

Thetford Priory and the Reformation

Old Archaeology and New Science

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Abstract: 'Representing Re-Formation' is an ongoing interdisciplinary research project funded by the AHRC and EPSRC as part of the Science and Heritage Programme and it is centred at the University of Leicester (UK) with partners at Oxford University (UK), Yale University (US), English Heritage and the Norfolk Museums Service (<http://representingreformation.net/>). It is focussed on the tombs of the Howard Dukes of Norfolk – one of the most important families in 16th century Europe. Rebuilt in the 1550s at Framlingham Church, these tombs were originally intended for Thetford Priory, and represent some of the highest quality Renaissance sculpture in England. Excavations at Thetford in the 1930s revealed matching sculptured tomb fragments, beginning a train of research into the tombs and the burials of the Howards.

This project has many facets, one of which is re-interrogating the 1930s excavations. Where were the tomb fragments found and what does their location tell us about their fate before and after the Dissolution? More widely, what can excavations like these on religious sites (and there are very many in Britain) tell us about those few years of destruction and discontinuity - a fate which reached religious houses in much of the rest of Europe at a number of later dates? So far, the approach has been systematic, based on identifying finds, re-creating the 1930s excavations as far as possible and using the historic records.

Another part of the project has been the 3D scanning of both the tombs and the excavated objects. These scans are being used in an innovative way to disassemble the complex extant monuments; to understand how the fragments relate to them; to work out how the tombs may have originally appeared at Thetford; and why they were rebuilt in a different way at Framlingham. Nishad Karim is aiming to test different hypotheses of design and reconstruction for the project PI Dr. Phillip Lindley and under the guidance of co-I Professor George Fraser.

Keywords: Reformation, Scanning, Thetford, Framlingham

Introduction

The Cluniac Priory at Thetford (Figs. 1-2) is most famous for one thing: its connection with the earls and dukes of Norfolk, particularly the Howard Dukes, one of the foremost aristocratic families of their time. They were the patrons of the priory from 1475 until the Dissolution, and used its church as their burial place. After the Dissolution, some of the family were buried (or re-buried) at Framlingham church, 57 km from Thetford. This included Thomas, the 3rd Howard Duke, who died in 1554 and his son-in-law Henry Fitzroy, the Duke of Richmond, the only acknowledged illegitimate child of Henry VIII, whose body was moved from Thetford Priory church. These two tombs (Fig. 3) have long been recognised as foremost examples of Renaissance art in England. In June 1935, during the clearance of the newly state-owned site of Thetford Priory, fragments



Fig. 1 – Location of Thetford, Framlingham and Kenninghall within the east of England (Google earth)



Fig. 2 – Aerial photograph of Thetford Priory, looking north (©English Heritage.NMR)



Fig. 3 – Tombs at Framlingham Church: the top one is for Thomas Howard, the 3rd Howard duke of Norfolk (d. 1554) and the lower one is for his son-in-law, the duke of Richmond (d. 1536) (Photos: Jackie Hall)



Fig. 4 – Fragments found at Thetford Priory in the 1930s, similar to the tombs at Framlingham Church, currently in the care of the Norfolk Museum Service (Photos: Jackie Hall)

matching the tombs were found (Fig. 4). This started a train of research into the tombs and the burials of the Howards, with a paper in 1936 read by Lord Harlech to the Society of Antiquaries of London (EH Accession number 88107150); and papers in 1965 by Lawrence Stone and Howard Colvin, in 1984 by Richard Marks and in 1997 by Phillip Lindley (COLVIN and STONE 1965; MARKS 1984; LINDLEY 1997). It seemed apparent from the absence of mortar that at least one tomb had been carved ready for assembly at Thetford Priory but was not actually constructed. Marks' paper argued convincingly that the tombs had not been erected at Framlingham as they had been originally intended for Thetford, but included considerable new work, of the 1550s. He also argued that the fragments found at the priory represent not a missing third tomb, as postulated earlier, but parts from the original design. No image of the pieces or tombs exists from their manufacture in Thetford. For art historian Dr. Phillip Lindley, the Principal Investigator, and with the aid of using analytical physics techniques employed in space science, Nishad Karim is testing a number of hypotheses concerning the original design of the tombs under the guidance of Professor George Fraser. The beginning of that work is presented below, while Dr. Jackie Hall examines the archaeological context of the fragments found at the Thetford Priory and what this can add (if anything) to how we perceive the Dissolution – the most obvious disruption to material culture of the English Reformation, and which prompted the movement of the Howard tombs to Framlingham.

Archaeology

The church and claustral buildings of Thetford Priory (Figs. 1-2) were acquired by the Crown in 1930 and came into formal Guardianship in 1933. Within a year, clearance excavations had begun, continuing into early 1939, and then again after the interruption for war in the late 1940s and 1950s. As was usual for the time, excavations stopped at the highest medieval floor level, without any systematic recording at all of post-dissolution features, many of which were destroyed.

