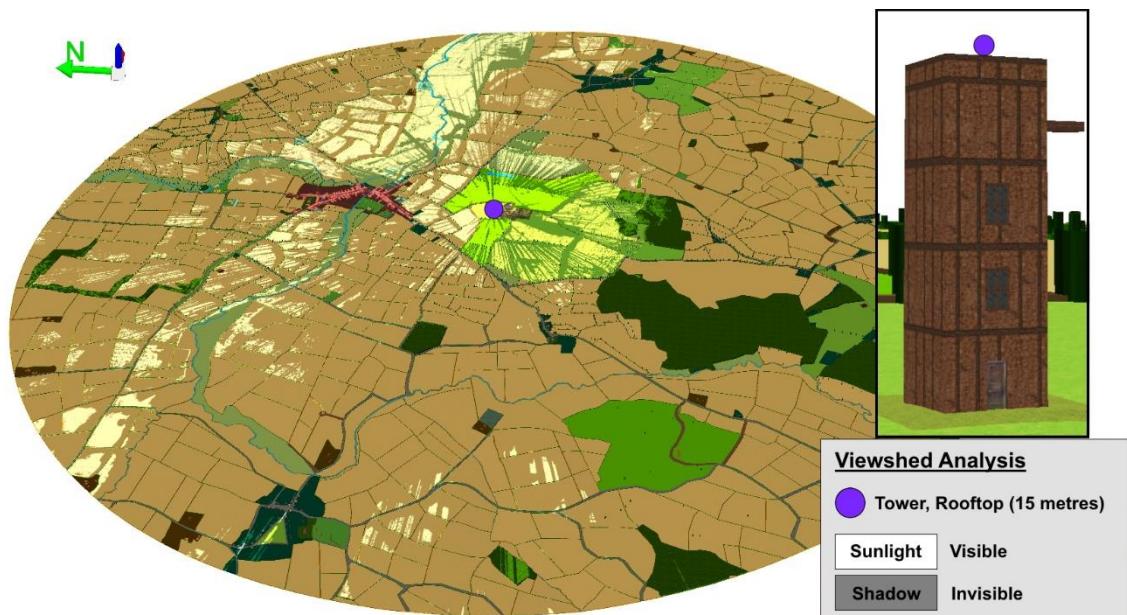


Fig. 5.45 - Viewshed results from Tower, Moulsham Hall (Wider Landscape)

asserted their dominance over their demesne. However, the impressive prospect from the tower better demonstrated their authority over the manors they owned. This authority also extended to the neighbouring estate of Springfield Barnes, whose country-house rooftops were visible north of Chelmsford. William Mildmay, the younger brother of Thomas Mildmay Esq. (Family Tree Appendix 2), purchased Springfield Barnes, (Grieve, 1988, p.102). While remaining hidden from the other vantage points, the visibility of Springfield Barnes within the tower's prospect was not an intrusion but established a familial connection which extended to Chelmsford, where Thomas and William's father made his fortune.

To conclude, the tower of Moulsham had the potential to serve a multitude of functions. Although no clear prospects of the gardens were possible, the tower may have been a pleasure building or folly where visitors could observe the hall and grounds from above. However, its role as a hunting tower or park standing was more probable. Visitors could either observe activities in the 'deare park' or appreciate the visually-appealing aspects of 'Great Wannells'. However, even though these parkland views were important, the visibility of the estate's boundaries and entrances into the grounds indicates that this building functioned as an outlook tower. Whilst the true purpose of this building may never be understood fully, what is clear is that the prospect perceivable from this tower was important to the Mildmays and thus for their guests to witness.

### **5.3.5 - Summary**

This analysis of Moulsham Hall has shown that the Mildmays recognised the importance of prospects and promenades within their estate and how different aspects of the landscape affected those visual experiences. By comparing the landscapes and views at Moulsham with those at Terling, it became increasingly clear that the Mildmays chose Moulsham to be their primary country-house estate for more reasons beyond their personal and professional connections to Chelmsford. These reasons were rooted in how their estate could be more effectively displayed or experienced, which was of great importance to the Mildmays because, as a family derived from new money, the Mildmays needed to prove that they belonged amongst the elite. Although Terling had some beneficial qualities, the visually-superior landscape compositions at Moulsham provided better opportunities for the family to exhibit their worth.

The elite amongst contemporary society wanted to not only “obtain a political appointment and establish a dynasty”, but it also became “the height of ambition for the wealthiest in the land to build a country seat on a large estate” (Elton et al., 1992, p.13). The Mildmays were certainly of this opinion when choosing this landscape at Moulsham, where they could create a large estate that would become the most authoritative feature in the landscape. At Terling, on the other hand, its location against the sprawling local village was a common occurrence amongst many older manor houses (Clemenson, 1982, p.80). Despite features such as the larger gatehouse attempting to improve its situation, the Terling estate did not achieve the same sense of visual dominance as Moulsham. The Mildmays enjoyed a lengthier approach with an intimidating tower amongst other grander aspects of the Moulsham estate. Moulsham thus provided a better foundation for the Mildmays to display their prestige within the landscape and power over their manors, tenants, and even nature itself.

By becoming visually prominent in the landscape, the Mildmays at Moulsham also attained privacy and segregation from neighbouring areas. The estate was surrounded by open and unrestricted countryside, which meant that contemporaries could enjoy more extensive, expansive and altogether more appealing prospects without disturbance. On the other hand, the Terling estate's confinement by the village and its roads prevented the Mildmays from achieving seclusion within the grounds. Although the orchard helped obscure some areas beyond the estate's boundaries at Terling, the Mildmays did not achieve privacy to the level that they had maintained at Moulsham. These hindrances that the Mildmays faced at Terling did not affect Moulsham because its placement within a natural and unmodified landscape, distanced from settlements and roads, helped ensure their privacy. The Mildmays also implemented visual barriers at Moulsham, such as the tree belts along the grounds' north boundary and through ‘Great Wannells’ park. These trees subsequently blocked views in the direction of Chelmsford and of the main roads that originated from it. It was, therefore, clear that the Mildmays strongly desired privacy.

It was not only privacy but the enjoyment of beautiful, unhindered prospects that the Mildmays sought. The orientation of the Moulsham estate resulted in the most meaningful views gravitating away from potentially bothersome landscape features to the north. Subsequently, the Mildmays focused

the views from their most prominent vantage points southwards. The best views at Terling were also orientated westwards away from the village to the east. At both sites, the Mildmays thus safeguarded their best prospects from unappealing distractions. At Moulsham, the approach led any arriving visitors towards the estate with the more appealing views southwards, in the opposite direction from Chelmsford. Although the parkland resided west and east of Moulsham Hall, observers from the tower admired them within a prospect orientated south. However, upon the viewing mount and within the hall's south range, visitors especially enjoyed these south-facing views. Therefore, the prospects in this direction notably influenced how the Mildmays developed the Moulsham estate.

What many of the viewsheds conducted at Moulsham captured was that the maximum viewing extent over this southern landscape remained within the bounds of grassland. Both parks, the warren and pastures were all frequently visible in these prospects before the woodland marked the southernmost horizon line, but rarely did those views extend beyond their boundaries. These prospects demonstrated how Moulsham was advantageously situated, not only geographically but also topographically. The elevations and land reliefs in the estate's vicinity along with certain obstructive surface features helped to ensure private views within the open landscape encompassing Moulsham. As a result, no views extended towards Galleywood Common, which resided further south behind where the woodland of Moulsham Frith stood. The Mildmays converted this common into land for copyholders by 1591 (ERO D/DM P2), which legitimised the squatters who lived there (Muir, 2000, p.58). Woodland combined with the hill ensured that this common did not interfere with any southerly prospects looking out from the *piano nobile* of Moulsham Hall. The Mildmays and their visitors also enjoyed appealing and secluded landscape views in this direction upon the viewing mount. From its summit, guests could reflect and contemplate upon the mount in solitude and reach a new level of religious understanding or intellectual knowledge when amongst this quiet and peaceful landscape.

In isolation, visitors appreciated the beautiful aesthetics of a cultural and theatrical landscape. The Mildmays demonstrated how particularly enamoured they were with providing both pleasure and entertainment for their guests. Where the best prospects were evident, the Mildmays created the principal rooms upon the *piano nobile* in the hall's south range as well as the viewing mount in the

orchard as settings for feasting and entertaining guests. Collectively, their landscape views bore a resemblance to how Dix described Kenilworth Castle in Warwickshire, where Robert Dudley hosted Elizabeth I for nineteen days of entertainment in 1575. Dudley created a “stage effect” where “the entire landscape served as a theatre”, which included the deer park and pleasure grounds “used in scenes of pageantry and spectacle” (Dix, 2011, p.162). With two royal visits taking place at Moulsham, including one from Elizabeth I four years after Kenilworth, Thomas Mildmay Knt. I beautified the estate to produce a grand stage for entertaining royalty. As the viewsheds from the house’s south range and the viewing mount determined, the Mildmays achieved this display at Moulsham.

This notion of entertainment also featured in the design of the approach. First, its length and sweeping curve through the landscape helped stage the best aspects of the wider estate landscape. Upon entry into the grounds, the use of arches and a grand double-forecourt scheme extended both the visual and physical entertainment for visitors until they arrived at the hall itself. The Mildmays thus arranged their ‘orchestrated’ approach so that the prospects visitors enjoyed could be manipulated and controlled to their desired specifications, thus creating a visually-stimulating and engaging experience. Furthermore, the prospects from the approach, along with other vantage points, presented various aesthetic aspects of the estate that contemporaries also recognised as status symbols. The Mildmays prominently displayed prestigious deer within their ‘deare park’ while the French-inspired gardens appeased royalty, especially when admired from above. The medieval style of architecture coupled with the possible inclusion of heraldry also potentially deceived visitors regarding the Mildmays’ true lineage. Therefore, these prospects staged not only the estate but the Mildmays themselves.

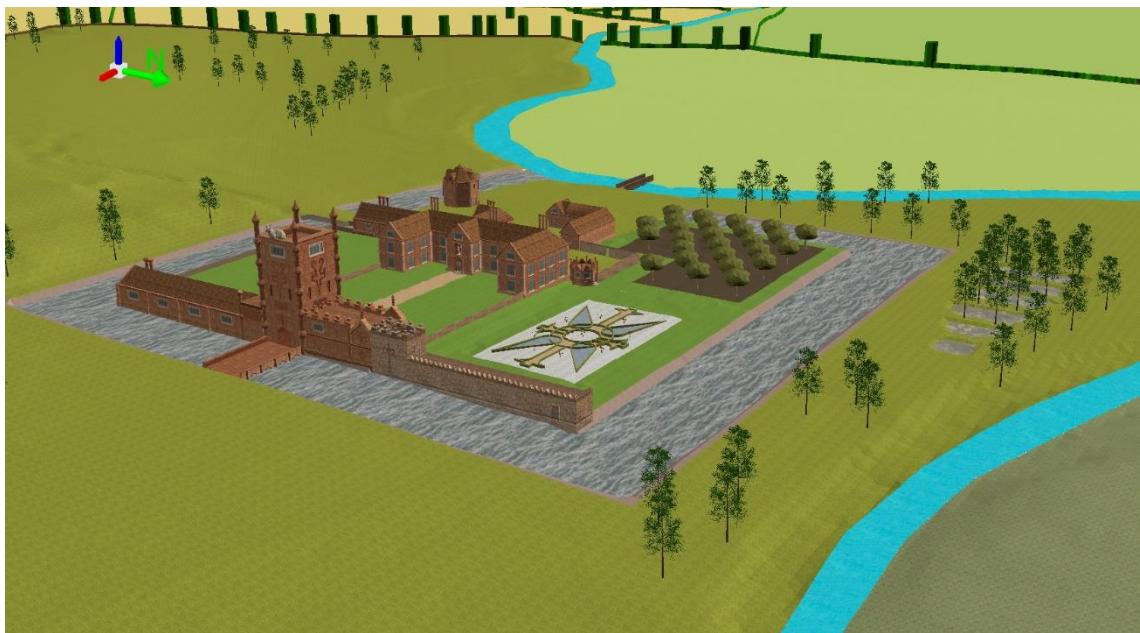
Altogether, Moulsham was utilised as more than a residence but as a visual statement that helped discern the Mildmays’ importance to their peers. The family’s desire for recognition, status and power influenced how they developed their estate in anticipation of visits from royalty and other esteemed guests during this period. Nevertheless, their “educational zeal” (Emmison, 1973, p.318), appreciation of art and culture, and enjoyment of theatre, were all woven into the designs of this estate and the visual experiences within them. As a result, the Mildmays created a magnificent estate to display their greatness to all who laid their eyes upon Moulsham Hall.

#### **5.4 - Conclusion**

The analyses undertaken within the 3D-GIS recreation of Moulsham Hall has proven beneficial in improving our knowledge of this lesser-known yet significant estate. Studies of Moulsham faced certain hindrances that affected how this estate could contribute effectively to our knowledge of designed landscapes. Its greatest obstacle was the suburban expansion of Chelmsford that covered the site, but 3D-GIS provided the platform to eradicate them. As a result, 3D-GIS has assisted in revitalising studies of Moulsham by allowing this site to be accessed and analysed without interference. Despite limited evidence that previously dissuaded other scholars from undertaking in-depth research, a detailed and comprehensive recreation and analysis of Moulsham was possible using 3D-GIS. The digital recreation further helped to interrogate and rationalise the data and its reliability, by assisting in identifying small discrepancies within the Walkers' map and by establishing the unreliability of Puget de la Serre's engraving by recreating the prospect from the tower. By investigating these sources' data within an immersive 3D environment where both the topography and sixteenth- to seventeenth-century features are digitally reinstated, the original landscape composition is better understood. More importantly, 3D-GIS enabled greater comprehension of how contemporaries experienced the Moulsham estate in reality and what the Mildmays potentially intended these prospects and promenades to achieve. The 3D perspective ensured the analyses of these experiences were detailed and thus able to be interrogated in depth, beyond what 2D analyses and archival research can address. As a result, a better understanding of the Mildmays now extends further than simply their genealogy and professions and into their personalities. Conclusively, 3D-GIS assisted in the intelligible exploration, analysis and interpretation of Moulsham Hall, regardless of its higher number of hindrances compared to Stiffkey Old Hall.

## Chapter 6 - Hoxne Hall, Suffolk

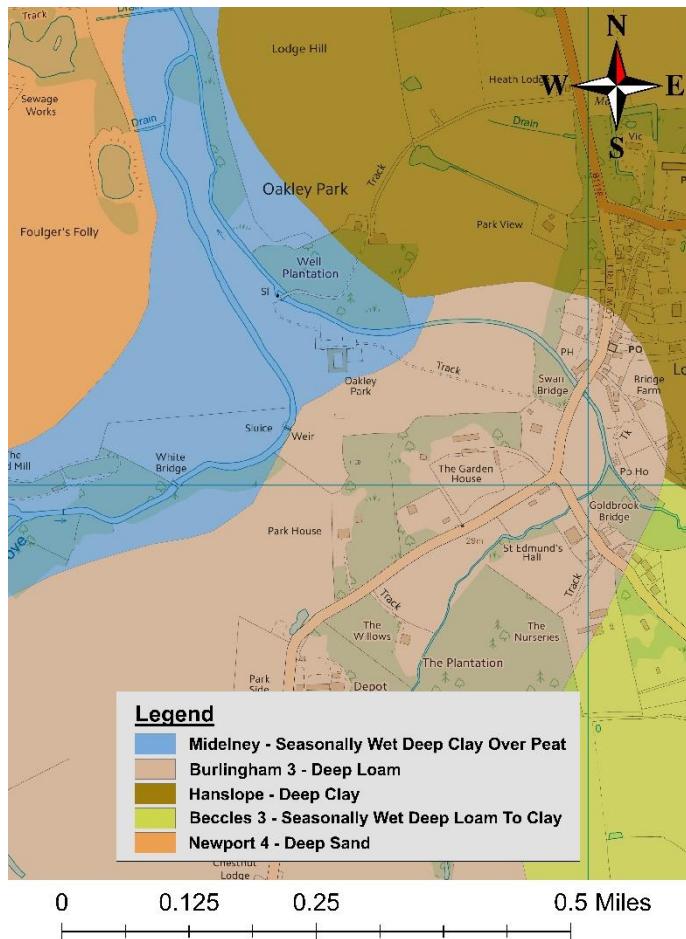
### 6.1 - Introduction



**Fig. 6.01 - 3D-GIS recreation of Hoxne Hall, Suffolk**

The final case study explored is Hoxne Hall in Suffolk (Fig. 6.01). Known today as Oakley Park, the site lies south-west of the village of Hoxne, which lies immediately south of the Norfolk-Suffolk border marked by the River Waveney. Per the regional variation analyses, the situation of Hoxne Hall was optimal and adhered to many popular location parameters for a designed landscape. Around 23 metres above sea level, Hoxne was sheltered within a valley containing the River Dove, which lay within 50 metres of the site. Hoxne also beneficially resided near numerous useful soil types (Fig. 6.02), including deep loams, deep clays and combinations thereof that were amongst the most favoured within the statistical analysis. Less-popular deep sandy soils were also nearby yet were part of the neighbouring estate of Brome Hall, situated nearly 2,000 metres distant and thus statistically remained within the more ideal proximity ranges. This designed landscape at Hoxne was thus suitably located within East Anglia.

However, researchers have not previously explored Hoxne from the sixteenth and seventeenth centuries to a great extent. One reason why involves the current state of the site. Hoxne has remained undeveloped compared to Moulsham. Nonetheless, no contemporary landscape evidence survives to the extent of Stiffkey because the estate has been subjected to centuries of landscape changes by its owners including extensive earth manipulation and structural



**Fig. 6.02 - Soil distribution, Hoxne Hall (Oakley Park)**

demolition. To what extent the topography has altered also remains unknown and thus cannot be adapted with confidence within the 3D-GIS recreation. Although the site no longer exists, some parts of the surrounding estate landscape such as the parkland retain their original characteristics. However, like with Stiffkey, studies have been hindered because Hoxne remains a private estate. Because there is no public access to the site, experiencing the landscape first-hand is not possible. Nevertheless, along with no archaeological evidence, Hoxne also has limited written evidence that provides beneficial landscape information about the site. There is, however, one contemporary cartographic source which can assist with the visual interpretation of the site from the sixteenth and seventeenth centuries (SRO(I) HD40/422). However, this source is also potentially unreliable, which became evident during the geo-referencing process (Fig. 3.23). Its inaccuracies and distortions not only affect the placement of different features within Hoxne while reconstructing the estate in 3D-GIS but also what contemporaries potentially perceived within it. Collectively, there have been many reasons why researchers have not attempted in-depth studies of Hoxne, although

some have acknowledged its importance (Williamson, 2000; Govier, 2012). Therefore, 3D-GIS will provide the opportunity to reconstruct and thus provide access to a complex example of a demolished country-house estate. This case study will also test the benefits of 3D-GIS in handling limited and inaccurate evidence but without using invasive landscape investigation techniques. Although this site poses specific reconstructive and analytical challenges, a 3D-GIS visualisation will provide the opportunity to trial this landscape recreation while seeking to interpret how the landscape once looked and was experienced.

Compared to the Bacons and the Mildmays from the previous case studies, there is even less knowledge about the Southwell family who owned Hoxne Hall. The Southwells were a prominent family in this period yet remain mostly unknown due to limited available evidence. For example, the family's ancestral home at Woodrising Hall in Norfolk no longer exists, which further highlights a different and unique situation because Hoxne was not the Southwells' principal seat. Subsequently, this research will provide the opportunity to explore an estate the Southwells owned but had not primarily lived in. Another interesting angle about Hoxne is that was once a palace belonging to the Bishops, which Henry VIII acquired during the Dissolution before the Southwells owned it. Therefore, this case study will also address how the Southwells adapted the bishops' palace when other landowners during the Dissolution "stripped [these sites] with the deliberate intention of effecting a physical and institutional break with the past" (Aston, 1984, p.313). Subsequently, this research seeks to determine how the monastic origins of Hoxne affected the layout of the Southwells' estate and to what extent this impacted upon the experiences within this designed landscape.

The recreated landscape of Hoxne within 3D-GIS primarily dates to 1619, in accordance with the cartographic source. By using 3D-GIS to overcome the aforementioned problems, this research into Hoxne has the potential to provide insight into different lines of inquiry about designed landscapes. Consequently, this study will provide an opportunity to learn more about Hoxne Hall and the lives of the Southwells. This case study is the most challenging and problematic site addressed in this thesis, which will thus demonstrate the reconstructive and analytical benefits of 3D-GIS when applied to a complicated, thought-provoking and unique designed landscape.

## **6.2 - History and Context**

Hoxne Hall was originally the site of an Anglo-Saxon monastery dedicated to St Athelbert (Roberts, 2010, p.110; Govier, 2012, p.23). In the medieval period, this monastery developed into a “fayre and gallant” episcopal palace for the Bishops of Norwich (MacCulloch, 1976, p.48). Unfortunately, no evidence survives to verify the palace's appearance or layout. By Act of Parliament in 1535, Henry VIII seized the palace and estate. He leased them between 1536 and 1537 to Charles Brandon, Duke of Suffolk (Copinger, 1909, p.50), whose household “did their best to strip the palace of Hoxne bare” (MacCulloch, 1987, p.156).

In 1543, Henry VIII granted Hoxne outright to Sir Robert Southwell I, Master of Rolls. Robert paid £1,512 15s 0d for the manor, hundred, and the ‘Newe [New]’ and ‘Holde [Old]’ parks of Hoxne, along with appurtenances in fifteen other parishes all previously belonging to the Bishops of Norwich (Gardiner & Brodie, 1901, p.446). Robert acquired Hoxne the same year that he alienated his primary residence at Yotes [Jotes] Place in Mereworth, Kent, to Sir Francis Walsingham (Greenwood, 1838, p.143). Historians initially believed that Robert then moved back to Woodrising (Steer, 1959, p.16). However, Robert's elder brother, Sir Richard Southwell, owned Woodrising and he also outlived Robert (Family Tree Appendix 3). It was not until Richard's death in 1564 that Woodrising passed to Sir Thomas Southwell I, Richard's nephew and Robert's son (TNA PROB 11/47/231). Nevertheless, Woodrising did become the primary residence for Robert's successors. More importantly, Robert's descendants transformed Hoxne into a beautiful estate, which William Stokes mapped in 1619 (Fig. 6.03).

Stokes' map shows in, potentially aggrandised, detail the designs of the Hoxne estate. A grand moat surrounded the house and gardens within a gentle valley of open pasture called the ‘Newe Park’, created in the late-fourteenth to early-fifteenth century (Hoppitt, 1992, p.246). Following most of the park pale, the main road passed through the village of Hoxne abutting the park's north-east boundary. Although this map provides evidence of Hoxne's sixteenth- to seventeenth-century landscape designs, it is not certain to what extent these retained the layout of the medieval episcopal palace. As a result, it is difficult to ascertain what the Southwells chose to create and what they kept or manipulated that was originally designed for the Bishops.

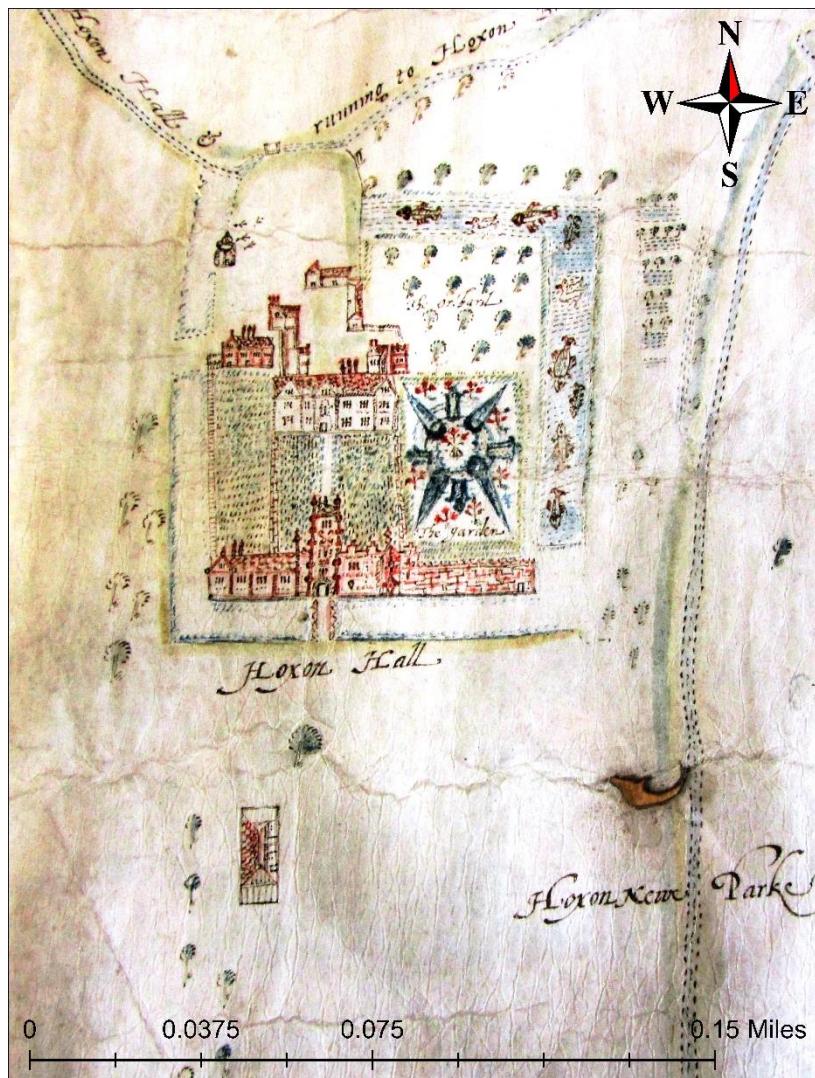


Fig. 6.03 - Hoxne Hall, on map by William Stokes, 1619 (SRO(I) HD40/422)

What can be determined is that the estate encompassed several manors and thus the Southwells' influence around Hoxne was prominent. Just south-east of the hall on a site now called Abbey Farm (Historic England, 2019), Robert Southwell I acquired Hoxne Priory in 1544, which he rented to the Thurston family (Evans, 1987, p.191). Robert also purchased the neighbouring manor of Chickering along with tithes in Denham (TNA PROB 11/43/577). By the seventeenth century, the Hoxne estate had expanded into a total of nineteen parishes and was collectively worth £9,300 (SRO(I) HA68/2593/3442). As a result, the Hoxne estate was a considerable addition to the Southwells' overall demesne.

Hoxne remained under the Southwells' ownership for four generations (Family Tree Appendix 3). The last Southwell at Hoxne was Sir Thomas Southwell II, who was a spendthrift and wasted his inheritance. Not long after he commissioned Stokes to create the estate map (Fig. 6.03), Thomas had to sell both the Hoxne and Woodrising estates in the 1620s (Steer, 1959, pp.20 & 22). Several



Fig. 6.04 - Hoxne Hall, on map of Hoxne, 1700 (SRO(I) HB21/280/1)



Fig. 6.05 - Hoxne Hall, from survey book, 1757 (SRO(I) HB21/280/1)

families subsequently owned Hoxne and they continually redesigned the estate as they desired. Thomas sold Hoxne to the Prescotts (SRO(I) HA68/2593/3442), which then became the Styles' through marriage (SRO(I) HA68/2593/3478, 3479). As architects, the Styles reportedly altered Hoxne Hall, but it is not known to what extent (Roberts, 2010, pp.110–12). By the 1670s, the Maynards gained ownership (SRO(I) HA68/2593/3485, 3486). A map dating to 1700 depicts the Maynards' estate, including the house, gardens and part of the moat, all in a state of disrepair with the original gatehouse no longer existing (Fig. 6.04). The Maynards commissioned another estate map as part of a more detailed map book in the 1750s (SRO(I) HA68/484/752; SRO(I) HB21/280/2). By this time, the Maynards replaced the entire site with a Georgian-style hall, surrounded by avenues, parterres and terraces (Fig. 6.05). In the 1820s, the Kerrisons owned the estate and named it Oakley Park, after demolishing and rebuilding the site once again (Roberts, 2010, p.110). In the 1920s, the Kerrisons sold the estate to a man named Lister, who immediately earmarked the hall for demolition. Today, only the nineteenth-century stables remain, which have been converted into what is currently a private residence. The only archaeological remains are the foundations of the nineteenth-century house and some garden pathways demolished by Lister, which survive as parchmarks visible on aerial photography (Fig. 6.06). With its long and eventful history, the site of Hoxne no longer holds any evidence of the estate that existed in the sixteenth and seventeenth centuries.

Therefore, using 3D-GIS to recreate Hoxne would enable a more competent exploration and analysis of this site. Hoxne has undergone centuries of alterations, has little surviving contemporary evidence and is not accessible today while under private ownership. These challenges have all prevented research of this estate. Nonetheless, Hoxne can provide a fresh perspective of the Southwells within the context of designed landscapes, despite its status as a secondary residence. Previous explorations about the Southwells' primary residence at Woodrising have also faltered because of the lack of evidence. Despite being part of Elizabeth I's progress in 1578, no archival evidence is known to survive about this estate (NHER 8825). All that remains of the original site is the moated platform where Woodrising Hall once stood (Fig. 6.07). Therefore, this analysis of Hoxne Hall may help to provide information about the Southwells but also assist in developing our understanding of both the Hoxne and Woodrising estates.

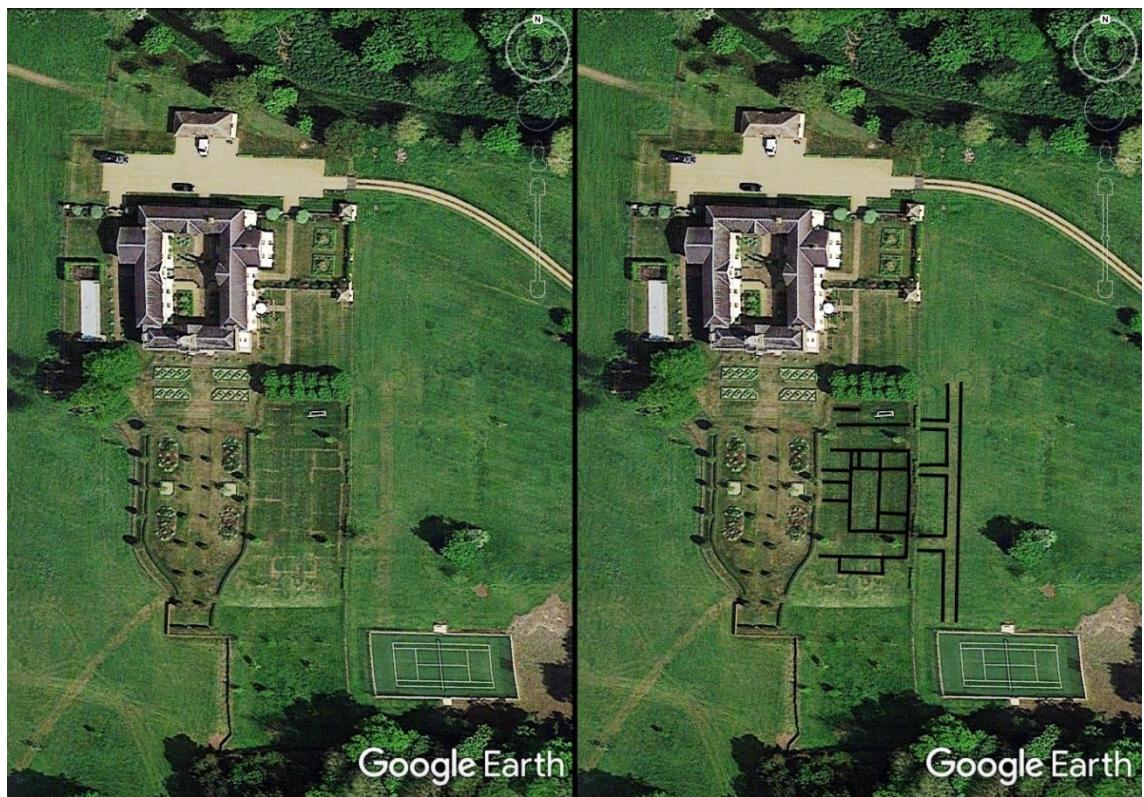


Fig. 6.06 - Aerial photography of Oakley Park (left) with nineteenth-century house and paths outlined in black (right)



Fig. 6.07 - Aerial photography of moated site of Woodrising Hall, Norfolk

### **6.3 - Prospects and Promenades**



**Fig. 6.08 - Oxburgh Hall, Norfolk**

Even though Hoxne was only a secondary residence, several locations existed where contemporaries enjoyed prospects and promenades. Visitors first experienced the estate along the approach. Principal rooms elevated on the *piano nobile* also granted access to advantageous views. The towering gatehouse provided a notably raised vantage point to observe a prospect from. Next to the gatehouse was a battlemented wall walk, which visitors likely promenaded along while enjoying the scenery. A garden building close to the house provided another external vantage point while a park lodge acted as another recreational building to the north of the ground amongst the parkland. The prospects and promenades associated with these features at Hoxne will thus be analysed in this chapter.

The current lack of evidence combined with the unavailability of LiDAR data makes the Woodrising estate an unsuitable comparison site for Hoxne. Therefore, Oxburgh Hall in Oxborough, Norfolk, was selected. Oxburgh Hall is a fifteenth-century courtyard house presently managed by the National Trust (Fig. 6.08). One reason for choosing Oxburgh was because Oxburgh Hall was built by the Bedingfields, who married into the Southwell family in the sixteenth century (Family Tree Appendix 3). According to his will, Robert Southwell I mentioned Edmund Bedingfield of Oxburgh as his son-in-law (TNA PROB 11/43/577), which also made him the brother-in-law of Thomas Southwell I. Also, since the early sixteenth century, the Bedingfields owned lands in Suffolk including Denham, a neighbouring parish to Hoxne (TNA PROB 11/36/267).



Fig. 6.09 - Oxburgh Hall, on parish map by Philip Wissiter, 1722 (NRO BRA 2524/1)

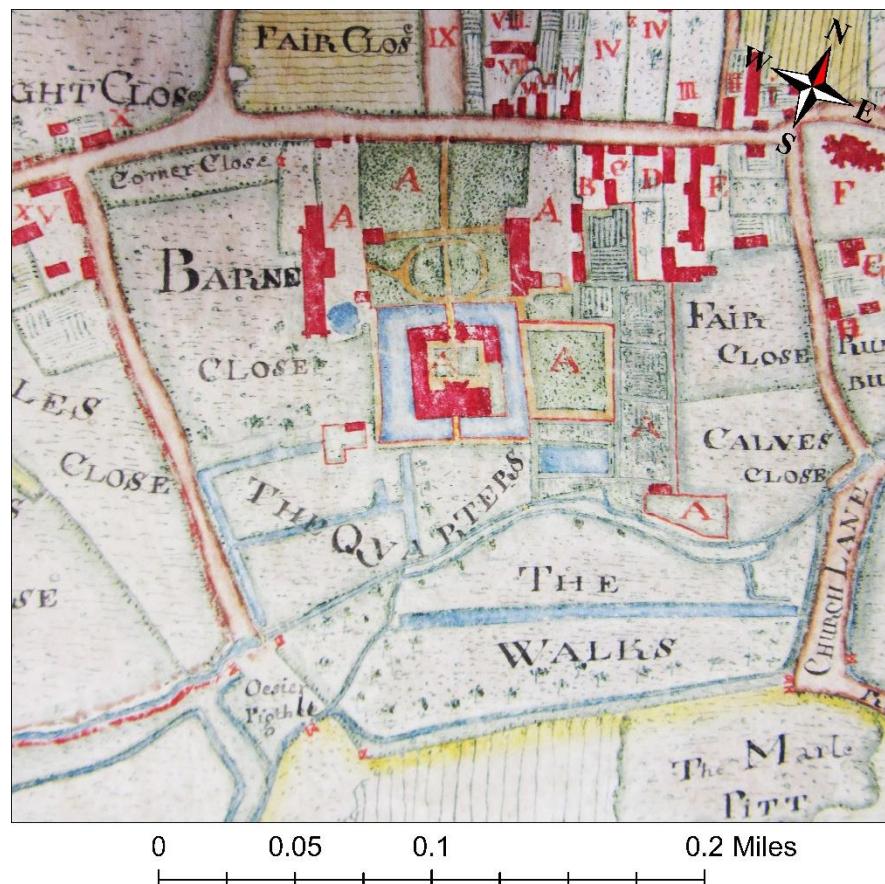


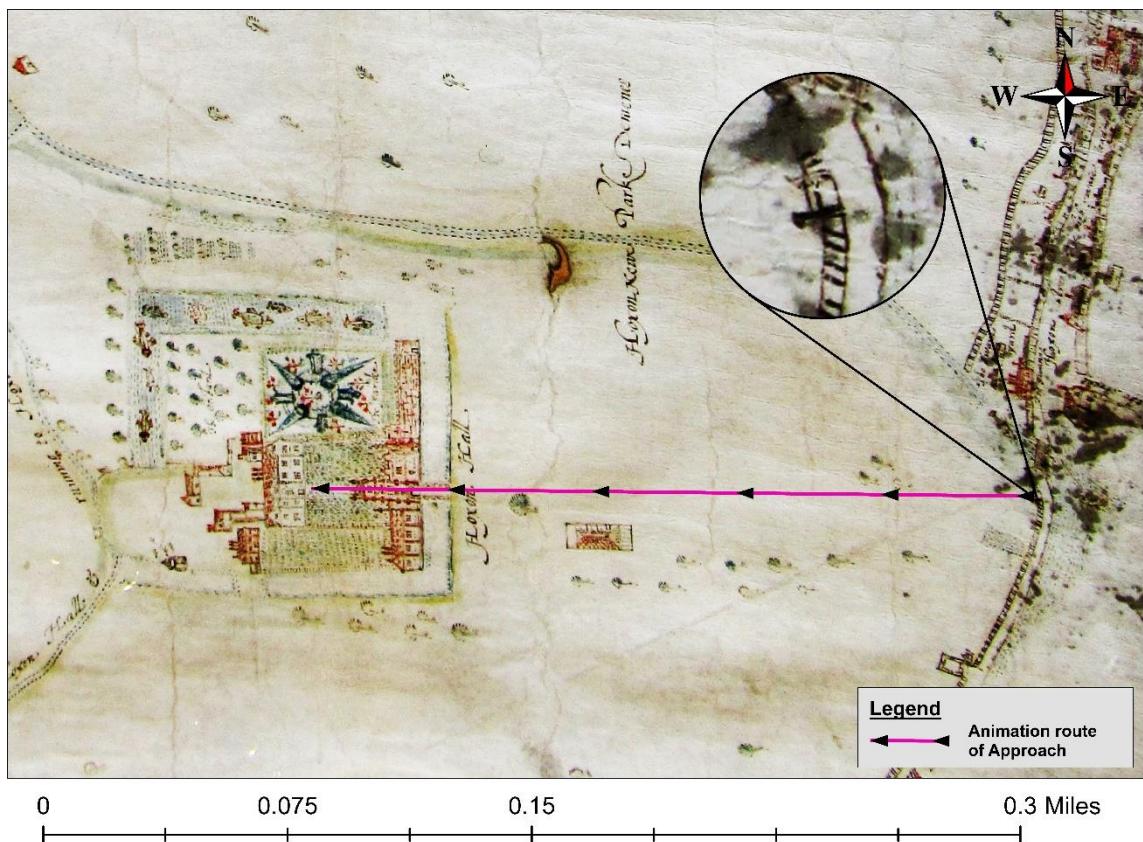
Fig. 6.10 - Oxburgh Hall, on estate map by I.I. de Wilstar, 1725 (NRO BRA 2524/2)

Another reason for selecting Oxburgh was because of the physical similarities between the landscape designs of Hoxne and Oxburgh, which the Southwells and Bedingfields developed simultaneously. Both sites had tall gatehouses, which will be a subject of comparison in this study. Oxburgh Hall was also surrounded by a large moat, which provided an example to help support the recreation of the moat encompassing Hoxne Hall. Although no contemporary cartographic evidence exists, and despite Oxburgh undergoing nineteenth-century alterations, a 1722 parish map (Fig. 6.09) and a 1725 estate map of Oxburgh (Fig. 6.10) survive with enough detail to conduct the relevant viewshed analyses. Also, because Oxburgh Hall still exists, researchers have undertaken investigations on-site (Menuge, 2006). Oxburgh is thus an appropriate comparative site to support the analysis of the prospects and promenades at Hoxne.

### **6.3.1 - The Approach**

The original approach to Hoxne Hall is neither distinct within the landscape or depicted with certainty on Stokes' map. Stokes drew several gates accessing the estate around its boundary that could potentially be the approach's entrance. Subsequently, there is little to indicate which entrance or route the Southwells intended for their more distinguished visitors. Nonetheless, deductions from the evidence helped identify what was most likely the main approach. What can be ascertained is that the gatehouse, permitting entrance to the hall, marked the end of the approach. Stokes depicted the gatehouse facing eastwards, which logically implies that the approach's entrance was east of the site. The approach thus began alone the estate's boundary abutting the main high street, which runs through Hoxne and continues south. Along this boundary opposite the gatehouse, there were two possible entrance gates drawn on Stokes' map (Fig. 6.03).

The first gate lay the furthest north, close to the southern extent of the village as the bridge crosses the River Dove. The second was further south, as part of the road junction with the high street, the King's Highway and Abbey Hill. Out of these two possibilities, the first gate was conclusively the main entrance for the Southwells' most esteemed visitors. One deduction to support this decision was that this gateway provided a direct, straight and thus geometrically-inspired and fashionable route to the gatehouse. The estate map of 1700 further supports this route, which demarcates a field boundary running directly from this entrance gate



**Fig. 6.11 - Animation route of Approach, Hoxne Hall**

to the now-demolished gatehouse and thus potentially followed the route of the original approach (Fig. 6.04). This gateway still existed in 1757, although no longer as the main entrance, yet the second gate to the south disappeared (Fig. 6.05). Its removal further indicates the greater importance of the first gate over the second gate.

Another deduction arose when addressing the difference between the gates' designs. The first gate (Fig. 6.11) bore similarities to that marking the entrance of the approach to Oxburgh Hall on the 1722 parish map (Fig. 6.10). Grandly designed, Oxburgh's entrance gates included what were presumably ball finials upon pedestals. By comparison, the crossed wooden beams on the other gates at Oxburgh, which provided access to the working areas of the estate, were similar in design to the second possible entrance gate at Hoxne. As a result, the first gate at Hoxne, decorated with ball finials, likely marked the start of a direct approach to the gatehouse. Consequently, this approach will be recreated as an animation for analysis and interpretation (Fig. 6.11) and compared with a viewshed analysis conducted from the approach to Oxburgh Hall. The aim is to ascertain the similarities and differences between the experiences when approaching both sites.

## Analysis



**Fig. 6.12 – Photographic observation through entrance gate, Oxburgh Hall**

A framed view of the approach through the entrance gates first greeted visitors.<sup>38</sup> Gates frequently provided a decorated piece of architecture to hint at the prestige of the owner, but they also created a *claire-voie*<sup>39</sup> (Taigel & Williamson, 1991, p.7). Contemporary treatises of perspective popularly explored *claire-voies* (Vredemen de Vries, 1604; Dubreuil, 1679). Thus, the Southwells were likely knowledgeable of such concepts. The Bedingfields also demonstrated an awareness of this concept by framing Oxburgh Hall with their entrance gate (Fig. 6.12). At both Hoxne and Oxburgh, the *claire-voies* focused on the towering gatehouses alongside adjoining buildings or ranges. At Oxburgh, the gatehouse adopted a militaristic style with projecting crenelated turrets (Fig. 6.08), whilst Hoxne was more ornamental with decorative columns terminated with finials (Fig. 6.03). Therefore, Oxburgh displayed power in the defensibility of its gatehouse. The gatehouse at Hoxne, on the other hand, had aesthetic impact but clearly to emphasise elite authority within the landscape.

Beyond the entrance gate, the 'Newe Park' drew the visitors' attentions<sup>40</sup> away from the village and church to the north.<sup>41</sup> Within the depths of the valley, the river ran alongside the approach.<sup>42</sup> Baron Waldstein documented a similar and pleasing view which presented itself during his visit to Woodstock Palace,

<sup>38</sup> This observation presented in the animation at timecode [00:00] (CD Appendix 3).