It was of some importance to discover more about those original excavations. Exactly where were the tomb fragments discovered, and what does this location tell us about the monuments? Do we know anything about other finds, and what can they tell us about the impact of the Reformation at Thetford?



Fig. 2 – Aerial photograph of Thetford Priory, looking north (©English Heritage.NMR)

Re-Interrogating the 1930s Excavations

The starting point was to assess the old archives. The Thetford archive is split three ways: the English Heritage Archives, formerly the NMR (National Monuments Record) holds numerous photos and plans; the curatorial side of English Heritage holds most of the finds, though many of these fragments are temporarily stored at the Space Research Centre (SRC), University of Leicester, for the duration of this project, and the original handwritten finds records from the 1930s, along with the drafts of an early guidebook and academic talks (Hall, forthcoming); the Norfolk Museum Service holds some of the finds, including all the best fragments of the Renaissance monuments, and also has a few photographs. We are grateful for the help of many people at these institutions, especially Jan Summerfield (EH curator) Oliver Bone (NMS curator) and the staff of the NMR. These archives have considerable value, and can inform, for instance, about now-lost or reburied features; consolidation and reconstruction work on the priory; and survival and deterioration over

the last 70 years (HALL forthcoming). For this paper, though, we are only going to look at the finds records (Fig. 5; EH Accession Number 88107135), and associated finds, since it is these that inform about the Howard tombs.

Metford Priory

Ref No	Description of Article	Revised	Position where found	Date of Finding	Present Destination	Final Destination
D IX 4. E III	2		Square fronted Chapel in South Transept.	10.5.35		Head office (1960)
C VII	12		Outside North Wall of Lady Chapel	22.6.35	On Site	
E IV	1		Sacristy	27.6.35		Head office
E IV	2		"	27.6.35		"
E IV	3		"	27.6.35		"
E IV	4		"	27.6.35		"
E IV	5.6		"	27.6.35		"
A VI			Outside East front of Lady Chapel	16.7.35		

Fig. 5 – One of the original 1930s finds sheets (Photo: Jackie Hall, with kind permission of English Heritage)

As well as brief description, date of finding and current and intended depository, the 1930s finds sheets have columns for the ‘Position where found’ and a reference number. Going through all twelve of the original sheets, it gradually became clear that the first part of the reference number (letter, Roman numeral) related to the find spot. For example, all the finds found in the choir had a reference beginning ‘C VII’ and most of the finds from the sacristy had a reference beginning ‘E IV’. Thus it was possible to recreate the grid used to excavate and label finds and, having done this, to refine the locations of the finds e.g. the finds from the nave north aisle had four different references, E VI, F VI, G VI and H VI – originally all put in the same place (the centre of the aisle), as the grid became clear they were positioned across the whole length of the aisle (Fig. 6).

The next stage was to identify the finds themselves. Knowing how the reference system worked, it was possible to realise the meaning of the pencil marks on some of the stone items i.e. the original 1930s identification system still partially survives. Other finds were identified by the descriptions on the original sheets e.g. ‘Piece of Masonry with 4 Images on’ is both clear enough and unusual enough to identify with the baluster shaft shown in Fig. 4, while ‘Tree Roots in Masonry’ at least ties it down to a group of matching fragments, one of which is shown in Fig. 8. The location spots of other pieces were identified through a paper read to the Society of Antiquaries of London on 31st January 1936 (EH Accession number 88107150). In many cases, though, pencil marks have been lost, the 1930s descriptions are too general (e.g. ‘Glass’,

‘Pieces of Pottery’ or ‘Carved Masonry’). In all, only c.20% of the items found in the 1930s collection have been positively identified with items in the current collections.