<sup>39</sup> *Claire-voie* means "clear way", an architectural term describing open-work fence, gate, or grille permitting a view of the landscape beyond (Curl & Wilson, 2015, p.174).

<sup>40</sup> [00:02]

<sup>41</sup> [00:35]

<sup>42</sup> [00:26; 00:43]

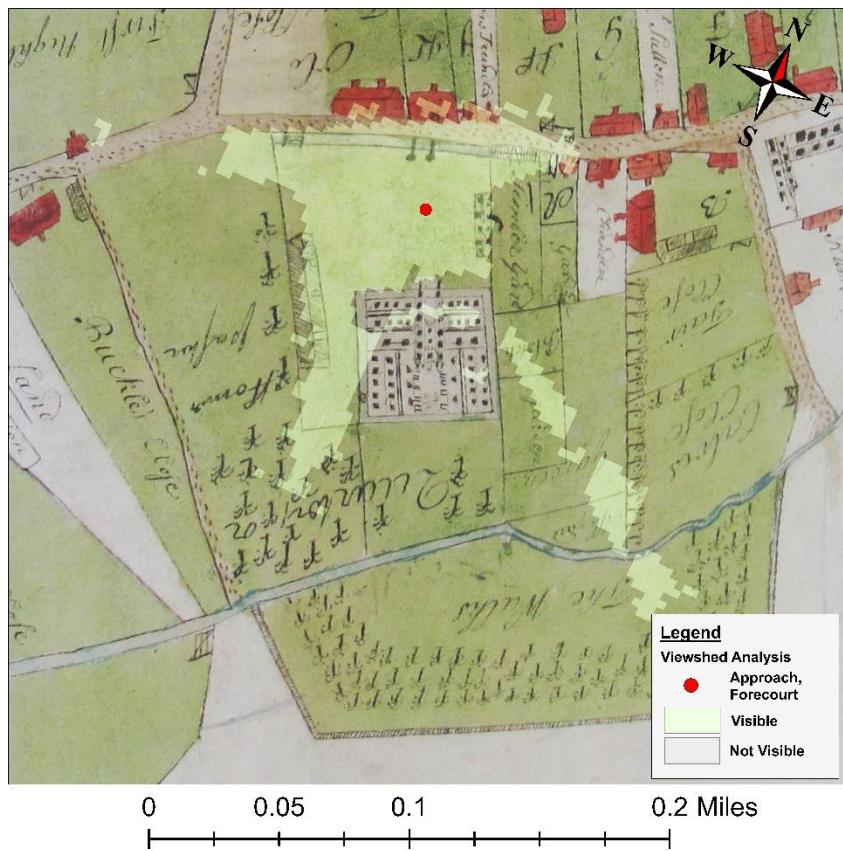
Oxfordshire, in July 1600: “The royal domain lies in a valley where a brook wanders lazily through meadows, all very picturesquely” (Waldstein, 1981, p.117). At Hoxne, grass covered the valley floor and up the hills to meet the horizon lines north and south of the approach. As Markham described, “the grasse is sweetest” in the valley (Markham, 1614a, p.77). In terms of husbandry, a valley was an ideal place to showcase any animals with enough space to graze and roam, which would have been possible at Hoxne. Francesco Colonna further supported this notion, who described that with the “grasse coole and sweet” within the valley, “a ground most healthfull” would be displayed (Colonna, 1592, p.99). Additionally, Estienne claimed that, to further complement the grassland, “goodly high woods” would add to the “beautie and gracefulness of the park” (Estienne, 1616, p.668). At Hoxne, ‘the Spring’ situated on the north horizon added beauty to the park.<sup>43</sup> This natural and sylvan ‘Newe Park’ would have ultimately showcased the fertility of the landscape, which had the benefit of rich soil types in the area (Fig. 6.02). Subsequently, the expense and influence attributed to its ownership would have promoted the status of the Southwells.

Drawing nearer the gatehouse at Hoxne, an impressive outbuilding stood on one side of the approach.<sup>44</sup> On Stokes’ map, this building had little ornamental detailing, which indicates it served a purely functional purpose (Fig. 6.03). At Oxburgh, buildings flanked both sides of the approach: to the west was a large barn and to the east stood the stables, possibly containing a dovecote (Menuge, 2006, pp.5–6, 29–9). The viewshed analysis confirmed that both buildings were prominently visible while also helping to restrict the views of various village houses in Oxborough (Fig. 6.13). At Hoxne, the outbuilding was likely a barn or stables. However, of interest was the landowners’ decision to place this building to the south side of the approach over the north. Its placement was not to obscure something from visitors, because the rising topography already hindered the view behind this structure looking southwards. Instead, the building’s placement ensured that the landscape view on the opposite side of the approach looking northwards was not obscured. A view with more “extent and varietie” (Wotton, 1624, p.4) was available to the north, which drew the visitors’ attention to the parkland with the river disappearing into the distance towards meadows, fields

---

<sup>43</sup> [00:38]

<sup>44</sup> [01:04]



**Fig. 6.13 - Viewshed results from Approach, overlaying parish map by Phillip Wissiter, 1722 (NRO BRA 2524/1)**

and hedgerows.<sup>45</sup> Keeping the view to the north was ultimately more appealing at Hoxne compared to the view to the south which lacked extent and variety because of the encroaching hill. As a result, the Southwells' desire for a prospect from the approach influenced the location of this outbuilding.

Drawing nearer the bridges over the moats at Hoxne and Oxburgh, visitors better examined the intricacies of the gatehouses' architecture.<sup>46</sup> The gatehouse at Oxburgh (Fig. 6.08) adopted a medieval military style with castellations and crenellations that created a powerful martial image (Liddiard, 2005, p.129), alongside cruciform-style gun-ports which were not functional but decorative embellishments (Menige, 2006, p.36). At Hoxne, however, one building abutting the gatehouse's northern façade included crenellations which evoked that sense of protection and defence. The gatehouse, on the other hand, was more ornamental in design. Upon closer inspection, a rooftop feature became more prominent, which Stokes depicted on his map (Fig. 6.03). This feature has been interpreted as a statue of a goat, the Southwells' heraldic beast (Debrett, 1811, p.680).

<sup>45</sup> [00:46; 01:18]

<sup>46</sup> [01:29]

The inclusion of heraldry was originally a medieval practice and, in some cases, were extravagantly placed on medieval castles and residences. The Percy family's heraldic beast, a rampant lion, emblazoned one front of Warkworth Castle, Northumberland, which faced the main town street and thus denoted the Percys' power and authority over the local residents (Liddiard, 2005, p.129). In the case of Hoxne, the statue upon the gatehouse overlooked the village and the approach, thus equally displaying a commanding and authoritative notion to observers.

There was no external heraldry emblazoned at Oxburgh to exude this same effect. Its known heraldic devices date to the nineteenth century, except for blank shields within certain rooms (Menuge, 2006, p.36). Therefore, the Southwells potentially gained inspiration from another site. Robert Southwell I received his knighthood in 1585 at Theobalds (Shaw, 1906, p.83), the same year that William Cecil finished Theobalds (Cole, 2017, p.71). Consequently, Robert would have been amongst the first to see it completed, including its gatehouse. A drawing of the gatehouse's inner façade at Theobalds depicts a grand display of heraldry on the rooftop (Fig. 6.14). This design was like Hoxne's gatehouse, including the finials creating a *claire-voie* which framed the heraldic device. As a result, this display drew the eye to the highest point of the gatehouse, thus emphasising geometric concepts of perspective (Fig. 6.15). Therefore, Theobalds likely inspired the Southwells to include a heraldic statue on the gatehouse at Hoxne.

This heraldic device also became as a confirmatory symbol that the Southwells had claimed the episcopal palace which Henry VIII seized. Heraldry identified new residing families who re-used or adapted original sites (Henderson, 2005, p.48). Contemporaries considered these heraldic displays to be "wittie devise[s] expressed with cunning woorkmanship, somethinge obscure to be perceived at the first" until upon moving closer to the gatehouse, "with further consideration [they are] understood" and thus "maie the greater delighte the behoulder" (Whitney, 1586, p.4). Along with the slightly pretentious family motto 'Nee male notus eques', meaning 'Not an unknown knight' (Debrett, 1811, p.680), the statue would have competently discerned the residing family (Wotton, 1624, p.36). Altogether, whilst the Southwells displayed their lordship and jurisdiction upon the gatehouse of a medieval episcopal predecessor at Hoxne, the Bedingfields emphasised their ancestral pedigree at Oxburgh as well as their status associated with obtaining a *licence to crenellate* (Menuge, 2006, p.18).

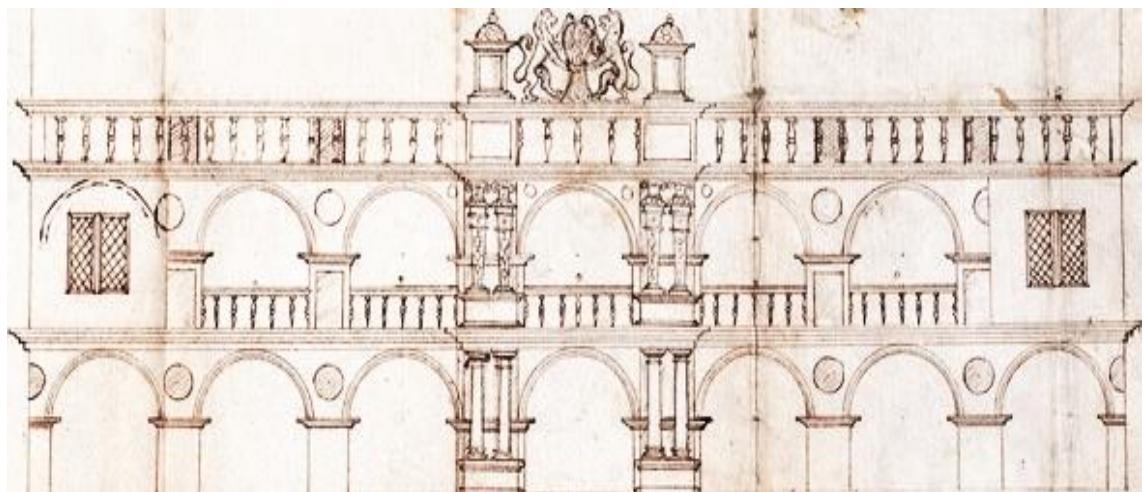


Fig. 6.14 - Design of courtyard façade of gatehouse range, Theobalds Palace, c.1570  
(Cole, 2017, fig. 9)

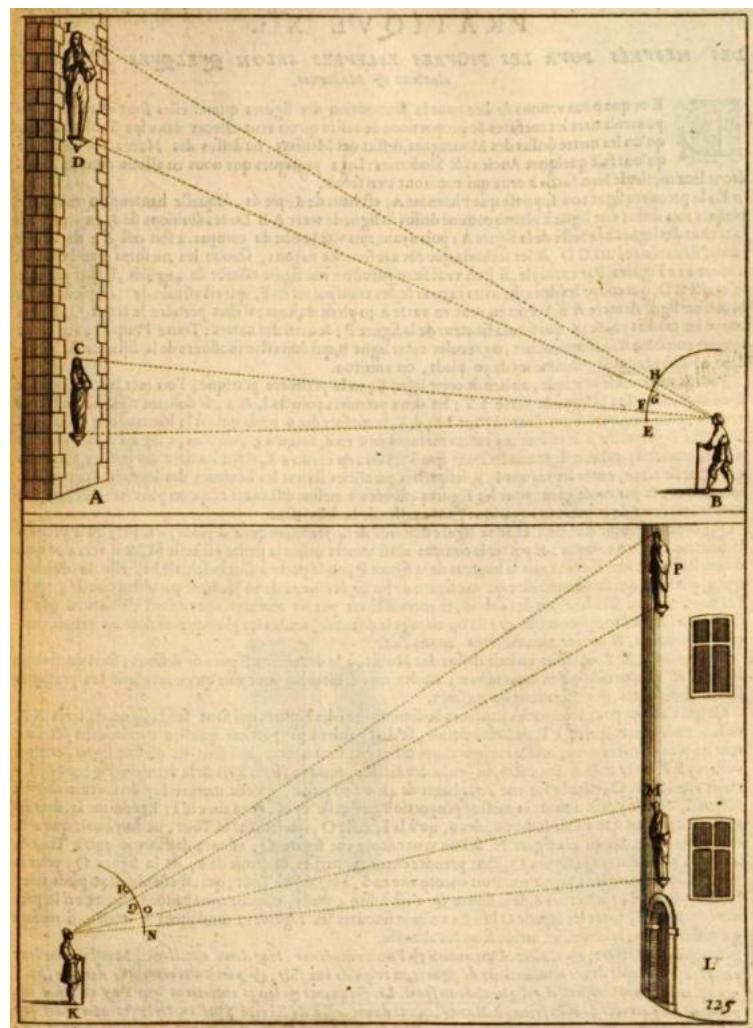


Fig. 6.15 - Practique XI (Dubreuil, 1679, p.125)

Upon the bridge at Hoxne, the moat became visible on either side.<sup>47</sup> This moat did not display defence in its design, like with the gatehouse. Instead, a desire for privacy and segregation was evident, which was essential for monastic life within an episcopal palace (Henderson, 2005, p.37). Nevertheless, the water added beauty to the view because “pure chrystal water” was “phansie like a mirrour” (Aubrey, 1898, p.37). Therefore, similarly to how the moat surrounding Bodiam Castle in Sussex has been described, the large sheet of water created an ornamental and dramatic effect in its reflections, as if the building was rising out of the moat (Taylor et al., 1992, p.155). Visitors to Oxburgh Hall (Fig. 6.08) also observed its moat’s mirroring effect (Menuge, 2006, p.29). The Southwells thus logically enjoyed similar experiences of the moats at Hoxne and also Woodrising. Conclusively, although providing a protective barrier, the moat created a visually-pleasing addition to the approach as visitors traversed the bridge. However, while the Bedingfields created a display of defence at Oxburgh, the Southwells retained the bishops’ original monastic motive for seclusion at Hoxne.

The gatehouse’s archway at Hoxne provided *claire-voies* from the bridge towards the hall<sup>48</sup> and back towards the entrance gate from within the forecourt.<sup>49</sup> These *claire-voies* thus highlighted the beginning and end of the approach. Through this archway, visitors received their first glimpse of the house’s entrance porch before emerging into the forecourt to admire Hoxne Hall fully.<sup>50</sup> Stokes depicted another architectural embellishment above the entrance which, similarly to the heraldic statue upon the gatehouse, also drew the visitors’ eyes upwards which adhered to concepts of perspective (Fig. 6.15). For this analysis, a statue within a classically-inspired arched niche has been interpreted. Small niches featured on the entrance fronts of Montacute House, Somerset (Shaw, 1839, pp.25–6), and Little Bolsover Castle, Derbyshire (Girouard, 1983, fig. 145). However, no surviving examples as grand as Stokes indicated at Hoxne have been identified at other country houses. Nonetheless, such architectural embellishments featured more commonly on medieval religious buildings, where worshippers prayed to effigies of saints within niches that generated emotional responses through imagery (Kinch, 2012, pp.267–8). Therefore, this statue within the niche at Hoxne

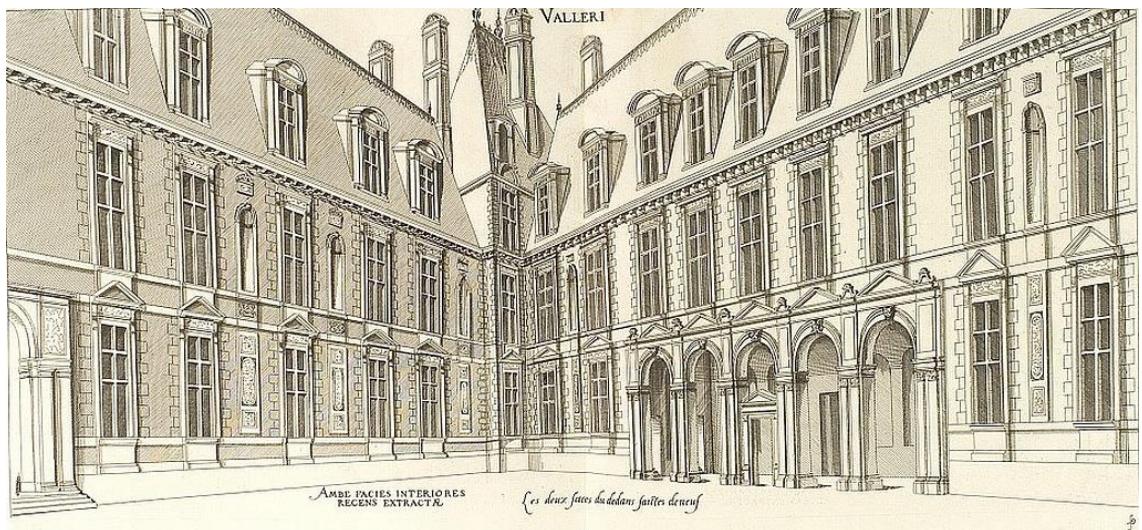
---

<sup>47</sup> [01:31]

<sup>48</sup> [01:34]

<sup>49</sup> [02:32]

<sup>50</sup> [02:04]



**Fig. 6.16 - Valleri [Vallery], France (Du Cerceau, 1576, p.140)**

could have had religious connotations originating from the episcopal palace. However, judging by its overall design, the hall's proportion, symmetry and the presence of quoins were more modern and primarily French in architectural style. French architecture also utilised niches, inspired by Italianate classical architecture (Fig. 6.16). Therefore, upon a background of grass within the forecourt and the surrounding landscape<sup>51</sup>, the architectural composition of the estate, which combined medieval with an alternative French style with classical embellishments, would have been admired before entering the hall.

To conclude, the approach allowed ample opportunity for visitors to enjoy both open and framed prospects. The prosperous parkland with grass and trees provided a natural setting that could be observed unhindered. After the enclosed and encroaching experience visitors endured when travelling through the village, the openly-visible scenery along the approach emphasised the transition into a more elite landscape. No public areas or built environments impeded the visitors' experiences of this bare yet tranquil parkland. This setting thus provided a pleasing contrast to highlight the medieval and classically-inspired architecture within the estate, accentuated by several *claire-voies*. Water also added to the experience, either providing natural effects along the river or ornamentation and drama in the moat. The Southwells especially emphasised the gatehouse as symbolic of their jurisdiction over the estate, including tenants in the village. Conclusively, the bishops and subsequently the Southwells used the approach to impress their status and prestige upon contemporaries.

<sup>51</sup> [02:04; 02:12; 02:42]

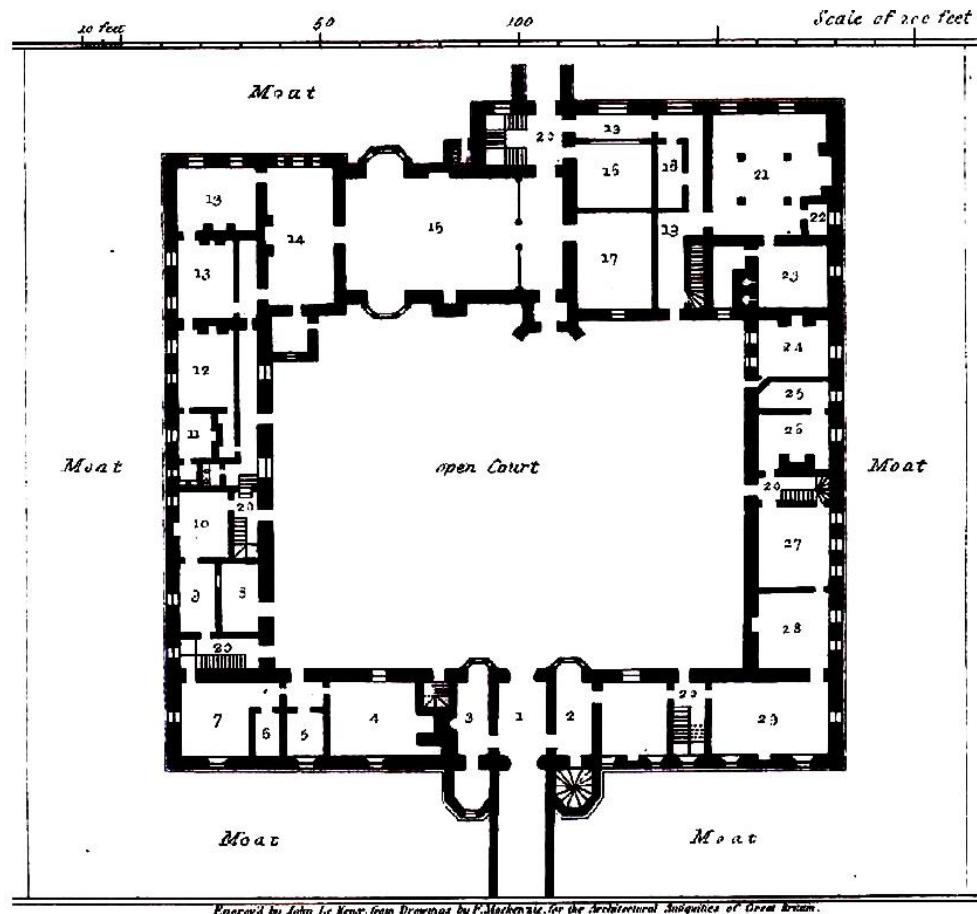
### 6.3.2 - The *Piano Nobile*



Fig. 6.17 - Coldham Hall, Suffolk ©John Fielding

Stokes drew only Hoxne Hall's entrance front, or eastern elevation, which only provided information about the external architecture and the presence of the *piano nobile* (Fig. 6.03). Hoxne Hall was a six-bay gabled house with two main storeys and an attic floor. A decorated porch rose full-height to the roof and quoins added embellishment to each corner of the building. Looking to other country houses, Hoxne Hall closely resembles another Suffolk country house called Coldham Hall (Fig. 6.17), designed by an unknown architect for the Rookwoods in the sixteenth century (Historic England, 2018a). Therefore, in 3D-GIS, Hoxne Hall has been recreated in a similar style to Coldham Hall. However, because Stokes only drew one façade, it is difficult to ascertain the entire plan of Hoxne Hall. However, William Roberts concluded that the hall was most likely U-shaped with projecting north and south wings (Roberts, 2010, p.110). Nevertheless, Hoxne certainly had a *piano nobile*, but no evidence currently exists to verify the internal plan or the identity and purposes of the rooms upon this floor.

Nonetheless, it is possible to make certain deductions primarily based on the porch's location, which was not placed centrally but closer to the south front which indicated a screens-passage plan. The layout of Oxburgh Hall similarly had an off-centre porch in the south range, which was not aligned to the centralised gatehouse archway in the north range across the inner courtyard (Fig. 6.18). As



The room names given in the accompanying key are:

- 1) Arched gateway; 2, 3) Porters' lodges; 4) Laundry; 5) Dairy; 6) Woodhouse; 7) Wash-house; 8) Aviary; 9) Baths;
- 10) Room for persons unwell; 11) Dressing room; 12) Bedchamber; 13) Drawing room; 14) Dining room; 15) Hall;
- 16) China room; 17) Pantry; 18) Closet; 19) Passage; 20) Staircases; 21) Kitchen; 22) Larder; 23) Bakehouse;
- 24) Servants' hall; 25) Storeroom; 26) Housekeeper's room; 27) Breakfast room; 28) Bedchamber; 29) Library.

Fig. 6.18 - Ground-floor plan of Oxburgh Hall, by F. Mackenzie, 1774 (Britton, 1809, pp.96-7)

a result, the Bedingfields situated their prominent rooms at Oxburgh Hall in the south and east ranges, whilst the west range held their service rooms (Menuge, 2006, pp.24-5). The Southwells likely adopted a similar floor plan at Hoxne. For this interpretation, therefore, a great hall plausibly resided immediately north of the porch. This room lay directly beneath the chimneys (Fig. 6.03), which indicated a large fireplace suited to a great hall. The other principal rooms thus lay beyond the hall in the north range. Oppositely, the south range contained the service rooms and lodgings. However, the prospects that visitors could observe from each front at Hoxne Hall will be analysed and interpreted together with comparative viewshed analyses conducted from the south and east ranges at Oxburgh. This section will seek to ascertain whether the previous observation regarding the floor plan of Hoxne Hall is accurate and also to identify where the Southwells logically placed their most prominent rooms upon the *piano nobile*.

### Analysis - North Front



**Fig. 6.19 - Viewshed results from *Piano Nobile*, North Front, Hoxne Hall (Immediate Grounds)**

The north front primarily overlooked the formal garden before the wall walk in the north-east corner of the grounds (Fig. 6.19). At Oxburgh, visitors upon the *piano nobile* within the east range primely viewed the gardens (Fig. 6.20). However, while Oxburgh's eastern façade aligned to its garden, Hoxne's north front did not follow the same principles and thus, the prospect of the formal garden was at an angle. As a result, visitors could not observe the whole plan of the formal garden from a geometrically-aligned perspective directly above, despite this view being preferable amongst contemporaries (Strong, 1998, p.15). This examination does raise the possibility that the Southwells did not plan these grounds but followed the original scheme from the episcopal palace.

Considering this, the garden may have aligned with the medieval palace's northern front which potentially adjoined the gatehouse. The line of this north front may have been demarcated by the wall between the formal garden and entrance court which, in retrospect, had different brickwork compared to the other garden walls that Stokes drew to the west of the property (Fig. 6.03). Altogether, these walls may theoretically have been the remains of a courtyard plan and thus the entrance court was originally the palace's inner courtyard. A similar design existed at the Archbishop's palace at Knole [Knowle] Park, Kent (Emery, 2006, p.365), which Robert Southwell I was appointed keeper of by Henry VIII in 1539 (Brady, 1839, p.9). Therefore, this view from the north front of Hoxne Hall

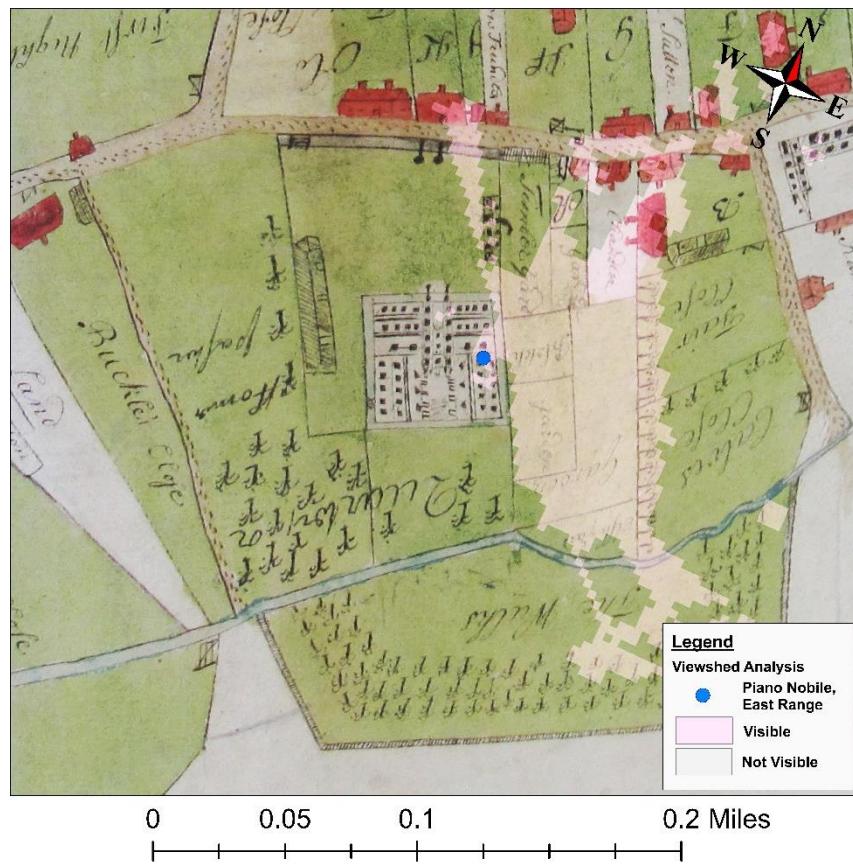


Fig. 6.20 - Viewshed results from *Piano Nobile*, East Range, Oxburgh Hall, overlaying parish map by Phillip Wissiter, 1722 (NRO BRA 2524/1)

demonstrated not the aesthetic preferences of the Southwells, but a compromise to avoid altering the design of the grounds. There is thus reason to suggest that Southwells' reluctance to change the gardens' layout was because Hoxne was only their secondary estate.

Behind the rooftop of the garden building, the orchard was visible. From upon the *piano nobile*, visitors admired raised views of its quincunx design, an aesthetically-pleasing and classically-inspired planting scheme (Henderson, 2005, p.83). However, the orchard was not well-proportioned in concordance with a geometric scheme and no alleys or pathways existed, both of which Markham suggested were necessary components for orchards of delight (Markham, 1613, p.33). This orchard may, therefore, be remnant from the medieval episcopal palace, during which time orchards were primarily productive sources of food, although documentation of such practices is rare (Bond, 2004, p.162). Nevertheless, after the medieval period, orchards became places of "unspeakable pleasure and infinite commodity" by contemporaries (Lawson, 1617, p.67). Therefore, while the owners prioritised the orchard's productivity in its fruits, visitors admired a display of "both beauty and riches" (Markham, 1613, p.41).

To some extent, the moat served as a protective boundary “from both Man and Beast” but also an ornamental feature, where the “most cleare water, encompassing the garden, dooth woonderfully set it foorth” (Heresbach, 1577, p.49). Subsequently, the moat provided a clear and fluid transition between the formal gardens and the natural parkland beyond. This prospect also included a partial view of another water feature, which ran parallel to the moat and comprised of individual pools divided by lines of trees within an altogether triangular design (Fig. 6.03). While cascades required sloping topography, the flatter topography at Hoxne means that this feature was more likely a water garden. During this period, landowners had a keen interest in water management, which included making and maintaining water gardens as elaborate as those still existing at Tackley, Oxfordshire (Whittle & Taylor, 1994, p.59). Especially within geometric designs, landowners demonstrated their power to control nature by taming, restraining and manipulating water (Spooner, 2005, p.60). The triangular layout of rectangular ponds thus initially indicates geometric inspiration at Hoxne.

On the other hand, these ponds potentially originated as a medieval complex of fishponds from when Hoxne was an episcopal palace. A triangular composition of fishponds resembling the composition at Hoxne still exists at Buckland Priory, Somerset (Fig. 6.21), originally consisting of twelve ponds joined by leats (Historic England, 2015). Fishponds also existed at Woodrising (NHER 49136), indicating that the Southwells strongly desired to adopt multiple water features at both sites. At Hoxne, the Southwells thus adapted what may originally have been medieval fishponds into a water garden with a more ornamental purpose, which was known to occur in this period (Henderson, 2005, p.129).

This collection of water features, including the moat, water gardens and river, “will afford you fish, fence, and moysture to your trees” but also more importantly “pleasure” (Lawson, 1617, p.16). Looking south-west from Oxburgh Hall, the Bedingfields also ensured their visitors could admire a similar prospect of their water garden, visible across the moat before the river (Fig. 6.22). According to the parish map, trees also covered this water garden like at Hoxne (Fig. 6.09). The water garden’s design is still identifiable as earthworks within the grounds of Oxburgh (Fig. 6.23). However, compared to those at Hoxne, Oxburgh’s water gardens were more extravagant like those at Tackley. Therefore, whilst the Southwells may have been inspired by sites like Oxburgh, the water gardens

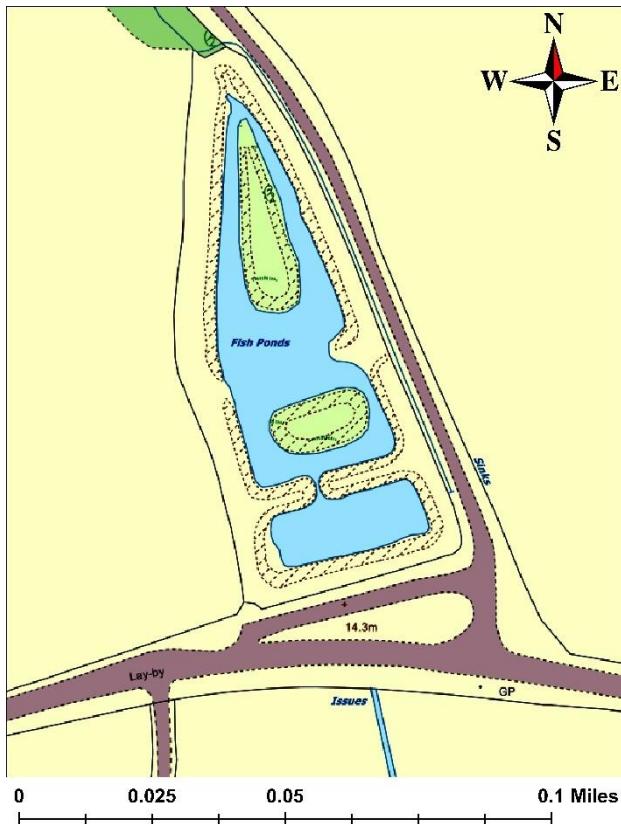


Fig. 6.21 - Fishponds at Buckland Priory, Durston, Somerset

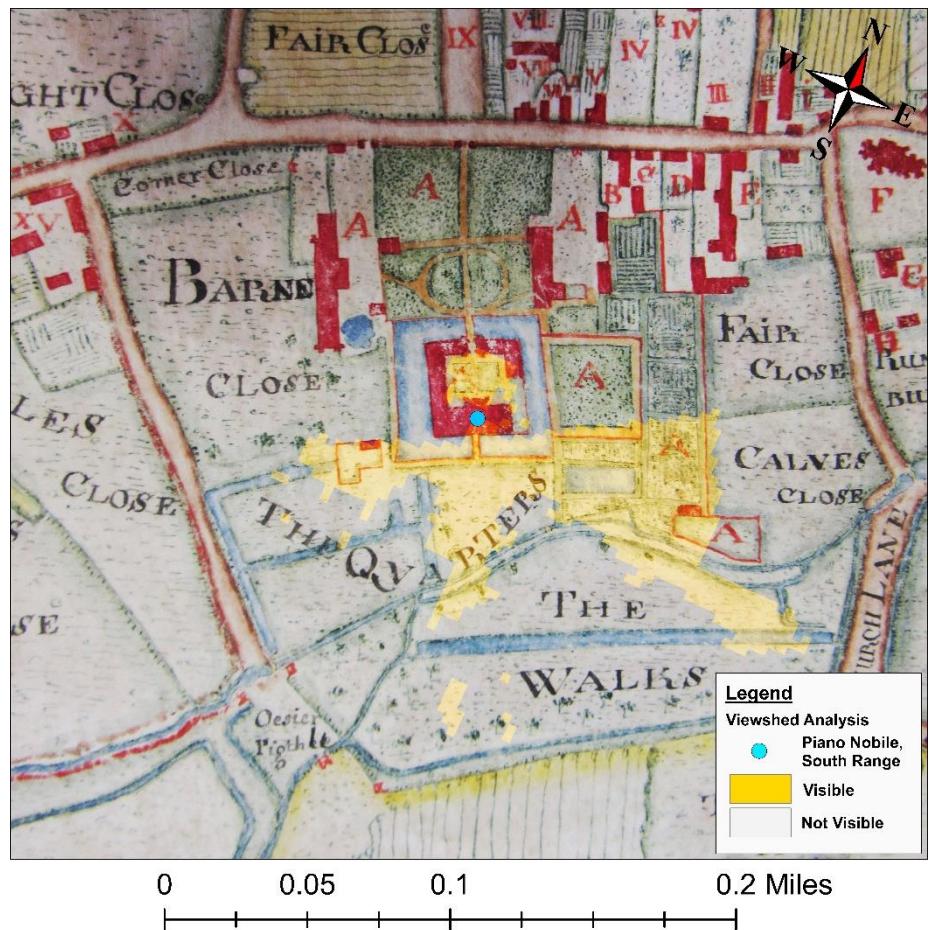


Fig. 6.22 - Viewshed results from *Piano Nobile*, South Range, Oxburgh Hall, overlaying estate map by I.I. de Wilstar, 1725 (NRO BRA 2524/2)

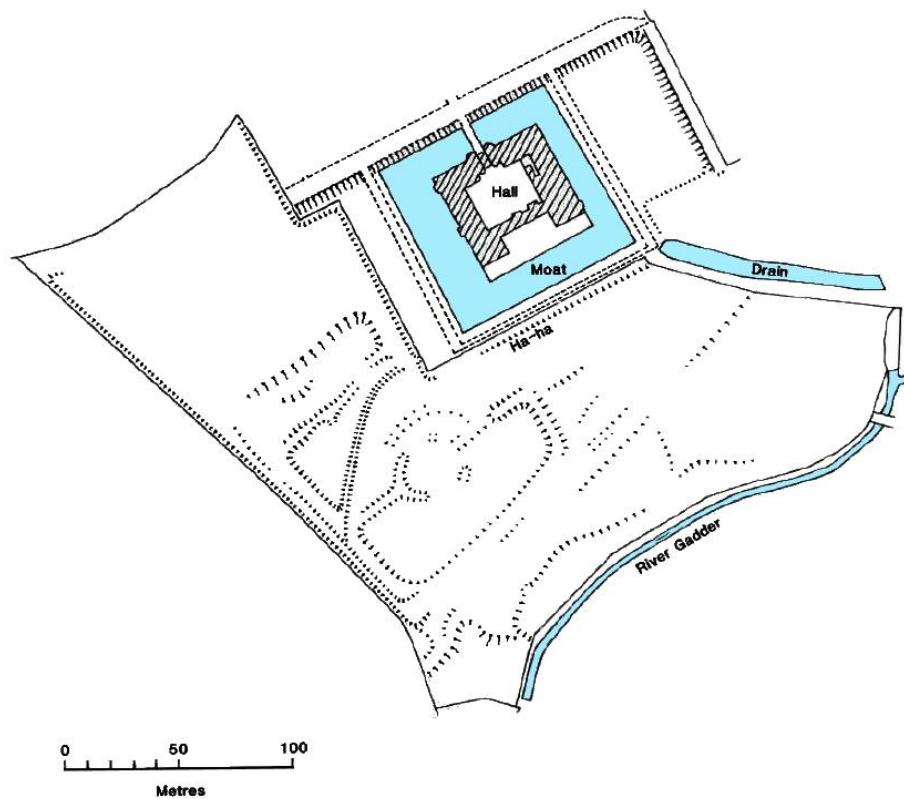


Fig. 6.23 - Earthworks of seventeenth-century water gardens, Oxburgh Hall  
(Cushion & Davison, 2003, pp.224–5)



Fig. 6.24 - Viewshed results from *Piano Nobile*, North Front, Hoxne Hall (Wider Landscape)

at Hoxne were comparatively smaller and more modest. This decision may be because the Southwells refrained from removing and replacing the pre-existing fishponds as opposed to meeting Oxburgh's standards. As a result, these water gardens enforce the idea that the Southwells did not deem it necessary to fundamentally change the designs within a secondary estate.

The parkland was prominent immediately after the moat within the view from Hoxne Hall (Fig. 6.24). Through the trees, visibility became sparser as the view extended across the river uphill towards the park lodge next to woodland on the horizon line. Whilst the river provided the best and necessary "store of sweet & cold water" for a park (Estienne, 1616, p.669), the woodland complemented the orchard as a place of profit and delight (Peacham, 1612, p.208). Similarly, although the original park at Oxburgh lay north of the estate and thus could not be viewed from the principal rooms, both the east (Fig. 6.20) and south (Fig. 6.22) ranges overlooked a grassland area called 'The Walk[e]s'. Alongside the river, 'the Walkes' looked untamed with a substantial planting of trees and thus resembled a parkland landscape like at Hoxne. As a result, the Southwells and Bedingfields considered these natural grassed features to be ideal within their prospects.

Outside of the 'Newe Park', the views westwards were less expansive as only small vistas of fenland and meadow were possible through the trees lining the moat (Fig. 6.24). The most substantial view extended north-east, beyond the park pale towards the village with its visually-prominent church. At Oxburgh, visitors also enjoyed a good view of the church from the hall's east range (Fig. 6.20). The church at Oxburgh was significant because of the Bedingfields' ancestral connections to this church, which holds the family monuments within the Bedingfield Chantry Chapel (Menuge, 2006, p.4). The Southwells' ancestral church, however, was at Woodrising. Therefore, the church at Hoxne was unlikely symbolic of the family's ancestral lineage. Also, a religious connotation to this prospect was not necessarily applicable at Hoxne either. As Stanley Bindoff assessed, Robert Southwell I's religious position had "some flexibility" because of his involvement in heresy investigations under Edward VI, raised a Protestant, but also under Queen Mary, a Catholic (Bindoff, 1982b, p.356). As a result, his opinions on religion were much different from those of other members of his extended family, most notably the Jesuit Martyr and poet Robert Southwell, the grand-nephew of Robert Southwell I (Family Tree Appendix 3).

Instead, intellectual associations to the church, as a symbol of wisdom and civility (see Section 5.3.3), may have been symbolised in the view at Hoxne. Nevertheless, situated upon the hill overlooking the village, the church offered an aesthetic addition to the prospect. Within his itinerary documenting his travels in 1617, Fynes Moryson described a similar view of another church upon a hill, "whose situation offered to our eyes a faire prospect, and promised great magnificence in the building" (Moryson, 1617, p.4). Surrounding the church at Hoxne, on the other hand, only the rooftops of the village were visible, whilst the fields remained hidden due to the topography and some parkland trees. Altogether, visitors upon the *piano nobile* at Hoxne enjoyed northerly prospects primarily contained within the immediate estate, especially the gardens and parkland. Only a few vistas extending beyond them, most notably the one towards the church upon the hill which became an aesthetic terminus to the prospect.

### **Analysis - East Front**

Gervase Markham recommended that the entrance fronts of country houses should look "upon the rising of the Sunne" to receive the "vigor of his warmth" (Markham, 1613, p.A4r). Hoxne's entrance façade looked eastwards and thus should have adhered to this advice. However, the hall's projecting wings, the towering gatehouse and adjoining outbuildings impeded not only the rising sun but also an extensive prospect beyond the grounds (Fig. 6.25; 6.26). As a result, although visitors admired grass within the entrance court directly below, they could not view much of the surrounding parkland. Only the church and some of the village's houses were high enough upon the hill to be visible above the courtyard buildings. Since the eastern front of Hoxne Hall overlooked the entrance including the approach, this landscape composition was largely unavoidable.

Nonetheless, this elevated vantage point upon the *piano nobile* did provide visitors with the opportunity to observe the architecture of the gatehouse. Although visible within a more restricted view, the gatehouse was nonetheless framed by the hall's wings similarly to a *claire-voie*. At Oxburgh, a raised view of the gatehouse, framed on either side by the courtyard ranges, was also possible in the direct line of sight from the hall's south range (Fig. 6.22). Since the great hall at Oxburgh was within the south range on the ground floor, the room directly above it was plausibly a great chamber (Menuge, 2006, p.59). Since Oxburgh Hall was



Fig. 6.25 - Viewshed results from *Piano Nobile*, East Front, Hoxne Hall (Immediate Grounds)



Fig. 6.26 - Viewshed results from *Piano Nobile*, East Front, Hoxne Hall (Wider Landscape)

a single-pile courtyard house, a dominant house plan since the late medieval period (Liddiard, 2016, p.9), it was highly probable that visitors in the great chamber enjoyed views both southwards, across the grounds, and northwards, towards the gatehouse. Therefore, the room above the great hall at Hoxne was also likely a great chamber.

### **Analysis - South Front**

Upon the *piano nobile* in the south range, visitors overlooked a garden, potentially grassed, with two flanking outbuildings (Fig. 6.27). Many contemporary writers advised that a southern garden which enjoyed the sun was favourable for pleasure, protected by the house from colder northern climates (Tusser, 1573, p.38; Hill, 1577, pp.10–11; Markham, 1613, p.A4r; Estienne, 1616, p.192). It is therefore possible that this court was a kind of pleasure garden, which visitors could admire from above. However, Stokes does not provide the identity of this garden on his map (Fig. 6.03), yet other gardens at contemporary sites like Theobalds inspire some possibilities, including a bowling green (Henderson, 2005, pp.85–6) and tennis courts (Cole, 2017, p.106). However, this court at Hoxne particularly bears the most resemblance to the privy garden at Theobalds, which was enclosed near the dovecote, kitchen courts and stable yards on the opposite side of the palace to the great garden (Andrews, 1993, p.132). These features also surrounded this unidentified garden court at Hoxne, including the outbuildings and dovecote which were also visible from the south front.

On the other hand, there is a reason to believe that this court was the kitchen garden. This possibility corresponds with the interpretation that the south range contained the lower-end service rooms in the house. This garden had beneficial protection from animals by the moat and fencing whilst also being easily accessible from the outbuildings and dovecote. As a result, this court could have been a kitchen garden, which would thus change the guests' experience of the prospect from the south front. Contemporaries like Parkinson believed that kitchen gardens should be distanced from the main gardens and important rooms because “the many s[c]ents that arise from the herbes, as Cabbages, Onions &c. are scarce well pleasing to perfum[e] the lodgings of any house” and “little pleasant to the sight” (Parkinson, 1629, p.461). If this court at Hoxne was a kitchen garden, visitors thus experienced a less-appealing prospect. At Theobalds, on the other



Fig. 6.27 - Viewshed results from *Piano Nobile*, South Front, Hoxne Hall  
(Immediate Grounds)



Fig. 6.28 - Viewshed results from *Piano Nobile*, South Front, Hoxne Hall (Wider Landscape)

hand, the privy garden potentially acted as a kitchen garden beneath the windows of certain lodgings (Andrews, 1993, p.139; Cole, 2017, p.86). Therefore, the southern garden court at Hoxne could have served as both a kitchen garden and a privy garden. Consequently, this interpretation increases the likelihood that the south range of Hoxne Hall contained the bedchambers.

Beyond this garden, contemporaries briefly glimpsed the moat before the view extended across the lower end of the park (Fig. 6.27). Grass frequently appealed to contemporaries like Jonson, who stated that "the meere grasse and greenesse delights" (Jonson, 1640a, p.119). However, the rising topography together with the trees planted close upon the park pale practically hid the surrounding countryside, including the King's Highway abutting the park (Fig. 6.28). On the other hand, within the western periphery of the view, areas of fenland and warren remained visible. Nevertheless, since unobstructed and aesthetically-pleasing parkland dominated the prospect within the direct line of sight, these features did not affect the otherwise private view which allowed observers to experience seclusion from this location. The parkland view overall thus supports the interpretation that Hoxne had a private or 'privy' garden which also served an aesthetic purpose. However, there remains the possibility that this garden still adopted a utilitarian function that did not necessarily create an unappealing visual experience in the Southwells' opinion.

### **Analysis - West Front**

The west front was surrounded by outbuildings, whose rooftops obscured much of the immediate grounds from view (Fig. 6.29). Although no evidence records what function each building had, their crude representations and lack of architectural embellishment on Stokes' map suggests that these were all working buildings. Adjoining the hall's west front, some of these buildings had chimneys, which may indicate that these were kitchens or other similar culinary facilities. As a result, cooking smells, smoke from fires and noise from these buildings would have impacted negatively on the visitors' experience. Thus, this front would have been an unappealing location for the principal rooms. Visible further west were other outbuildings with no chimneys that were logically for storage purposes. At Oxburgh, outbuildings resided distantly from the hall yet remained visible within the northernmost periphery of the prospect from the east range (Fig. 6.20) but



Fig. 6.29 - Viewshed results from *Piano Nobile*, West Front, Hoxne Hall (Immediate Grounds)

visitors avoided them entirely within the view from the south range (Fig. 6.22). As a result, the outbuildings did not encroach upon these views and so visitors avoided an enclosed and unpleasant experience. By comparison, visitors endured an almost claustrophobic experience from the west front at Hoxne because of these buildings. The Southwells thus unlikely considered this prospect to be suitable or even beautiful or pleasing for visitors to observe from the best rooms.

Within the peripheries of this westerly view, the orchard's canopy and the dovecote's rooftop were visible above the outbuildings (Fig. 6.29). Collectively, these features displayed the productivity of the estate. The dovecote was close upon the moat, "for Pigeons delight much in the water" while helping to "keepe away vermin" (Markham, 1613, B1v). It is possible the dovecote survived from the episcopal palace, similarly to the one near the moat at the medieval monastic residence of Wookey in Somerset (Payne, 2003, p.144). Of note is that in both cases, with the extent of water surrounding their grounds, these dovecotes had numerous possible locations. Nevertheless, the bishops at both Wookey and Hoxne decided to keep the dovecotes away from the residences and main gardens. Therefore, although landowners prominently displayed dovecotes as lordly emblems of status at castles and other elite landscapes since the medieval period (Liddiard, 2005, p.107), it was not necessarily the case at episcopal palaces. At Oxburgh, the Bedingfields placed one dovecote in the stables near the forecourt, but also ingeniously built another into one of the gatehouse's turrets (Menuge,

2006, pp.5–6; 57). With the turret's architecture masking the dovecote, visitors did not identify its presence while admiring the gatehouse from the approach (see Section 6.3.1). Nevertheless, the Bedingfields' dovecotes were in agreeable locations compared to the Southwells' one at Hoxne. Although a status symbol within an elite domestic landscape, the dovecote lacked visibility at Hoxne which indicated that it was only meant for utilitarian purposes when the estate was a monastic landscape. As a secondary residence, therefore, the Southwells did not endeavour to change the dovecote's location.

Beyond the outbuildings, the prospect continued over towards the river (Fig. 6.29). Judging by Stokes' map (Fig. 6.03), the westernmost end of the grounds met the river in a pleasing and potentially designed curve. One possibility is that a curved terraced garden existed at Hoxne, similar to that at Wollaton Hall (Girouard, 1983, p.93 pl.V). However, Stokes' limited detailing combined with the scattering of outbuildings indicates that this area was purely for functional rather than aesthetic or recreational use. This observation further solidifies the interpretation that the west front did not contain the prominent rooms when more aesthetically-pleasing prospects existed from the other ranges in the house.

A bridge provided access over the River Dove into an area of land called 'Slaughterhouse Fenn'. In the first instance, the field's name suggests that its purpose involved the slaughter of animals for food and profit. This interpretation would correspond with the depictions on Stokes' map of cows within the park to the north (SRO(I) HD40/422). However, the fieldname actually means "land on or near which a sloe tree grew", also known as blackthorn (Field, 1972, p.207). Therefore, this observation throws the initial interpretation of the fenland's use into doubt. The fenland abutted a warren, which resided upon the deep sandy soils (Fig. 6.02). As a result, these rabbit warrens would have appeared desolate, with dunes created by the wind as rabbits stripped the turf from the sand (Williamson, 2006c, p.11). Normally, warrens were worthy parts of estates, as hunting grounds as well as sources of profit (Estienne, 1616, p.644). In medieval times, rabbits were also symbols of religious salvation, and thus the placement of the warren near the main residence was a symbol of the owner's religious devotion (Liddiard, 2005, p.110). However, at Hoxne, neither the bishops nor the Southwells owned the warren but was the property of the Cornwallis family, distant relations of the Southwells through the Jerningham line (Fig. 6.03).

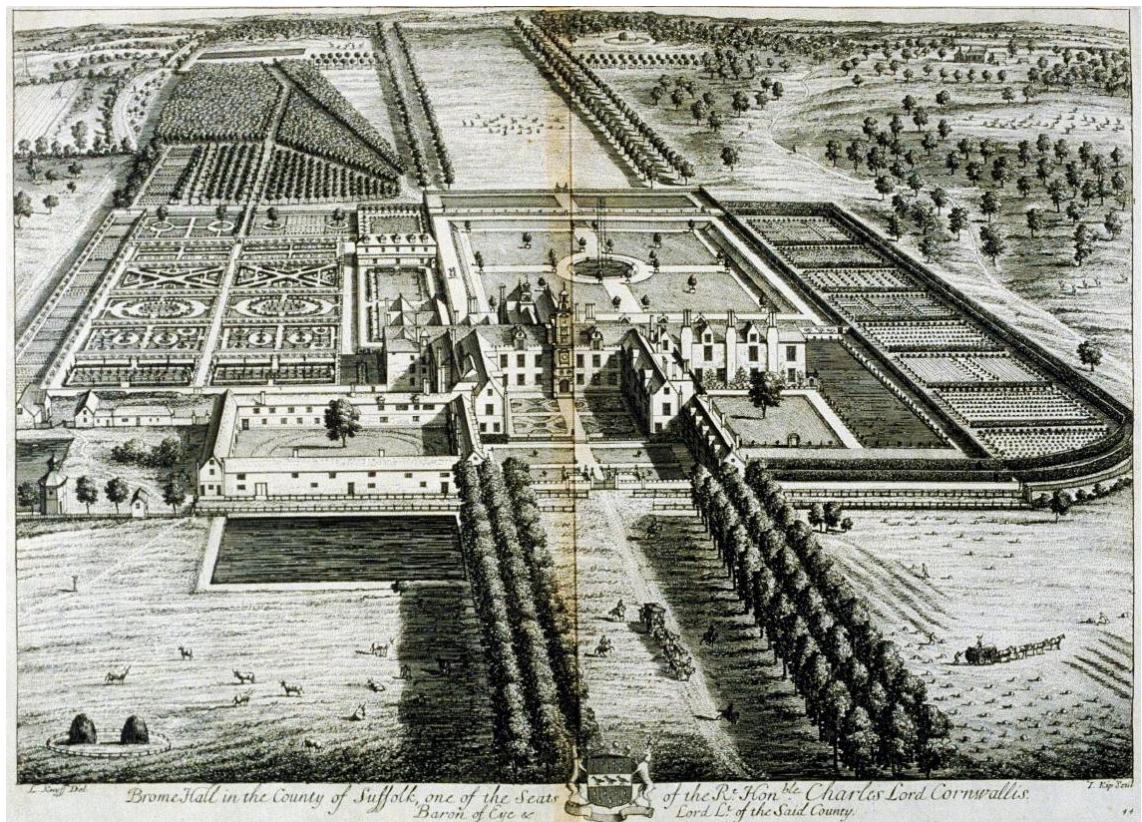


Fig. 6.30 - Brome Hall, Suffolk (Knyff & Kip, 1707; McKee, 2004, plate 45)



Fig. 6.31 - Viewshed results from *Piano Nobile*, West Front, Hoxne Hall (Wider Landscape)



Fig. 6.32 - Viewshed results from *Piano Nobile*, East Front, Brome Hall (Wider Landscape)

The Cornwallises' estate of Brome lay further west from Hoxne (Fig. 6.30). The family built Brome Hall on a new site to its medieval predecessor in 1550 (Bateman-Hanbury, 1911, p.228), not long after Robert Southwell I acquired Hoxne in 1543. Subsequently, the Cornwallises ensured that they built their residence far from Hoxne and took advantage of the sloping topography to ensure that the Southwells could not overlook Brome. Two viewsheds helped confirm that not only could the Southwells not see Brome Hall (Fig. 6.31) but the Cornwallises also had no prospect over Hoxne Hall (Fig. 6.32). The Cornwallis avoided this possibility by not building Brome Hall close to the river and thus within view of Hoxne Hall. As a result, visitors to Hoxne only perceived the edge of the Brome estate, including the warren. Even though these estates resided next to each other, both families enjoyed their privacy without looking directly upon their neighbours, considered "ill" or not (Bacon, 1864b, p.229).

### Summary

In conclusion, the most prominent rooms were most likely located upon the *piano nobile* within the north front of Hoxne Hall. This deduction would correspond with Markham's advice that the "cheifest rooms are which euer would haue their prospect into our garden" (Markham, 1613, p.A4r). However, the views from the east and south front also allowed visitors to enjoy more private yet nonetheless pleasing prospects of other adjoining garden courts, the gatehouse and parkland. Each of these compositions bore some resemblance to the views

from the prominent rooms at Oxburgh. As for the westerly view from Hoxne, the composition contained a myriad of outbuildings but lacked gardens or other ornamental features, which reduced its overall visual appeal. The view was also in the direction of a neighbour's estate, even though the residence remained hidden. Collectively, the landscape composition visible from the west front reduces the likelihood that it contained the principal rooms at Hoxne Hall.

Derived from the viewshed analyses, these observations mostly correspond with the previous interpretation about the room layout of Hoxne Hall. Similar to Oxburgh Hall's plan, immediately north of the porch with its screens passage was the great hall with, most likely, a great chamber above. Within the north-west corner of the hall, in proximity to the chimneied outbuilding, the room which overlooked the orchard could have been a dining chamber. Residing further into the north wing, a gallery or similar room allowed visitors to enjoy views over the formal garden and possibly eastwards out of the gabled end. Consequently, bedchambers and lodgings lay within the southern end of the house, where private yet advantageous views were possible. The west front, on the other hand, likely marked the opposite end of the single-pile rooms facing eastwards, such as the great hall and great chamber. On the other hand, the significantly hindered view does raise the possibility that corridors of little importance resided along the west front, providing access between the different chambers upon the *piano nobile*.

### **6.3.3 - The Gatehouse**

One fascinating feature on Stokes' map was the towering gatehouse, which granted visitors access to the hall along the approach (Fig. 6.03). The gatehouse was believed to be original to the medieval episcopal palace under the ownership of the Bishops of Norwich (Roberts, 2010, p.110). Robert Southwell I may have been inspired to keep the gatehouse of the ecclesiastical predecessor through his duties at Knole (Brady, 1839, p.9; Emery, 2006, p.365). In the case of Hoxne, the Southwells further adapted the gatehouse's rooftop by adding a statue, interpreted as a goat representing the Southwells' heraldic beast (Debrett, 1811, p.680). Altogether, the gatehouse was an impressive and independent architectural feature which had a significant visual impact on visitors. However, the gatehouse also provided visitors with the highest vantage point at Hoxne, and thus access to one of the most extensive views over the Southwells' estate.

Along with Knole, the late-fifteenth century gatehouse at Oxburgh Hall (Fig. 6.09) potentially inspired the Southwells to keep theirs at Hoxne. The gatehouse is one of Oxburgh Hall's oldest features and contained lodgings for only the most distinguished visitors, such as Henry VII in 1487 (Menuge, 2006, p.1). Forming part of the hall, the gatehouse provided two storeys of accommodation above the archway granting visitors access to the hall's inner courtyard, after crossing the bridge over the moat from the north. Flanking the gatehouse on either side, polygonal and crenelated turrets extended beyond the roof. By the late seventeenth century, North deemed the gatehouse at Oxburgh to be "the statlyest tower I have seen" (North et al., 1981, p.127). By the end of the sixteenth century, however, formidable gatehouses were becoming less common (Henderson, 2005, p.36). Nevertheless, the gatehouse at Oxburgh may have inspired the Southwells to construct or retain the gatehouse at Hoxne. Another potential source of inspiration was the equally-famous gatehouse at Layer Marney Tower (Fig. 4.08), constructed in 1520 by Henry, 1st Lord Marney, who was the great-grandfather-in-law of Edmund Bedingfield (Family Tree Appendix 3). Oxburgh thus likely inspired both the Marneys and Southwells to build or keep similar gatehouses. Furthermore, Oxburgh has rooftop access for recreational purposes (Menuge, 2006, pp.45, 55–6), which suggests that visitors could also venture onto the gatehouse rooftop at Hoxne. This analysis thus explores the viewshed results from both gatehouses to determine what the Southwells and Bedingfields intended their visitors to observe and experience at Hoxne and Oxburgh.

### Analysis

The viewshed does demonstrate how extensive the prospect from the gatehouse would have been. Therefore, this analysis only addresses landscape features and compositions of specific interest. Within the grounds of the hall itself (Fig. 6.33), the formal garden, entrance court and privy or kitchen garden were collectively visible from above. However, the hall ensured that the outbuildings were hidden from sight. As a result, contemporaries' attentions focused on the landscape in the foreground of the view. These grounds displayed a geometric and axial composition. Straight, parallel and perpendicular lines and angles were evident in the courts' walled divisions, the projecting wings of the hall, the outbuildings extending from the gatehouse and the moat encompassing the entire scheme. From this centrally-placed and elevated vantage point atop the gatehouse,

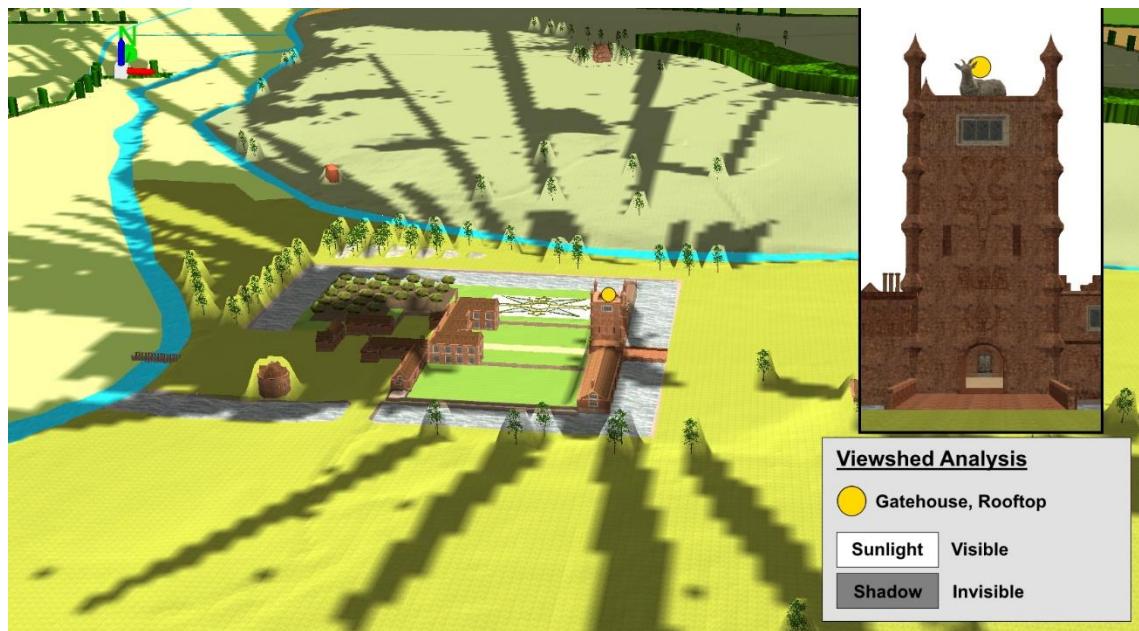


Fig. 6.33 - Viewshed results from Gatehouse, Hoxne Hall (Immediate Grounds)

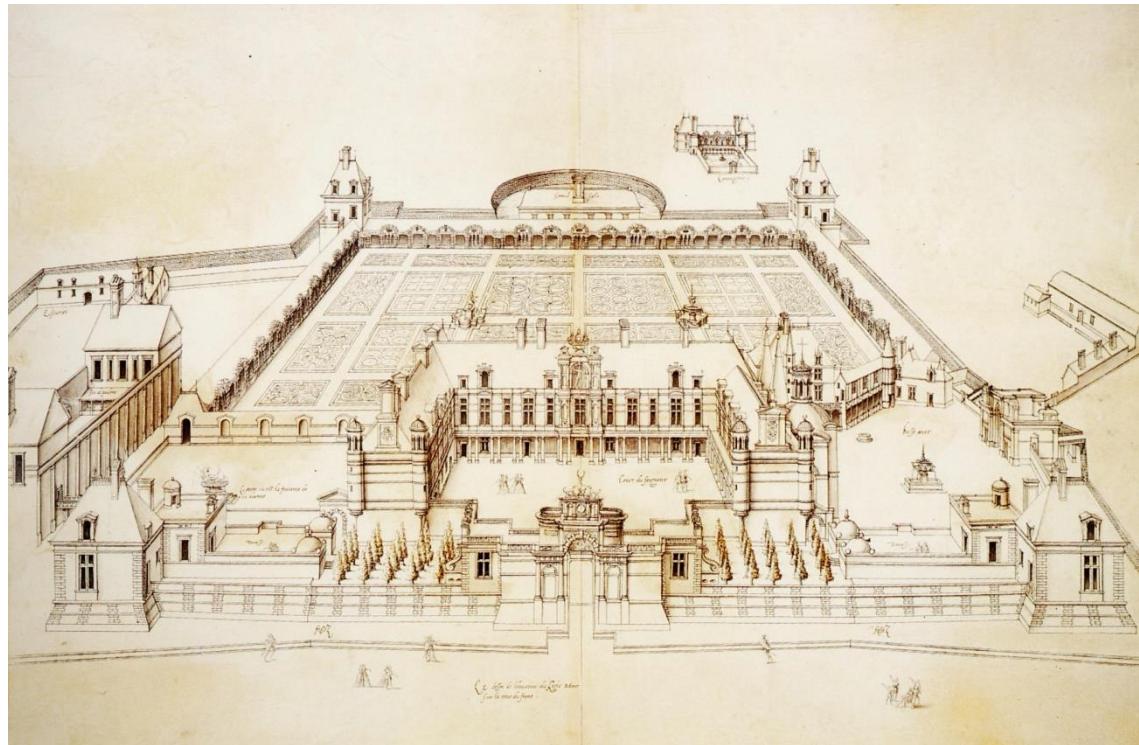
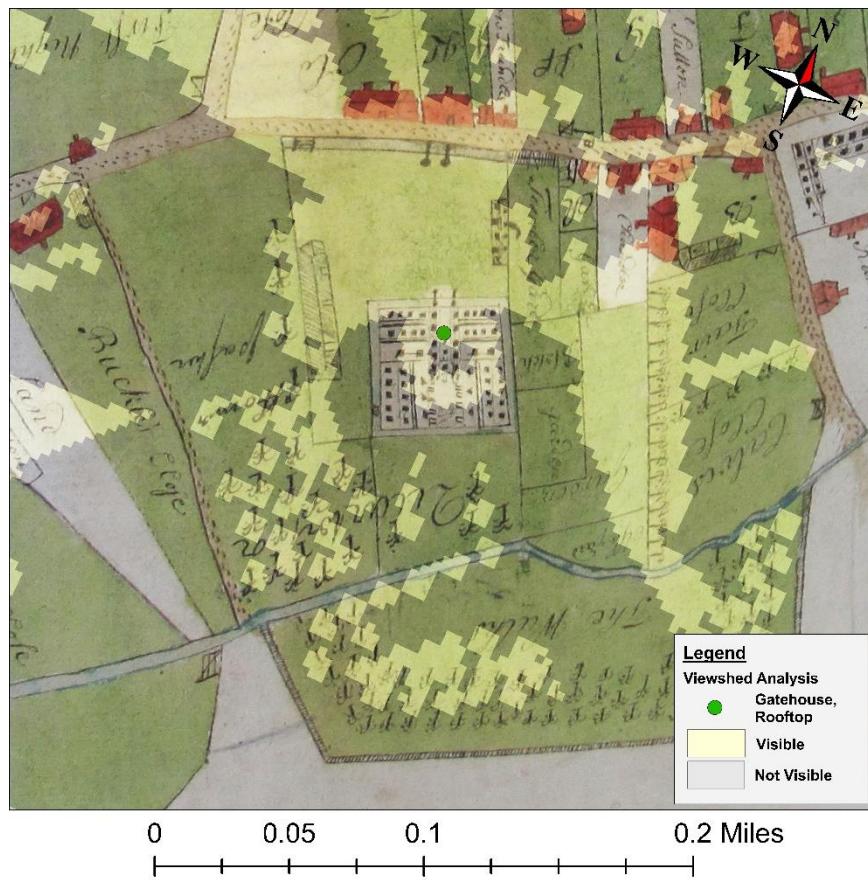


Fig. 6.34 - Château d'Anet, France (Du Cerceau, 1579)



**Fig. 6.35 - Viewshed results from Gatehouse, Oxburgh Hall, overlaying parish map by Phillip Wissiter, 1722 (NRO BRA 2524/1)**

visitors best observed the geometry on display. Contemporary writers explored elevated perspectives of such layouts within illustrated plans such as Androuet du Cerceau's work on Château d'Anet in France, whose landscape composition resembled that at Hoxne (Fig. 6.34). These illustrations demonstrated popular geometric principles, including axiality and order, which likely encouraged landowners like the Southwells to develop or maintain such schemes (Henderson, 2005, p.9). Therefore, visitors had the opportunity observe the beautiful grounds from a more beneficial perspective first-hand upon the gatehouse at Hoxne.

Another feature primarily in focus was the approach, evident in the views from both Hoxne (Fig. 6.33) and Oxburgh (Fig. 6.35). Contemporaries upon the gatehouse rooftop were thus able to anticipate the arrival of visitors. The straight and axial alignment of the approach also added a sense of geometric design that exuded dominance within otherwise untamed parkland (Taigel & Williamson, 1991, pp.7–8). William Cecil also implemented similar elements at Theobalds, not only in the approach through a green entrance court but also in the avenues radiating out from the gardens into the park (Fig. 4.08). At Oxburgh, an area of

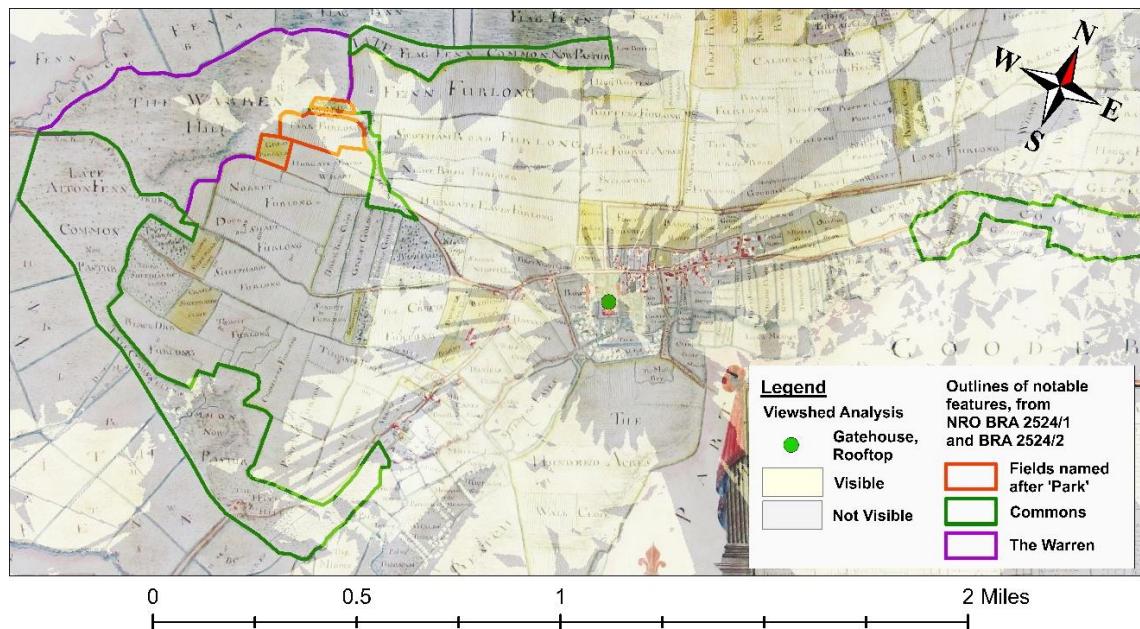


Fig. 6.36 - Viewshed results from Gatehouse, Oxburgh Hall, overlaying estate map by I.I. de Wilstar, 1725 (NRO BRA 2524/2)



Fig. 6.37 - Viewshed results from Gatehouse, Hoxne Hall (Wider Landscape, South-East)

'former pasture' and the village surrounded the hall, which meant a geometric progression into the landscape was not evident (Fig. 6.09). Its actual park lay further north roughly near 'the Warren [Hill]' where several fields with names including 'Park' existed, which were all partially visible from the gatehouse (Fig. 6.36). At Hoxne, the Bishops of Norwich owned a detached park called 'the Oldepark' (Hoppitt, 1992, p.233), which was later divided into fields sometime before the eighteenth century (SRO(I) HB21/280/1; SRO(I) HA68/484/752). The curved outline of the park's boundary and '[Old] Park Farm' remain in the landscape today. From the gatehouse at Hoxne, visitors could glimpse 'the Oldepark', which resided far to the south-east (Fig. 6.37). Although the views of the parks at both Hoxne and Oxburgh were slight, the prospects possible from the heights of the gatehouses helped visitors perceive that these detached parks were part of the Southwells' and Bedingfields' estates.

Beyond the eastern boundary of the pasture within the Hoxne estate, a neighbouring manor called Hoxne Priory was visible (Fig. 6.38). This manor was another integral part of the Southwells' demesne, which they leased to another family (Evans, 1987, p.191). Nevertheless, the Southwells could oversee the manor that they owned and managed from this gatehouse. On the other hand, landscape visibility did not extend to all the surrounding areas of agricultural land under the Southwells' demesne. Certainly, as Norden stated, "he that hath many Honors, Manors, Lordships, Tenements and Farms, cannot himself take view of them all with ease" (Norden, 1607, p.27). Nevertheless, the prominence of Hoxne Priory was intriguing. Before the Dissolution, Hoxne Priory was a working ecclesiastical establishment alongside two chapels, including one near Cross Street. These chapels dedicated themselves to Saint Edmund, King of East Anglia, whose martyrdom took place near Hoxne Priory (Evans, 1987, pp.187–9). Therefore, the views of these ecclesiastical landscapes reinforced the bishops' religious influence but also the cult of Saint Edmund at Hoxne. This visual emphasis on religious areas from view of the Hoxne estate also extended to the visibility of the parish church. This church had remained a prevalent and essential feature within the prospects not only from the gatehouse but from other vantage points, as mentioned earlier. Consequently, the prominence of these ecclesiastical features was most plausibly for the bishops' benefit, rather than adapted to the desires of the Southwells whose religiousness was not evident.



Fig. 6.38 - Viewshed results from Gatehouse, Hoxne Hall (Hoxne Priory)



Fig. 6.39 - Viewshed results from Gatehouse, Hoxne Hall (Wider Landscape, West)

The village was also visible, whilst its houses obscured a green within it and another common or 'waste' remained hidden beyond the brow of the hill. Stokes included the church and village houses but not the green or common on his map (SRO(I) HD40/422). Their omission was partly because this map was not an estate and only focused on the 'Newe Park'. Stokes only focused on private land under the Southwells' influence, rather than areas held in common and used by common right. However, another possibility is that these common areas were not visually desirable to include on a map, which thus affects their presence within a prospect. Although other areas of common land existed in the vicinity, they remained hidden from contemporaries observing from the gatehouse rooftop.

At Oxburgh, contemporaries viewing the landscape from the gatehouse also could not observe many areas of common in the distance, except one area far to the east (Fig. 6.36). The gatehouse at Hoxne and Oxburgh were medieval or late-medieval in origin, meaning that sixteenth- and seventeenth-century perspectives of commons may not apply in both these contexts. An early-sixteenth century writer, John Fitzherbert, described how "all the whole commen is [the Lord's] owne" (Fitzherbert, 1523, p.4). Therefore, even if later contemporaries considered these unsightly places (Moore, 1653), these opinions were not prevalent amongst earlier contemporaries who viewed these as integral parts of the manors and thus the lords' responsibilities. Nevertheless, the inability to view commons at Hoxne satisfied the Southwells in the sixteenth and seventeenth centuries.

To further improve the prospect, Brome Hall and its gardens were mostly invisible even from the gatehouse (Fig. 6.39). Visitors only glimpsed Brome's rooftop, which did not greatly interfere with the view overall. Instead, areas of woodland, designed as part of the Brome estate, drew the visitors' attention along the horizon line. Although a beautifying addition to the Brome estate, this woodland helped maintain the Cornwallises' privacy while subsequently improving the view from Hoxne. The view over the Brome estate, including its myriad of fields, was not as extensive as initially anticipated because the undulating topography reduced the visual extent possible in this direction. Only the warren residing closest to Hoxne remained unavoidably prominent from the gatehouse. Although the Southwells did overlook some aspects of their neighbours' estate, these were only of uninhabited areas. Visitors in either estate enjoyed beneficial prospects of the surrounding countryside without interfering

with their neighbours' experiences. Consequently, not directly overlooking a neighbour was beneficial but an awareness of a neighbour's presence was nonetheless useful, as Norden indicated: "it is fit the Lord should knowe who were his neighbour Lords, and what Mannors were neer him" (Norden, 1607, p.134).

Conclusively, the gatehouse provided a high vantage point for visitors to observe what the Southwells owned and had influence over. Visitors also enjoyed the entire composition of the grounds and admired their conformity to geometric principles which extended into the park. However, the wider landscape primarily contained medieval ecclesiastical features and the views thereof had originated under the bishops' ownership before the Southwells acquired the demesne. As a result, these views better reflected the personalities of the bishops. Nevertheless, the Southwells' aesthetic preferences within the landscape still features. More importantly, visitors enjoyed prospects of the demesne that the Southwells' received whilst avoiding any less-appealing aspects, such as commons and neighbours. Collectively, the gatehouse thus became one of the most suitable places from which the Southwells' prestige could be admired by their guests.

#### **6.3.4 - The Wall Walk**

On Stokes' map, a battlemented structure ran along the moat's edge from the gatehouse's northern façade into the north-east corner of the formal garden (Fig. 6.03). According to Stokes, this feature adopted a different architectural style to the other buildings and, judging by the detailing of the brickwork, used a different stone to the rest of the estate, except for the entrance court walls. Therefore, as mentioned previously, this alternative brickwork may indicate that, like the walls, this feature was originally part of the bishops' medieval estate. However, no other records provide evidence indicating what this feature was, and there is also no comparable counterpart at Oxburgh. However, from the following observations, this feature has been interpreted as a wall walk that the Southwells probably retained from the episcopal palace.

First, this long yet low structure had crenellations. Although exuding militaristic symbolism, these crenellations were pointed and thus futile in the event of a siege. Therefore, these crenellations served an ornamental rather than defensive purpose. The moated Bishops' Palace in Wells, Somerset, also utilises crenellations along its perimeter wall (Fig. 6.40), which dates to the fourteenth



**Fig. 6.40 - Perimeter wall at the Bishops' Palace in Wells, Somerset**

century when the bishops obtained a *licence to crenellate* (Payne, 2003, p.131). At Wells and Hoxne, these crenellations alongside the moat expressed the bishops' desire for privacy and seclusion rather than defence. This example at Wells also had an accessible walkway, which took the form of a parapet walk along one side of the grounds. At Hoxne, therefore, a walkway was plausible and likely accessible from the adjoining outbuilding or from a doorway that Stokes drew within the north-eastern corner of the structure (Fig. 6.03). Although access to the garden was a possibility, Stokes only depicted a doorway to the moat, which resembles the design at Wells (Fig. 6.40). When the Southwells acquired Hoxne, they potentially retained this wall walk as an externalised long gallery where visitors could enjoy prospects along its length, similarly to the battlemented walkway at Bolsover Castle, Derbyshire (Worsley, 2005, p.96). Conclusively, the structure at Hoxne has been deduced as a wall walk and recreated in 3D-GIS using the perimeter wall at Wells for inspiration. For this analysis, an animation recreated the promenade to enable explorations of the contemporaries' experience along this wall walk.

### **Analysis**

This wall walk provided guests, while promenading, with views both within the grounds and across the landscape. One noticeable aspect of the experience throughout the animation was how a variety of perspectives helped effectively displayed specific features within the immediate grounds. The Southwells thus demonstrated their awareness of continental theories and practices of perspective



Fig. 6.41 - French ceiling (left) and parterre designs (right) (Du Cerceau, 1576)

that developed amongst English contemporaries during this period (Ogden & Ogden, 1955, p.2). One instance involved the elevated view over the formal garden on its western side.<sup>52</sup> Compared to the view from the north front, the wall walk provided an elevated yet more favourable, centralised and proportional view over the designs within this garden.

As Estienne described, the “beautie and comeliness” of the garden plot is essential, but readers should be able to “chuse those which shall most delight you, and best agree with your good liking” (Estienne, 1616, p.254). For the Southwells, their personal preferences and inspiration stemmed from French architecture or landscape designs (Fig. 6.41). The designs within these examples bear some similarities to the garden layout at Hoxne, which contained designs alike to *fleur-de-lys* acting as termini within the planting scheme (Fig. 6.03). However, it is difficult to determine from the planar view of Stokes’ map whether the garden was a knot or parterre, but the French influences evident suggests a parterre was more likely. Additionally, red flowers adorned the formal garden. Although the exact species of flower is undeterminable, it was plausible that these flowers were representative of those upon the Southwell’s coat of arms. The coat-of-arms contained three red floral annulets on a white shield, as displayed in the top-left corner of a late-seventeenth-century portrait of the Southwells’ distant cousin Thomas Southwell, 1<sup>st</sup> Baronet<sup>53</sup> (Fig. 6.42). The red flowers within the formal

<sup>52</sup> This observation presented in the animation at timecode [00:20] (CD Appendix 3).

<sup>53</sup> Thomas Southwell, 1<sup>st</sup> Baronet of Castle Mattress in the Baronetage of Ireland, created by Charles II. The Viscounts Southwell descended from the Southwells of Barham, Suffolk. Lineage began with John Southwell, the great-great-uncle of Robert Southwell I (Harvey, 1878, p.125; Steer, 1959).



**Fig. 6.42 - Thomas Southwell, 1<sup>st</sup> Baronet, with a Gun and His Dog (Anonymous, 1650)**

garden mimicked the red floral annulets on the Southwells' heraldic shield, which may help explain the amount of detail and aggrandisement of these flowers on Stokes' map. Subsequently, this garden demonstrated the Southwells' elite status and dominance, especially over nature, by adopting the symbolism found in French ideals of absolutism (Strong, 2000, p.43; Stewart, 2015, p.9).

As the garden's prevalence within the prospect from the wall walk suggests, a strong relationship existed between both features. Since the length of the wall walk matched the width of the garden, there is reason to interpret that both features were, at least structurally, original to the medieval palace and thus it was the bishops who purposefully built them in close coordination with each other. Subsequently, the Southwells logically retained the wall walk and the formal garden to keep this advantageous view over the garden's formal designs from this proportional, elongated and elevated vantage point. As a result, visitors had more interactive and investigative experiences with the symmetry, geometry and complexity of the gardens designs using lines and angles of perspective.

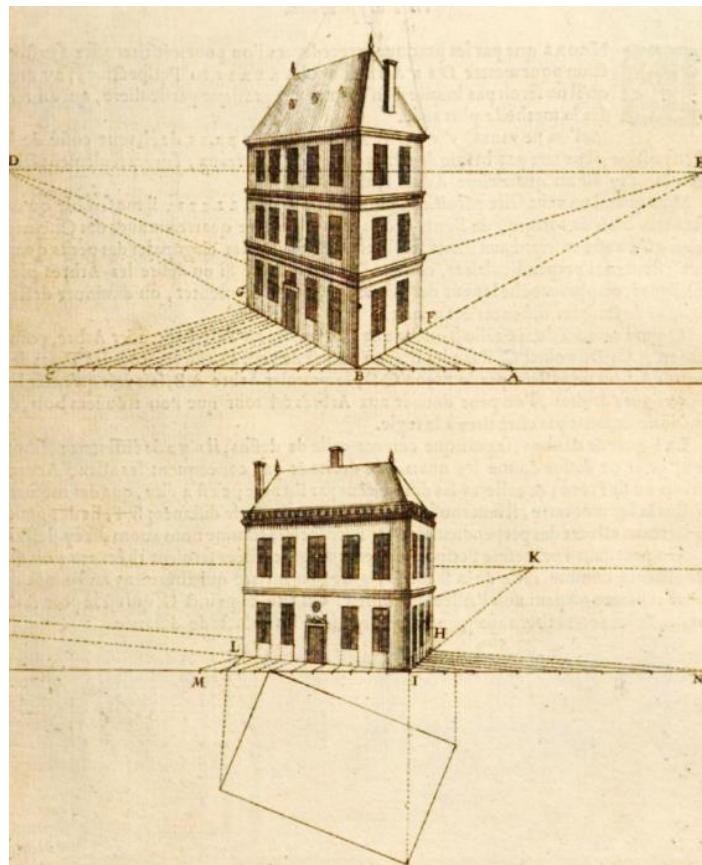


Fig. 6.43 - Practique LXXXVI (Dubreuil, 1679, p.112)

Visitors also observed several feats of architecture collectively and to a greater extent within this prospect compared to those experienced previously. From the wall walk's medieval stonework to the French-inspired design of the hall, these contrasting architectural styles added interest and potentially intrigued visitors as to the estate's origins before the Southwells. From this vantage point, visitors could admire the house visible to the north-east from a perspective that aggrandised its true structure.<sup>54</sup> This view corresponded to diagrams within other architectural treatises about perspective, such as Jean Dubreuil's *Perspective Practique* (Fig. 6.43). Therefore, upon constructing the new hall and accounting for perspective, the Southwells retained the wall walk as an opportunistic location to view the house. Another building that the Southwells kept was the gatehouse, which provided one of the highest vantage points in the estate and from where different angles of perspective helped aggrandise the house and grounds that visitors observed. From the wall walk, however, visitors admired the gatehouse from a lower vantage point and the resulting visual perspective, similarly observed from the approach (see Section 6.3.1), helped emphasise the gatehouse's

<sup>54</sup> [00:26]

dominance.<sup>55</sup> Therefore, the Southwells encouraged visitors to engage with different visual perspectives, which helped to display this collection of key features within the grounds beautifully. Consequently, the Southwells demonstrably considered the impact that perspective had within the visual experiences at Hoxne.

Beyond the gardens, guests observed three visible water features running parallel to each other.<sup>56</sup> These bodies of water benefitted from their situation within the valley at Hoxne, where “the hills environing of everie side [which] send downe their waters into the same, making it continually wet” (Estienne, 1616, p.505). Visitors first enjoyed an aesthetically-pleasing view of the moat, as it passed the wall walk and along the formal garden’s northern end towards the orchard. However, similar to what Paul Hentzner described on his travels to Theobalds, the moat was “large enough for one to have the pleasure of going in a boat, and rowing between the shrubs” (Hentzner, 1807, p.38). Since Robert Southwell I received his knighthood at Theobalds, he potentially engaged in such activities there and thus, the Southwells and their visitors likely experienced them at Hoxne. Furthermore, the evolution of moats into decorative canals, like those at Theobalds and Hoxne, only came from French garden designs under the Valois dynasty (Strong, 1998, p.53). Therefore, the Southwells’ French inspirations were further evident at Hoxne. Another of the moat’s aesthetic contributions emerged “whe[n] men sayle or rowe in boates, the sunne shyneth upon the water, whiche casteth on the vessels syde, the colours & image of the raynbowe” (Fulke, 1563, p.36). As a result, the wall walk provided an advantageous platform to observe these activities. Nevertheless, as Thomas Carew poetically described, contemporaries also appreciated the alluring combination of water and trees:

*“With various trees we fringe the water’s brink,  
Whose thirsty roots the soaking moisture drink,  
And whose extended boughs in equal ranks  
Yield fruit, and shade, and beauty to the banks”*  
(Carew, 1994, p.91).

This beautiful combination featured in the orchard next to the moat but also continued amongst the water gardens and the convergence of the rivers further north. Rivers also provided another pleasant experience while boating, as William

---

<sup>55</sup> [00:43]

<sup>56</sup> [00:13; 01:17]

D'Avenant described: "a summer passage on a crooked river, where going about, and turning back, is as delightfull as the delaies of parting Lovers" (D'Avenant, 1651, p.39). Each of these water features added to the visitors' experiences, within the watery reflections and varying speeds of movement but also through the natural and tranquil sounds that water produced (Spooner, 2005, pp.60-4).

Following the wall walk's orientation, parkland and woodland were prominent northwards.<sup>57</sup> Similarly to the view from the approach, visitors focused on the healthy green grass and the distant views of verdant woodland (see Section 6.3.1). However, the wall walk provided a more elevated vantage point from which contemporaries experienced a diverse landscape composition within a more expansive prospect. In its entirety, the underlying message that the Southwells wished to convey within the view was prosperity and fertility. As *Anglicus Bartholmaeus* described in the thirteenth century, "such land is full plenteous in bearing of flowers, fruite and corne, and most covenable for habitation of mankind" (*Bartholomaeus*, 1582). The formal garden, therefore, displayed the flowers next to the fruit-bearing orchard, whose trees also prevented westerly views into the Brome estate.<sup>58</sup> Oppositely, the view eastwards best showcased the fields of corn next to the village, providing habitation for mankind.<sup>59</sup> However, fertility and prosperity was also displayed in the moat.<sup>60</sup> Stokes depicted in detail the moat's northern section, which included white birds, logically swans as a "noble and goodly Foule" (*Heresbach*, 1577, p.171), but more importantly, fish (Fig. 6.03). As *Lawson* described, contemporaries used moats not only for the pleasure of rowing a boat but also for fishing with nets (*Lawson*, 1617, p.72). However, as *Heresbach* observed, fish "rather pleased the eye, then the purse" (*Heresbach*, 1577, p.172). Therefore, the fish provided a potentially profitable but aesthetic and sporting contribution that also symbolised prosperity and fertility.

In conclusion, the wall walk provided views that beneficially displayed features both individually and collectively within the estate. Visitors observed displays of beauty, quality, and control over the gardens while also admiring different styles of architecture from various advantageous perspectives. The views

---

<sup>57</sup> [00:01; 01:11]

<sup>58</sup> [00:20; 01:22]

<sup>59</sup> [00:59]

<sup>60</sup> [00:13; 01:19]

from the wall walk also strongly associated with experiences involving water. The Southwells also displayed their most prosperous and fertile landscape areas within extensive yet controlled views. Despite standing lower than the *piano nobile* or the gatehouse, the wall walk provided contemporaries with a beneficial platform upon which to promenade and engage with the estate landscape within desirable and more immersive experiences. Conclusively, the wall walk was plausibly a parapet walk from the medieval episcopal palace, which the Southwells adapted into an externalised long gallery to allow guests access to opportune prospects.

#### **6.3.5 - The Garden Building**

Against the hall's north-west corner was a garden building (Fig. 6.03). Stokes only drew one façade of this building, so its exact structure is difficult to discern. Nevertheless, its architectural style resembles the sixteenth-century banqueting house at Melford Hall (Fig. 6.44), thus increasing the likelihood that the Southwells and not the bishops created the structure at Hoxne. Like Melford, this garden building was possibly octagonal and intended to be a banqueting house. Both buildings had ornate decorations with triangular projections and finials along the roofline, yet the structure at Hoxne only had one storey. Stokes' drawing indicates that the garden structure potentially matched the heights of the wall walk and other outbuildings (Fig. 6.03). This observation thus helped not only to establish the height of the garden building but also to anticipate that the neighbouring structures likely restricted its prospect. Therefore, the Southwells plausibly built the garden building with privacy in mind.

According to the 1725 estate map, an ornamental building existed at the end of a path within the entrance court at Oxburgh (Fig. 6.10). However, no evidence in the 1598 inventory (NRO JER 269, 55X1) or on the 1722 parish map (Fig. 6.09) confirms that this building existed before 1725. Therefore, the Bedingfields unlikely created any garden buildings at Oxburgh in the sixteenth and seventeenth centuries and thus, no comparative study was possible in this instance. Consequently, the analysis of the garden building at Hoxne is based on a single viewshed calculated from multiple vantage points around the structure. As a result, the analysis accounts for the possibility that the structure was similar in design to the banqueting house at Melford, which contained several windows facing different directions through which visitors enjoyed prospects.



**Fig. 6.44 - Banqueting House, Melford Hall**

### Analysis

Within the immediate grounds, Hoxne Hall notably encroached upon the garden building and thus the prospect (Fig. 6.45). Although visitors could admire its architecture up close, the hall appeared overbearing and also prevented the sun from providing warmth and light from the south into the vicinity of the garden building. The lack of sunshine thus rules out the possibility that this structure was a summer house (Woodfield, 1991, p.128). Not only did the hall obscure the sun but also the view, which was further hindered by the westerly outbuildings except for a small vista towards the dovecote. As a marker of status, the dovecote was a beneficial feature to include within the prospect. However, the previous analyses do suggest that the Southwells considered the views unappealing in the direction of these outbuildings. Therefore, this viewshed might indicate that the garden building's design was different than initially thought. At Theobalds, there was a semi-circular summer-house (Hentzner, 1807, p.38), which likely prioritised the views out from its curved façade. The garden building at Hoxne thus potentially had either no west-facing windows or was built against the garden wall on its southern side, thereby obscuring any unfavourable views in this direction.



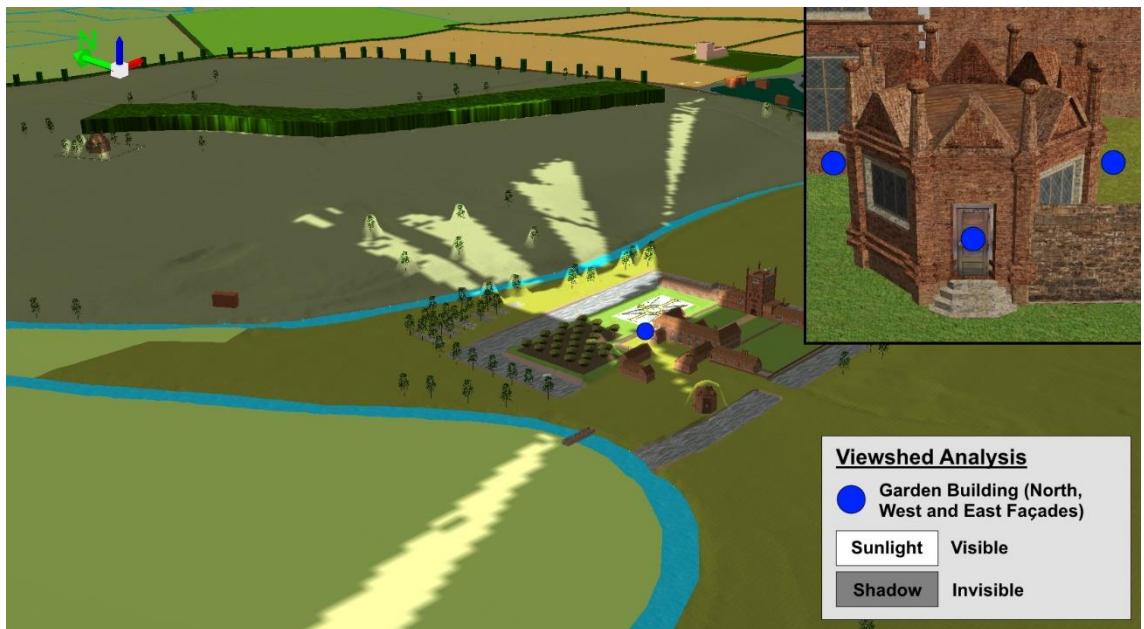
**Fig. 6.45 - Viewshed results from Garden Building, Hoxne Hall (Immediate Grounds)**

As a result, the Southwells prioritised the northerly view towards the garden and orchard (Fig. 6.45). However, the garden building's single-storey elevation was not high enough to observe the formal garden designs from the best perspective. The plants themselves "may not grow great and tall" but "short, and thinne set" to avoid "hinder[ing] the view of the garden" (Estienne, 1616, p.255), but this did not compensate enough for the building's lower situation. Also, no evidence suggests that a prospect from the garden building was possible from a higher elevation than initially assessed. Its proximity to the hall reduces the likelihood that the garden building had rooftop access. Another possibility is that the building resided upon a terrace, similarly to the banqueting house at Melford (Fig. 3.20; 6.44). A terrace would have provided the higher elevation needed to allow visitors to enjoy a more comprehensive view of the garden's designs. However, this suggestion is dubious because of the necessary earth-moving required while also considering the moat amongst other surrounding features. A different theory is that the garden itself was sunken, but its proximity to the moat as a flood-risk makes this idea unlikely. It is therefore possible that the Southwells did not build this structure with the sole intention of viewing the garden. Instead, the reason to have a lower building was to ensure that contemporaries could achieve a greater sense of seclusion within the garden. Visitors could view the garden's intricate designs better from other vantage points, meaning this garden building simply provided "a remote place of pleasure" (Markham, 1613, p.127).

The orchard next to the formal garden also aided in creating a remote yet pleasant experience. Sufficiently obscuring the landscape beyond, the orchard trees provided the garden and thus this building with “a great shelter” from both wind and sun (Parkinson, 1629, p.535). However, the orchard’s dual purpose as a protective barrier and a source of fruits raises the possibility that this building was a banqueting house, designed for feasting (Austen, 1657, p.127). However, the trees provided not only aesthetic beauty but also pleasing sounds, when “from the trees resounded the sweete consents of small chirping birds” (Colonna, 1592, p.99). However, merging the garden and orchard was ideal because “the sweete smell of floures, and the fayre beautie of trees, bringeth both health and pleasure” (Heresbach, 1577, p.10). The Southwells, therefore, advantageously placed this building so that visitors could enjoy both the garden and orchard together.

The Southwells also suitably placed the structure upon the axis dividing the garden and orchard. As a result, the building itself became a terminus of the transitional space between the two gardens, which created a sense of geometric proportion and axial alignment in this view. This role thus indicates that the garden building was a pavilion (Woodfield, 1991, p.128), which the National Trust initially classed the banqueting house at Melford (The National Trust, 1966, p.19). Looking north along this axis, the moat crossed the direct line of sight within the view, which guided guests to the moat’s edge to observe or participate in any aforementioned activities occurring on the water. Also, whilst the moat displayed principles of geometry and perspective, “water of cleerenesse” (Markham, 1613, p.127) further added visual interest within this private view from the building.

The moat marked the transition between the formalised, geometric grounds and the untamed, natural woodland and parkland (Fig. 6.46). Therefore, the Southwells wished to display the beautiful contrast between these landscapes in this prospect. The lodge rose above the horizon in the direct line of sight along the axis from the garden building, indicating that the Southwells also addressed concepts of perspective. Another vista looking north-east towards the parish church reinforces this observation. Visitors admired the beauty of the church’s tower in its favourable location upon the hill while also ensuring the prospect did not include the village in the surrounding area. The Southwells thus ensured their visitors experienced privacy and seclusion within the grounds by avoiding these external intrusions and focusing only on the tranquil aspects of the estate.



**Fig. 6.46 - Viewshed results from Garden Building, Hoxne Hall (Wider Landscape)**

In conclusion, the Southwells did not design this garden building as an elevated vantage point for accessing an extensive prospect. Even though visitors enjoyed a prospect of the formal garden in the building's vicinity, they also experienced both shelter and shade while remaining secluded because they could not be overlooked by people in the village. Nonetheless, contemporaries could spectate any activities happening upon the moat as well admire views across the natural parkland with its trees and woodland. The Southwells placed this building at the end of a terminus along an axis which drew the eye northwards, away from unfavourable outbuildings to the south. These displays of axiality, symmetry and other geometric principles thus increases the likelihood that the garden building adopted a geometric form like an octagon, as initially suspected. As for its function, the garden building was most likely a pavilion, according to Paul Woodfield's definition (Woodfield, 1991, p.128), although Paula Henderson emphasised that pavilions also extended to more temporary structures like tents (Henderson, 2005, p.150). Regardless, pavilions frequently abutted garden walls and became a mode between gardens, but of particular note is that prospects from them were not essential (Woodfield, 1991, p.128). This description bears close resemblance to the observations of the garden building at Hoxne. Therefore, the Southwells did not necessarily prioritise a prospect, especially of the formal garden because the wall walk better fulfilled that role. Instead, from the lower vantage point within this building's single-storey, contemporaries enjoyed a secluded and immersive experience within the sanctuary of the northern grounds.

### 6.3.6 - The Lodge



Fig. 6.47 – Lodge, on map by William Stokes, 1619 (SRO(I) HD40/422)

About 500 yards north of the hall within the 'Newe Park' was a building called 'the Lodge' (Fig. 6.47). The lodge has been dated to as early as the fourteenth century, when the 'Newe Park' superseded the 'Oldepark' (Hoppitt, 1992, pp.50; 246). Stokes drew one heavily-decorated façade of a three-storey building, with projecting finials on the roofline including a cross that implied the bishops' involvement in its construction. Of interest, however, the lodge had many windows allowing several prospects. Although enclosed by fencing and sparsely-planted trees, the lodge provided ample opportunity for guests to observe landscape views, especially southwards which remained open and unhindered. The Southwells' likely retained this medieval building because of the beneficial prospect from this location upon the hill. The lodge was demolished before 1700, when its location was immortalised in the fieldname, Lodge Hill (Fig. 6.04).

Oxburgh also had a park but the maps do not indicate its boundary let alone if a lodge existed and so, no comparison was available. For this analysis, a single viewshed was calculated from the uppermost fenestrated storey on each side of the lodge. The interpretation of the prospect thus accounts for the most wide-ranging views possible from the building in each direction. Despite its medieval origins, the Southwells advantageously used this lodge to enjoy a prospect.

## Analysis

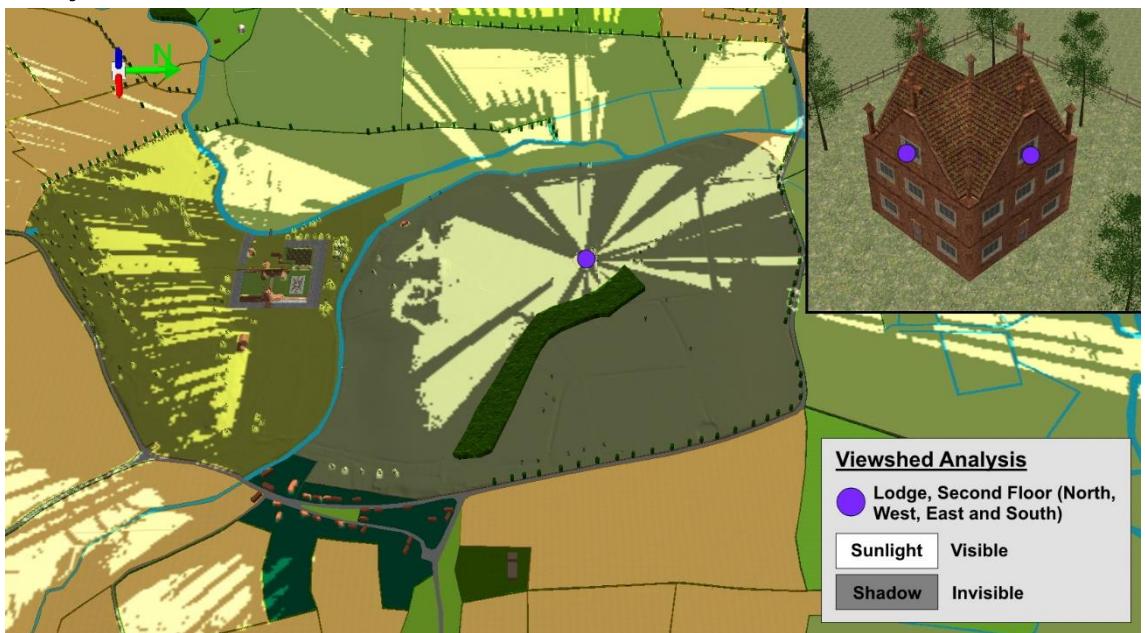


Fig. 6.48 - Viewshed results from Lodge, Hoxne Hall (Immediate Grounds)

Split into two by the river, the 'Newe Park' was the most prominent feature visible from the lodge, except for an area within the valley (Fig. 6.48). As Hentzner described, parks "belonged to those that are distinguished either for their rank or riches" (Hentzner, 1807, p.37). Therefore, the prospect from the lodge best showcased the park as a marker of status. Symbolically reserved only for the prominent country families, parks existed at Hoxne and also Woodrising, although the Southwells disparked it by 1602 (Williamson, 1998c, p.40; Taigel & Williamson, 1991, pp.9–10). Until this point, the Southwells demonstrated their prestige by retaining parkland at both properties. The Southwells' intentions for the lodge within the park at Hoxne, however, unlikely involved hunting.

The pale around the boundary of the 'Newe Park' suggests that it was once a medieval deer park for the bishops (Williamson, 2000, p.22). Ecclesiastics frowned upon hunting because "hunters be not holy men" (Chaucer, 1542, *The Monk*), but hunting remained a popular aristocratic pastime even for the heads of greater monastic houses into the sixteenth century (Bond, 2004, pp.172–3). "Divers[e] hills, divers[e] plaines, and divers[e] valleyes" were all important to consider when creating a park, to improve the scenery's beauty and grace but also for the echoing sounds while hunting that added delight to the sport (Estienne, 1616, p.668). Based on the topography and landscape composition in view, the 'Newe Park' was an ideal hunting landscape. However, the bishops rather than the Southwells engaged in hunting activities at Hoxne, although Robert Southwell I

likely hunted at Woodrising with his goshawk, which he bequeathed to Sir Henry Jerningham (TNA PROB 11/43/577), Thomas Southwell I's father-in-law (Family Tree Appendix 3). Nonetheless, as a status symbol, the park needed protecting. Therefore, judging by the extensive view possible from the lodge, its role was a viewing platform where the bishops could monitor and protect the deer from thieves during the medieval period. Subsequently, the lodge became integral to ensuring the security of the park under the Southwells.

Within the park, Stokes does not depict deer or other game animals but cows within areas labelled as 'pasture', meaning that the Southwells transformed the deer park into grazing land (SRO(I) HD40/422). During Elizabeth I's reign, the number of deer parks declined (Clemenson, 1982, p.60). The deer park at Woodrising disappeared but the Southwells kept the one at Hoxne, which was adapted for husbandry yet retained its medieval symbolism associated with the elite. The fenced boundary around the lodge was thus likely used to prevent the cows from approaching the building. Furthermore, 'the Spring' provided trees as shelter for the cattle (Evelyn, 1670, p.223). Therefore, while initially serving as a hunting retreat for the bishops within their deer park, the lodge adopted a different purpose when under the Southwells' ownership.

Despite the lodge's height and placement upon the hill, visitors could not look directly upon the hall and its grounds except taller architectural structures like the gatehouse. A painting of Greenwich Palace by Johannes Vorsterman depicts how the park lodge overlooked the Queen's House directly at the bottom of the hill, which can be verified in the landscape today (Fig. 6.49). However, this lodge was advantageously positioned upon the edge of the hill's precipice, while the lodge at Hoxne resided further into the hill's plateau. The Southwells could have moved the lodge if they desired to look upon Hoxne Hall, but they kept the original structure. Therefore, this view recognised the presence of the grounds but did not prioritise them over the parkland.

The Southwells thus considered this lodge to be a place of solitude away from the estate. Hoppitt suggested that Hoxne became a popular retreat for the bishops during the fifteenth century (Hoppitt, 1992, p.246). The Southwells may also have used Hoxne for the same purpose when they acquired it as their secondary residence. Its remote location would have been ideal for private



Fig. 6.49 - Greenwich and London from One Tree Hill (Vorsterman, 1680)

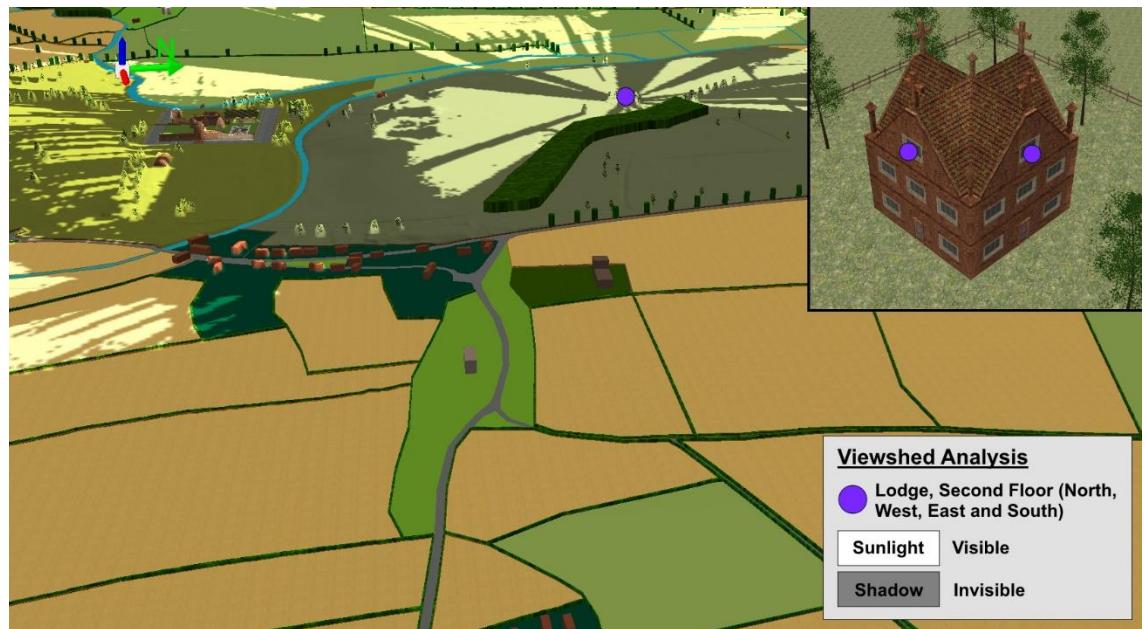


Fig. 6.50 - Viewshed results from Lodge, Hoxne Hall (Wider Landscape, East)

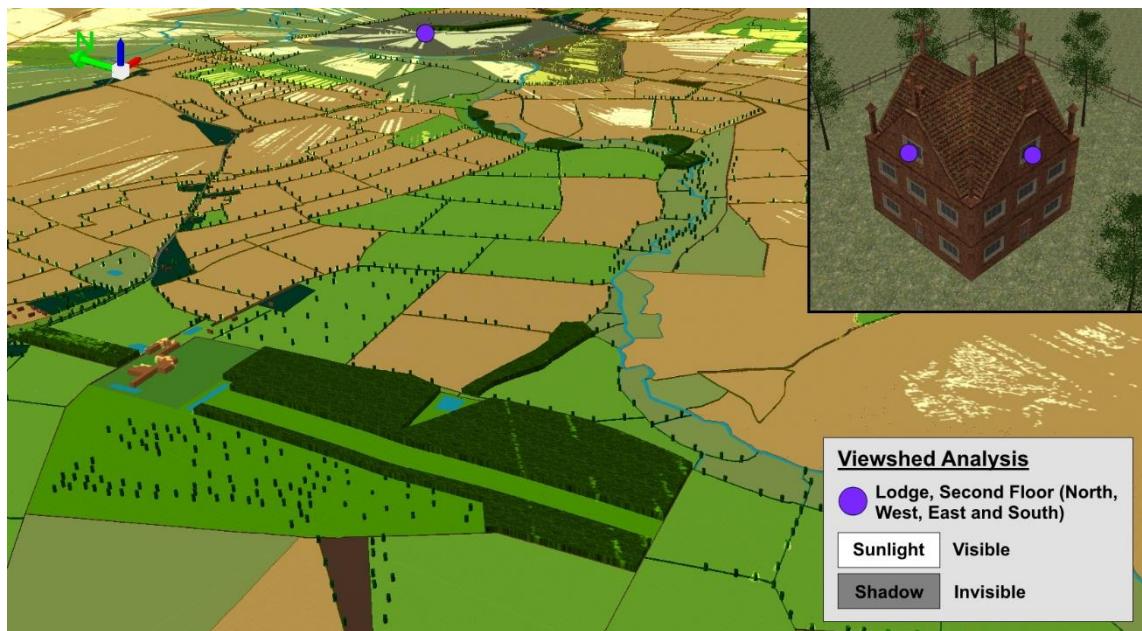


Fig. 6.51 - Viewshed results from Lodge, Hoxne Hall (Wider Landscape, West)

meetings, but the seclusion also created a lonely yet romantic situation (Girouard, 1978, p.108). Girouard concluded this from a description in Shakespeare's *Much Ado About Nothing*, when Benedick said: "as melancholy as a lodge in a warren" (Shakespeare, 1903b, p.20). The expanse of pasture surrounding the lodge but also the woodland called 'the Spring' create this sense of seclusion. This woodland provided timber yet also helped obscure the village, church and common from view (Fig. 6.50). The woodland's serpentine planting, possibly designed by the bishops but more likely the Southwells, further ensured privacy. Looking west, the Brome estate was also primarily invisible except for the hall's rooftop (Fig. 6.51). As a result, the Southwells could achieve seclusion within the lodge without being overlooked by local villagers and neighbours. Nonetheless, the prospect did extend south-east towards the 'Oldepark' (Fig. 6.52). Although this park could only be glimpsed in the distance, it was nonetheless a suitable area for the bishops and subsequently the Southwells to observe within the view from the park lodge.

However, the most extensive view was to the north, over the landscape crossing the county boundary into Norfolk (Fig. 6.53). Visibility notably extended towards the King's Highway, which followed the boundary of the 'Newe Park' from the village to the east until the bridge over the River Dove to the north-west. Stokes, however, depicted travellers journeying along this road, either walking or on horse-back (SRO(I) HD40/422). As the King's Highway, this road was more public and travellers passing by could admire views of the park as part of the English countryside (Aston & Bettey, 1998, p.123). As a result, the road's visibility



Fig. 6.52 - Viewshed results from Lodge, Hoxne Hall (Wider Landscape, South-East)

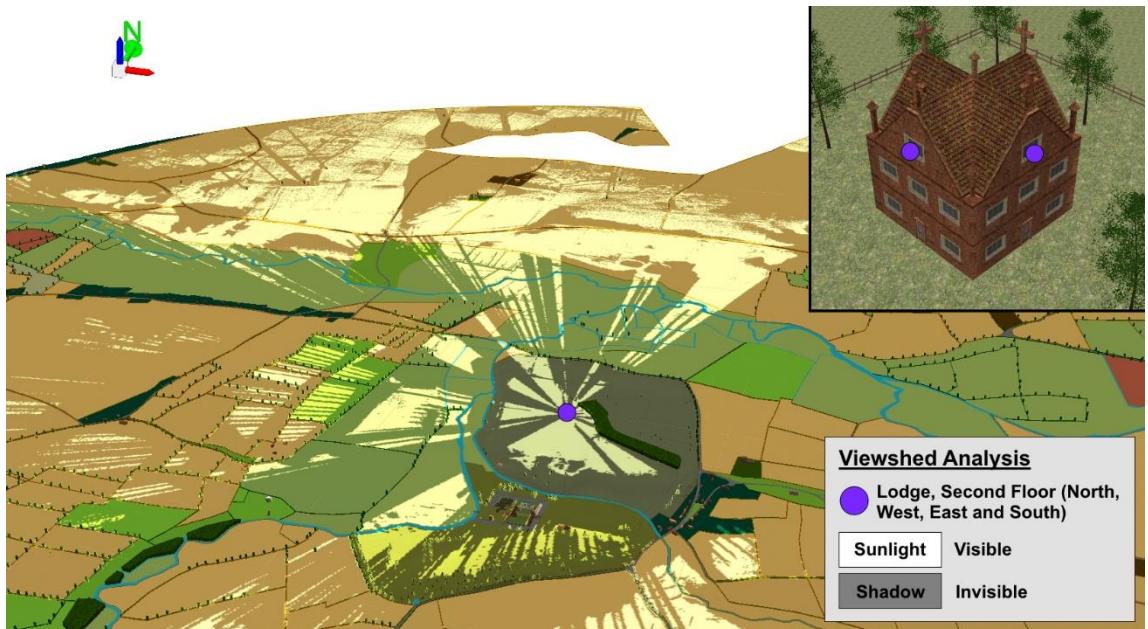


Fig. 6.53 - Viewshed results from Lodge, Hoxne Hall (Wider Landscape, North)



**Fig. 6.54 - Photographic observations of earthworks from park pale, Hoxne Hall  
(Easting: 617630, Northing: 276830)**

indicates that the lodge was less private than anticipated. However, 'the Spring' coupled with other significant plantings of trees along the park pale helped to hinder views into the park. Nevertheless, on the south boundary of the 'Newe Park', the remains of the park pale survive as earthworks. As this archaeological evidence shows, the ditch and subsequent deer leap comprising the park pale were of significant size, although the fence on the top no longer exists (Fig. 6.54). Consequently, whilst primarily used to control deer and cattle, the pale further obscured prospects into the park. While hindering the outsiders' views, these visual barriers also aided in creating solitude within the park, thus allowing the Southwells and their guests to peacefully experience the prospect from the lodge.

To conclude, a hunting lodge advantageously placed within a deer park had become a retreat for the Southwells away from their estate. From the lodge, visitors could admire the "beautie and gracefulness of the parke" (Estienne, 1616, p.669) while also observing the commodities that it contained, such as the cattle and woodland. However, the landscape surrounding the lodge was also beneficial for the Southwells and their guests who sought privacy and solitude. The lodge was detached from the grounds of the hall, which visitors could not observe down the hill. Anyone looking towards the lodge, especially from the village and road, faced hindrances from rising topography, tree planting and the park pale. The lodge was therefore ideally placed for contemporaries seeking seclusion, whilst also providing a suitable location to admire the tranquil pastoral scenery.

### **6.3.7 - Summary**

Throughout the investigation of Hoxne Hall, it became evident that the Bishops of Norwich and the Southwells left their mark on this estate. Within the analysis of the prospects and promenades existing at Hoxne, the visual experiences were not always representative of the personal preferences of one group but were an amalgamation of both their attitudes towards the landscape. With limited evidence about the Southwells, including the contradictory information regarding their pedigree as compiled by different researchers, it was already difficult to establish their personalities. However, identifying their traits, ideals and opinions within the visual experiences recreated at Hoxne became more problematic because it was also increasingly difficult to determine if the Southwells or the bishops made each decision during the estate's development. It was nonetheless possible to interpret specific findings relevant or informative about both groups. This research also revealed that the bishops and the Southwells even shared certain attitudes and perspectives. As a result, the Southwells adapted but did not significantly change aspects of the bishops' palace at Hoxne. By analysing the visual experiences within this estate, this research has helped to provide new understanding of the preceding and succeeding owners of Hoxne.

One of the more prevalent experiences noted from every prospect and promenade at Hoxne was that of seclusion and privacy. The location of the estate deep within the valley showed initial evidence of this. The hills on either side of the immediate grounds created visual barriers that hid much of the surrounding landscape from view, especially from the vantage points closest to the level of the river. Therefore, although the bishops decided to place the episcopal palace within the valley, the Southwells maintained its situation for their secondary residence. Consequently, whilst of great importance to the bishops, the secluded valley appealed to and thus influenced the Southwells, who desired to have a retreat away from prying eyes. This valley subsequently helped to maintain privacy from the neighbouring estate of Brome Hall. Despite the largeness of both estates, Hoxne Hall and Brome Hall remained wholly hidden from view of each other, and thus ensured privacy for both the Southwells and Cornwallises. Oxburgh Hall, on the other hand, resided within a more open setting and closer to populated areas. As the Bedingfields' main residence, Oxburgh Hall maintained the family's strong connection to their parish that existed since the medieval period.

However, the valley did not obscure all aspects of the wider landscape within the prospects from Hoxne. The religious establishments of Hoxne Priory and the parish church remained visible alongside some inconsistent views of the village. The bishops benefitted from this connection as the residing ecclesiastical influence in the area, whereby sustaining their relationships to those institutions was important whilst also projecting their influence over the parishioners. When the Southwells acquired the site, the visibility of these ecclesiastical features adopted new meaning. The Southwells were less concerned with their religious symbolism and became more interested in displaying their ownership and control over those establishments. While the parish church added some aesthetic appeal to the prospects, Hoxne Priory became a source of revenue for the estate. The Southwells thus saw an opportunity to showcase the wealth and prosperity within the landscape that they had attained, which included the glimpses of enclosed agricultural land and woodland but not of the common. However, the prospects also emphasised the Southwells' new-found authority over the parish but also the old religious order. By retaining the medieval gatehouse but with the addition of their heraldry upon its rooftop, the Southwells emphasised to observers that they had gained control. The new country house existed within a setting where certain elements of its medieval religious predecessor remained, which further emphasised to contemporaries that the bishops no longer had authority at Hoxne. The Southwells transformed Hoxne into a symbol of their success after the Dissolution, which began with Charles Brandon under the eye of Henry VIII.

The valley primarily consisted of parkland, which became the most dominant landscape area visible within every analysed prospect. As a suspected hunting retreat for the bishops, the 'Newe Park' with its park lodge was already an integral part of the estate. However, whilst the bishops desired to experience the thrill of the chase, the Southwells sought solitude within the park. The park lodge was ideally situated for this purpose because it was placed distantly from the grounds and hidden from the village by trees and topographical changes. Even after the Southwells dispensed the one at Woodrising, the park at Hoxne nonetheless continued the tradition. As a result, Hoxne provided the Southwells with a beautiful and natural landscape where the Southwells could venture to as a retreat away from Woodrising. The parkland with its trees and grassland alongside the rivers provided an aesthetically-pleasing setting which would have

delighted contemporaries, even the Jesuit Martyr and poet Robert Southwell. He recorded in his experience of a similar natural landscape near Rome within his poem, *Poema de Assumptione B.V.M.:*

*"worthy of report from the first beginning of the Universe,  
planted with trees amongst which the mild air breathes with  
gentle whispering and soft murmuring and, flowing through the grass,  
rippling water sends forth sweet-sounding melodies, and flowing back  
on itself in even curves divides into various meandering paths"*  
(Sweeney, 2011, p.177).

Therefore, whilst they had different religious attitudes, members of the Southwell family but also the bishops certainly appreciated the beauty of the landscape as well as the tranquillity that they experienced within it.

The experiences within these prospects and promenades were furthered by the presence of water, from the rivers, moat and water garden that potentially originated as fishponds. Although the bishops used them for more functional purposes, the Southwells retained or manipulated these water features into sources of peaceful entertainment. Although the Bedingfields at Oxburgh also enjoyed such experiences within the water garden close upon the river, the moat emulated a stronger sense of authority and defence alongside accompanying militaristic architecture. As North described regarding Oxburgh, "wee see most ancient seats to be bat[t]lemented, tow[e]red, and moated" (North et al., 1981, p.127). Therefore, the moat combined with medieval battlements and towering gatehouse at Oxburgh was similarly achieved at Hoxne, thus exuding a sense of ancient authority that the Southwells sought to acquire. Nonetheless, the experiences of these medieval and defensive aspects provided further evidence of the bishops' and the Southwells' desires for Hoxne to be a place of solitude.

The Southwells did retain some parts of the medieval estate, but they also created new features. The house and the formal garden with its parterre designs displayed their personal preferences rather than the bishops'. Although confined to the layout of the old grounds, these features were nonetheless integral within many of the prospects analysed and created self-contained experiences that emphasised the importance of this part of the Hoxne estate. Within this private and enclosed space within the grounds, French styles of architecture and garden

design were visually prevalent, which indicates the Southwells paid particular attention to French texts, typically aimed at the elite while the plainer man read English texts (Allen, 1969, pp.124–5). This source of inspiration also appeared in other displays of geometric principles and concepts of perspective. Aerial views from the gatehouse included a display of the estate and its geometric layout from a perspective adopted in French texts. Vistas also enhanced geometry through axiality within the formal garden whilst *claire-voies* framed prospects through archways and gates along the approach. However, it became evident that the formal garden was of particular importance to the Southwells.

As a result, the Southwells displayed a notable lack of interest towards other less-appealing areas within the confines of the moat. Many of the prospects avoided the westernmost grounds, where the outbuildings resided. Also, the dovecote, despite its symbolism of status, was not proudly displayed to its best visual advantage by the bishops or the Southwells. However, the Southwells may have desired to alter this part of the grounds but they did not have the means to change it. While the Southwells may have spent much of their wealth only on the essential areas of the grounds, such as the formal garden, the rest of the estate was not worthy of their investment. Their money, especially when Thomas Southwell II owned the estate, was more likely spent elsewhere rather than on altering or aggrandising properties, especially a secondary residence like Hoxne.

To conclude, the bishops and the Southwells considered aspects of the Hoxne estate to be desirable, but their differences in personality also resonated through this designed landscape. What both groups contributed to the estate was possible to identify because Hoxne was a secondary estate and thus, much of what previously existed under the bishops' ownership suited the Southwells' needs as a private retreat proficiently. However, the Southwells used what means they had available to create an estate which also demonstrated their status, power, authority and prowess at Hoxne. As a result, the Southwells prioritised these elements above the rest. Hoxne was thus an extraordinary designed landscape and the Southwells developed it in a similar way to what Parkinson best described:

*"for private mens houses, who must like their habitations as they fall into them, and cannot have time or meanes to alter them, they must make a virtue of necessity and convert their places to their best advantage." (Parkinson, 1629, p.461).*

#### **6.4 - Conclusion**

As the final case study, Hoxne Hall was the site which had the most challenges to overcome. The results have shown that 3D-GIS helped remove the hindrances that had prevented a comprehensive analysis of Hoxne within previous studies. After becoming unrecognisable after centuries of intensive and invasive landscape change, 3D-GIS digitally restored the site within its landscape context. Although the extent that those changes affected the topography of the site remains unknown, this analysis has emphasised how topography and landscape context greatly influenced the prospects and promenades within Hoxne. Despite the considerable absence of physical and documentary evidence, what sources survive nonetheless supported the creation of a comprehensive 3D-GIS visualisation. As a result, what Stokes depicted about the site on his unreliable planar map was rationalised and better understood when experienced through immersion within the third dimension. Explorations of prospects from stationary vantage points and experiences through movement along promenades within 3D-GIS provided new sources of information about Hoxne which previous researchers could not access.

Nevertheless, what also became apparent was that by stripping back the landscape to its earlier context, the monastic landscape which preceded Hoxne Hall became at least partially accessible for analysis. 3D-GIS thus helped reveal more about the medieval episcopal palace and its development into a country house during the sixteenth and seventeenth centuries by visualising what Hoxne Hall and its predecessor originally looked like. More importantly, 3D-GIS has helped explore how contemporaries intended the Hoxne estate to be experienced, which had led to a greater understanding of the personal characteristics of the Southwells and the Bishops of Norwich, who had once owned it. Altogether, the capabilities of 3D-GIS have helped provide fresh insight about a complicated designed landscape. This research has been facilitated by 3D-GIS despite the inadequate quantity of physical and documentary evidence, which had created difficulties when investigating this site in the past. Furthermore, along with a fresh perspective of an obscure residing family of elite landowners, the ecclesiastical residents from a previous era and how they influenced the development of this designed landscape also became evident. Conclusively, 3D-GIS has proven the value of Hoxne Hall within the studies of designed landscapes and arguably of monastic ones.

## **Chapter 7 - Summary and Conclusion**

### **7.1 - Introduction**

By using 3D-GIS supported by a multidisciplinary approach, this work has accomplished more meticulous explorations and rigorous investigations of Stiffkey, Moulsham and Hoxne than previous studies have achieved. Recreating and analysing prospects and promenades within these individual estates has helped establish what the Bacons, Mildmays and Southwells intended for themselves and their visitors to perceive. In this concluding chapter, one aim is to compare what each landowner envisioned to be experienced within their estates according to their “best fantastie” (Estienne, 1616, p.253). This discussion will identify whether they followed trends, fashions and conventions or used more unique traits that reflected their individual tastes. Another aim of this chapter is to assess how using a multidisciplinary approach, including digital methodologies through 3D-GIS, greatly assisted in reaching those conclusions. Consequently, this examination shall emphasise how this work has improved studies of English designed landscapes dating to the sixteenth and seventeenth centuries. This thesis shall thus conclude that 3D-GIS and a multidisciplinary approach can benefit and thus inspire research endeavours into other historic landscapes in the future.

This chapter thus explores, compares and evaluates the experiences at each case study and secondary site and what they elucidate about the landowners who created them. Interpreting these prospects and promenades highlighted four main themes. Firstly, contemporaries appreciated beauty within the displays of these landowners’ estates within surrounding scenery. Secondly, landowners encouraged their guests to progress through, explore and discover what these designed landscapes had to offer. Thirdly, contemporaries impressed their peers by demonstrating their authority, power and status over their estates. Finally, landowners and visitors sought privacy and places for solitude and contemplation. Characterising these experiences proved difficult because their meaningfulness in the absence of other empirical encounters was not always obvious (Siegel, 2011, p.25). It is also human nature to undergo various perceptual experiences which strongly depends on where attention is directed (Tye, 2003, p.96). Therefore, while exploring these separate themes, each of these experiences were strongly interlinked as they manifested within these designed landscapes.

## **7.2 - Beauty, Display and Scenery**

Within prospects and along promenades, landowners notably tended to prioritise or gravitate towards landscapes features and compositions thereof that encapsulated their concepts of beauty. These landscape views collectively showcased various assets amongst the estate, which landowners considered aesthetically pleasing, to their best advantage within ideal scenery. Nevertheless, beauty remained in the eye of the beholder (Hall, 1630, p.94). As landscape artists captured their commissioners' desires and specifications within paintings, landowners imposed their individual opinions of beauty onto the designs of their landscapes and the experiences within them. Visible landscape areas partially suggested that landowners deemed them to be beautiful. However, other applications of visual emphasis, such as direct, elevated or framed vistas including through *claire-voies* and archways, also made these features prominent and thus indicates landowners deemed them worthy within these views. Therefore, this section shall explore how concepts of beauty influenced contemporary experiences within these sites, while assessing how different disciplinary approaches and 3D-GIS contributed to investigations and subsequent knowledge of this phenomenon.

The elite lived and primarily entertained within the country house, the heart of the estate (Clemenson, 1982, p.39). Each house exemplified different stages of architectural advancement, which developed throughout this period (Airs, 1975, p.vi). Stiffkey Old Hall as well as Old Gorhambury House emulated the medieval style of Oxburgh Hall but with more Italianate inclusions. The late-Tudor to Elizabethan styles of Moulsham Hall and Terling Hall, with their medieval floor plans, progressed to European inspirations amongst the Jacobean architecture of Hoxne Hall. These individual styles demonstrated that landowners prioritised displaying their creativity over normalised aesthetic conventions (Kruft, 1994, p.17). Architectural historians have previously limited their understanding of these houses by favouring surviving and well-documented sites or those designed by renowned architects, including the existing medieval courtyard house at Oxburgh which aided analyses in this thesis. However, this thesis used a multidisciplinary approach, rooted in landscape history, helped expand the range of possible examples to include ruined or demolished houses with limited information. 3D-GIS also allowed the most intricate details and architectural differences of these under-researched or ignored houses to be digitally assessed in

a manner previously unfathomable from fragmentary data and dispersed sources. Consequently, the external architecture, floor plans and individual rooms of these houses could be analysed equally alongside extant examples and thus contribute to wider scholastic discourse. 3D-GIS also helped to better present and analyse how contemporaries experienced these country houses compared to more traditional methods and even the 2D analyses of the secondary sites. As a result, the more humanised perspective in 3D became essential to understanding country houses as more than buildings, with social, economic or structural histories, but as residences that contemporaries lived within and experienced.

3D-GIS also captured the architecture of garden, parkland and working buildings more effectively than 2D-GIS. For example, the 2D analysis of Old Gorhambury could not include the black-and-white tiles within the banqueting house, despite knowledge of their existence (Henderson, 1992, p.122). Even 2.5D extrusions within GIS could not visualise, for instance, the farm buildings renovated by Nathaniel Bacon near the approach to Stiffkey. With more evidence available about Stiffkey, 3D-GIS could realistically visualise detailing, like the Roman-style pediments and friezes on the banqueting house as well as the main house, and the locally-sourced rubble with stone-imitation plaster moulding in textures. As a result, a visual coherence between Stiffkey Old Hall and its estate buildings became apparent. Also, because the Bacons did not use good quality and expensive stone that was difficult to transport (Airs, 1975, p.96), 3D-GIS helped emphasise the architectural differences in terms of social status but also local and regional variations. Despite his rank and wealth, Nathaniel Bacon still adopted contemporary building techniques inspired by his father's estate, Old Gorhambury. Both sites therefore captured the Bacons' concepts of beauty, yet Stiffkey reflected Nathaniel's lower social standing and more humble disposition. This research helped emphasise that country houses, which architectural historians primarily address, but also multiple estate buildings collectively emulated these landowners' concepts of beauty to their satisfaction. Therefore, recognising neighbouring architectural features beyond a chosen focus is imperative, which a landscape history approach and digital methodologies help accomplish.

On the other hand, contemporaries ensured less appealing or undecorated outbuildings remained hidden to create more attractive views but also healthier environments. At Moulsham, the forecourt buildings obscured the more utilitarian

structures from sight of visitors within the entrance courts. Guests pleasantly experienced a complex of decorated edifices at Hoxne, including the garden building, park lodge and various structures either side of the gatehouse. However, these pleasantly distracted guests' attentions away from working buildings, kept generally hidden behind the country house and garden walls. Although modest, the Stiffkey estate advantageously included the banqueting house and gatehouse within a scheme of walled courts that altogether enhanced the estate's beauty. Its working buildings, on the other hand, resided far from the more beautiful structures and thus became less visually prominent. These observations confirmed that such buildings cannot be addressed singularly, as architectural historians and garden historians have done previously. For more effective analysis, these buildings need to be recognised as a collective while also considering geographical and topographical influences, which a landscape historian approach, spatial humanities investigations using GIS and 3D modelling can help visualise. This multidisciplinary approach thus aided in providing the optimal conditions to research how individual architectural features concurrently displayed landowners' concepts of beauty.

Individual gardens also provided opportunities for landowners to express their ideas of beauty. The garden was the *locus amoenus*, or the place to joy and delight in beauty (Dix, 2011, p.163). At Stiffkey, the Bacons created beautiful yet personal displays within the black-and-white heraldic garden, complete with beasts-on-poles upon the Italianate terraces. The later style of parterre within the formal garden at Hoxne also exuded beauty to be primely admired from above, within the principal rooms or on the wall walk. However, the banqueting house provided a place for visitors to engage in more intimate experiences amongst the garden rather than a raised vantage point to admire these designs from a distant and higher perspective. At Moulsham, on the other hand, the Mildmays did not necessarily create their French-inspired parterre to satisfy their own ideals of beauty but rather those of visiting French royalty. Data about these gardens varied with each site, and the lack of especially iconographic evidence combined with gardens' ephemeral nature have previously dissuaded garden historians from analysing them. However, 3D-GIS helped visualise every structural and textural detail interpreted within these planting schemes, their colourful designs, and architectural complexities. Although formal gardens are the garden historians'

domain, understanding them required recognising other disciplinary contributions, such as the architecture found in neighbouring structures or the archaeology of surviving garden remnants. Using digital technologies in this thesis thus enhanced the ability to acknowledge and implement multiple disciplinary approaches more effectively than past studies. Garden historians have also prioritised meaning within gardens, yet their physical and spatial arrangements also affected how contemporaries experienced them. Although Strong previously confirmed a distinct relationship between the house and gardens (Strong, 1998, p.135), 3D-GIS highlighted this correlation more profoundly. 3D-GIS allowed the user to appreciate the landowners' vision for these gardens structurally but also experientially, when viewed from above and on foot through immersion. Subsequently, this work has vastly improved our understanding of how creating gardens was a unique human action that also displayed each landowner's individual conceptualisations of beauty.

Contemporaries also considered orchards to be eminently beautiful gardens. Particularly in Essex, where the Mildmays' estates at Moulsham and Terling and the Petres' ones at Old Thorndon and Ingatestone resided, landowners designed grander and more formally-designed orchards, which may indicate a regional trend. At Hoxne and Stiffkey, their orchards of medieval origin retained their productive uses and beneficially resided closer to the service rooms and outbuildings and, in the case of Stiffkey, the kitchen gardens. Nevertheless, orchards became integral to exuding beauty within these estates especially after landowners, like Nathaniel Bacon at Stiffkey, adapted orchards into wildernesses for external admiration and internal enjoyment (Henderson, 2005, p.139). Both viewsheds and animations within 3D-GIS made the orchards' visual impact apparent, within their layouts but also the trees themselves. Such attributes could not be collectively visualised let alone analysed within 2D analyses or investigations using more traditional research methods. Nonetheless, 3D-GIS could visualise different disciplinary contributions collectively within the reconstructions of these orchards and thus more meticulously address contemporary notions of beauty within them. Supported by the landscape history approach, 3D-GIS also helped identify key relationships between orchards and other features, for example formal gardens which allowed contemporaries to enjoy seasonal flowers and fruit together. This correlation became evident because

orchards could be collectively explored with other neighbouring entities at different sites within 3D-GIS, rather than addressing these gardens individually or within the context of a single site. This study subsequently demonstrated a wider fashionable trend whereby landowners situated their orchards in places where both beauty and functionality could be valued.

On the other hand, only from some vantage points could the kitchen gardens be glimpsed at Stiffkey, Moulsham and potentially Hoxne. For example, the Bacons did not prioritise elevated views over the kitchen garden to the west and instead focused on the eastern and northern formal gardens at Stiffkey, thus exemplifying that the kitchen garden did not outwardly project equal or greater beauty by comparison. However, this did not mean kitchen gardens were considered altogether unappealing but rather they were not intended to be admired from above. Instead, visitors likely underwent more direct interactive experiences within these kitchen gardens, such as perusing the Mildmays' rare produce at Moulsham. Formal gardens and orchards may be more popular topics, amongst garden historians especially, but this research identified that kitchen gardens were nonetheless integral to designed landscapes beyond their utilitarian purposes. Therefore, this multidisciplinary approach ensured they could be analysed equally within the recreated spatial layouts of these estates, which helped to address the meaning behind these observations. Although highlighting their lack of visibility from elevated positions, 3D-GIS helped visualise kitchen gardens more superiorly than 2D analyse, which consequently opened new lines of enquiry about kitchen gardens beyond surviving examples.

While elite landowners implemented artificial garden designs, they kept other gardens simple. For instance, the grassed entrance courts at each case study have been plainly depicted in sources. These became uninteresting subjects to garden historians, who preferred designed and detailed formal gardens and orchards. However, it was because these entrance courts were unostentatious that they provided a perfectly subtle stage to advantageously showcase the landowners' architectural accomplishments. Although Strong noted that formal gardens had strong connections to country houses, the analyses in 3D-GIS highlighted that entrance courts did also. Individual contemporary sources or 2D analyses do not document or make readily apparent this experiential connection. The 3D-GIS recreations, on the other hand, enabled greater analytical

consideration of the physical and spatial relationships between these features and provided more realistic perspectives from which such visual connections became clearer. 3D modelling may beneficially visualise objects that are very detailed, but also allowed simpler areas like these entrance courts to be seen simultaneously. As a result, this analysis helped determine that, despite primarily acting as transitional spaces along the approach, these entrance courts purposefully lacked visual interest so that visitors focused upon the architectural complexities and structural mastery of country houses and other buildings. Therefore, while landowners considered some features in themselves beautiful, other areas only served to complement or enhance the beauty of those features.

Landowners also ensured that entire estate compositions reflected their notions of beauty. For instance, one key influence during this period was geometry, which literary and artistic sources captured and subsequently inspired contemporaries to adopt. Mathematical proportions, ratios, order and linear perspectives radiated outwards from the country houses into different gardens and along the approaches into the countryside. The Bacons most evidently considered geometry to be essential to their concepts of beauty, which they displayed within their imposing and ambitious geometric scheme at Stiffkey. Within this restricted site, the Bacons encompassed the symmetrical house with walled courts containing terraced gardens that collectively followed geometric ratios. The scheme also required the adjoining churchyard and the acquisition of neighbouring property to complete it, thus emphasising the strength of the Bacons' desire to implement it. Architectural or garden historians may ascertain geometry within individual landscape areas like the house or gardens, but this in-depth study using a landscape history approach allowed exploration of geometry within an entire designed landscape. As a result, 3D-GIS assisted in recognising the historiographical contributions of multiple disciplines that acknowledge the impact of geometry at various scales within their fields. However, the viewshed analysis went further by demonstrating how the Bacons' priorities lay with optimising this geometric scheme over having an unimpeded view of the bowling green from the Terrace Walk. These priorities also became evident within the wider landscape, where these analyses helped verify that the Bacons manipulated the axial approach and straightened the river by canalisation to ensure complete landscape coordination with their scheme. Ultimately, this multidisciplinary

approach supported by 3D-GIS helped recreate how the Stiffkey estate grandly displayed the Bacons' concepts of beauty rooted in geometric fashions. The other landowners at Moulsham and Hoxne, however, introduced or adapted less extravagant designs into their estates yet still displayed the importance of geometry within these estates. At Hoxne, the Southwells adhered to the bishops' original layout rather than designing a scheme themselves but nonetheless took advantage of geometric principles primarily within the grounds. The Mildmays, on the other hand, only introduced more subtle geometric inclusions for embellishment at Moulsham. 2D analyses also allowed restricted analyses from an aerial perspective of geometry within Francis Bacon's water gardens at Old Gorhambury, the Mildmays' formal garden layouts and linear approach to Terling, and the Bedingfields' moated courtyard house at Oxburgh. However, only because the Oxburgh estate still survives to some extent could, for example, the *claire-voie* demarcating the approach's geometric line through the entrance gate be identified in perspective. 3D-GIS, on the other hand, could visualise the *claire-voie* through the gate at the demolished site of Hoxne far superiorly than 2D analyses can achieve. Altogether, 3D-GIS better enabled investigations of the visual and experiential dominance of geometry within these estates because of the immersive navigation possible from aerial and grounded perspectives. This research thus better illuminated how geometric fashions percolated into different landscape areas that individually and collectively created beautiful displays to meet these landowners' expectations.

Unconfined space also radiated beauty (Allen, 1969, p.126). As the landscape grew progressively untamed, parks, meadows and pastures provided pleasing scenery that contrasted against the geometrically-designed grounds. Although open grassland devoid of agricultural intervention were fitting settings for Georgian country houses, the concept arose during the sixteenth and seventeenth centuries (Williamson, 1995, p.24). Hoxne had a pre-existing deer park adapted into grazing land for cows under the Southwells. Pastures surrounded Moulsham, alongside a deer park and a pleasure ground containing meadowland. Stiffkey, on the other hand, had no park but utilised the surrounding meadows and pastures of sheep to the same advantage. However, despite grassland being simple and generic, contemporaries experienced such areas differently according to their purposes and the landowners' personalities but also

their unique topographical situations. Geography, regional and landscape history recognise the impact of topography, but 3D-GIS combined with LiDAR data can visualise it beyond what distorted contemporary artwork may depict and even 2D analyses can emulate. Also, 3D-GIS beneficially provided an immersive perspective to explore these restored sites in their intended topographical context, which surpasses even on-site analyses because centuries of landscape change have obscured the contemporary layer of the 'palimpsest'. This methodology thus provided the best circumstances to elucidate how topography affected landscape perception, including how people once appreciated these scenic grasslands. As a result, 3D-GIS visualised how the grassed valleys of Stiffkey complemented the terraced gardens, which reminded the Bacons of Italianate landscapes that inspired their landscape designs. The Mildmays took advantage of their grassland upon gentle slopes as a theatrical backdrop around Moulsham, where they entertained royalty and other esteemed guests, that also provided open space that eradicated overbearing or claustrophobic experiences. At Hoxne, a pleasant background of grass showcased the Southwells' estate while the valley's topography mostly kept the prospects within the parkland and pastures. These favourable perceptions of unhindered grassland thus potentially influenced the Mildmays' preference of Moulsham over Terling, increased the allure of Hoxne in the eyes of the bishops and the Southwells, and fuelled the Bacons' desire to create a new approach at Stiffkey. Ultimately, each landowner wanted to emulate the second nature, a green cultural and theatrical space amongst their estates. While previous researchers have limited their observations to surviving or well-known sites, including those depicted in artwork or described in texts, 3D-GIS revealed how the beauty of grass uniquely influenced the appearance and utilisation of these more obscure and under-researched designed landscapes.

Water further complemented designed landscapes. While winding rivers enhanced the natural scenery, artificial creations such as moats, water gardens and ponds served utilitarian functions but also aesthetic ones. Hoxne and Oxburgh had the more impressive conglomerations featuring each of aforementioned water features on prominent display. Water gardens but notably the canalised river enhanced Stiffkey's beauty while emulating the Bacons' geometric ideals, which also featured throughout Francis Bacon's water gardens at Old Gorhambury. At Moulsham, on the other hand, the Mildmays introduced smaller and less visually

prominent water features, such as the fountain and pond that still added beauty amongst the grounds. However, the fishponds in the deer park and the river, a trade route through Chelmsford, served primarily utilitarian functions. The Mildmays had the financial means to create more water features and the estate also had access to the seasonally-wet Windsor clays, which geographical, regional and GIS approaches helped to determine were suitable conditions to sustain water features. These observations collectively suggest that the Mildmays did not wish to have such features nor did they consider water to be a prevalent source of beauty in their opinion. Previous researchers, especially garden historians, may focus on the uses and designs of individual examples or themes across different water features. However, landscape context also influenced where landowners created water features and thus what they desired their guests to experience. Therefore, while a landscape history approach helped recognise the contributions of multiple disciplines, 3D-GIS helped combined them when recreating these water features within their unique landscape circumstances at different sites. The finalised digital recreations thus enabled proficient visual analysis of the singular and cumulative aesthetic impacts of water features in the eyes of contemporaries.

Landowners also appropriated within their prospects other rural landscape features, although contemporaries considered some to be more appealing than others. For example, the ecclesiastical architecture of churches or chapels were prominent sources of beauty beyond religious reasons. The Bacons incorporated the parish church at Stiffkey into their geometric scheme. At Hoxne, the local church upon the hill marked the terminus of vistas from the grounds. Woodland complemented a chapel upon elevated topography at Moulsham, which emulated more theatrical scenery with intellectual connotations. Oppositely, these views frequently omitted commons, in part because of topographical hindrances. Nevertheless, it is reasonable to interpret that landowners considered commons to be blemishes on the landscape's beauty, an opinion which developed in the eighteenth century (Gregory, 2005, p.66). Also, similar attitudes plausibly extended to vernacular architecture within villages and farms but also roads, because the viewshed and animation analyses highlighted their decreased visual prominence. The landscape compositions of neighbouring estates, like the Brome estate near Hoxne, also affected these views. While not overlooking their neighbours' houses, the Southwells and the Cornwallises enjoyed uninterrupted

beauty within scenic views of each other's "possessions" (Wotton, 1624, p.4). Scholars like architectural or garden historians have previously restricted themselves by only addressing features existing within the sites themselves. On the other hand, this landscape history approach including geographical and regional studies helped identify that the countryside and topography beyond the site affected the display and improvement of designed landscapes but especially how contemporaries experienced them. Previous studies did not or could not account for such information, within on-site observations and even invasive on-site reconstructions because the landscape has changed considerably over time. This digital methodology using 3D-GIS, however, provided the scope to host large datasets from different sources and consider the contributions from multiple disciplines. By accounting for external influences when reconstructing these sites, the wider landscape impact on experiences within them became analysable.

The immersive perspective attainable within 3D-GIS also helped establish how viewing perspective, including distance, orientation and inclination, altered contemporaries' experiences of either individual or collections of features amongst their scenery. For example, like artists captured commissioners' estates in landscape paintings, contemporaries best appreciated country houses from a distance. Visitors advantageously observed Stiffkey Old Hall, elevated majestically upon rising topography, from the approach. Guests admired Moulsham Hall from multiple angles as they followed the approach encircling the estate. However, only through the gatehouse archway and within the immediate garden courts at Hoxne could visitors observe the hall from the approach. Instead, the diagonal view from the wall walk better showcased the hall alike to diagrams in architectural treatises. Each landowner also addressed concepts of perspective when deciding how to orientate their country houses to optimise the views from the principal rooms. Furthermore, as both Moulsham and Hoxne demonstrated, outbuildings either side of the gatehouses created illusions that aggrandised these structures, which the *claire-voie* through the entrance gate additionally framed at Hoxne. A multidisciplinary approach supported by 3D-GIS beneficially assisted in analysing the visual impact of perspective. By visualising entire estate compositions within the navigable environment of 3D-GIS, the features that landowners prioritised within views could be more accurately identified than those within static prospects depicted in rare and unreliable artwork. Because a spectator's position affected

the prospect, an immersive first-person perspective in 3D-GIS and derived from phenomenology helped visualise the different features and compositions thereof visible from specific locations. The *claire-voie* through the entrance gate at Oxburgh, for example, could not be observed in 2D-GIS yet first-person engagement with the site in reality made such investigations possible. 3D-GIS, on the other hand, helped recreate these lost designed landscapes and allowed the user to situate themselves within them in order to visually assess the surroundings as if these sites still existed. As a result, the views of formal gardens generated through the archways at Moulsham were comparable to the contemporary experience captured in artwork like Henry VIII's family portrait (Fig. 4.30). This assessment emphasises how 3D-GIS superiorly made experiences within inaccessible designed landscapes comprehensible, especially compared to the 2D analyses and more conventional methods used by researchers in other disciplines. Consequently, this research brought new understanding of how landowners advantageously used perspective to display beauty within their estates.

Overall, concepts of beauty strongly influenced landowners when designing and developing their estates. At Stiffkey, the Bacons' ideals focused prevalently on geometry with medieval and Italianate inspirations, especially upon the terraces displaying the colourful yet personal heraldic garden. The Mildmays beautified Moulsham potentially beyond their own desires and showcased their estate amongst beautiful scenery, to ensure that they appeared prestigious to others. At Hoxne, the bishops and the Southwells grandly displayed beautiful architecture centrally within expansive parkland and complemented with water features. This thesis thus elucidated how designed landscapes emulated landowners' concepts of beauty. The interpretation of what contemporaries experienced thus became comparable to what poems, diaries or letters record but without idealised exaggeration or poetic embellishment that more factual works provide. Therefore, 3D-GIS and a multidisciplinary approach aided in realising contemporaries' perceptions of beauty during this "Age of Display" (Strong, 1992, p.5).

### **7.3 - Progression, Exploration and Discovery**

The elite also encouraged their guests to explore, by progressing through interlinked spaces and discovering different areas within these estates. Within 3D-GIS, movement captured within animations demonstrated how contemporaries

navigated these landscapes, while the viewsheds highlighted points of interest that potentially drew the visitors' attentions and inspired which directions they should venture in. Therefore, this research further illuminated that, unlike their medieval predecessors, landowners no longer desired static landscapes but more active and engaging ones to entertain guests and satisfy their curiosities. This section will thus examine these areas while addressing the benefits of 3D-GIS in researching this subject within wider historiographical discourse.

Visitors first experienced these landowners' estates along the approaches. The approach to Moulsham dramatically curved through a diverse display of the Mildmays' landscape assets before entering the grounds. At Stiffkey, the Bacons privatised a road through the valley of pastures and meadows that they altogether considered more desirable than the original shorter approach that it replaced. While the Southwells retained the straight approach through pasture leading originally to the medieval episcopal palace at Hoxne, Nicholas Bacon implemented a similarly direct route through his demesne to Old Gorhambury House. Shorter approaches existed at Terling and Oxburgh, which lacked drama yet still emphasised progression from the neighbouring villages into the private estates. Researchers have primarily focused on approaches from later periods of landscape design, including eighteenth-century landscape parks by designers like John Vanbrugh (Dalton, 2012, p.2) and nineteenth-century estates adopting picturesque styles pioneered by Humphry Repton (Daniels, 1999, pp.48–9). Nonetheless, even scholars studying these period fail to acknowledge the presence let alone the experiential impact along the approach. Only within site-based investigations, which landscape historians and thus this thesis embraces, can the approaches through all estate features including the wider landscape be addressed. Furthermore, by becoming digitally immersed within the 3D-GIS recreations of these sites, the experiences along these earlier yet still sensational approaches could be replicated. Compared to rare descriptions in diaries and letters and even 2D analyses, 3D-GIS demonstrated what guests experienced as they moved along these approaches and anticipated the discovery of these country houses.

Vistas also guided visitors along pathways to discover new places. For instance, *claire-voies* through the entrance gates at Hoxne and Oxburgh framed the approaches and thus the visitors' destinations. Arches not only provided access through gatehouses and garden walls but also aesthetically framed views of

landscapes beyond. The gatehouse archways at Moulsham, Hoxne and Stiffkey highlighted aspects of the country houses. The Mildmays at Moulsham, however, used multiple arches in the walls surrounding the entrance courts to effectively capture formal gardens, lawns, parkland and the wider landscape, which consistently provided visitors with hints of landscapes to explore and discover. Other vistas simply accentuated prominent features. A vista of the viewing mount inspired visitors to leave Moulsham Hall, wander through the formal garden as the first nature, into the orchard-cum-wilderness demarcating the third nature, before arriving upon the viewing mount's summit to enjoy substantial prospects of grass and woodland comprising the second nature. At Stiffkey, visitors could explore the orchard-cum-wilderness before reaching the water garden or venture down the terraces into the formal gardens and bowling green. However, the Terrace Walk primarily directed guests towards the banqueting house, which provided a multi-directional prospect. At Hoxne, a vista extended from the garden building to the park lodge, axially aligned with the estate's geometric elements but primarily highlighted the lodge as a destination for visitors. 3D-GIS helped to establish such visual connections, which archival sources do not record and that exist beyond prospects captured in artwork. As a result, this methodology allowed analyses of vistas beyond what remains currently accessible at more intact sites or 3D analyses can derive from individual cartographic sources. By recreating vistas of features in context, 3D-GIS allowed their physical and spatial relationships to be perceived in-situ, especially those through *claire-voies* and archways.

Ascents and descents also provided visitors with additional entertainment. At Stiffkey, the Bacons prompted guests to descend through the eastern terraces to explore and discover the different gardens within the complex. Oppositely, visitors ascended the terraced entrance courts towards the gatehouse lodge before Stiffkey Old Hall, which added drama to the approach's final stage. At Moulsham, contemporaries ascended along the winding paths and changing levels of the viewing mount, culminating in discovering the prospect at its summit. These were all practical demonstrations of how topography, especially when artificially manipulated, impacted visual experiences by forcing contemporaries to move differently through these landscapes. Although the terraced gardens at Stiffkey survive archaeologically, the private and inaccessible status of the estate meant that only through digital reconstruction using 3D-GIS could experiences within

these terraces be replicated. At Moulsham, on the other hand, the prospect from the viewing mount is no longer perceivable in the landscape due to urbanisation. 3D-GIS, however, provided an editable and non-invasive method of reintroducing these pieces of landscape architecture back into their intended locations. As a result, this research could more effectively address what people once experienced when engaging with these designs.

Contemporaries also ascended into buildings. Among the grandest structures, country houses provided some of the most elevated vantage points within designed landscapes. Only people of high standing or with personal connections to the owners could ascend to the *piano nobile* and access optimal views over the landscape. 3D-GIS helped recreate what they perceived from this floor, even if the houses themselves have become ruinous or demolished entirely. Although no rooftop views existed at these case studies, 3D-GIS nonetheless has the scope to analyse them if the opportunity presents itself. Outside these country houses, landowners also encouraged visitors to alter their visual perspectives to fully comprehend their size, structure and style. For example, from the low-lying vantage point along the approach, Stiffkey Old Hall's medieval-inspired turrets could be admired adjacent to the church tower projecting above the garden walls. At Hoxne, the arched niche above the house's front door drew visitors' attentions upwards upon approach. Changing perspective also occurred when admiring prospects of and from the gatehouse, wall walk, garden building and park lodge. As a result, the Southwells emphasised architectural diversity within this multi-period and complex site, thus inspiring guests to explore each structure further. The Mildmays showcased Moulsham Hall within views from the approach and viewing mount but also the outlook tower, which encouraged visitors to ascend to its rooftop before accessing the most expansive prospects over the estate. Many of these architectural features no longer survive within the landscape today. Archival sources or 2D analyses prevent researchers from truly visualising these structures' heights and designs, meaning that previous studies restricted to such evidence could not properly analyse let alone comprehend experiences of or from them. Some disciplines address architectural features individually or collectively, but contemporaries' engagement with these inaccessible structures through the movement and changes in visual perspective only became visually apparent within the immersive and navigable environment of 3D-GIS.

Upon reaching their destinations, contemporaries could partake in certain activities. At Stiffkey, the Bacons enjoyed friendly games of bowls upon the bowling green and relaxing views over the valley emulating Italianate scenery from the banqueting house. They also appreciated equally amicable prospects from the garden building within the water garden at Old Gorhambury. However, the Mildmays designed Moulsham with more lavish entertainments in mind, like feasting or enjoying theatre upon the viewing mount and spectating hunting or shooting within the deer park from the tower. The park lodges at Terling and Hoxne also provided places to observe such sports, especially when the bishops owned Hoxne. When the Southwells acquired Hoxne, the park lodge became a retreat for hosting more intimate social gatherings. Many scholars have focused purely on what activities these landowners provided within these estates. 3D-GIS, however, helped assess how the estate compositions, landscape context and topography determined where landowners placed these features and what they intended their purposes to be. Such observations also became clearer because 3D-GIS provided an immersive 3D perspective that better replicated what people perceived while actively and passively experiencing these sites.

3D-GIS and a multidisciplinary approach helped gain understanding of how experiences of progression, exploration and discovery became integral when designing and developing estates. The Bacons created intimate yet entertaining experiences within the constricted site of Stiffkey. While they inspired visitors to discover the water garden through the orchard-cum-wilderness, the Bacons also encouraged them to traverse the terraced gardens into the bowling green. At Moulsham, the Mildmays frequently prompted such experiences as visitors progressed along the approach into the hall. Thereafter, esteemed guests partook in grander entertainments as they explored the three natures from the *piano nobile* before venturing towards the viewing mount or the tower to spectate other activities. However, although the Southwells did encourage exploration and discovery at Hoxne, visitors undertook these activities more leisurely in concordance with the interpretation that Hoxne was a secondary estate used as a retreat. This research has emphasised that designed landscapes of this period were no longer static but actively engaging landscapes. Consequently, this thesis has aided in-depth investigations of designed landscapes which landowners and their guests experienced during the “Age of Adventure” (Strong, 1992, p.5).

## **7.4 - Authority, Power and Status**

The elite also displayed their authority, power and status within their designed landscapes. Driven by wealth, social standing and connections, landowners encouraged others to admire various features that visually symbolised their prowess and proved themselves worthy amongst the elite. By using a multidisciplinary approach, this research could effectively investigate individual areas and collections of features within these ruinous or demolished sites that contributed to landowners' displays of control and influence in the landscape. The viewsheds and animations generated within 3D-GIS also made evident how contemporaries experienced these expressions of dominance in ways which rival and improve upon previous scholarly explorations of designed landscapes.

The decline of the castle and the rise of the country house as the main seat of power was one of the most significant architectural transformations of the Tudor age (Airs, 1998, p.xi). However, as long as castellated buildings retained an association with noble dignity, they continued to be built or retained by the elite (Liddiard, 2005, p.66). The late-medieval courtyard house at Oxburgh remained unchanged and continued to display its visual dominance as an ancient seat within its moated defence. This castellated style inspired the octagonal towers at Old Gorhambury House and subsequently the round towers at Stiffkey Old Hall. Implementing such militaristic designs established status but also created the illusion of the residing family's longevity within recently-acquired sites like Stiffkey. Because the towers also projected beyond the skyline, Stiffkey Old Hall also demonstrated Nathaniel Bacon's local authority and power within Stiffkey. If Nathaniel had executed the proposed plan, the house would have grandly displayed architecture more reminiscent of castles. Nevertheless, 3D-GIS helped confirm through recreation and exploration within the expected landscape context that both the intended and actual houses presented prestige. On the other hand, Moulsham Hall established the Mildmays' new-found authority by using more innovative Tudor or Elizabethan architecture without necessarily needing medieval architectural symbolism. The Petres also used a similar architectural style to project their own influence at Ingatestone, that subsequently bolstered the Mildmays' status through association. While different architectural phases displayed eras of development to help fabricate the Southwells' long-established residency at Hoxne, the Jacobean-style house also advantageously demonstrated

their power over the medieval episcopal predecessor. The Mildmays may thus have adopted a similar display within the episcopal complex at Terling. Such observations could be made at Oxburgh because it can be investigated in the landscape today. On the other hand, the demolished and inaccessible houses from the main case studies lacked evidence to warrant their inclusion in previous scholarly discussions by narrowly-focused disciplines like architectural history. Nonetheless, by using 3D-GIS to recreate these sites so that the country houses' visual impacts could be observed from the contemporaries' perspective, this research helped rectify the situation and went beyond what archival sources or 2D analyses could evidence. Also, 3D-GIS not only helped assess prominence exuded through existing country houses but also those proposed but never executed. Therefore, 3D-GIS benefits architectural historians' work on actual and theoretical examples. This thesis has subsequently opened new lines of enquiry beyond surviving country houses, which also more frequently date to later periods.

Gatehouses also indicated elite strength, best exemplified by Oxburgh's tall castellated gatehouse that can be observed in the landscape today. Also surviving yet inaccessible is Stiffkey's more humble gatehouse lodge with unostentatious Roman-style embellishments that reflected Nathaniel Bacon's modest disposition. Visitors nonetheless perceived this gatehouse as an emblem of status because Nathaniel placed it upon elevated topography and used concepts of perspective to further aggrandise it. On the other hand, the bishops and not the Mildmays or Southwells visually demonstrated their authority beyond the medieval episcopal palaces of Hoxne and Terling by creating towering gatehouses. Nevertheless, the Southwells and Mildmays then capitalised on these projections of dominance after acquiring these sites. The gatehouse at Moulsham also demonstrated the Mildmays' power to visitors approaching the estate. However, the nearby tower's imposing height and assertive display more clearly presented the Mildmays' local authority while also intimidating others, especially thieves who previously plundered the warren. While architectural historians have focused on country houses as the primary visual symbol of landowners' wealth and status (Clemenson, 1982, p.33), other buildings also played a significant role that mainly landscape historians have researched. These structures' prominence became more apparent because the multidisciplinary approach focused on landscape history helped support their visualisations within 3D-GIS. The close-to-authentic recreations of

these buildings and experiences of them became comparable to surviving examples, thus surpassing studies by other disciplines and also the 2D analyses. This work further emphasised the importance of engaging with the wider landscape beyond these sites in order to understand how profoundly these structures impacted upon observers within the estate and local landscape.

Medieval heraldic designs continued to emphasise status in this period by discerning elite owners while providing glimpses of their personalities. The only confirmed outward displays of heraldry were by the Southwells at Hoxne and the Bacons at Stiffkey and Old Gorhambury. Oxburgh only had heraldry in interior rooms while its presence remains unknown at Moulsham and Terling. However, these landowners did not necessarily display heraldry for the same reasons. For example, an interpreted heraldic beast upon the gatehouse rooftop at Hoxne became an arrogant spectacle by the Southwells, who highlighted the change in authority from the bishops of the episcopal predecessor when they claimed the site and surrounding manors. Nonetheless, this device succeeded in discerning the residing family to visitors, which the Bacons also similarly implemented at their estates. Nicholas Bacon created a subtle yet powerful display of heraldic arms and family colours to embellish the double-height porch at Old Gorhambury, while Nathaniel Bacon included a small humble heraldic beast on his gatehouse at Stiffkey. The Bacons further displayed their heraldry more extravagantly by emblazoning their colours of black and white, on the paving within the terraced gardens at Stiffkey and inside the banqueting house at Old Gorhambury. Therefore, the Bacons considered their ancestry and associated power to be important to prominently display within their estates. While scholars may acknowledge the written evidence documenting the colours exhibited at Stiffkey and Old Gorhambury, these sources as well as 2D analyses cannot emulate the structural and spatial layouts as well as the topographical and geographical settings within which visitors perceived these embellishments. Typically analysed separately by disciplines like architectural history and garden history, these devices can be assessed concurrently and contextually by using 3D-GIS to visualise these heraldic devices in intricate detail and supported by a multidisciplinary approach primarily adopting landscape history methods. The humanised perspective provided by 3D-GIS thus helped improve our understanding of heraldry by perceiving them in the context that landowners had intended.

Other aggrandising techniques helped display these landowners' power within their estates. Outbuildings or hall ranges flanked either side of porches and gatehouses, which magnified these features and thus displayed the owners' elite authority more profoundly. Entrance courts magnified the approaches to these halls, especially at Moulsham where the Mildmays used two forecourts instead of one to better showcase their prestige and prove themselves deserving and worthy to be amongst their peers. The Mildmays could satisfactorily achieve this scheme within the larger space available at Moulsham compared to Terling. The Bacons contended with a constrained site at Stiffkey, yet the house appeared dignified in view of the approach because the geometric scheme of garden courts surrounded it upon the elevated valley slope. The approach to Stiffkey also followed the site's longest axis, which deceptively prolonged visitors' journey and thus aggrandised their perceptions of the estate. Because 3D-GIS helped simultaneously visualise each of these scenarios, the resulting displays of dominance could be analysed and interpreted. The immersion possible in 3D-GIS also better replicated the contemporaries' perspectives and thus how they once experienced the visual impact of these innovations, which 2D analysis and more conventional research methods could not establish. This multidisciplinary approach and digital methodology thus provided an environment to assess this phenomenon within under-researched sites comparable with on-site studies of surviving estates.

Also taking advantage of perspective, prospects from higher vantage points captured landscapes under the residing families' jurisdictions. Despite no evidence suggesting access to country-house rooftops at these case studies, the rooms upon the *piano nobile*, the tower at Moulsham and the gatehouses at Hoxne and Oxburgh provided aerial views comparable to fashionable depictions in artwork and treatises. Looking into the wider landscape from the gatehouse at Hoxne, the prospect contained Hoxne Priory, the bishops' adjacent manor and site of St Edmund's martyrdom. Its visibility later became advantageous to the Southwells as a further demonstration of their influence in Hoxne after acquiring the priory for themselves. Similarly, the Mildmays had enclosed fields, of unknown data, within their extensive demesne in Moulsham and Chelmsford while the Bedingfields owned land throughout Oxborough. Therefore, the far-reaching views from the tower at Moulsham and the gatehouse at Oxburgh helped to promote these landowners' local authority over their property. On the other hand,

although contemporaries enjoyed more expansive views from the *piano nobile* at Stiffkey, many of Nathaniel Bacon's dispersed manors lay beyond the horizon line. Nonetheless, the agricultural strip systems near Stiffkey Old Hall demonstrated a closer relationship between lord and tenant, which potentially emphasised Nathaniel Bacon's paternalistic outlook to others. Therefore, this theme emphasises the need to include wider landscape context within these analyses, which many disciplines have failed to do despite landscape history, geographical and regional studies proving it essential. Estate maps, used in art history, geography and landscape history, may record in detail landownership beyond these sites yet their 2D planar surfaces cannot account for human experience on foot. 3D-GIS, however, can digitally reconstruct from these sources the landscape under these landowners' jurisdiction but also its visual and experiential impact on these sites, beyond what even observations of surviving sites can accomplish.

Landowners also displayed power by controlling animals. Each prospect at Stiffkey contained meadows and pastureland for sheep, the Bacons' prominent husbandry animal that Nicholas Bacon also grazed amongst the fields constituting the park at Old Gorhambury. Parkland became elite symbols that demonstrated control over especially prestigious animals like deer. Deer within the park at Terling and the 'Oldepark' and 'Newe Park' at Hoxne first symbolised the bishops' status and wealth. The Mildmays then continued the tradition and capitalised on this symbolism at Terling, while the Southwells kept cattle rather than deer at Hoxne. Although only its rough location is known, a deer park plausibly displayed the Bedingfields' prominence at Oxburgh. However, the Mildmays more ambitiously demonstrated control over nature at Moulsham, which included a deer park, a warren, fishponds and adjoining pastureland that all contained animals they owned. Every site also had a dovecote that physically evoked the landowners' power and status by containing doves or pigeons, yet many dovecotes were far removed from beautified areas or hidden from sight altogether. Moulsham was the only exception, where the Mildmays considered it necessary to prominently place the dovecote along the approach, to emphasise their increasing prestige to visitors in the first instance. Landowners did not limit prospects presenting their ability to control animals to individual areas, as narrowly-focused disciplines tend to address, but within estates as a whole which 3D-GIS assisted in exemplifying by allowing visual and spatial relationships between relevant features to be analysed.

The elite also controlled nature by shaping the landscape itself. For instance, each landowner manipulated water as demonstrations of power. Examples include the fountain at Moulsham, fishponds existing at Moulsham and Terling, moats surrounding the sites of Hoxne and Oxburgh, water gardens near to Hoxne, Oxburgh, Stiffkey and Old Gorhambury, and the canalised river at Stiffkey. Geometry to display these landowners' authority over water and other landscape features. While the fountain at Moulsham embellished the centre of the formal garden, the geometric water gardens at Old Gorhambury and the linear river at Stiffkey met their owners' visual satisfaction while emphasising their power over water. Landscape manipulation involving geometry also extended to formal garden layouts, orchard planting schemes, and the architectural arrangements of the hall, courts and buildings. The scheme at Stiffkey best demonstrated elite authority, of Nathaniel Bacon in this instance, over the local landscape and the tenants living within it. Nonetheless, geometric dominance also featured at Hoxne, although the Southwells merely adopted the surviving medieval scheme as opposed to purposefully implementing it themselves. Although to a lesser extent, geometry also featured within Moulsham and the other comparative sites. However, landscape architecture that required moving substantial amounts of earth became one of the most outstanding demonstrations of power (Seeber, 2012, p.4). While the Mildmays created a complex viewing mount at Moulsham, the Bacons integrated magnificent terracing into the geometric scheme surrounding Stiffkey. Landowners also controlled the visitors and encouraged them to venture along pathways within the formal gardens and orchards, ascend or descend terraces and viewing mounts, and enter through gatehouses, arches and gates. Each of these examples demonstrated power over visitors' experiences, which became symbolic of these landowners' utmost authority within their estates (Spooner, 2005, p.2). Separate disciplines may identify examples where landowners controlled nature, yet such observations rarely address every feature within designed landscapes. They also fail to account for archaeological, topographical and geographical influences, which disciplines like landscape history recognise. By using 3D-GIS, however, the impact of landscape architecture, for example, became evident because LiDAR data visualised the topography as well as the surviving terraces at Stiffkey but could also be edited to include demolished features like the viewing mount at Moulsham. Therefore, to achieve a more

authentic analysis, 3D-GIS helped merge traditional methods and sources used by individual disciplines to more authentically assess how visitors perceived these landowners' demonstrations of control within an immersive 3D environment.

Ultimately, landowners desired to showcase their authority, power and status throughout their estates. Moulsham displayed the status of a rising family from 'new money', who needed to prove themselves amongst their peers by exerting their power over the landscape they owned. Hoxne primarily exerted the bishops' dominance over their manors before the Southwells later adapted the estate to meet their needs as the new and successful landowners. Stiffkey was a lower-ranking site yet Nicholas Bacon's desire for Nathaniel Bacon to rise through the ranks became evident. Nonetheless, compared to his father, Nathaniel remained paternalistic and thus Stiffkey remained modest and humble in the eyes of visitors and the local community. The 3D-GIS recreations, supported by a multidisciplinary approach, helped make apparent these landowners' elite social standing within their designed landscapes and across their demesne and manors.

### **7.5 - Privacy, Solitude and Contemplation**

Finally, designed landscapes were also private landscapes for landowners and their guests to enjoy without disturbance. Landowners used different landscape design techniques to ensure privacy prevailed within their estates, especially in consideration of their wider landscape compositions. Subsequently, contemporaries sought places of solitude throughout the grounds to undertake peaceful activities including contemplation. By addressing multiple disciplinary approaches simultaneously when recreating these sites and their landscape contexts in 3D-GIS, this research helped establish the extent that landowners provided private, solitary and contemplative experiences for their visitors.

Landowners considered the wider landscape when orientating their estates to ensure optimal privacy. The Bacons placed the best rooms at Stiffkey and Old Gorhambury nearest the beautified grounds and facing the opposite direction to the service areas or nearby village. The only exception at Stiffkey was Nathaniel Bacon's gallery, which overlooked village houses but only as a result of a compromise. Guests would have enjoyed private views had Nathaniel built Nicholas Bacon's intended gallery. Consequently, both Nathaniel and Nicholas considered the site's orientation when creating private views at Stiffkey. The

Mildmays also orientated their best rooms at Moulsham and Terling towards pleasingly tranquil scenes and away from the towns and villages in their vicinity. At Oxburgh, the Bedingfields could not guarantee privacy within certain important chambers that looked out onto the local village, despite medieval castles being known to have their private rooms purposefully overlooking more secluded landscapes (Liddiard, 2005, p.113). From Hoxne Hall, the Southwells also could not enjoy the formal gardens without glimpsing the village, yet the privy garden on the house's other side and the park lodge upon the hill provided greater privacy. Only in-depth studies of sites provide the best approach to understanding why the elite orientated entire estate compositions within their wider landscape contexts, which narrowly-focused disciplines interested in specific subjects cannot address. 2D analyses may help visualise which ways landowners orientated their designed landscapes, but the immersive perspective within 3D-GIS helped replicate what contemporaries visually and spatially experienced when interpreting viewsheds and animations and thus how orientation affected the attainment of privacy.

Distance also helped attain privacy and seclusion within designed landscapes. At Stiffkey, although the village resided near the northern half of the estate, the road privatised by act of *inquisition ad quod damnum* helped establish distance southwards and thus created a sense of seclusion within this constrained site. Nicholas Bacon owned parkland containing numerous fields that surrounded Old Gorhambury House at its centre. Enclosed fields beneficially segregated the Mildmays at Moulsham from Chelmsford, bustling with trading markets selling goods transported along the river or the roads radiating from the town centre. The Mildmays thus desired Moulsham to be their primary country seat because, like Oxburgh, the Terling estate resided too close upon the local village to be private. Nonetheless, both Terling and Oxburgh had their more secluded areas on the opposite side of these houses and away from the villages. At Hoxne, the park's expanse provided enough distance between the site and the village to ensure seclusion for the bishops and the Southwells. Landowners and their guests also sought solitude within other distant locations away from the heart of these estates. Places of isolation included the park lodges at Hoxne and Terling, the Terrace Walk leading to the banqueting house at Stiffkey, the viewing mount at Moulsham or the water gardens at Oxburgh and Old Gorhambury. Resulting from this analysis, the elite noticeably gravitated towards more secluded scenic compositions that

typically lay in the opposite direction to public landscape areas. Topographical changes also add to illusions of distance within the landscape. Despite Stiffkey Old Hall being in view of the village, the undulating valley helped Nathaniel Bacon create a sense of seclusion within his estate. At Hoxne, the bishops before the Southwells also took advantage of the hilly terrain and placed the residence deep within the valley to ensure seclusion from the village beyond the park. Also, isolated upon the hill within parkland surrounded by a grandiose pale, the lodge served hunting and security purposes for the bishops before becoming a suitable refuge for the Southwells to enjoy. On the other hand, despite residing within a flatter landscape, the Mildmays remained distanced within their expansive estate and thus enjoyed open yet secluded views. Altogether, topography visually affected concepts of distance, blocked views of public landscapes, and ultimately helped attain privacy. Such observations became more evident because both the 2D-GIS and 3D-GIS analyses in this thesis accounted for the wider landscape context. The viewsheds calculated within 2D-GIS indicated that the flat topography at Old Gorhambury allowed open yet private views over the park. The valley where Terling resided created confined views towards the village yet provided open and secluded prospects uphill towards parkland. Finally, despite Oxburgh being situated within a topographical depression, expansive views were possible on all sides. However, 3D-GIS better visualised how contemporaries originally experienced it compared to 2D analyses because the 3D perspective assisted in emulating distance as well as the impact of topography recorded in LiDAR that cannot be fathomed from planar maps. Thus, like with artwork, experiences of distance cannot be truly fathomed let alone relied upon for analysis using only these maps within 2D-GIS. Even on-site observations cannot account for wider landscape change, regardless of whether existing parts of these sites could still be accessed and experienced. By using a landscape history approach, digital methodologies and phenomenological techniques, this research thus surpassed previous studies and demonstrated how distance, topography and wider landscape context influenced whether landowners could obtain privacy.

Upon the topography, surface features also helped privatise experiences within designed landscapes. Landowners implemented or took advantage of natural barriers. For example, various trees scattered throughout parks, within water gardens, and along field boundaries hindered views both in and out from

these estates. More purposefully designed plantings of trees also provided additional privacy, such as the orchard-cum-wildernesses at Stiffkey and Old Gorhambury, which also created enclosed experiences for visitors exploring the orchards themselves. From Hoxne, the orchard as well as tree belts helped collectively obscure views over the Cornwallises' estate including Brome Hall. At Moulsham, tree belts also hid the main road eastwards but also Chelmsford to the north. Woodland, such as Moulsham Frith near Moulsham and the Spring at Hoxne, also help increase privacy within these estates. As well as trees, water provided natural barriers. Water helped create distance and became obstacles to cross within moats, which subsequently portrayed notions of privacy at Hoxne and Oxburgh, or rivers, like the Bacons manipulated across the approach at Stiffkey. As well as using natural barriers, landowners created more artificial ones using buildings and walls. The Bedingfields placed their outbuildings between Oxburgh Hall and the village to provide enough visual segregation within the grounds to remain sufficiently private. Gatehouses, some of which included adjoining outbuildings, also helped landowners attain privacy. In the case of Oxburgh, the gatehouse hid the inner courtyard and the entrance to the hall itself. At Moulsham, these buildings hid the beautified aspects of the grounds until visitors had entered the estates. At Terling and Hoxne, the Mildmays and Southwells likely adopted the designs of the bishops, who originally desired to stay solitary at these episcopal palaces according to their religious beliefs but also as higher-status individuals. At Stiffkey, on the other hand, the gatehouse may have granted entry to the hall but the towering garden walls abutting the public road and churchyard kept the gardens primarily hidden to outsiders. Nonetheless, open yet private views existed eastwards over the valley, which included where demolished village houses and the privatised road resided. Although 2D analyses can visualise these barriers in context, only 3D-GIS could register their visual impact onto contemporaries' experiences from their perspective. Even scholars studying surviving sites have had their assessments of past experiences hindered by modern landscape impediments, such as the expansions of Chelmsford, or missing features, such as the trees destroyed during the Great Storm of 1705. As a result, many disciplines solely address maps and archival information, which can document obstructions yet do not allow researchers to fully understand how they affected the experiences that landowners intended their guests to engage in. Only

through digital reconstruction can relevant landscape aspects be added and irrelevant ones be eradicated. Recording of imperceptible yet useful data, such as the locations of demolished village houses in Stiffkey, also provided additional context to aid the interpretation of these secluded experiences in 3D-GIS. As a result, the multidisciplinary approach used in this thesis necessarily accounted for these barriers and also landscape context beyond these individual disciplines' chosen foci, which 3D-GIS captured within more historically accurate scenarios for conducting visual analyses within these case studies.

With privacy obtained within these estates, contemporaries found peaceful places to contemplate. First, gardens became refuges for meditative experiences (Battisti, 1972, p.4). At Stiffkey, the terraced gardens provided Nathaniel Bacon with more personal and romantic experiences to remember of his late wife, Anne Gresham. The Mildmays created an alluring location suited for more meditative experiences, either for religious or intellectual reasons, upon the summit of the viewing mount within the orchard-cum-wilderness at Moulsham. The Southwells further improved the bishops' estate at Hoxne by adding the banqueting house or pavilion within the seclusion of the formal garden, bordered by the hall, orchard, moat and wall walk. While the Bedingfields likely retreated to the water gardens to contemplate, Francis Bacon also sought solitude within the banqueting house upon an island amongst the water garden at Old Gorhambury. Beyond the gardens, parkland also provided suitable scenery for those seeking solitude. The bishops at Hoxne and Terling primarily desired to exercise seclusion yet used the park lodges for hunting purposes. The Mildmays likely continued this tradition but the Southwells later used the lodge for solitary and contemplative purposes. The tower at Moulsham, on the other hand, did not provide a secluded location for contemporaries to experience within parkland. Instead, the tower created an eminent presence over the local landscape that deterred external intruders and thus ensured privacy for the Mildmays and their guests when enjoying the estate. For this research, rather than addressing singular sources that merely identified what features were present without indicating contemporary perceptions of them, 3D-GIS better visualised how these physical components helped these landowners achieve solace within their designed landscapes. This technology also enabled users to more actively engage with these sites to interpret contemporaries' emotive responses to those scenarios using phenomenology's immersion

techniques and an adaptation of literary history's reception theory. Therefore, this multidisciplinary approach helped address numerous lines of inquiry, supported by different sources and methods of interpretation that ultimately produced more comprehensive analyses of such experiences than previous works have achieved.

In conclusion, status-seeking landowners of the sixteenth and seventeenth centuries considered privacy to be of great importance, but the bishops also deemed seclusion integral to their religious practices during the medieval period. Therefore, both groups attempted to reduce the visibility of external influences to create desirable experiences segregated from others. At Stiffkey, privatising the road and orientating the site away from the village ensured views remained secluded and thus the gardens kept private for contemporaries to enjoy without interference. The spacious estate of Moulsham remained distant and orientated away from Chelmsford while the Mildmays adopted physical barriers where necessary to maintain secluded views suited for contemplative experiences. The bishops already ensured Hoxne became private and secluded within its distanced situation further by topography and various artificial and natural barriers. Nonetheless, its solitary composition meant that Hoxne suited the Southwells' need for a secondary estate that became a retreat for their guests to enjoy more recreational yet isolated experiences. This multidisciplinary approach not only benefitted the process of recreating these private spaces within 3D-GIS but also helped more proficiently interpret where contemporaries sought solitude and contemplative experiences within these unique designed landscapes.

## **7.6 - Conclusion**

This thesis has demonstrated that the connections between English designed landscapes and human experiences through sight were more apparent than previous studies have been able to comprehend. This research helped gain greater understanding of how the "Lordship... of the Feete" and the "Lordship... of the Eye" influenced each landowner, or "Master", to develop their estates in consideration of "the Properties of a well chosen prospect" and the "joy when he walketh about the Line of his owne Possessions" (Wotton, 1624, p.4). As a result, this thesis has uncovered deeper knowledge of not only country-house estates from the sixteenth and seventeenth centuries but of the people who designed, lived in and experienced them. By recognising and implementing various disciplinary

approaches as well as integrating 3D-GIS into the methodology, this thesis has illustrated how harnessing a multidisciplinary approach as well as digital technologies can enhance comprehension of this subject. The combined reconstructive and analytical capabilities of GIS and 3D modelling have proved advantageous in combating various hindrances that other research endeavours have previously faced, by collating the strengths of different disciplines while tackling their weaknesses. Consequently, the versatility of 3D-GIS and the breadth of knowledge obtained by adopting a multidisciplinary approach helped to demonstrate how different experiences, as divided into the aforementioned four themes, influenced the Bacons', Mildmays' and Southwells' designs of prospects and promenades within Stiffkey, Moulsham and Hoxne.

The Stiffkey estate established Nathaniel Bacon's local authority over his manor. The use of medieval symbolism and heraldry defined and emphasised his prestige and familial connections, especially within the gardens. By combining various landscape components, the Bacons were able to convey ideas of beauty both within the geometric scheme of the gardens and across the wider landscape of their estate. Although the Bacons did encourage exploration of the orchard-cum-wilderness and water garden to the west, visitors more frequently gravitated towards the ascents and descents within the eastern gardens including the bowling green. Nathaniel prioritised these terraced gardens where he guaranteed solitude by placing and orientating the terraces away from the village and by privatising the approach through the grassy valleys. Altogether, despite its constrained site, Stiffkey exuded beauty and intrigue alongside demonstrations of status, yet nonetheless displayed Nathaniel's modest and humble disposition.

On the other hand, the Mildmays at Moulsham extravagantly implemented designs even beyond their own ideals of beauty to create captivating settings to entertain royalty. The Mildmays ensured fashionable concepts became visually prevalent and not only provided entertainment but also encouraged contemplation, most likely on an intellectual level from the Mildmays' perspective. The Moulsham estate took advantage of the surrounding topographical and geographical context and thus remained secluded, distanced and orientated away from Chelmsford. As a result, looking towards open scenery and residing within a spacious landscape, the Mildmays enjoyed certain freedoms when creating their

ideal estate. As a result, Moulsham helped to exude the family's prestige amongst their peers who visited the estate. As a result, it became evident that the Mildmays primarily sought to prove their worth amongst the higher ranks of society within this large emblematic estate at Moulsham.

From its landscape situation to the extensive use of architectural and natural barriers, the Hoxne estate provided a place of seclusion and isolation, which the Bishops of Norwich and subsequently the Southwells deemed of paramount importance. Visitors could privately explore and discover the estate at their leisure, including the beauty displayed within different pieces of architecture, gardens and parkland. Nonetheless, the impressive variety of visually dominant structures symbolised the residing owners' power over those who lived within the manor. While originally emphasising the bishops' authority, the architecture at Hoxne became a display manipulated by the Southwells to emphasise their newly-acquired ownership and control over the episcopal predecessor. Conclusively, the Southwells desired to demonstrate their prestigious influence beyond Woodrising to their secondary estate at Hoxne, yet Hoxne primarily served as a private refuge reserved for the enjoyment of only the Southwells' closest friends and guests.

Within these three case studies, each of these themes became prevalent because of the assistance of 3D-GIS and support of a multidisciplinary approach. This thesis thus promotes the benefits and potential adaptation of this research strategy to help improve studies into other historic landscapes. Before the reconstructive process even began, 3D-GIS provided Stiffkey, Moulsham and Hoxne with blank canvases that stripped away the layers of the landscape 'palimpsest' currently impeding our experiences of these sites. Consequently, the 3D-GIS environment had the scope to restore only the landscape compositions historically relevant to the sixteenth and seventeenth centuries for subsequent interrogation within this thesis. These recreations not only included the sites themselves, but the wider landscape context, which was a vital element in shaping the experiences that have been analysed within designed landscapes. Such considerations could not be addressed when observing these estates in the landscape today, after these sites and their surrounding countryside have changed considerably and even beyond recognition. As a result, this research using 3D-GIS accomplished more meticulous explorations and rigorous analyses of contemporary experiences within these case studies than previous researchers have been able to achieve.

Because of the greater expanse of knowledge accessible using a multidisciplinary approach, this thesis also benefitted from consulting a diverse yet dispersed range of data that 3D-GIS helped combine into singular coherent landscape interpretations by acting a catalyst. Other more traditional historiographical approaches typically analysed sources separately in respect of their own disciplinary inclinations. This research, however, endeavoured to examine, organise and visualise the data from each available source spatially, regardless of being textual or iconographic in nature or containing qualitative or quantitative data, so that these sources collectively contributed to these 3D-GIS visualisations. This process also helped confirm data reliability, established where gaps existed and thus opened new lines of enquiry to pursue. The editable attributes of 3D-GIS then provided additional freedom to experiment with both proposed and executed plans for these designed landscapes. As a result, this thesis exhibited how 3D-GIS allowed investigations of not only what landowners succeeded in constructing but what they ideally wished to create.

To fully comprehend what these sources tell us about these designed landscapes as well as the experiences within them, their data needed to be visualised in the third dimension. The presence but also their sizes, shapes, materials and detailing of different features affected what contemporaries perceived from different perspectives within these sites. Topography also played a significant role, which affected how features within designed landscapes and into the wider landscape physically and visually linked to one another. Such information could not effectively be compiled and visualised within 2D-GIS, let alone using more traditional research methods including on-site observations within the current landscape context and analysing individual sources. 3D-GIS, on the other hand, could model what evidence different sources provided into a collection of landscape components within their original context, thus creating realistic digital visualisations of designed landscapes. The third dimension subsequently benefitted analyses of experiences within the 3D-GIS recreations of these case studies. From the unique designs of individual gardens to displays of entire estate compositions within tranquil scenery, 3D-GIS visualised the beauty that contemporaries perceived within these landscapes beyond what archival documents may record. Compared to 2D-GIS, the navigability and immersive perspective captured in the animations created in 3D-GIS better demonstrated

progression through movement between interconnecting spaces, exploration by changing visual perspectives and the discovery of new landscape settings within all parts of these estates. The landowners' authority became more prevalent in 3D-GIS by witnessing first-hand their domineering presence over the landscape by using architecture and other powerful displays embellished with status symbols. The wider landscape context combined with topography that 3D-GIS visualised also helped realise the privacy that landowners gained within these estates and to experience where contemporaries sought solitude or contemplative places. Therefore, 3D-GIS aided in investigating these landscapes from a perspective more closely resembling how contemporaries perceived their estates, thus allowing the meanings behind those experiences to be derived more proficiently in this thesis.

Subsequently, this research generated new digital resources in 3D-GIS that represent the most comprehensive interpretations of Stiffkey, Moulsham and Hoxne to date. The digital space and scope within 3D-GIS advantageously helped to recreate individual components of designed landscapes but assess them as collective entities. As a result, more proficient investigations could be undertaken because these 3D-GIS recreations freed the mind from the preoccupations of imagining the appearances of these designed landscapes, in consideration of other local and regional landscape factors. Subsequently, this research could prioritise the analysis and interpretation of what landowners and visitors experienced within prospects and promenades. Despite the time-consuming endeavour of recreating these designed landscapes, 3D-GIS proved to be a worthwhile investment and a valuable tool for this thesis. Consequently, this study aimed and succeeded in providing obscure and lower-status landowners of under-researched sites, in varying physical states with limited surviving evidence, the opportunity to contribute to current discourse. Using 3D-GIS and a multidisciplinary approach, this work in this thesis thus rivalled that of scholars from more narrowly-focused disciplines, who have more popularly investigated prestigious landowners and extant features within surviving sites.

There are still opportunities to continue this research by engaging with more case studies and different experiential scenarios. Nevertheless, the 3D-GIS recreations of Stiffkey, Moulsham and Hoxne can continue to contribute to investigations beyond this thesis. James Bond's sentiments are thus relevant here:

*"No published survey of parks and gardens can ever be definitive; views prevailing at any given time will continue to be reassessed; new evidence will continue to emerge as new techniques of investigation are developed and further resources are explored; and new questions will be asked of the evidence. ... I would have been deeply disappointed if it had marked the end of that road and had provoked no further response" (Bond, 2003, p.84).*

This thesis has presented only an indication of what is currently possible to achieve using 3D-GIS. However, granting public access to these 3D-GIS recreations can prove beneficial. Recent developments in WebGL, an open-source and web-based graphics library, allows internet browsers to generate digital environments without additional apps or plugins (Scianna & La Guardia, 2018, p.172). Therefore, WebGL enables users to navigate the 3D-GIS recreations online. These 3D-GIS visualisations can then satisfy the public's curiosities while allowing them to comment and critique as the data currently stands. New suggestions for improvements can then be submitted by others to help continually add to our understanding of these designed landscapes. Creating such websites is thus the logical next step (Fig. 8.01).

To finally conclude, the work undertaken in this thesis has proven valuable in helping bridge the gap between what sixteenth- and seventeenth-century English designed landscapes and the experiences within them were like in theory and what truly existed in reality. Considering its numerous advantages, 3D-GIS has the potential to become a useful research tool for other historiographical disciplines to utilise under a variety of different circumstances and into other historical landscapes generally. Consequently, as one of the main aims of this thesis, it is hoped this work inspires the future use of a multidisciplinary approach and especially 3D-GIS, which has provided the opportunity for historic sites to be explored, analysed, conserved, and accessed digitally for all to experience.

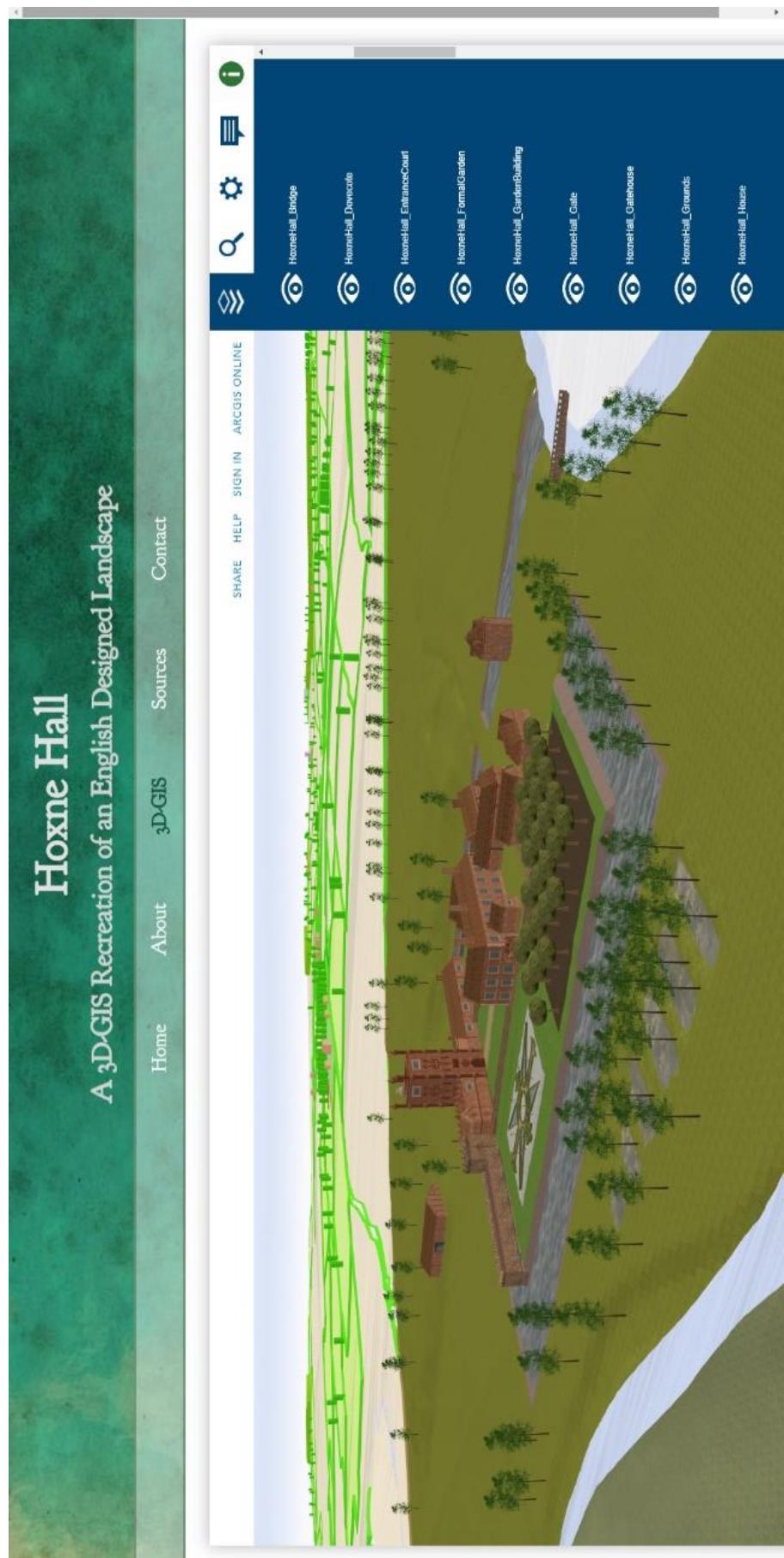


Fig. 8.01 – Sample of website for 3D-GIS recreations

## Bibliography

- Aalen, F. ed., (2006), *The North East, England's Landscape: Volume 7*, London: HarperCollins.
- Abdul-Rahman, A. & Pilouk, M., (2007), *Spatial Data Modelling for 3D GIS*, New York: Springer.
- Acheson, K.O., (2011), 'Military Illustration, Garden Design, and Marvell's "Upon Appleton House"', *English Literary Renaissance*, 41(1), pp.146–188.
- Agas, R., (1560), *Civitas Londinium*.
- Agnew, J. ed., (2012), *The Whirlpool of Misadventures: Letters of Robert Paston, First Earl of Yarmouth, 1663-1679*, Norwich: Norfolk Record Society.
- Agugiaro, G. & Remondino, F., (2014), '3D GIS For Cultural Heritage Sites: The QueryArch3D Prototype', in F. Remondino & S. Campana, eds. *3D Recording and Modelling in Archaeology and Cultural Heritage: Theory and Best Practices*, BAR International Series 2598, Oxford: Archaeopress, pp.145–150.
- Agugiaro, G., (2014), '2D & 3D GIS and Web-Based Visualization', in F. Remondino & S. Campana, eds. *3D Recording and Modelling in Archaeology and Cultural Heritage: Theory and Best Practices*, BAR International Series 2598, Oxford: Archaeopress, pp.101–112.
- Airs, M., (1975), *The Making of the English Country House, 1500-1640*, London: Architectural Press.
- Airs, M., (1982), *The Buildings of Britain: Tudor and Jacobean - A Guide and Gazetteer*, London: Barrie & Jenkins.
- Airs, M., (1987), 'Architecture', in B. Ford, ed. *The Cambridge Guide to the Arts in Britain, Volume 3: Renaissance and Reformation*, Cambridge: Cambridge University Press, pp.46–97.
- Airs, M., (1998), *The Tudor & Jacobean Country House: A Building History*, 2nd ed., Godalming: Sutton Publishing Ltd.
- Alberti, L.B., (1755), *The Ten Books of Architecture*, G. Leoni, ed., London: Edward Owen.
- Alexander, M., (2015), *Audley End, Essex: Historic Landscape Investigations*, English Heritage Research Report Series 46-2011, Portsmouth: Historic England.
- Allen, B.S., (1969), *Tides in English taste, 1619-1800: A Background for the Study of Literature, Volume 1*, New York: Rowman and Littlefield.
- Allison, K.J., (1957), 'The Sheep-Corn Husbandry of Norfolk in the Sixteenth and Seventeenth Centuries', *Agricultural History Review*, 5, pp.12–30.

- Allison, K.J., (1995), *The Wool Supply and the Worsted Cloth Industry in Norfolk in the Sixteenth and Seventeenth Centuries*, Unpublished PhD Thesis, Leeds: University of Leeds.
- Andrews, M., (1993), 'Theobalds Palace: The Gardens and Park', *Garden History*, 21(2), pp.129-49.
- Anonymous, (18th century), *Old Gorhambury House, St Albans, Hertfordshire* [Watercolour], Gorhambury House Private Collection, St Albans.
- Anonymous, (1590), *Pleasure Garden, or A jardin d'amour* [Oil on Panel], Rijksmuseum, Amsterdam.
- Anonymous, (1594), *The orchard, and the garden [con]taining cer[tai]ne necessarie, secret, and ordinarie knowledges in grafting and gardening*, London: Adam Islip.
- Anonymous, (1650), *Thomas Southwell (d.1680), with a Gun and His Dog* [Oil on Panel], Royal Armouries Museum, Leeds.
- Apollonio, F.I., Gaiani, M. & Benedetti, B., (2012), '3D reality-based artefact models for the management of archaeological sites using 3D Gis: a framework starting from the case study of the Pompeii Archaeological area', *Journal of Archaeological Science*, 39(5), pp.1271-1287.
- Appleton, J., (1975), *The Experience of Landscape*, London: Wiley.
- Archaeology Data Service, (2018), 'Archaeology Data Service', Available at: <https://archaeologydataservice.ac.uk/> [Accessed August 18, 2018].
- Archer, J.E., Goldring, E. & Knight, S., (2007), *The Progresses, Pageants, and Entertainments of Queen Elizabeth I*, Oxford: Oxford University Press.
- Aston, M. & Bettey, J., (1998), 'The post-medieval rural landscape, c.1540-1700: the drive for profit and the desire for status', in P. Everson & T. Williamson, eds. *The Archaeology of Landscape: Studies Presented to Christopher Taylor*, Manchester: Manchester University Press, pp.117-138.
- Aston, M., (1984), 'English Ruins and English History: The Dissolution and the Sense of the Past', in *Lollards and Reformers: Images and Literacy in Late Mediaeval Religion*, London: The Hambledon Press, pp.313-338.
- Aubrey, J., (1898), *'Brief Lives'*, chiefly of Contemporaries, set down by John Aubrey, between the Years 1669 & 1696, A. Clark, ed., Volume 1: (A-H), Oxford: Clarendon Press.
- Aubrey, J., (1921), 'Appendix I - Aubrey's Account of Danvers House', in R. Blunt, ed. *By Chelsea Reach: Some Riverside Records*, London: Mills and Boon, pp.259-264.
- Austen, R., (1657), *The Spiritual Use of an Orchard, Or Garden of Fruit-Trees*, Oxford: Hen Hall.

- Bacon, F., (1864a), 'Apophthegms', in J. Spedding et al., eds. *The Works of Francis Bacon, Baron of Verulam, Viscount St. Albans, and Lord High Chancellor of England, Volume 13*, Boston, MA: Houghton, Mifflin and Co., pp.311–418.
- Bacon, F., (1864b), 'Of Building', in J. Spedding, R. L. Ellis, & D. D. Heath, eds. *The Works of Francis Bacon, Baron of Verulam, Viscount St. Albans, and Lord High Chancellor of England, Volume 12*, Boston, MA: Houghton, Mifflin and Co., pp.228–235.
- Bacon, F., (1864c), 'Of Gardens', in J. Spedding, R. L. Ellis, & D. D. Heath, eds. *The Works of Francis Bacon, Baron of Verulam, Viscount St. Albans, and Lord High Chancellor of England, Volume 12*, Boston, MA: Houghton, Mifflin and Co., pp.235–245.
- Bacon, F., (1864d), 'Of Studies', in J. Spedding et al., eds. *The Works of Francis Bacon, Baron of Verulam, Viscount St. Albans, and Lord High Chancellor of England, Volume 12*, Boston, MA: Houghton, Mifflin and Co., pp.252–254.
- Bacon, F., (2000), *The New Organon*, L. Jardine & M. Silverthorne, eds., Cambridge Texts in the History of Philosophy, Cambridge: Cambridge University Press.
- Bacon, N., (1977), *Sir Nicholas Bacon's Great House Sententiae*, E. McCutcheon, ed., English Literary Renaissance Supplements 3, Amherst, MA: University of Massachusetts Press.
- Bacon, N., (1979), *The Papers of Nathaniel Bacon of Stiffkey, Volume 1: 1556-1577*, A. Hassell Smith, G. M. Baker, & R. W. Kenny, eds., Norfolk Record Society: Volume 46, Norwich: Norfolk Record Society.
- Bacon, N., (1983), *The Papers of Nathaniel Bacon of Stiffkey, Volume 2: 1578-1585*, A. H. Smith, G. M. Baker, & R. W. Kenny, eds., Norfolk Record Society: Volume 49, Norwich: Norfolk Record Society.
- Bacon, N., (1990), *The Papers of Nathaniel Bacon of Stiffkey, Volume 3: 1586-1595*, G. M. Baker, R. W. Kenny, & A. H. Smith, eds., Norfolk Record Society: Volume 53, Norwich: Norfolk Record Society.
- Bacon, N., (2000), *The Papers of Nathaniel Bacon of Stiffkey, Volume 4: 1596-1602*, V. Morgan, J. Key, & B. Taylor, eds., Norfolk Record Society: Volume 64, Norwich: Norfolk Record Society.
- Bacon, N., (2010), *The Papers of Nathaniel Bacon of Stiffkey, Volume 5: 1603-1607*, V. Morgan, J. Key, & B. Taylor, eds., Norfolk Record Society: Volume 74, Norwich: Norfolk Record Society.
- Baker, K. ed., (2000), *The Faber Book of Landscape Poetry*, London: Faber & Faber.
- Ballantyne, A., (1997), *Architecture, Landscape and Liberty: Richard Payne Knight and the Picturesque*, Cambridge University Press.
- Bannister, N. & Barnatt, J., (2009), *The Archaeology of a Great Estate: Chatsworth and Beyond*, Oxford: Windgather Press.

- Barnes, G. & Williamson, T., (2011), *Ancient Trees in the Landscape: Norfolk's Arboreal Heritage*, Oxford: Windgather Press.
- Barnes, T.J. & Duncan, J.S., (1992), *Writing Worlds: Discourse, Text, and Metaphor in the Representation of Landscape*, Abingdon: Routledge.
- Barrett, J.C. & Ko, I., (2009), 'A phenomenology of landscape: A crisis in British landscape archaeology?', *Journal of Social Archaeology*, 9(3), pp.275–294.
- Bartholomaeus, A., (1582), *Batman vpon Bartholome, His Booke De Proprietatibus Rerum, or Properties of Things*, London: Thomas East.
- Bartos, J., (2010), 'The Spirituall Orchard: God, Garden and Landscape in Seventeenth-Century England before the Restoration', *Garden History*, 38(2), pp.177–193.
- Bateman-Hanbury, A.R., (1911), 'Brome Hall', *Proceedings of the Suffolk Institute of Archaeology*, 14(2), pp.226–237.
- Battisti, E., (1972), 'Natura Artificiosa to Natura Artificialis', in D. R. Coffin, ed. *The Italian Garden*, Washington, D.C.: Dumbarton Oaks Trustees for Harvard University, pp.1–36.
- BBC News, (2018), 'UK heatwave exposes ancient Chatsworth House gardens', Available at: <https://www.bbc.com/news/uk-england-derbyshire-44951970> [Accessed July 25, 2018].
- Beckett, J., (2007), *Writing Local History*, Manchester: Manchester University Press.
- Bender, B., (1999), *Stonehenge: Making Space*, Oxford: Berg.
- Bender, B. et al., (2007), *Stone Worlds: Narrative and Reflexivity in Landscape Archaeology*, Walnut Creek, CA: Left Coast Press.
- Bennett, H.S., (1969), *English Books and Readers, Being a Study in the History of the Book Trade from Caxton to the Incorporation of the Stationers' Company*, 2nd ed., Volume 1: 1475-1557, Cambridge: Cambridge University Press.
- Benson, A., (2017), *Troy House: A Tudor Estate Across Time*, Cardiff: University of Wales Press.
- Bevan, A. & Lake, M. eds., (2013), *Computational Approaches to Archaeological Spaces*, Walnut Creek, CA: Left Coast Press.
- Bindoff, S.T., (1982a), *The House of Commons, 1509-1558, Volume 2: Members D-M*, London: Secker & Warburg.
- Bindoff, S.T., (1982b), *The House of Commons, 1509-1558, Volume 3: Members N-Z*, London: Secker & Warburg.

Blackwood, B.G., (2001), *Tudor and Stuart Suffolk*, Lancaster: Carnegie Publishing Ltd.

Bleisch, S. & Dykes, J., (2015), 'Quantitative data graphics in 3D desktop-based virtual environments – an evaluation', *International Journal of Digital Earth*, 8(8), pp.623–639.

Bodenhamer, D.J., Corrigan, J. & Harris, T.M. eds., (2010), *The Spatial Humanities: GIS and the Future of Humanities Scholarship*, Bloomington, IN: Indiana University Press.

de Boer, A. et al., (2011), 'Virtual Historical Landscapes', in S. Nijhuis, R. V. Lammeren, & F. van der Hoeven, eds. *Exploring the Visual Landscape: Advances in Physiognomic Landscape Research in the Netherlands, Research in Urbanism Series: Volume 2*, Amsterdam: Delft University Press, pp.185–203.

Bold, J., (1989), *John Webb: Architectural Theory and Practice in the Seventeenth Century*, Oxford: Clarendon Press.

Bond, J. & Iles, R., (1991), 'Early Gardens in Avon and Somerset', in A. E. Brown, ed. *Garden Archaeology: Papers presented to a conference at Knuston Hall, Northamptonshire, April 1988, CBA Research Report 78*, London: Council for British Archaeology, pp.36–52.

Bond, J., (1998), *Somerset Parks and Gardens: A Landscape History*, Tiverton: Somerset Books.

Bond, J., (2003), 'Somerset Parks and Gardens, 1500-1830: Some Addenda', in R. Wilson-North, ed. *The Lie of the Land: Aspects of the Archaeology and History of the Designed Landscape in the South West of England*, Exeter: The Mint Press, pp.83–99.

Bond, J., (2004), *Monastic Landscapes*, Stroud: The History Press.

Boorde, A., (1547), *A Compendyous Regyment or A Dyetary of Healthe made in Mountpyllyer*, London: In Fletestrete at the sygne of the George nexte to saynte Dunstones churche by Wyllyam Powell.

Boothman, L. & Hyde Parker, R. eds., (2005), *Savage Fortune: An Aristocratic Family in the Early Seventeenth Century, Suffolk Records Society: Volume 49*, Woodbridge: Boydell & Brewer.

Boyceau, J., (1638), *Traité du jardinage selon les raisons de la nature et de l'art*, Paris: Michel Vanlochom.

Bradfer-Lawrence, H.L., (1929), 'Stiffkey alias Stewkey', *Norfolk Archaeology*, 23(3), pp.308–340.

Brady, J.H., (1839), *The Visitor's Guide to Knole, in the County of Kent*, London: James Payne.

- Brandon, P.F., (1979), 'The Diffusion of Designed Landscapes in South East England', in H. S. A. Fox & R. A. Butlin, eds. *Change in the Countryside: essays on rural England, 1500-1900*, London: Institute of British Geographers, pp.165-87.
- Brighton, T., (1995), 'Chatsworth's Sixteenth-Century Parks and Gardens', *Garden History*, 23(1), pp.29-55.
- British Library OSD 139, *Ordnance Survey drawing of Chelmsford, 1799*.
- British School, (1545), *The Family of Henry VIII, c.1545* [Oil on Canvas], Hampton Court Palace, London.
- Britton, J., (1809), *The Architectural Antiquities of Great Britain, Volume 2*, London: Longman, Hurst, Rees, and Orme.
- Brown, A.E. & Taylor, C.C., (1972), 'The Gardens at Lyveden, Northamptonshire', *Archaeological Journal*, 129(1), pp.154-160.
- Brown, J., (1989), *The Art and Architecture of English Gardens: Designs for the Garden from the Collection of the Royal Institute of British Architects, 1609 to the Present*, New York: Rizzoli International Publications.
- Brown, J., (1999), *The Pursuit of Paradise: A Social History of Gardens and Gardening*, London: HarperCollins.
- Brown, J., (2011), *Lancelot 'Capability' Brown, 1716-1783: The Omnipotent Magician*, London: Random House.
- Brück, J., (2005), 'Experiencing the past? The development of a phenomenological archaeology in British prehistory', *Archaeological Dialogues*, 12(1), pp.45-72.
- Brusoni, G., (1660), *Arnaldo, or, The injur'd lover*, London: Thomas Dring.
- Bucklow, S., (2018), *The Anatomy of Riches: Sir Robert Paston's Treasure*, London: Reaktion Books.
- Buisseret, D., (1996), *Rural Images: Estate Maps in the Old and New Worlds*, Chicago, IL: University of Chicago Press.
- Cambridge Digital Library, (2017), 'Landscape Histories from the Air: unlocking a UK-wide archive', Available at: <https://cudl.lib.cam.ac.uk/collections/landscapehistories/1> [Accessed August 18, 2019].
- Campana, S., (2014), '3D Modelling in Archaeology and Cultural Heritage - Theory and Best Practice', in F. Remondino & S. Campana, eds. *3D Recording and Modelling in Archaeology and Cultural Heritage: Theory and Best Practices*, BAR International Series 2598, Oxford: Archaeopress, pp.7-12.

- Carew, T., (1994), 'To My Friend G.N. from Wrest', in A. Fowler, ed. *The Country House Poem: A Cabinet of Seventeenth-Century Estate Poems and Related Items*, Edinburgh: Edinburgh University Press, pp.89–95.
- Caus, I. de, (1640), *Hortus Penbrochianus: Wilton Garden* [Etching], The Metropolitan Museum of Art, New York.
- Chambers, J., (1829), *A General History of the County of Norfolk, Volume 2*, London: John Stacy.
- Chapman, H.P., (2003), 'Rudston 'Cursus A'- Engaging with a Neolithic Monument in Its Landscape Setting Using GIS', *Oxford Journal of Archaeology*, 22(4), pp.345–356.
- Chapman, H., (2006), *Landscape Archaeology and GIS*, Stroud: The History Press.
- Chapman, J. & André, P., (1777), *Map of the County of Essex*.
- Chaucer, G., (1542), *The workes of Geffray Chaucer*, London: William Grafton.
- Christie, C., (2000), *The British Country House in the Eighteenth Century*, Manchester: Manchester University Press.
- Clemenson, H.A., (1982), *English Country Houses and Landed Estates*, New York: St. Martin's Press.
- Clutton, G. & Mackay, C., (1970), 'Old Thorndon Hall, Essex: A History and Reconstruction of Its Park and Garden', *Garden History Society Occasional Paper*, 2, pp.27–39.
- Cohen, N. & Parton, F., (2019), *Knole Revealed: Archaeology and Discovery at a Great Country House*, London: National Trust.
- Cole, E., (2017), 'Theobalds, Hertfordshire: The Plan and Interiors of an Elizabethan Country House', *Architectural History*, 60, pp.71–116.
- Cole, M.A. et al., (1997), 'Non-destructive techniques in English gardens: geophysical prospecting', *The Journal of Garden History*, 17(1), pp.26–39.
- Collins, R., (2015), *Hadrian's Wall and LiDAR: New features in an ancient frontier landscape*, Frontiers of the Roman Empire Digital Humanities Initiative: Report 1, Newcastle Upon Tyne: Newcastle University.
- Colonna, F., (1592), *Hypnerotomachia Poliphili, or The Strife of Love in a Dreame*, London: Simon Waterson.
- Colvin, H. & Foister, S. eds., (1996), *The Panorama of London, c.1544, by Anthonis van den Wyngaerde*, London: London Topographical Society.
- Colvin, H., (2008), *A Biographical Dictionary of British Architects, 1600-1840*, London: Yale University Press.

- Conolly, J. & Lake, M., (2006), *Geographical Information Systems in Archaeology*, Cambridge: Cambridge University Press.
- Coope, R., (1986), 'The 'Long Gallery': Its Origins, Development, Use and Decoration', *Architectural History*, 29, pp.43-72+74-84.
- Cooper, D. & Gregory, I.N., (2011), 'Mapping The English Lake District: A Literary GIS', *Transactions of the Institute of British Geographers*, 36(1), pp.89-108.
- Copinger, W.A., (1909), *The Manors of Suffolk, Volume 4: The Hundreds of Hoxne, Lackford, and Loes*, Manchester: Taylor, Garnett, Evans & Co. Ltd.
- Cosgrove, D., (1984), *Social Formation and Symbolic Landscape*, London: Croom Helm.
- Cosgrove, D., (1985), 'Prospect, Perspective and the Evolution of the Landscape Idea', *Transactions of the Institute of British Geographers*, 10(1), pp.45-62.
- Cosgrove, D., (2001), *Apollo's Eye: A Cartographic Genealogy of the Earth in the Western Imagination*, London: The Johns Hopkins University Press.
- Cosgrove, D., (2008), *Geography and Vision: Seeing, Imagining and Representing the World*, London: I.B.Tauris & Co. Ltd.
- Cowley, D.C., Standring, R.A. & Abicht, M.J. eds., (2010), *Landscapes through the Lens: Aerial Photographs and Historic Environment, Occasional Publication of the Aerial Archaeology Research Group*, Oxford: Oxbow Books.
- Crane, W., (1980), *Flowers from Shakespeare's Garden: A Posy from the Plays*, London: Studio Vista.
- Crawford, O.G.S., (1953), *Archaeology In The Field*, London: Phoenix House.
- Cunliffe, B. ed., (2006), *The West, England's Landscape: Volume 4*, London: HarperCollins.
- Curl, J.S. & Wilson, S., (2015), *The Oxford Dictionary of Architecture*, Oxford: Oxford University Press.
- Currie, C.K., (1990), 'Fishponds as Garden Features, c. 1550-1750', *Garden History*, 18(1), pp.22-46.
- Currie, C.K., (2005), *Garden Archaeology: A Handbook*, York: Council for British Archaeology.
- Cushion, B. & Davison, A., (2003), *Earthworks of Norfolk, East Anglian Archaeology 104*, Dereham: Archaeology and Environment Division, Norfolk Museums and Archaeology Service.
- Dallas, C. & Sherlock, D., (2002), *Baconsthorpe Castle, Excavations and Finds, 1951-1972, East Anglian Archaeology 102*, Dereham: Archaeology and Environment Division, Norfolk Museums and Archaeology Service.

- Dallas, P., Barnes, G. & Williamson, T., (2015), 'Orchards in the Landscape: A Norfolk Case Study', *Landscapes*, 16(1), pp.26–43.
- Dallas, P., Williamson, T. & Last, R., (2013), *Norfolk Gardens & Designed Landscapes*, Bollington: Windgather Press.
- Dallas, R.W.A., Parker, D. & Hilder, D.W., (1993), 'GIS principles applied to an English country house: The Brodsworth Hall project', in J. Wilcock, K. Lockyear, & A. Bayliss, eds. *Computer Applications and Quantitative Methods in Archaeology*, BAR International Series 598, Oxford: Archaeopress, pp.259–262.
- Dallington, R., (1605), *A Survey of the Great Dukes State of Tuscany, in the yeare of our Lord 1596*, London: Edward Blount.
- Dalton, C., (2012), *Sir John Vanbrugh and the Vitruvian landscape*, London: Routledge.
- Daniels, S. & Seymour, S., (2013), 'Landscape Design and the Idea of Improvement 1730-1914', in 2nd ed., R. A. Dodgshon & R. A. Butlin, eds. *An Historical Geography of England and Wales*, London: Academic Press Ltd, pp.487–520.
- Daniels, S., (1999), *Humphry Repton: Landscape Gardening and the Geography of Georgian England*, London: Yale University Press.
- Darnton, R., (2009), 'What Is The History of Books?', in *The Case for Books: Past, Present, and Future*, New York: Public Affairs, pp.175–206.
- D'Avenant, W., (1651), *Gondibert: An Heroick Poem*, T. Hobbes, ed., London: John Holden.
- Debrett, J., (1811), *Debrett's Peerage of England, Scotland, and Ireland*, London: William Pickering.
- Deegan, A. & Foard, G., (2008), *Mapping Ancient Landscapes in Northamptonshire*, London: English Heritage.
- Defoe, D., (1705), *The Storm: or, a Collection of the most remarkable casualties and disasters which happen'd in the late dreadful tempest, both by sea and land*, 2nd ed., London: George Sawbridge.
- Dell'Unto, N. et al., (2016), 'Experiencing Ancient Buildings from a 3D GIS Perspective: a Case Drawn from the Swedish Pompeii Project', *Journal of Archaeological Method and Theory*, 23(1), pp.73–94.
- Dennis, R., (1991), 'History, Geography, and Historical Geography', *Social Science History*, 15(2), pp.265–288.
- Department of the Environment, (1958), *Audley End: Essex*, London: HMSO.
- Dix, B., (1997), "Digging of borders": Reflections on archaeology and garden restoration', *Garden History*, 17(1), pp.11–17.

- Dix, B., (2003), "Come My Spade': Archaeology in Historic Gardens', in R. Wilson-North, ed. *The Lie of the Land: Aspects of the Archaeology and History of the Designed Landscape in the South West of England*, Exeter: The Mint Press, pp.21–23.
- Dix, B., (2011), 'Experiencing the past: the archaeology of some Renaissance gardens', *Renaissance Studies*, 25(1), pp.151–182.
- Dovey, Z., (1996), *An Elizabethan Progress: The Queen's Journey Into East Anglia, 1578*, Madison, NJ: Fairleigh Dickinson University Press.
- Drury, P. & Simpson, R., (2009), *Hill Hall: A Singular House Devised by a Tudor Intellectual*, London: Society of Antiquaries of London.
- Drury, P.J., (1980), 'No Other Palace in the Kingdom Will Compare with It: The Evolution of Audley End, 1605-1745', *Architectural History*, 23, pp.1-39+145-171.
- Du Cerceau, J.A., (1576), *Les Plus Excellents Bastiments de France, Volume 1*, Paris: For the said Jacques Androuet, Du Cerceau.
- Du Cerceau, J.A., (1579), *Les Plus Excellents Bastiments de France, Volume 2*, Paris: For the said Jacques Androuet, Du Cerceau.
- Dubreuil, J., (1679), *La Perspective Pratique*, Paris: Antoine Dezallier.
- Duckworth, A.M., (1971), *The Improvement of the Estate: a study of Jane Austen's novels*, Baltimore, MD: Johns Hopkins Press.
- Duckworth, A.M., (1989), 'Gardens, Houses, and the Rhetoric of Description in the English Novel', *Studies in the History of Art*, 25, pp.395–413.
- Dunn, S. & Woolford, K., (2013), 'Reconfiguring Experimental Archaeology using 3D Movement Reconstruction', in J. P. Bowen, S. Keene, & K. Ng, eds. *Electronic Visualisation in Arts and Culture*, London: Springer Science & Business Media, pp.277–291.
- Dunn, S., (2017), 'Praxes of "The Human" and "The Digital": Spatial Humanities and the Digitization of Place', *GeoHumanities*, 3(1), pp.88–107.
- Dunn, S., (2019), *A History of Place in the Digital Age*, London: Routledge.
- Dutch School, (1665), *The Paston Treasure* [Oil on Canvas], Norwich Castle Museum and Art Gallery, Norwich.
- Earl, G.P., (2005), 'Wandering the House of the Birds: reconstruction and perception at Roman Italica', in M. Mudge, N. Ryan, & R. Scopigno, eds. *VAST 2005: Proceedings of the 6th International Symposium on Virtual Reality, Archaeology and Cultural Heritage, Short Papers (unpaginated)*.
- Earley-Spadoni, T., (2017), 'Spatial History, deep mapping and digital storytelling: archaeology's future imagined through an engagement with the Digital Humanities', *Journal of Archaeological Science*, 84, pp.95–102.

- Eastmead, S., (2012), *Landscape Surveying Using Handheld GPS Receivers*, Swaledale: Swaledale and Arkengarthdale Archaeology Group.
- Eburne, A., (2008), 'The Passion of Sir Thomas Tresham: New Light on the Gardens and Lodge at Lyveden', *Garden History*, 36(1), pp.114–134.
- Eckardt, H. et al., (2009), 'Roman Barrows and their Landscape Context a GIS Case Study at Bartlow, Cambridgeshire', *Britannia*, 40, pp.65–98.
- Eckhart, M., (1924), 'The Rank and Nature of the Soul', in F. Pfeiffer & C. de B. Evans, eds. *Meister Eckhart, Volume 1*, London: John M. Watkins, pp.288–306.
- Edwards, A.C. & Newton, K.C., (1984), *The Walkers of Hanningfield: Surveyors and Mapmakers Extraordinary*, Dover: Buckland Press Ltd.
- Edwards, A.C., (1964), *Elizabethan Essex*, 2nd ed., Chelmsford: Essex County Council.
- Edwards, A.C., (1975), *John Petre: Essays on the life and background of John, 1st Lord Petre, 1549-1613*, London: Regency Press.
- Edwards, A.C., (1977), *Account Books of Benjamin Mildmay, Earl Fitzwalter*, London: Regency Press.
- Edwards, D.A. & Williamson, T., (2000), *Norfolk Country Houses: From The Air*, Stroud: Sutton Publishing Ltd.
- Elton, A., Harrison, B. & Wark, K., (1992), *Researching the Country House: A Guide for Local Historians*, London: Batsford.
- Elvin, C.N., (1860), *A Hand-book of Mottoes Borne by the Nobility, Gentry, Cities, Public Companies, &c*, London: Bell and Daldy.
- Emery, A., (2006), *Greater Medieval Houses of England and Wales, 1300-1500, Volume 3: Southern England*, Cambridge: Cambridge University Press.
- Emmison, F.G., (1973), *Elizabethan Life, Volume 2: Morals & the Church*, Chelmsford: Essex Record Office.
- Emmison, F.G., (1976), *Elizabethan Life, Volume 3: Home, Work & Land*, Chelmsford: Essex County Council.
- English Heritage, (1998), *The Register of Parks and Gardens: an introduction*, London: English Heritage.
- ERO D/DM P1, 'A trew platt of the mannor and towne of Chellmisforde', by John Walker, 1591.
- ERO D/DM P2, 'A trew platt of the mannor and hamlett of Moulshum' by John Walker, 1591.

ERO D/DP P5, *A true platt and survey of the mannors of Weast Hornedon, East Hornedon, Feldehouse, Noke Halle, Ames, with the ferme called Sallmons, Belsers Hatch, Goate House and others, by John Walker, 1598.*

ERO I/Mb 74/1/131, *Print of Moulsham Hall, the Seat of Sir William Mildmay, Bart., in Chelmsford, Essex, c.1776.*

ERO Q/SR 30/26, *Indictment: John Bridges and John Simpson of Chelmsford, grocers, for entering the free warren of Sir Thomas Mildmay, knight, at M[o]ulsham at nine o'clock at night, and for hunting and chasing his rabbits with sticks, nets and ferrets, contrary to the statute of 13 Richard 11 [A.D.1390], 10th September 1569.*

ERO T/A 313/1, *Microfilm of transcript of household and personal accounts of Benjamin Mildmay, Earl Fitzwalter, 1726-1732 (unpaginated).*

ERO T/M 63/1, *Reduced photographs and negatives of 'A true Survey and platt of the mannor of Terlinge', by John Walker, 1597.*

ERO T/M 446, *Plans of Moulsham Hall, Chelmsford, date unknown.*

ESRI Technical Support, (2018), 'BUG-000118814: Details from viewshed are reduced when base height is added in ArcScene', Available at: <https://support.esri.com/en/bugs/nimbus/QIVHLTAwMDExODgxNA==> [Accessed December 31, 2018].

Estienne, C., (1616), *Maison Rustique, or The Countrey Farme*, G. Markham, ed., London: Adam Islip.

Evans, M.C., (1987), 'The Contribution of Hoxne to the cult of St Edmund King and Martyr in the Middle Ages and Later', *Proceedings of the Suffolk Institute of Archaeology*, 36(3), pp.182-195.

Eve, S., (2014), *Dead Men's Eyes: Embodied GIS, Mixed Reality and Landscape Archaeology*, BAR British Series 600, Oxford: Archaeopress.

Evelyn, C., (1717), *The Lady's Recreation, Or, The Third and Last Part of the Art of Gardening Improv'd*, London: J. Roberts.

Evelyn, J., (1670), *Silva, or A Discourse of Forest-Trees, and the Propagation of Timber in His Majesty's Dominions*, London: Jo[hn] Martyn and Ja[mes] Allestry.

Evelyn, J., (1901), *The Diary of John Evelyn*, W. Bray, ed., Volume 2, London: M. W. Dunne.

Everson, P. & Williamson, Thomas, (1998), 'Gardens and designed landscapes', in P. Everson & Tom Williamson, eds. *The Archaeology of Landscape: Studies Presented to Christopher Taylor*, Manchester: Manchester University Press.

Fane, M., (1648a), 'In Obitum Ben Jonson, Poetae Eximii', in *Otia Sacra: Optima Fides*, London: Richard Cotes, p.169.

- Fane, M., (1648b), 'To Retiredness', in *Otia Sacra: Optima Fides*, London: Richard Cotes, pp.172-4.
- Fehrenbach, Robert J., (1992), 'PLRE 3: An Inventory of Books in the Possession of Sir Roger Townshend, ca.1625', in R.J. Fehrenbach & E. S. Leedham-Green, eds. *Private Libraries in Renaissance England: A Collection and Catalogue of Tudor and Early Stuart Book-Lists, Volume 1: PLRE 1-4*, Marlborough: Medieval and Renaissance Texts and Studies, pp.79-135.
- Field, J., (1972), *English Field-Names: A Dictionary*, Newton Abbot: David & Charles.
- Finch, J. & Giles, K. eds., (2007), *Estate Landscapes: Design, Improvement and Power in the Post-Medieval Landscape*, Woodbridge: Boydell & Brewer Ltd.
- Finch, J., (2008), 'Three Men in a Boat: Biographies and Narrative in the Historic Landscape', *Landscape Research*, 33(5), pp.511-530.
- Fisher, P. et al., (1997), 'Spatial analysis of visible areas from the Bronze Age cairns of Mull', *Journal of Archaeological Science*, 24(7), pp.581-592.
- Fitzherbert, J., (1523), *The Boke of Surveyeng and Improvme[n]tes*, London: Rycharde Pynson.
- Fletcher, D.H., (1990), *Estate Maps of Christ Church, Oxford: The Emergence of Map-Consciousness c.1600 to 1840*, Unpublished PhD Thesis, Exeter: University of Exeter.
- Fokker, T.H., (1931), *Jan Siberechts, Peintre de la Paysanne Flamande*, Brussels: National Library of Art and History.
- Ford, D., (2018), 'Live World Map of Satellite Positions', Available at: <https://in-the-sky.org/satmap.php> [Accessed April 27, 2018].
- Fowler, A., (1994), *The Country House Poem: A Cabinet of Seventeenth-Century Estate Poems and Related Items*, Edinburgh: Edinburgh University Press.
- Francis, J., (2008), 'Order and Disorder in the Early Modern Garden, 1558-C.1630', *Garden History*, 36(1), pp.22-35.
- Frieman, C. & Gillings, M., (2007), 'Seeing Is Perceiving?', *World Archaeology*, 39(1), pp.4-16.
- FSL E.b.2, *Estate accounts of Sir Nathaniel Bacon, 1588-1598*.
- Fulke, W., (1563), *A goodly gallerye with a most pleasaunt prospect, into the garden of naturall contemplation, to behold the naturall causes of all kynde of meteors, as wel[!] fyery and ayery, as watry and earthly, of whiche sort be blasing sterres, shooting starres, flames in the ayre &c. tho[n]der, lightning, earthquakes, &c. rayne dewe, snowe, cloudes, springes &c. stones, metalles, earthes &c. to the glory of God, and the profit of his creatur[e]s*, London: William Griffith.

- Galofré-Vilà, G., Hinde, A. & Meera Guntupalli, A., (2018), 'Heights across the Last 2,000 Years in England', C. Hanes & S. Wolcott, eds., *Research in Economic History*, 34, pp.67–98.
- Gardiner, J. & Brodie, R.H. eds., (1901), *Letters and Papers, Foreign and Domestic, of the Reign of Henry VIII, Volume 18, Part 1: January-July, 1543*, London: HMSO.
- Gill, R., (1972), *Happy Rural Seat: The English Country House and The Literary Imagination*, London: Yale University Press.
- Gillings, M., Mattingly, D. & Dalen, J.V. eds., (1999), *Geographical Information Systems and Landscape Archaeology*, Oxford: Oxbow Books.
- Gillings, M., (2000), 'The Utility of the GIS Approach in the Collection, Management, Storage and Analysis of Surface Survey Data', in *The Future of Surface Artefact Survey in Europe*, Sheffield: Sheffield Academic Press, pp.105–120.
- Girouard, M., (1966), *Robert Smythson and the Architecture of the Elizabethan Era*, London: Country Life.
- Girouard, M., (1978), *Life in the English Country House: A Social and Architectural History*, London: Yale University Press.
- Girouard, M., (1983), *Robert Smythson and the Elizabethan Country House*, London: Yale University Press.
- Glennie, P.D., (2013), 'Industry and Towns 1500-1730', in 2nd ed., R. A. Dodgshon & R. A. Butlin, eds. *Historical Geography of England and Wales*, London: Academic Press Ltd, pp.199–222.
- God, (1560), *The Bible and Holy Scriptures Contened In The Olde And Newe Testament*, Geneva: Rowland Hall.
- Gomme, A.H. & Maguire, A., (2008), *Design and Plan in the Country House: From Castle Donjons to Palladian Boxes*, London: Yale University Press.
- Gough, H., (1847), *A Glossary of Terms Used in British Heraldry: With a Chronological Table, Illustrative of Its Rise and Progress*, Oxford: J. H. Parker.
- Govier, S., (2012), *Hoxne, an Illustrated History*, Hoxne: Stephen Govier.
- Greaves, S., (2014), *The Country House at War: Fighting the Great War at home and in the trenches*, London: National Trust Books.
- Green, S.W., (1990), *Interpreting Space: GIS And Archaeology*, London: CRC Press.
- Greenwood, C., (1838), *An Epitome of County History, Volume 1: County of Kent*, London: For The Proprietor, At The Office Of The Author.
- Gregory, I., DeBats, D. & Lafreniere, D. eds., (2018), *The Routledge Companion to Spatial History*, London: Routledge.

- Gregory, I. & Geddes, A., (2014), *Toward Spatial Humanities: Historical GIS and Spatial History*, Bloomington, IN: Indiana University Press.
- Gregory, J. & Liddiard, R., (2016), 'Visible from afar? The setting of the Anglo-Norman Donjon', in J. A. Davies et al., eds. *Castles and the Anglo-Norman World*, Oxford: Oxbow Books, pp.147–158.
- Gregory, J., (2005), 'Mapping Improvement: Reshaping Rural Landscapes in the Eighteenth Century', *Landscapes*, 6(1), pp.62–82.
- Grieve, H., (1988), *The Sleepers and The Shadows, Chelmsford: A Town, Its People and Its Past, Volume 1: The Medieval and Tudor Story*, Chelmsford: Essex Record Office Publications.
- Grieve, H., (1994), *The Sleepers and The Shadows, Chelmsford: A Town, Its People and Its Past, Volume 2: From Market Town to Chartered Borough 1608-1888*, Chelmsford: Essex Record Office Publications.
- Gwynn, L., (2010), 'The Architecture of the English Domestic Library, 1600–1700', *Library & Information History*, 26(1), pp.56–69.
- Hall, J., (1630), *Occasionall Meditations*, London: Nath[aniel] Butter.
- HALS D/EV/P1, *Map of the Manor of Gorhambury, by Benj[amin] Hare, 1634*.
- Harris, E. & Savage, N., (1990), *British Architectural Books and Writers, 1556-1785*, Cambridge: Cambridge University Press.
- Harris, J. & Summerson, J., (1989), *Inigo Jones: Complete Architectural Drawings*, New York: The Drawing Center.
- Harris, J., (1964), 'The Prideaux Collection of Topographical Drawings', *Architectural History*, 7, pp.17+19+21+23-39+41-108.
- Harris, J., (1979), *The Artist and the Country House*, London: Philip Wilson Publishers Ltd.
- Harris, T.M. & Lock, G.R., (1995), 'Toward an evaluation of GIS in European archaeology: the past, present and future of theory and applications', in G. R. Lock & G. Stancic, eds. *Archaeology and Geographic Information Systems: A European Perspective*, Boca Raton, FL: CRC Press, pp.349–366.
- Hartlib, S., (1659), *The Compleat Husband-man: or, A discourse of the whole Art of Husbandry; Both Forraign and Domestick*, London: Edward Brewster.
- Harvey, J.H., (1981), *Mediaeval Gardens*, London: Batsford.
- Harvey, P.D.A., (1993a), 'Estate surveyors and the spread of the scale-map in England 1550–80', *Landscape History*, 15(1), pp.37–49.
- Harvey, P.D.A., (1993b), *Maps in Tudor England*, London: The Public Record Office and the British Library.

- Harvey, W., (1878), *The Visitation of Norfolk in the Year 1563*, G. H. Dashwood, ed., Norwich: Miller and Leavins.
- Heal, F., (2014), *The Power of Gifts: Gift-exchange in Early Modern England*, Oxford: Oxford University Press.
- Hearn, K., Upstone, R. & Waterfield, G., (1999), *In Celebration: Art of the Country House*, London: Tate Publishing.
- Henderson, I., (2016), 'Gardens, history and the designer: contributions to historiography', *Studies in the History of Gardens & Designed Landscapes*, 36(1), pp.42–52.
- Henderson, P., (1992a), 'Sir Francis Bacon's Water Gardens at Gorhambury', *Garden History*, 20(2), pp.116–131.
- Henderson, P., (1992b), *The setting of the Tudor and early Stuart house (c. 1485 to c. 1640): forecourt and garden buildings*, Unpublished PhD Thesis, London: Courtauld Institute of Art, University of London.
- Henderson, P., (1999), 'The Architecture of the Tudor Garden', *Garden History*, 27(1), pp.54–72.
- Henderson, P., (2005), *The Tudor House and Garden: Architecture and Landscape in the Sixteenth and Early Seventeenth Centuries*, New Haven, CT: Yale University Press.
- Henderson, P., (2008), 'Sir Francis Bacon's Essay 'Of Gardens' in Context', *Garden History*, 36(1), pp.59–84.
- Henderson, P., (2011), 'Clinging to the past: medievalism in the English 'Renaissance' garden', *Renaissance Studies*, 25(1), pp.42–69.
- Hentzner, P., (1807), *A Journey Into England: In the Year 1598*, 2nd ed., T. E. Williams, ed., Reading: T.E. Williams.
- Heppell, E., (2014), 'The gardens of Moulsham Hall: Excavations at Princes Road, Chelmsford, 1996-7', *Transactions of the Essex Society for Archaeology and History*, 5, pp.118–132.
- Herbert Jones, M., (1879), 'Stiffkey: A Sketch', *Norfolk Archaeology*, 8, pp.143–166.
- Heresbach, C., (1577), *Foure Bookes Of Husbandry, collected by M. Conradus Heresbachius, Counseller to the hygh and mighty Prince, Duke of Cleve*, B. Googe, ed., London: Richard Watkins.
- Heritage Technology, (2013), 'Temple Newsam house, c.1699', Available at: <http://www.heritagetechnology.co.uk/projects/temple-newsam-house-c1699> [Accessed November 27, 2017].
- Hertfordshire County Council, (2001), 'Area 97: Gorhambury Estate', in *North Hertfordshire Landscape Character Assessment*, Hertfordshire County Council, pp.25–28, Available at:

- <https://www.hertfordshire.gov.uk/services/recycling-waste-and-environment/landscape/landscape-character-assessment.aspx>.
- Heward, T. & Taylor, R., (1996), 'Apethorpe Hall', in *The Country Houses of Northamptonshire*, Swindon: Royal Commission on the Historical Monuments of England, pp.58–69.
- Hill, L.J., (2015), 'Human geography and archaeology: Strange bedfellows?', *Progress in Human Geography*, 39(4), pp.412–431.
- Hill, T., (1577), *The Gardeners Labyrinth: containing a discourse of the Gardeners life, in the yearly travels to be bestowed on his plot of earth, for the use of a Garden*, London: Henry Bynneman.
- Historic England, (2015), 'Buckland Priory fishponds, Durston', Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1006145> [Accessed April 20, 2019].
- Historic England, (2017), *Photogrammetric Applications For Cultural Heritage: Guidance for Good Practice*, Swindon: Historic England.
- Historic England, (2018a), 'Coldham Hall', Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1229768> [Accessed January 18, 2019].
- Historic England, (2018b), 'Dovecote approximately 75 metres west of Culham Manor, Culham', Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1059793> [Accessed October 21, 2018].
- Historic England, (2018c), 'Moated site immediately east of Heron Hall, Herongate and Ingrave', Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1016861> [Accessed October 19, 2018].
- Historic England, (2019), 'Remains of Hoxne Priory at Abbey Farm, Hoxne', Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1020447> [Accessed November 14, 2018].
- Hodge, C.A.H. et al., (1984), *Soils and Their Use in Eastern England*, Harpenden: Soil Survey of England and Wales.
- Hollar, W., (1640), *Richmond Palace* [Oil on Canvas], Burlington House, London.
- Hooke, D. ed., (2006), *The West Midlands, England's Landscape: Volume 6*, London: Collins.
- Hoppitt, R., (1992), *A Study of the Development of Parks in Suffolk from the eleventh to the seventeenth century*, Unpublished PhD Thesis, Norwich: University of East Anglia.
- Horace, (1567), *Horace: His arte of Poetrie, pistles, and Satyrs Englished, and to the Earle of Ormount by Tho[mas] Drant addressed*, T. Drant, ed., London: Thomas Marshe.

- Hoskins, W.G., (1970), *The Making of the English Landscape*, 2nd ed., Harmondsworth: Penguin Books Ltd.
- Hough, C., (1998), 'Computers in Place-Name Teaching: The English Place-Name Database', *Literary and Linguistic Computing*, 13(1), pp.29–35.
- Howard, M., (1987), *The Early Tudor Country House: Architecture and Politics, 1490-1550*, London: George Philip.
- Howard, M., (2008), *The Building of Elizabethan and Jacobean England*, New Haven, CT: Yale University Press.
- Hudson, W.S., (1980), 'The Cambridge Connection in London', in *The Cambridge Connection and the Elizabethan Settlement of 1559*, Durham, NC: Duke University Press.
- Hunn, J., (1994), *Reconstruction and measurement of landscape change: a study of six parishes in the St Albans area*, BAR British Series 236, Oxford: Tempvs Reparatvm.
- Hunt, J.D., (1975), *The Genius of the Place: English Landscape Garden, 1620-1820*, New York: Harper & Row.
- Hunt, J.D., (1986), *Garden and Grove: The Italian Renaissance Garden in the English Imagination, 1600-1750*, London: Dent.
- Hunt, J.D., (1988), *William Kent: Landscape Garden Designer*, London: Zwemmer.
- Hunt, J.D., (1994), *Gardens and the Picturesque: Studies in the History of Landscape Architecture*, Cambridge, MA: MIT Press.
- Hunt, J.D., (1999), 'Approaches (New and Old) To Garden History', in M. Conan, ed. *Perspectives on Garden Histories, Dumbarton Oaks Colloquium on the History of Landscape Architecture: Volume 21*, Washington, D.C.: Dumbarton Oaks, pp.77–90.
- Hunt, J.D., (2000), *Greater Perfections: The Practice of Garden Theory*, Philadelphia, PA: University of Pennsylvania Press.
- Hunt, J.D., (2003), "Lordship of the Feet": Toward a Poetics of Movement in the Garden', in *Landscape Design and the Experience of Motion, Dumbarton Oaks Colloquium on the History of Landscape Architecture: Volume 24*, Washington, D.C.: Dumbarton Oaks, pp.187–213.
- Hunt, J.D., (2013), *The Afterlife of Gardens*, 2nd ed., London: Reaktion Books.
- Hunter, J.M., (1999), *The Essex Landscape: A Study of Its Form and History*, Essex Record Office Publications.
- Husselby, J., (1996), *Architecture at Burghley House: the patronage of William Cecil, 1553-1598*, Unpublished PhD Thesis, Warwick: University of Warwick.

- Hussey, C., (1967), *The Picturesque: Studies in a Point of View*, London: Archon Books.
- Jacques, D., (1983), *Georgian Gardens: The Reign of Nature*, London: Batsford.
- Jam Creative Studios, (2018), 'Caistor Roman Town AR', Available at: [https://play.google.com/store/apps/details?id=com.JamCreativeStudios.CaistorRomanTownAR&hl=en\\_GB](https://play.google.com/store/apps/details?id=com.JamCreativeStudios.CaistorRomanTownAR&hl=en_GB) [Accessed November 18, 2018].
- Jameson, J.H. ed., (2004), *The Reconstructed Past: Reconstructions in the Public Interpretation of Archaeology and History*, Oxford: Rowman Altamira.
- Jessop, M., (2007), 'The Inhibition of Geographical Information in Digital Humanities Scholarship', *Literary and Linguistic Computing*, 23(1), pp.39–50.
- Johnson, M., (2007), *Ideas of Landscape*, Oxford: Wiley-Blackwell.
- Johnson, M., (2013), *Behind the Castle Gate: From the Middle Ages to the Renaissance*, London: Routledge.
- Jonson, B., (1640a), 'Discoveries', in J. Geraghty, ed. *The Workes of Benjamin Jonson, Volume 2*, London: John Beale, pp.85–132.
- Jonson, B., (1640b), 'To Penshurst, in 'The Forrest'', in J. Geraghty, ed. *The Workes of Benjamin Jonson, Volume 1*, London: John Beale, pp.47–9.
- Kain, R.J.P. ed., (2006), *The South West, England's Landscape: Volume 3*, London: HarperCollins.
- Kemp, W., (1600), *Kemps Nine Daies Wonder: Performed in a daunce from London to Norwich*, London: E.A.
- Kennedy, M., (2009), *Introducing Geographic Information Systems with ArcGIS: A Workbook Approach to Learning GIS*, 2nd ed., Hoboken, NJ: John Wiley & Sons.
- Kenworthy-Browne, J.A., (1981), *Burke's and Savills Guide to Country Houses, Volume 3: East Anglia*, London: Burke's Peerage.
- Kern-Stahler, A., Busse, B. & Boer, W., (2016), *The Five Senses in Medieval and Early Modern England*, Leiden: Brill.
- Kinch, A., (2012), 'Re-visioning the past: Neuromedievalism and the neural circuits of vision', *PostMedieval: A Journal of Medieval Cultural Studies*, 3(3), pp.262–271.
- Knyff, L. & Kip, J., (1707), *Britannia Illustrata*, London: Erasmus' Head.
- Kruft, H.-W., (1994), *A History of Architectural Theory: from Vitruvius to the present*, London: Philip Wilson Publishers Ltd.

- Landeschi, G. et al., (2016), '3D-GIS as a platform for visual analysis: Investigating a Pompeian house', *Journal of Archaeological Science*, 65, pp.103–113.
- Landeschi, G., (2018), 'Rethinking GIS, three-dimensionality and space perception in archaeology', *World Archaeology*, 50, pp.1–16.
- Lawson, W., (1617), *A New Orchard and Garden, and The Categorie Housewife's Garden*, London: Nicholas Okes.
- Layton-Jones, K., (2013), 'A Commanding View: Public Parks and the Liverpool Prospect, 1722–1870', *Cultural and Social History*, 10(1), pp.47–67.
- Lecercle, A., (2003), 'Country house, Catholicity and the Crypt(ic) in Twelfth Night', in R. Dutton, A. G. Findlay, & R. Wilson, eds. *Region, Religion and Patronage: Lancastrian Shakespeare*, Manchester: Manchester University Press, pp.84–100.
- Lehmberg, S.E., (2014), *Sir Walter Mildmay and Tudor Government*, Austin: University of Texas Press.
- Leland, J., (1993), *John Leland's Itinerary: Travels in Tudor England*, J. H. Chandler, ed., Stroud: Sutton Publishing Ltd.
- Leone, M.P., (1984), 'Interpreting ideology in historical archaeology: using the rules of perspective in the William Paca garden at Annapolis, Maryland', in D. Miller & C. Tilley, eds. *Ideology, Power and Prehistory*, Cambridge: Cambridge University Press, pp.25–35.
- Leslie, M. & Raylor, T., (1992), *Culture and Cultivation in Early Modern England: Writing and the Land*, Leicester: Leicester University Press.
- Liddiard, R., (2005), *Castles in Context: Power, Symbolism and Landscape, 1066 to 1500*, Bollington: Windgather Press.
- Liddiard, R., (2016), *Late Medieval Castles*, Woodbridge: Boydell & Brewer.
- Lillesand, T., Kiefer, R.W. & Chipman, J., (2015), *Remote Sensing and Image Interpretation*, 7th ed., Hoboken, NJ: Wiley Global Education.
- Llobera, M., (2007), 'Reconstructing Visual Landscapes', *World Archaeology*, 39(1), pp.51–69.
- Lloyd, N., (1927), 'Photograph of distant view across the gardens at Layer Marney, from the south', Available at: <https://historicengland.org.uk/listing/the-list/list-entry/1000209> [Accessed November 24, 2017].
- Lock, G.R., (2000), *Beyond the Map: Archaeology and Spatial Technologies*, Oxford: IOS Press.
- Lomazzo, G.P., (1598), 'The Fifth Booke of Perspectives', in R. Haydock, ed. *A Tracte Containing The Artes of curious Paintinge, Carvinge & Buildinge*, Oxford: Joseph Barne.

Lucas van Leyden, (1520), *The Promenade* [Engraving], The Metropolitan Museum of Art, New York.

MacCulloch, D., (1976), *The Chorography of Suffolk*, Suffolk Record Society: Volume 19, Ipswich: Boydell Press.

MacCulloch, D., (1987), *Suffolk and the Tudors: Politics and Religion in an English county, 1500-1600*, Oxford: Clarendon Press.

MacCulloch, D. ed., (2007), *Letters from Redgrave Hall: The Bacon Family, 1340-1744*, Woodbridge: Boydell Press.

MacDougall, E.B., (1972), 'Ars Hortulorum: Sixteenth Century Garden Iconography and Literary Theory in Italy', in D. R. Coffin, ed. *The Italian Garden*, Washington, D.C.: Dumbarton Oaks Trustees for Harvard University, pp.37-60.

MacDougall, E.B., (1986), *Medieval Gardens*, Washington, D.C.: Dumbarton Oaks Research Library and Collection.

Machor, J.L. & Goldstein, P. eds., (2001), *Reception Study: From Literary Theory to Cultural Studies*, London: Routledge.

Macnair, A., (2010), 'Joseph Hodskinson's map of Suffolk, 1783 - digitally redrawn by Andrew Macnair, 2010', Available at: <http://www.hodskinsonsmapofsuffolk.co.uk/> [Accessed February 22, 2017].

Manning, R.B., (1993), *Hunters and Poachers: A Social and Cultural History of Unlawful Hunting in England, 1485-1640*, Oxford: Clarendon Press.

Markham, G., (1613), *The English Husbandman*, Volume 1, London: John Browne.

Markham, G., (1614a), *Cheape and Good Husbandry, For the Well-Ordering of all Beasts and Fowls, and for the generalll Cure of their Diseases*, London: T.S.

Markham, G., (1614b), *The English Husbandman*, Volume 2, London: Thomas Snodham and John Browne.

Martin, E., (2011), 'Norfolk, Suffolk and Essex: Medieval Rural Settlement in 'Greater East Anglia'', in N. Christie & P. Stamper, eds. *Medieval Rural Settlement: Britain and Ireland, AD 800-1600*, Oxford: Windgather Press, pp.225-248.

Marvell, A., (2007), 'Upon Appleton House, To My Lord Fairfax (1654)', in N. Smith, ed. *The Poems of Andrew Marvell*, Harlow: Pearson Education, pp.210-241.

McBride, K.B., (2001), *Country House Discourse in Early Modern England: A Cultural Study of Landscape and Legitimacy*, Aldershot: Ashgate Publishing Ltd.

McClung, W.A., (1977), *The Country House in English Renaissance Poetry*, Berkeley, CA: University of California Press.

- McGregor, G. & White, R.S., (1990), 'Introduction', in G. McGregor & R. S. White, eds. *Reception and Response: Hearer Creativity and the Analysis of Spoken and Written Texts*, London: Routledge, pp.1-7.
- McKee, H.A.F., (2004), *The Bird's Eye Views of L.Knyff and J.Kip, as published in Britannia Illustrata, and their use for understanding historic landscapes*, Unpublished PhD Thesis, Oxford: Oxford Brookes University.
- McLean, T., (1981), *Medieval English Gardens*, London: Collins.
- Mehrer, M.W. & Wescott, K.L., (2005), *GIS and Archaeological Site Location Modeling*, Boca Raton, FL: CRC Press.
- Menuge, A., (2006), *Oxburgh Hall, Oxborough, Norfolk: A Survey and Investigation of the Moated House*, London: English Heritage.
- Mildmay, H.A.S.J., (1913), *Brief memoir of the Mildmay family*, John Lane: New York.
- Miller, N.F., (1997), *The Archaeology of Garden and Field*, Philadelphia, PA: University of Pennsylvania Press.
- Moore, A.W., Flis, N. & Vanke, F., (2018), *The Paston Treasure: Microcosm of the Known World*, London: Yale University Press.
- Moore, A., (1653), *Bread for the poor, and advancement of the English nation promised by enclosure of the wastes and common grounds of England*, London: R. & W. Leybourn.
- Morris, J. ed., (1983), *Domesday Book: Essex*, Chichester: Phillimore & Co. Ltd.
- Moryson, F., (1617), *An Itinerary*, London: John Beale.
- Mowl, T. & Hickman, C., (2008), *Historic Gardens of Northamptonshire*, Stroud: Tempus.
- Mowl, T. & James, D., (2011), *Historic Gardens of Warwickshire*, Bristol: Redcliffe Press Ltd.
- Mowl, T. & Mako, M., (2008), *Historic Gardens of Cheshire*, Bristol: Redcliffe Press Ltd.
- Mowl, T. & Mayer, L., (2013), *Historic Gardens of Cambridgeshire and the Isle of Ely*, Bristol: Redcliffe Press Ltd.
- Mowl, T., (2000), 'Inigo Jones - The Stage Designer As Gardener', in *Gentlemen and Players: Gardeners of the English Landscape*, Stroud: Sutton Publishing Ltd, pp.1-10.
- Mowl, T., (2002), *Historic Gardens of Gloucestershire*, Stroud: Tempus.
- Mowl, T., (2003), *Historic Gardens of Dorset*, Stroud: Tempus.
- Mowl, T., (2004), *Historic Gardens of Wiltshire*, Stroud: Tempus.

- Mowl, T., (2005), *Historic Gardens of Cornwall*, Stroud: Tempus.
- Mowl, T., (2006), *Historic Gardens of Worcestershire*, Stroud: Tempus.
- Mowl, T., (2007), *Historic Gardens of Oxfordshire*, Stroud: Tempus.
- Mowl, T., (2010a), *Historic Gardens of Somerset*, Bristol: Redcliffe Press Ltd.
- Mowl, T., (2010b), *Historic Gardens of Staffordshire*, Stroud: Tempus.
- Muir, R., (2000), *The New Reading The Landscape: Fieldwork in Landscape History*, Exeter: University of Exeter Press.
- Munroe, J., (2008), *Gender and the Garden in Early Modern English Literature*, Aldershot: Ashgate Publishing Ltd.
- Myers, A.M., (2013), *Literature and Architecture in Early Modern England*, Baltimore, MD: The Johns Hopkins University Press.
- Newman, J., (1992), 'Inigo Jones's Architectural Education before 1614', *Architectural History*, 35, pp.18–50.
- NHER 8825, *Site of Woodrising Hall and Deer Park*, Available at: <http://www.heritage.norfolk.gov.uk/record-details> [Accessed January 13, 2019].
- NHER 30712, *Earthworks-south-west-of-Old-Hall-and-multi-period-pottery-finds*, Available at: <http://www.heritage.norfolk.gov.uk/record-details?MNF30712> [Accessed November 24, 2017].
- NHER 49136, *Fishponds-to-the-north-of-Wood-Rising-Hall*, Available at: <http://www.heritage.norfolk.gov.uk/record-details> [Accessed July 4, 2019].
- Nichols, J., (1823), *The Progresses and Public Processions of Queen Elizabeth, Volume 2*, London: J. Nichols and Son.
- Nobajas, A. & Nadal, F., (2015), 'From historical map to online 3D recreation: the 1861 cadastral map of Horta (Barcelona)', *Cartography and Geographic Information Science*, 42(3), pp.211–223.
- Norden, J., (1607), *The Surveyors Dialogue, Divided into Five Bookes*, M. Netzloff, ed., London: Simon Stafford.
- North, R., Colvin, H.M. & Newman, J., (1981), *Of Building: Roger North's writings on architecture*, Oxford: Clarendon Press.
- North, R., (1713), *A Discourse of Fish and Fish-Ponds*, London: E. Currill.
- NRO BL/T 10/12, *Inventory of Sir Roger Townshend's goods at Stiffkey and Raynham Halls, January 1637*.
- NRO BRA 2524/1, *Map of the parish of Oxborough, showing the lands of Sir Henry Bedingfield, by Philip Wissiter, 1722*.

NRO BRA 2524/2, *Map of the Manor of Oxborough, belonging to Sir Henry Bedingffield, by I.I. de Wilstar, 1725.*

NRO HMN 7/227/1-2, *Map of the parish of Stiffkey, c.1620s.*

NRO JER 269, 55X1, *Inventories of furniture and other property at Costessey Hall and Oxburgh Hall, 1590-1598.*

NRO RH 6/50, *A 'plat' of the first floor of Stiffkey Old Hall, by John Osborne, 1573.*

NRO RH Box 33, *Steward's Account Book, including Wages, of Nathaniel Bacon's estate at Stiffkey, 1587-97.*

NT DDKS 38/16, *Gawthorpe Hall, No. 8: Plan of Second Floor, annotated by James P. Kay-Shuttleworth, Jan[uar]y 31st 1850.*

O'Connor, M., (2006), 'Rachel Fane's May Masque at Apethorpe, 1627', *English Literary Renaissance*, 36(1), pp.90-113.

Ogden, H.V.S. & Ogden, M.S., (1955), *English Taste in Landscape in the Seventeenth Century*, Ann Arbor, MI: University of Michigan Press.

Overton, M., (1984), 'Agricultural revolution? Development of the agrarian economy in early modern England', in A. R. H. Baker & D. Gregory, eds. *Explorations in Historical Geography: Interpretative Essays*, Cambridge: Cambridge University Press.

Overton, M., (1993), 'A New Perspective on Medieval and Early Modern Agriculture: Six Centuries of Norfolk Farming c.1250-c. 1850', *Past & Present*, 141, pp.38-105.

Overton, M., (1996), *Agricultural Revolution in England: The Transformation of the Agrarian Economy 1500-1850*, Cambridge: Cambridge University Press.

Pacione, M., (1987), *Historical Geography: Progress and Prospect*, London: Croom Helm.

Page, W. ed., (1821), 'Parishes: St Michael's', in *A History of the County of Hertford, Volume 2*, London: Victoria County History, pp.392-405, Available at: <http://www.british-history.ac.uk/vch/herts/vol2/pp392-405> [Accessed November 25, 2017].

Paint.NET, (2016), 'Paint.NET - Free Software for Digital Photo Editing', Available at: <https://www.getpaint.net/> [Accessed March 29, 2016].

Papworth, M., (2003), 'Archaeological Recording on Historic Garden by The National Trust', in R. Wilson-North, ed. *The Lie of the Land: Aspects of the Archaeology and History of the Designed Landscape in the South West of England*, Exeter: The Mint Press, pp.21-23.

Parkinson, J., (1629), *Paradisi in Sole Paradisus Terrestris*, London: Humphry Lownes and Robert Young.

Partida, T., (2014), *Drawing the lines: a GIS study of enclosure and landscape in Northamptonshire*, Unpublished PhD Thesis, Huddersfield: University of Huddersfield.

Payne, N., (2003), *The Medieval Residences of the Bishops of Bath, and Wells, and Salisbury*, Unpublished PhD Thesis, Bristol: University of Bristol.

Peacham, H., (1612), *Minerva Britannia, or A Garden of Heroical Devises*, London: Walter Dight.

Peacock, J., (1995), *The Stage Designs of Inigo Jones: The European Context*, Cambridge: Cambridge University Press.

Pellitero, A.M., (2011), 'The Phenomenological Experience of the Visual Landscape', in S. Nijhuis, R. V. Lammeren, & F. van der Hoeven, eds. *Exploring the Visual Landscape: Advances in Physiognomic Landscape Research in the Netherlands, Research in Urbanism Series: Volume 2*, Amsterdam: Delft University Press, pp.57–72.

Pett, D.E. & Wales, H. the P. of, (1998), *The Parks and Gardens of Cornwall: A Companion Guide Arranged to Correspond With the Ordnance Survey Landranger Maps*, Penzance: Alison Hodge.

Pevsner, N., (1960), *The Planning of the Elizabethan Country House: An Inaugural Lecture Delivered at Birkbeck College, 23rd May 1960*, London: Birkbeck College.

Phibbs, J., (1983), 'An Approach to the Methodology of Recording Historic Landscapes', *Garden History*, 11(2), pp.167–175.

Phil, N., (1984), 'Farming land holding in wood pasture East Anglia 1550-1650', *Proceedings of the Suffolk Institute of Archaeology*, 35, pp.303–15.

Piers, S., (1613), *Map of Long Melford*, Melford Hall Private Collection, Long Melford.

Platter, T., (1937), *Thomas Platter's Travels in England, 1599*, C. Williams, ed., London: J. Cape.

Plunkett, G., (1984), 'Photography of Stiffkey Old Hall, North-East Tower Ruin', Available at: <http://www.georgeplunkett.co.uk/Norfolk/halls.htm> [Accessed October 29, 2017].

Pluskowski, A., (2007), 'The Social Construction of Medieval Park Ecosystems: An Interdisciplinary Perspective', in R. Liddiard, ed. *The Medieval Park: New Perspectives*, Bollington: Windgather Press, pp.63–78.

Pound, J., (1988), *Tudor and Stuart Norwich*, Chichester: Phillimore.

Prince, H.C., (1967), *Parks in England*, Isle of Wight: Pinhorns.

Prince, H.C., (2008), *Parks in Hertfordshire Since 1500*, Hatfield: University of Hertfordshire Press.

- Pryor, F., (2010), *The Making of the British Landscape: How We Have Transformed the Land, from Prehistory to Today*, London: Allen Lane.
- Puget de la Serre, J., (1639), *Histoire de l'Entree de la Reyne Mere Du Roy Tres-Chrestien dans la Grande-Bretaigne (unpaginated)*, London: Jean Ranworth.
- Pugsley, S. ed., (1994), *Devon Gardens: An Historical Survey*, Stroud: Sutton Publishing Ltd.
- Pujol, L., (2004), 'Archaeology, Museums and Virtual Reality', *Revista Digital d'Humanitats*, 6, pp.1-9.
- Rackham, O., (1981), *Trees and Woodland in the British Landscape*, 3rd ed., Surrey: J.M. Dent & Sons Ltd.
- Raper, J., (1989), *Three Dimensional Applications In GIS*, London: Taylor and Francis Ltd.
- Ravensdale, J.R., (1974), *Liable to Floods: Village Landscape on the Edge of the Fens, A.D.450-1850*, Cambridge: Cambridge University Press.
- RCHME, (1984), 'Apethorpe', in *An Inventory of the Historical Monuments in the County of Northamptonshire, Volume 6: Architectural Monuments in North Northamptonshire*, London: HMSO, pp.1-16.
- Rees, R., (1980), 'Historical Links between Cartography and Art', *Geographical Review*, 70(1), pp.60-78.
- Reljić, I. & Dunder, I., (2019), 'Application of Photogrammetry in 3D Scanning of Physical Objects', *TEM Journal*, 8(1), pp.94-101.
- Richardson, S., (2010), 'A Room With A View? Looking Outwards From Late Medieval Harewood', *Archaeological Journal*, 167(1), pp.14-54.
- Richards-Rissetto, H. et al., (2014), 'Geospatial Virtual Heritage: a gesture-based 3D GIS to engage the public with Ancient Maya Archaeology', in *Archaeology in the Digital Era*, pp.118-130.
- Richards-Rissetto, H., (2017a), 'An iterative 3D GIS analysis of the role of visibility in ancient Maya landscapes: A case study from Copan, Honduras', *Digital Scholarship in the Humanities*, 32(Supplement 2), pp.195-212.
- Richards-Rissetto, H., (2017b), 'What can GIS + 3D mean for landscape archaeology?', *Journal of Archaeological Science*, 84, pp.10-21.
- Rippon, S., (2012), *Making Sense of an Historic Landscape*, Oxford: Oxford University Press.
- Roberts, W.M., (2010), *Lost Country Houses of Suffolk*, Woodbridge: The Boydell Press.

- Robey, A.C., (1991), *The Village of Stock, Essex, 1550-1610: A Social and Economic Survey*, Unpublished PhD Thesis, London: The London School of Economics, University of London.
- Robinson, J.M., (2014), *Requisitioned: The British Country House in the Second World War*, London: Aurum Press.
- Rogers, J.C., (1936), 'The Manor and Houses of Gorhambury', *Transactions of the St Albans and Hertfordshire Architectural and Archaeological Society*, 4, pp.35-112.
- Rowe, A., (2007), *Hertfordshire Garden History: A Miscellany*, Hatfield: University of Hertfordshire Press.
- Rowe, A., (2019), *Tudor and Early Stuart Parks of Hertfordshire*, Hatfield: University of Hertfordshire Press.
- Rowley, T., (1987), *Villages in the Landscape*, 2nd ed., Gloucester: Alan Sutton.
- Rubens, P.P., (1638), *A Landscape with a Shepherd and his Flock* [Oil on Oak], The National Gallery, London.
- Rutherford, S., (2016), *Capability Brown and His Landscape Gardens*, London: National Trust Books.
- Samaha, J., (2013), *Law and Order in Historical Perspective: The Case of Elizabethan Essex*, London: Academic Press Ltd.
- Sandeen, E.R., (1959), *The Building Activities of Sir Nicholas Bacon*, Unpublished PhD Thesis, Chicago, IL: University of Chicago.
- Sanders, J., (2011), *The Cultural Geography of Early Modern Drama, 1620-1650*, Cambridge: Cambridge University Press.
- Saunders, A., (2014), *The Landscape Context of Bronze Age Ritual Activity in Norfolk*, Unpublished MA Dissertation, Norwich: University of East Anglia.
- Savage, C. & Barker, T.C., (2012), *Economic History of Transport in Britain*, London: Routledge.
- Schama, S., (1995), *Landscape and Memory*, London: HarperCollins.
- Scianna, A. & La Guardia, M., (2018), 'Globe Based 3D GIS solutions for Virtual Heritage', in *ISPRS - International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, XLII-4/W10, pp.171-177.
- Searle, A., (1966), *Stuart Essex*, Chelmsford: Essex County Council.
- Seeber, K., (2012), "Ye Making Of Ye Mount": Oxford New College's Mount Garden Revised', *Garden History*, 40(1), pp.3-16.
- Seeber, K., (2013), 'Jacob Bobart (1596-1680): First Keeper of the Oxford Physic Garden', *Garden History*, 41(2), pp.278-284.

- Shakespeare, W., (1903a), 'Hamlet, Prince of Denmark', in E. Malone & G. Steevens, eds. *Complete Works of Shakespeare, Volume 8*, Philadelphia, PA: David McKay, pp.83–180.
- Shakespeare, W., (1903b), 'Much Ado about Nothing', in E. Malone & G. Steevens, eds. *Complete Works of Shakespeare, Volume 2*, Philadelphia, PA: David McKay, pp.5–68.
- Shaw, H., (1839), *Details of Elizabethan Architecture*, London: William Pickering.
- Shaw, W.A., (1906), *The Knights of England: A Complete Record from the Earliest Time to the Present Day of the Knights of All the Orders of Chivalry in England, Scotland, and Ireland, and of Knights Bachelors, Volume 2*, London: Sherratt and Hughes.
- Sheeran, G., (1990), *Landscape Gardens in West Yorkshire 1680-1880*, Wakefield: Wakefield Historical Publications.
- Shepherd, I.D.H., (2008), 'Travails in the Third Dimension: A Critical Evaluation of Three-Dimensional Geographical Visualization', in M. Dodge, M. McDerby, & M. Turner, eds. *Geographic Visualization: Concepts, Tools and Applications*, Chichester: Wiley & Sons Ltd, pp.199–222.
- Short, B. ed., (2006), *The South East, England's Landscape: Volume 1*, London: HarperCollins.
- Sidney, P., (1590), *The Countesse of Pembroke's Arcadia*, London: John Windet.
- Siegel, S., (2011), *The Contents of Visual Experience*, Oxford: Oxford University Press.
- Silver, M., Fangi, G. & Denker, A., (2018), *Reviving Palmyra in Multiple Dimensions: Images, Ruins and Cultural Memory*, Caithness: Whittles Publishing Ltd.
- Simpson, A., (1961), 'The Rising Lawyer: Sir Nicholas Bacon', in *East Anglian Studies: The Wealth of the Gentry, 1540-1660*, Cambridge: Cambridge University Press, pp.22–114.
- Skelton, K., (2015), *The Paradox of Body, Building and Motion in Seventeenth-Century England*, Oxford: Oxford University Press.
- Smith, A.H., (1974), *County and Court: Government and Politics in Norfolk, 1558-1603*, Oxford: Clarendon Press.
- Smith, H., (1994), 'The gardens of Sir Nicholas Bacon and Sir Francis Bacon: an enigma resolved and a mind explored', in *Religion, Culture and Society in Early Modern Britain: Essays in Honour of Patrick Collinson*, Cambridge: Cambridge University Press, pp.125–160.
- Smith, H., (2002), 'Concept and Compromise: Sir Nicholas Bacon and the Building of Stiffkey Hall', in C. Harper-Bill, C. Rawcliffe, & R. G. Wilson, eds. *East Anglia's History: Studies in Honour of Norman Scarfe*, Woodbridge: Centre of East Anglian Studies, University of East Anglia, pp.159–188.

Smith, S., Watson, J. & Kenny, A. eds., (2015), *The Senses in Early Modern England, 1558-1660*, Manchester: Manchester University Press.

Smythson, R., (1580), *Plan of Wollaton Hall, Northamptonshire, for Sir Francis Willoughby* [Drawing], Royal Institute of British Architects, London.

Spooner, S., (2005), *The Third Nature: Seventeenth Century Designed Landscapes in Norfolk*, Unpublished MA Dissertation, Norwich: University of East Anglia.

Spooner, S., (2009), "A prospect two fields' distance": Rural Landscapes and Urban Mentalities in the Eighteenth Century', *Landscapes*, 10(1), pp.101-122.

Spooner, S., (2010), *The Diversity of Designed Landscapes: A Regional Approach c.1660-1830*, Unpublished PhD Thesis, Norwich: University of East Anglia.

Spooner, S. ed., (2012a), *Sail and Storm: the Aylsham Navigation*, Aylsham: Aylsham Local History Society.

Spooner, S., (2012b), 'Small Designed Landscapes around Norwich 1780-1830', *Norfolk Gardens Trust Journal*, 1, pp.31-40.

Spooner, S., (2015), *Regions and Designed Landscapes in Georgian England*, London: Routledge.

SRO(I) HA68/484/752, *Surveys of the several Estates situated in the Parishes of Hoxne, Syleham, Wingfield, Denham, Eye & Wetheringsett in the County of Norfolk belonging to The Right Hon[oura]ble Charles Lord Maynard, by T. Skynner, 1757.*

SRO(I) HA68/2593/3442, *Bargain and Sale of Hoxne estate, 1621.*

SRO(I) HA68/2593/3478, 3479, *Final concord, William Style, Esq., and Thomas Style, Gent, Robert Style, Esq., and Crisogen, his wife, concerning the manors of Hoxne, 1642.*

SRO(I) HA68/2593/3485, 3486, *Bargain and sale, by means of lease and release, 1) William Style of the Inner Temple, London, Esq., and Thomas Style, doctor of Lawes, 2) the Lan. William Maynard of St Giles, in the Fields, Midd[le]seJx, and Lady Jane his wife, of a moiety of the manor and hundred of Hoxne with property called the Old Park and the New Park, the manors of Hoxne Parsonage and Hoxne Priory, the rectories and advowsons of Hoxne and Denham, 5th February 1671-2.*

SRO(I) HB21/280/1, *Map of Hoxne, 1700.*

SRO(I) HB21/280/2, *Map of the estate of The Right Hon[oura]ble Charles Lord Maynard, by T. Skynner, 1757.*

SRO(I) HD40/422, *A true platt of Hoxon newe Park in Hoxon...appertayning and belonging to Sr Thomas Sowthwell Knight & nowe demised to Denney Gent for ... yeres', by William Stokes, 1619.*

- Stamper, P., (1996), *Historic Parks and Gardens of Shropshire*, Shrewsbury: Shropshire Books.
- Stanley-Millson, C. & Newman, J., (1986), 'Blickling Hall: The Building of a Jacobean Mansion', *Architectural History*, 29, pp.1-42.
- Steane, J.M., (1977), 'The Development of Tudor and Stuart Garden Design in Northamptonshire', *Northamptonshire Past and Present*, 5(5), pp.383-405.
- Steane, J., (1987), 'Renaissance Parks and Gardens', in B. Ford, ed. *The Cambridge Guide to the Arts in Britain, Volume 3: Renaissance and Reformation*, Cambridge: Cambridge University Press, pp.208-221.
- Steer, F.W., (1959), *Woodrising Church, Norfolk And Notes On The Southwell And Other Families Connected With The Parish*, Norwich: Diocese of Norwich.
- Stewart, E., (2015), *Recreating Contemporary Views Of Seventeenth-Century Designed Landscapes in Norfolk*, Unpublished MA Dissertation, Norwich: University of East Anglia.
- Stewart, E., (2019), '3D GIS and 'The Royaltie Of Sight': Recreating 'Prospects' and 'Perspectives' within an English designed landscape c. 1550-1660', *Digital Scholarship in the Humanities*, 34(Supplement 1), pp.179-189.
- Stewart, S., (1966), *The Enclosed Garden: The Tradition and the Image in Seventeenth-Century Poetry*, London: University of Wisconsin Press.
- Stiffkey Local History Group, (2013), *Stiffkey with Cockthorpe: A Story of Norfolk People*, Lowestoft: Poppyland Publishing.
- Stocker, D. ed., (2006), *The East Midlands, England's Landscape: Volume 5*, London: HarperCollins.
- Stocker, M., (1986), 'Apocalypse and Upon Appleton House', in *Apocalyptic Marvell: The Second Coming in Seventeenth Century Poetry*, Brighton: Harvester, pp.46-66.
- Strong, R.C. & Wragg, T.S. eds., (1967), *Festival Designs by Inigo Jones: An Exhibition of Drawings for Scenery and Costumes for the Court Masques of James I and Charles I*, Washington, D.C.: International Exhibitions Foundation.
- Strong, R.C., (1992), *Small Period Gardens: A Practical Guide to Design and Planting*, New York: Rizzoli International Publications.
- Strong, R., (1998), *The Renaissance Garden in England*, 3rd ed., London: Thames and Hudson.
- Strong, R., (1999), 'Foreword: The Renaissance Garden in England Reconsidered', *Garden History*, 27(1), pp.2-9.
- Strong, R., (2000), *Gardens Through the Ages*, London: Conran Octopus Ltd.

- Strong, R., (2005), *The Artist and the Garden*, London: Yale University Press.
- Stroud, D., (1950), *Capability Brown*, London: Country Life.
- Stroud, D., (1962), *Humphry Repton*, London: Country Life.
- Stubbings, W., (2002), *Lost Gardens of Essex*, Romford: Ian Henry Publications.
- Summerson, J., (1959), 'The Building of Theobalds, 1564-85', *Archaeologia*, 97, pp.107-26.
- Sutherill, M., (1995), *The Gardens of Audley End*, London: English Heritage.
- Sutton, J.M., (2004), *Materializing Space at an Early Modern Prodigy House: The Cecils at Theobalds, 1564-1607*, Aldershot: Ashgate Publishing Ltd.
- Sweeney, A.R., (2011), *Robert Southwell: Snow in Arcadia: Redrawing the English Lyric Landscape, 1586-95*, Oxford: Oxford University Press.
- Taigel, A. & Williamson, T., (1991), 'Some Early Geometric Gardens in Norfolk', *Journal of Garden History*, 11(1) and (2), pp.5-111.
- Taylor, C., Everson, P. & Wilson-North, R., (1992), 'Bodiam Castle, Sussex', *Medieval Archaeology*, 34, pp.155-157.
- Taylor, C., (1983), *The Archaeology of Gardens*, Princes Risborough: Shire Publications.
- Taylor, C., (1991), 'Garden Archaeology: an introduction', in A. E. Brown, ed. *Garden Archaeology: Papers presented to a conference at Knuston Hall, Northamptonshire, April 1988*, CBA Research Report 78, London: Council for British Archaeology, pp.1-5.
- Taylor, C., (1996), 'The Archaeology of Gardens and Designed Landscapes', in D. M. Evans, P. Salway, & D. Thackray, eds. *The Remains of Distant Times: Archaeology and the National Trust*, Woodbridge: Boydell Press.
- Taylor, C., (1998), 'From recording to recognition', in P. Pattison, ed. *There by Design: Field Archaeology in Parks and Gardens: Papers Presented at a Conference Organised by the Royal Commission on the Historical Monuments of England and the Garden History Society*, BAR British Series 267, Oxford: Archaeopress.
- Taylor, E.G.R., (1930), *Tudor Geography, 1485-1583*, London: Methuen & Co. Ltd.
- Taylor, E.G.R., (1934), *Late Tudor and Early Stuart Geography, 1583-1650: a sequel to Tudor Geography, 1485-1583*, London: Methuen & Co. Ltd.
- Taylor, J.R., (1989), *Nathaniel Bacon; An Elizabethan Squire, His Family And Household And Their Impact Upon The Local Community*, Unpublished PhD Thesis, Norwich: University of East Anglia.

- Taylor, K., (2008), 'The Earliest Wildernesses: Their Meanings and Developments', *Studies in the History of Gardens & Designed Landscapes*, 28(2), pp.237–251.
- Textures.com, (2016), 'Textures.com, formerly CGTextures.com', Available at: <https://www.textures.com/> [Accessed February 21, 2016].
- The Landmark Trust, (2018), 'Holiday at Freston Tower near Ipswich, Suffolk', Available at: <https://www.landmarktrust.org.uk/search-and-book/properties/freston-tower-7680> [Accessed May 10, 2018].
- The National Trust, (1966), *Melford Hall, Suffolk: a property of the National Trust, home of Sir Richard Hyde Parker, Baronet*, London: Country Life for the National Trust.
- The Woodland Trust, (2018), 'Ancient Tree Inventory: Tree Search', Available at: <https://ati.woodlandtrust.org.uk/tree-search> [Accessed May 9, 2018].
- Thorpe, J.A., (1966), *The Book of Architecture of John Thorpe in Sir John Soane's Museum, The Walpole Society: Volume 40*, Glasgow: R. Maclehose, University Press.
- Thurley, S., (1988), 'Henry VIII and the Building of Hampton Court: A Reconstruction of the Tudor Palace', *Architectural History*, 31, pp.1–57.
- Thurley, S., (2003), *Hampton Court: A Social and Architectural History*, London: Yale University Press.
- Tigner, A.L., (2012), *Literature and the Renaissance Garden from Elizabeth I to Charles II: England's Paradise*, Farnham: Ashgate Publishing Ltd.
- Tiller, K., (2007), 'Ways of seeing. Hoskins and the Oxfordshire landscape revisited', in P. S. Barnwell & M. Palmer, eds. *Post-Medieval Landscapes, Landscape History after Hoskins: Volume 3*, Bollington: Windgather Press, pp.185–200.
- Tilley, C., (1994), *A Phenomenology of Landscape: Places, Paths and Monuments*, B. Kapferer & J. Gledhill, eds., Oxford: Berg.
- Tilley, C., (2004), *The Materiality of Stone: Explorations in Landscape Phenomenology*, Oxford: Berg.
- Tipping, H.A., (1929), *English Homes: Period 2*, 2nd ed., Volume 1: Early Tudor 1485-1558, London: Country Life.
- TNA PROB 11/36/267, *Will of Edmund Bedingfield of Oxburgh, Norfolk, proved 2nd November 1553*.
- TNA PROB 11/43/577, *Will of Robert Southwell of Mereworth, Kent, proved 5th November 1560*.
- TNA PROB 11/47/231, *Will of Richard Southwell of Woodrising, Norfolk, proved 22nd June 1564*.

TNA PROB 11/112/528, *Will of Thomas Mildmay of Moulsham, Essex, proved 3rd December 1608.*

Trevisan, S., (2013), 'Mildmay Fane's masque 'Raguaillo d'Oceano' (1640): royalism, Puritanism and sea voyages', *Renaissance Studies*, 27(1), pp.34-50.

Turner, J., (1979), *The Politics of Landscape: Rural Scenery and Society in English Poetry, 1630-1660*, Cambridge, MA: Harvard University Press.

Tusser, T., (1573), *Five hundred points of good husbandry united to as many of good huswiferie, first devised, & nowe lately augmented with diverse approved lessons concerning hopps & gardening, and other needefull metters together with an abstract before euery Moneth, conteining the whole effect of the saide moneth with a table & a preface in the beginning both necessary to be reade, for the better understandinge of the booke*, London: Richard Tottill.

Twynning, J., (2012), 'The English Country Estate and the Landscape's Nation', in *Forms of English History in Literature, Landscape, and Architecture*, Basingstoke: Palgrave Macmillan, pp.108-142.

Tye, M., (2003), 'A Theory of Phenomenal Concepts', *Royal Institute of Philosophy Supplement*, 53, pp.91-105.

Uglow, N., Addyman, T. & Lowrey, J., (2012), 'The Archaeology and Conservation of the Country House: Leslie House and Kinross House', *Architectural Heritage*, 23(1), pp.163-178.

Virtual Past, (2016), 'Virtual Past - Bringing History to Life: Our Expertise', Available at: <http://www.virtualpast.co.uk/about.php> [Accessed April 24, 2016].

Virtual Reality Society, (2015), 'History Of Virtual Reality', Available at: <http://www.vrs.org.uk/virtual-reality/history.html> [Accessed April 24, 2016].

Vorsterman, J., (1680), *Greenwich and London from One Tree Hill* [Oil on Canvas], National Maritime Museum, London.

Vredemen de Vries, H., (1604), *Perspective, Volume 2*, Leiden: Henricus Hondius.

Waldstein, B., (1981), *The Diary of Baron Waldstein: A Traveller in Elizabethan England*, London: Thames and Hudson.

Ward, J., (2016), *Jan Siberechts (1627-1703): A 17th Century Flemish Landscape Painter of Innovative English Estate Portraiture: Including Catalogue Raisonné*, Buckinghamshire: Julia Ward.

Watkins, C. & Cowell, B., (2012), *Uvedale Price (1747-1829): Decoding the Picturesque*, Woodbridge: The Boydell Press.

- Wenley, R., (1991), 'Robert Paston and the Yarmouth Collection', *Norfolk Archaeology*, 41(2), pp.113–144.
- Wescott, K.L. & Brandon, R.J., (2003), *Practical Applications of GIS for Archaeologists: A Predictive Modelling Toolkit*, Boca Raton, FL: CRC Press.
- West, S., (1999), 'Social Space and the English Country House', in S. Tarlow & S. West, eds. *The Familiar Past?: Archaeologies of Later Historical Britain*, London: Routledge, pp.103–122.
- West, W., (1590), *Symbolaeographia: Which May be Termed The Art, Description, Or Image of Instruments, Covenants, Contracts, &c. Or the Notarie Or Scrivener*, London: Tothill.
- Wheatley, D. & Gillings, M., (2003), *Spatial Technology and Archaeology: The Archaeological Applications of GIS*, Boca Raton, FL: CRC Press.
- Wheeler, J., Aspinall, A. & Walker, R.A., (2007), 'Geophysics in the Garden: A Survey of the Gardens at Duncombe Park, North Yorkshire', *Garden History*, 35(1), pp.85–91.
- Whitney, G., (1586), *A Choice of Emblemes, and Other Devises*, Leyden: Francis Raphelengius.
- Whittle, E. & Taylor, C., (1994), 'The Early Seventeenth-Century Gardens of Tackley, Oxfordshire', *Garden History*, 22(1), pp.37–63.
- Whittle, E., (2017), 'Ornamental and Utilitarian Water Features and Their Water Supply in Cambridge at the Beginning of the Seventeenth Century', *Garden History*, 45(1), pp.21–44.
- Whyte, I.D., (2002), *Landscape and History since 1500*, London: Reaktion.
- Whyte, N., (2005), *Perceptions of the Norfolk Landscape c.1500-1750*, Unpublished PhD Thesis, Norwich: University of East Anglia.
- Whyte, N., (2009), *Inhabiting the Landscape: Place, Custom and Memory, 1500-1800*, Oxford: Windgather Press.
- Whyte, N., (2015), 'Senses of Place, Senses of Time: Landscape History from a British Perspective', *Landscape Research*, 40(8), pp.925–938.
- Wild, T., (2004), *Village England: A Social History of the Countryside*, London: I.B.Tauris.
- Williamson, T. & Macnair, A., (2010), *William Faden and Norfolk's 18th-century landscape*, Oxford: Windgather Press.
- Williamson, T., Ringwood, I. & Spooner, S., (2015), *The Lost Country Houses of Norfolk*, Woodbridge: Boydell Press.
- Williamson, T. & Taigel, A., (1990), *Gardens in Norfolk, 1550-1900*, Norwich: Centre of East Anglian Studies.

Williamson, T., (1995), *Polite Landscapes: Gardens and Society in Eighteenth-Century England*, Baltimore, MD: Johns Hopkins University Press.

Williamson, T., (1998a), '18th-century landscapes in Norfolk, England', in P. Pattison, ed. *There by Design: Field Archaeology in Parks and Gardens: Papers Presented at a Conference Organised by the Royal Commission on the Historical Monuments of England and the Garden History Society, BAR British Series 267*, Oxford: Archaeopress, pp.47–55.

Williamson, T., (1998b), 'Questions of preservation and destruction', in P. Everson & T. Williamson, eds. *The Archaeology of Landscape: Studies Presented to Christopher Taylor*, Manchester: Manchester University Press, pp.1–24.

Williamson, T., (1998c), *The Archaeology of the Landscape Park: Garden Design in Norfolk, England, 1680 to 1840*, BAR British Series 268, Oxford: Archaeopress.

Williamson, T., (2000), *Suffolk's Gardens and Parks: Designed Landscapes from the Tudors to the Victorians*, Cheshire: Windgather Press.

Williamson, T., (2004), 'Designed Landscapes: The Regional Dimension', *Landscapes*, 5(2), pp.16–24.

Williamson, T. ed., (2006a), *East Anglia, England's Landscape: Volume 2*, London: HarperCollins.

Williamson, T., (2006b), 'Mapping Field Patterns: A Case Study from Eastern England', *Landscapes*, 7(1), pp.55–67.

Williamson, T., (2006c), *The Archaeology of Rabbit Warrens*, Princes Risborough: Shire Publications.

Williamson, T., (2007), 'Introduction: Archaeological Perspectives on Estate Landscapes', in J. Finch & K. Giles, eds. *Estate Landscapes: Design, Improvement and Power in the Post-medieval Landscape*, Woodbridge: Boydell & Brewer Ltd, pp.1–18.

Williamson, T., (2013), *Environment, Society And Landscape In Early Medieval England: Time and Topography*, Woodbridge: The Boydell Press.

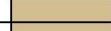
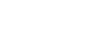
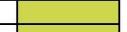
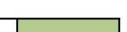
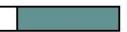
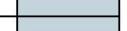
Wilson, D.R., (1991), 'Old gardens from the air', in A. E. Brown, ed. *Garden Archaeology: Papers presented to a conference at Knuston Hall, Northamptonshire, April 1988*, CBA Research Report 78, London: Council for British Archaeology, pp.20–35.

Wilson, R. & Mackley, A., (2000), *Creating Paradise: The Building of the English Country House, 1660-1880*, London: Hambledon and London.

Wilson-North, R., (2003a), 'Approaches to Garden Archaeology and Designed Landscapes in South West England', in R. Wilson-North, ed. *The Lie of the Land: Aspects of the Archaeology and History of the Designed Landscape in the South West of England*, Exeter: The Mint Press, pp.1–4.

- Wilson-North, R. ed., (2003b), *The Lie of the Land: Aspects of the Archaeology and History of the Designed Landscape in the South West of England*, Exeter: The Mint Press.
- Winchester, A.J.L. ed., (2006), *The North West, England's Landscape: Volume 8*, London: HarperCollins.
- Wood, A., (2013), *The Memory of the People: Custom and Popular Senses of the Past in Early Modern England*, Cambridge: Cambridge University Press.
- Woodfield, P., (1991), 'Early garden buildings in England', in A. E. Brown, ed. *Garden Archaeology: Papers presented to a conference at Knuston Hall, Northamptonshire, April 1988*, CBA Research Report 78, London: Council for British Archaeology, pp.123–137.
- Woodhouse, E., (2008), 'Propaganda in Paradise: The Symbolic Garden Created by the Earl of Leicester at Kenilworth, Warwickshire', *Garden History*, 36(1), pp.94–113.
- Woodward, F., (1982), *Oxfordshire Parks*, Oxford: Oxfordshire Museum Services.
- Worsley, G., (1993), 'Inigo Jones: Lonely Genius or Practical Exemplar?', *Journal of the British Archaeological Association*, 146(1), pp.102–112.
- Worsley, L. & Souden, D., (2005), *Hampton Court Palace: the official illustrated history*, London: Merrell.
- Worsley, L., (2005), 'The 'artisan mannerist' style in British sculpture: a bawdy fountain at Bolsover Castle', *Renaissance Studies*, 19(1), pp.83–109.
- Wotton, H., (1624), *The Elements of Architecture*, London: John Bill.
- Woudstra, J., (2016), 'Fruit Cultivation in the Royal Gardens of Hampton Court Palace, 1530–1842', *Garden History*, 44(2), pp.255–271.
- Wright, N., (1990), *The gentry and their houses in Norfolk and Suffolk from circa 1550 to 1850*, Unpublished PhD Thesis, Norwich: University of East Anglia.
- Wright, T., (1831), *The History and Topography of the county of Essex, comprising its Ancient and Modern History*, W. Bartlett, ed., Volume 1, London: Geo. Virtue.
- Yelling, J., (2013), 'Agriculture 1500-1730', in 2nd ed., R. A. Dodgshon & R. A. Butlin, eds. *Historical Geography of England and Wales*, London: Academic Press Ltd, pp.181–198.
- Yu, H., (2017), 'ArcMap Raster Edit Suite', Available at: <https://github.com/haoliangyu/ares> [Accessed May 9, 2017].
- Zlatanova, S., Abdul-Rahman, A. & Pilouk, M., (2002), '3D GIS: Current Status and Perspectives', in *Proceedings of Joint International Symposium on GeoSpatial Theory, Processing and Applications, 8-12 July, Ottawa, Canada, 2001*.

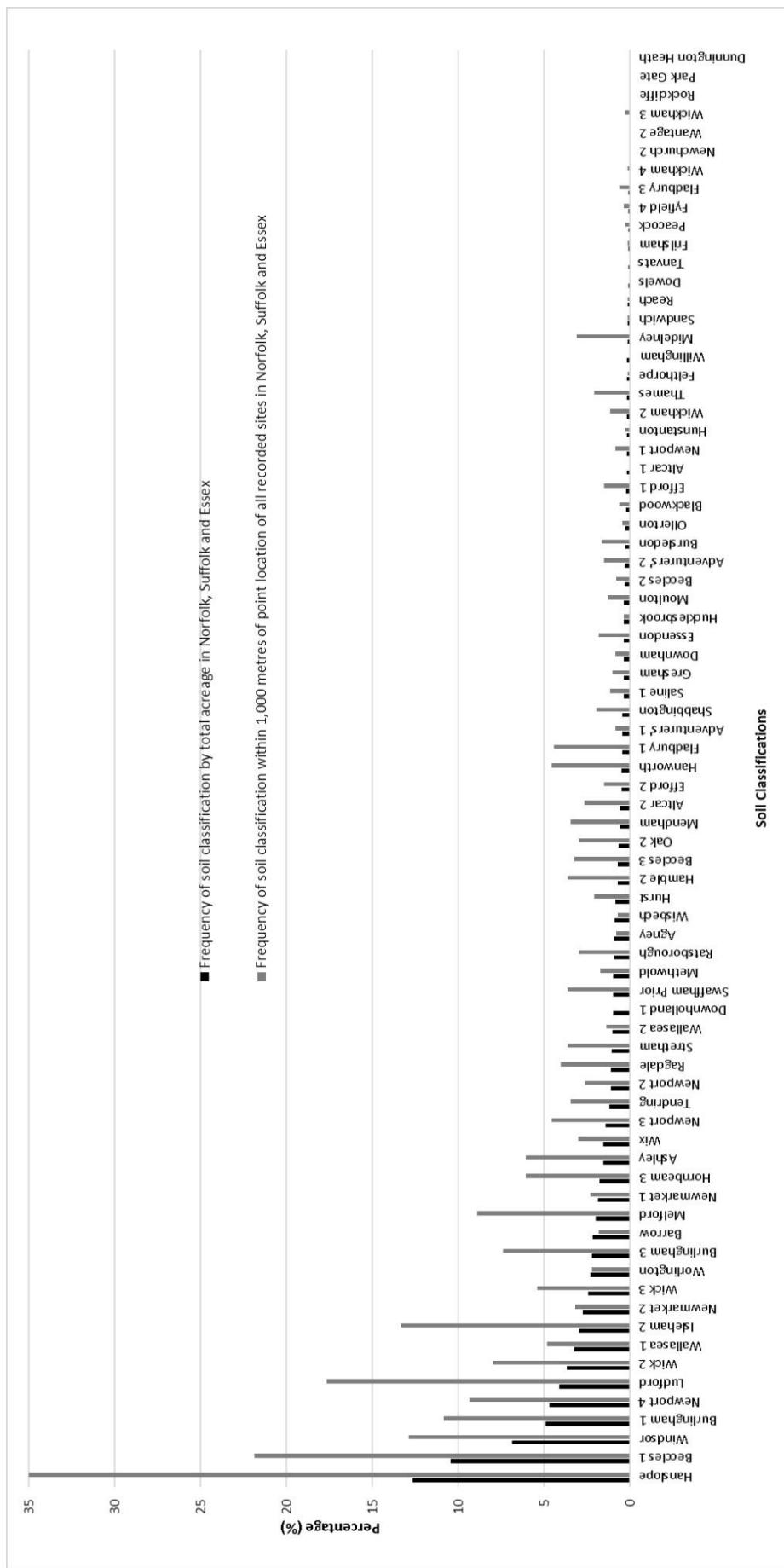
## Appendices - Images

Mendham	Peat		
Adventurers' 1	Peat		
Adventurers' 2	Peat		
Altcar 1	Peat		
Altcar 2	Peat		
Worlington	Deep Sandy		
Reach	Shallow Loam Over Chalk		
Stretham	Deep Clay		
Swaffham Prior	Loam Over Chalk		
Newmarket 1	Shallow Loam Over Chalk		
Newmarket 2	Shallow Loam Over Chalk		
Sandwich	Dune Sand		
Wantage 2	Shallow Silty Over Chalk		
Willingham	Deep Silty Over Peat		
Newport 1	Deep Sandy		
Newport 2	Deep Sandy		
Newport 3	Deep Sandy		
Newport 4	Deep Sandy		
Methwold	Deep Sandy		
Ollerton	Deep Sandy		
Felthorpe	Deep Sandy		
Efford 1	Deep Loam Over Gravel		
Efford 2	Deep Loam Over Gravel		
Frilsham	Loam Over Chalk		
Fyfield 4	Loam Over Sandstone		
Hamble 2	Deep Silty		
Hucklesbrook	Deep Loam		
Hunstanton	Deep Loam		
Ludford	Deep Loam		
Melford	Deep Loam To Clay		
Moulton	Loam Over Chalk		
Wix	Deep Loam		
Ashley	Deep Loam To Clay		
Burlingham 1	Deep Loam		
Burlingham 3	Deep Loam		
Bursledon	Deep Loam		
Dunnington Heath	Deep Red Loam To Clay		
Ratsborough	Deep Loam To Clay		
Downham	Deep Sandy		
Wick 2	Deep Loam		
Wick 3	Deep Loam		
Barrow	Deep Loam To Clay		
Hornbeam 3	Deep Loam To Clay		
Tendring	Deep Loam		
Hanslope	Deep Clay		
Ragdale	Seasonally Wet Deep Clay		
Windsor	Seasonally Wet Deep Clay		
Beccles 1	Seasonally Wet Deep Loam To Clay		
Beccles 2	Seasonally Wet Deep Loam To Clay		
Beccles 3	Seasonally Wet Deep Loam To Clay		
Gresham	Seasonally Wet Deep Loam		
Wickham 2	Seasonally Wet Silty To Clayey Over Shale		
Wickham 3	Seasonally Wet Loam To Clayey Over Shale		
Wickham 4	Seasonally Wet Loam To Clayey Over Shale		
Essendon	Seasonally Wet Deep Loam To Clay		
Oak 2	Seasonally Wet Deep Red Loam To Clay		
Hurst	Seasonally Wet Deep Loam		
Park Gate	Seasonally Wet Deep Loam		
Shabbington	Seasonally Wet Deep Loam		
Saline 1	Saltmarsh		
Isleham 2	Seasonally Wet Deep Sand		
Agney	Seasonally Wet Deep Silty		
Wisbech	Seasonally Wet Deep Silty		
Lake	Lake or Water Body		
River	River		
Sea	Sea		
Newchurch 2	Seasonally Wet Deep Clay		
Thames	Seasonally Wet Deep Clay		
Dowels	Seasonally Wet Deep Clay Over Peat		
Fladbury 1	Seasonally Wet Deep Clay		
Fladbury 3	Seasonally Wet Deep Clay		
Midelney	Seasonally Wet Deep Clay Over Peat		
Wallasea 1	Seasonally Wet Deep Clay		
Wallasea 2	Seasonally Wet Deep Clay		
Rockcliffe	Seasonally Wet Deep Silty		
Tanvats	Seasonally Wet Deep Silty		
Blackwood	Seasonally Wet Deep Sandy		
Downholland 1	Seasonally Wet Deep Clay		
Hanworth	Seasonally Wet Deep Peat To Loam		
Peacock	Seasonally Wet Deep Peat To Loam		

**Appendix 1 - Soil classifications map legend**



Appendix 2 - Frequency of sites by soil classification (point location)



Appendix 3 - Frequency of sites by soil classification (within 1,000-metres of point location)

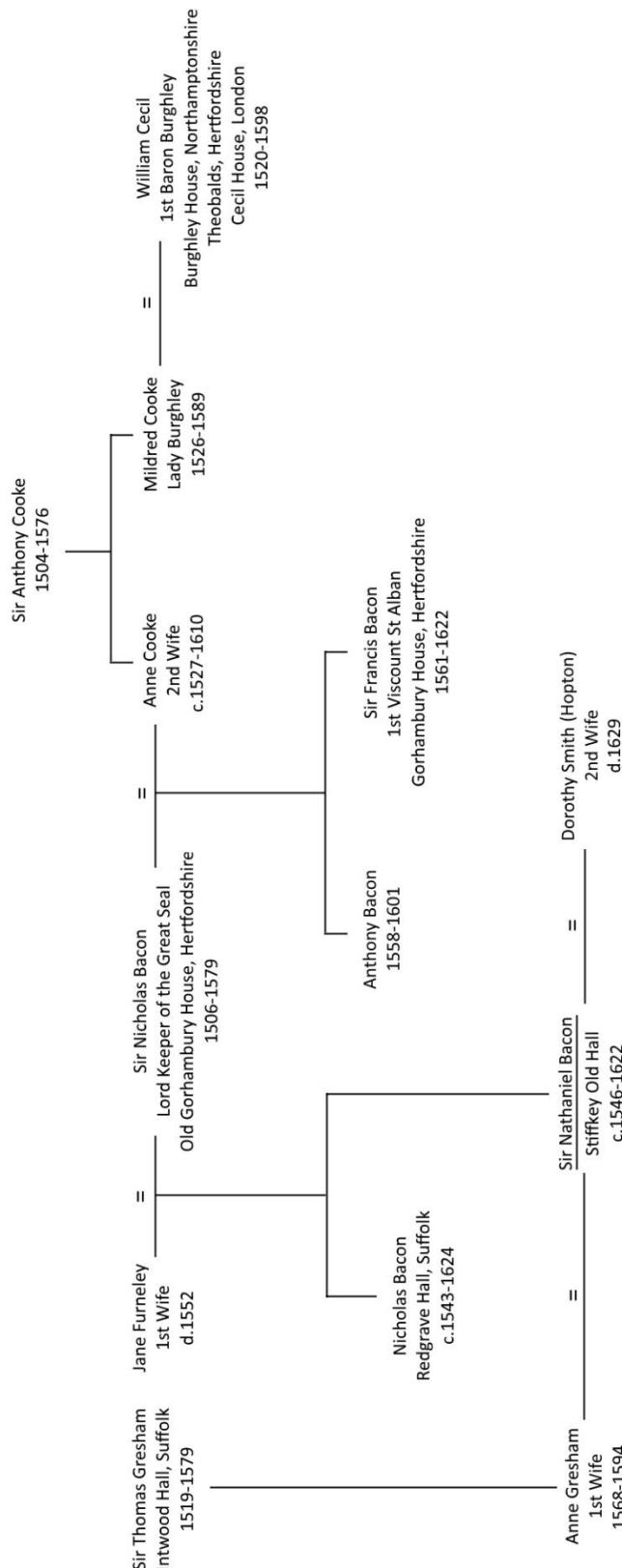


**Appendix 4 - Satellite locations during GPS surveys (Ford, 2018)**

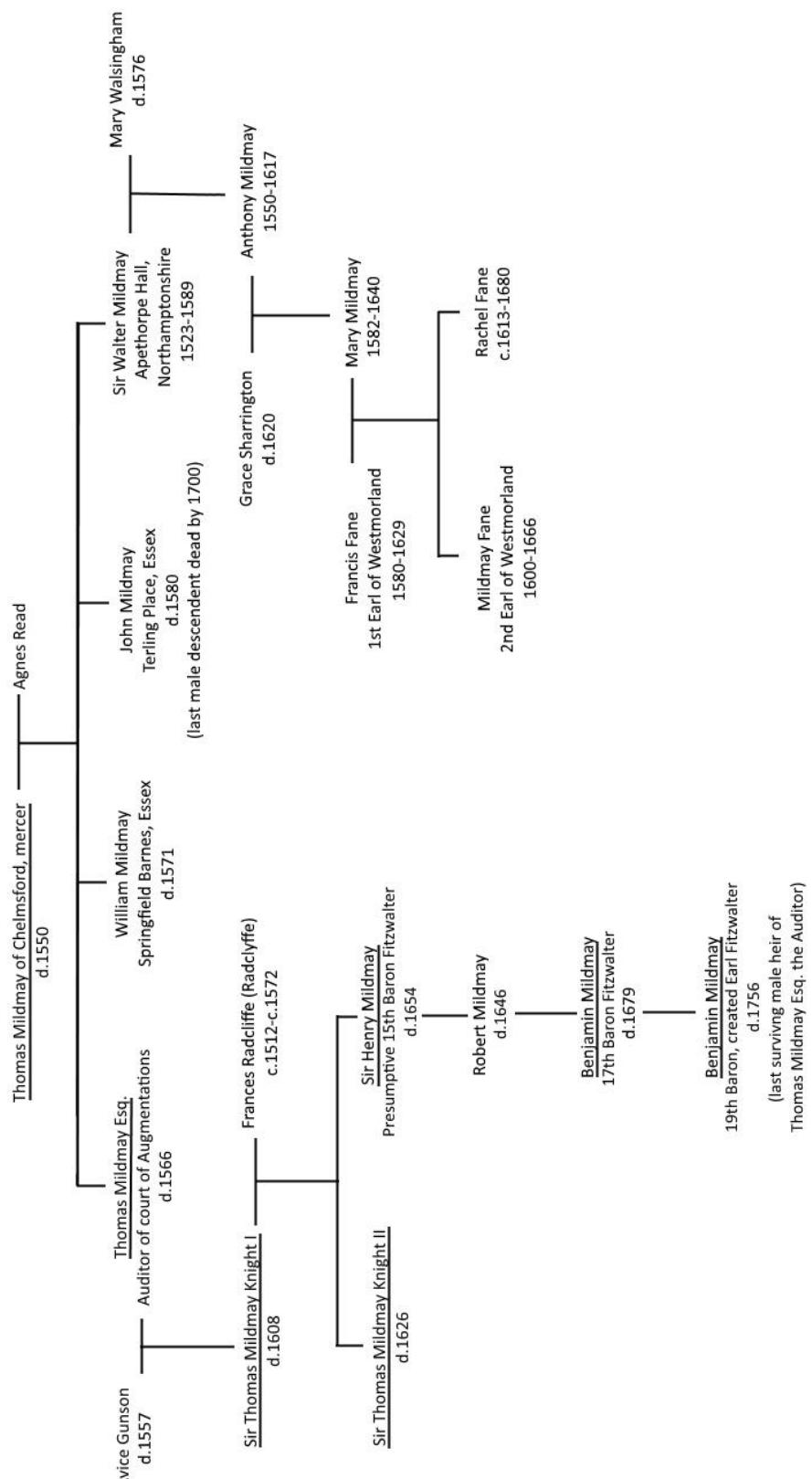
Sites	Vantage Points for Viewshed Analyses	OFFSETA (metres)
<b>Stiffkey Old Hall, Norfolk (Primary Case Study)</b>	Intended Gallery ( <i>Piano Nobile</i> , South Range, Central Window)	8.5
	Actual Gallery (Second Floor, North Range, West-Facing Window)	11.5
	Hall/Parlour ( <i>Piano Nobile</i> , North Range, North-Facing Window)	6
	Great (Dining) Chamber ( <i>Piano Nobile</i> , East Range, East-Facing Window)	6.5
	Banqueting House (West Front, Entrance/Terrace Walk)	1.6
	Banqueting House (East Front, Central Window of Projection)	3.5
<b>Old Gorhambury House, Hertfordshire (Comparison site for Stiffkey)</b>	Approach	1.6
	Gallery	5
	Banqueting House	2
<b>Moulsham Hall, Essex (Primary Case Study)</b>	<i>Piano Nobile</i> (All Ranges)	7
	Viewing Mount (Summit)	1.6
	Tower (Rooftop) - 15 metres and 25 metres	1.6
<b>Terling Place, Essex (Comparison site for Moulsham)</b>	Approach (Gatehouse and Forecourt)	1.6
	<i>Piano Nobile</i> (All Ranges)	6
	Park Lodge	5
<b>Hoxne Hall, Suffolk (Primary Case Study)</b>	<i>Piano Nobile</i> (All Fronts)	4.6
	Brome Hall, <i>Piano Nobile</i> (East Range)	4.6
	Gatehouse (Rooftop)	1.6
	Garden Building (North, West and East Facades)	2
	Park Lodge (Second Floor, All Facades)	7.6
<b>Oxburgh Hall, Norfolk (Comparison site for Hoxne)</b>	Approach, Forecourt	1.6
	<i>Piano Nobile</i> (East and South Ranges)	7
	Gatehouse (Rooftop)	1.6

**Appendix 5 - OFFSETA heights for viewshed analyses from vantage points at case studies and comparative sites**

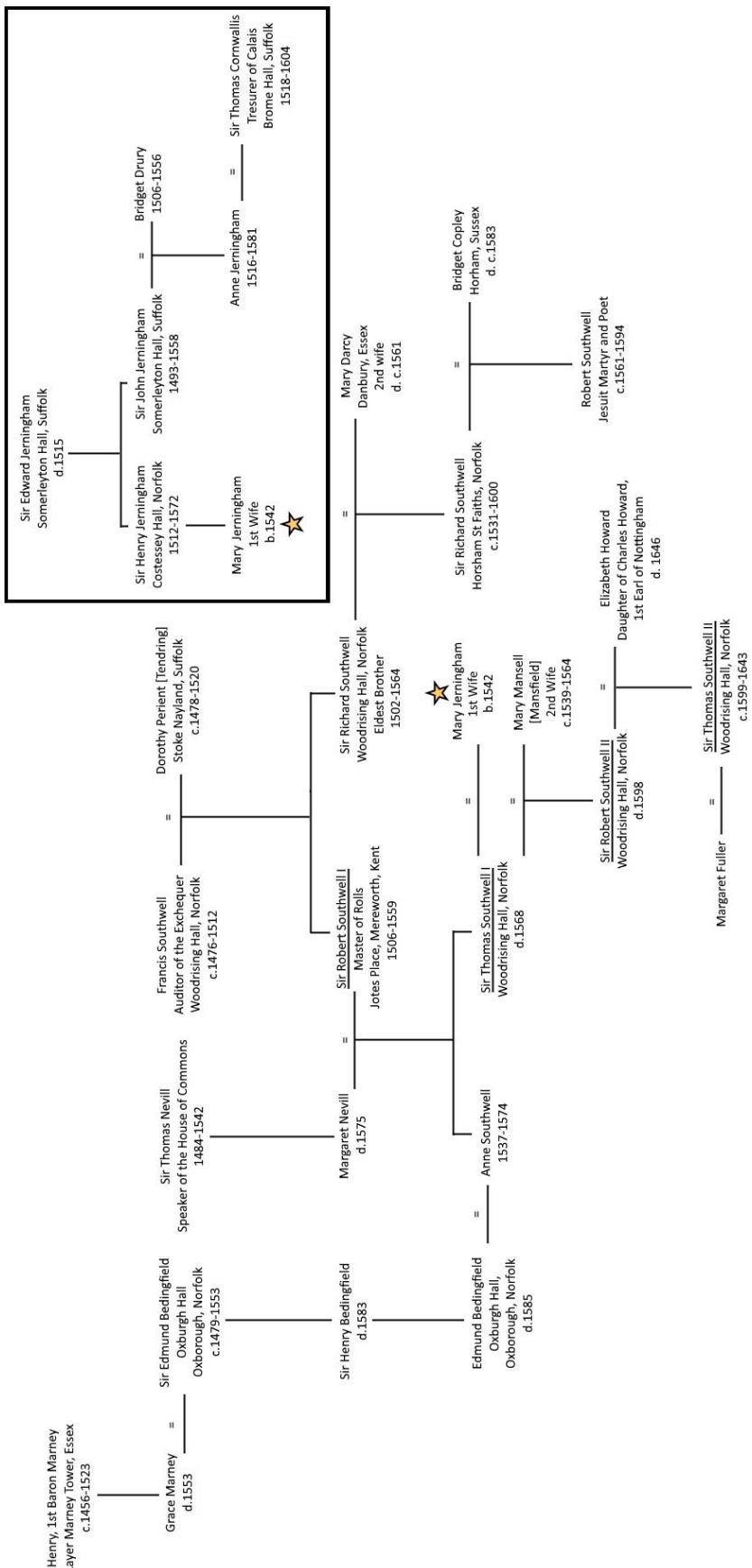
## Appendices - Family Trees



**Family Tree Appendix 1 - The Bacons including Cookes, Cecils and Greshams, with  
Lords of Stiffkey underlined**



**Family Tree Appendix 2 - The Mildmays including Fanes, with Lords of Moulsham underlined**



Family Tree Appendix 3 - The Southwells including Bedingfields, Cornwallises and Jerninghams, with Lords of Hoxne underlined