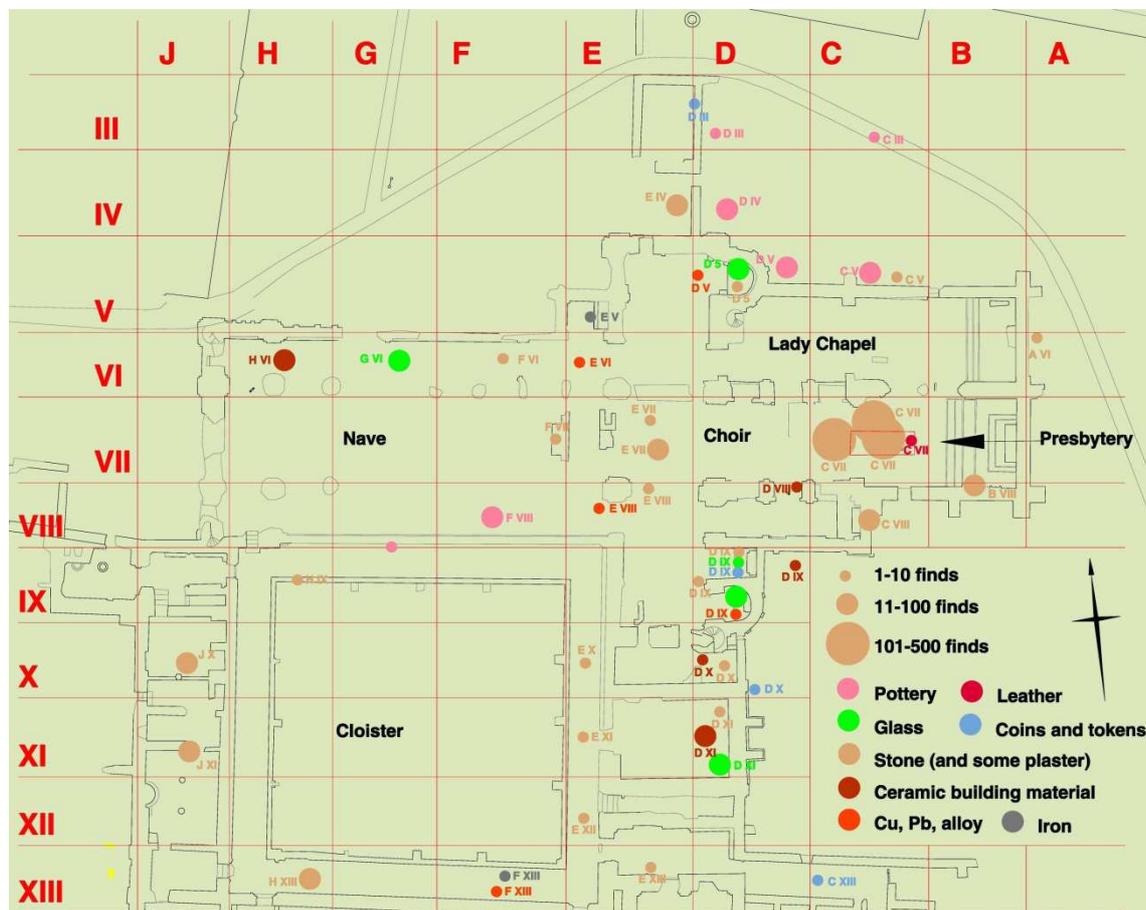


Fig. 6 – Reconstruction of the grid used to label the finds from Thetford Priory in the 1930s clearance excavations (Jackie Hall)

Seeing the Dissolution at the Priory

Given what we have, is it possible to specifically concentrate on activity at and just after the Dissolution? There are major methodological questions. What are we actually looking at? The records are almost certainly partial – witness the lack of post-medieval finds for instance. Is what we are looking at representative of a moment shortly after the Dissolution, or of a much longer period of destruction and decay? How does what we see relate to patronage and the last phases of the priory? What we cannot see in the pattern of finds is anything like a pattern of movement showing us how the monastery was carefully dismantled and then carted out in a particular direction, as has been hypothesised for Rievaulx Abbey, for instance (Susan Harrison and Richard Mason pers com, also MORRIS 2003 for other sites). However, particular aspects and particular finds do stick out, a very few of which are presented here:

Renaissance tomb fragments

These were found without mortar or other fixings, immediately north of the north transept, in ‘the sacristy’ (EH Archive 88107135 and 88107150). Although this area – of three interlinking rooms – is probably not the

sacristy as such (where church plate, vestments and service books etc are stored), contemporary references strongly suggest that it was the sacrist's office (MARTIN 1779, Appendix 50-51). Since the sacrist was often in charge of the building works in the church (as well as the liturgical arrangements and services), this does not seem an unreasonable place in which these very high class, expensive objects should be stored immediately before their planned construction, and after the disuse of the church, and before Thomas Howard had decided what to do with them.



Fig. 7 – Thetford Priory, the presbytery, looking east (Photo: Tom Arbour, detail)

Fragments from vault

The middle of the presbytery (Fig. 7) was occupied by the tomb of the 2nd Howard Duke, who died in 1524 and was famously buried with great pomp (MARKS 1984; Claiden-Yardley in prep). On 15th and 16th June 1937, the vault was emptied. No bodies were found there, but 495 'Images, pieces of tomb, carved, Gilded, and painted fragments' (48% identified). A few months later, the excavators recorded a further 401 pieces of stone from around the top (5% identified). These fragments range from Romanesque to late medieval and from fragments of effigy; screen (including the vine shaft fragments, one of which is shown in Fig. 8); fragments of statues of Mary and child and of St Peter; large and small heraldic fragments; and quantities of late medieval mullion and jamb fragments.

The lady chapel

Remarkably few finds were recorded from the lady chapel and this absence is accompanied by other evidence. Engravings show that a significant amount of walling survived well into the 17th century – probably until major losses were recorded in the 18th century (MARTIN 1779, 160); in the 1930s, a large section of stone and brick floor was found intact, although only a few years' exposure was enough to decimate it.

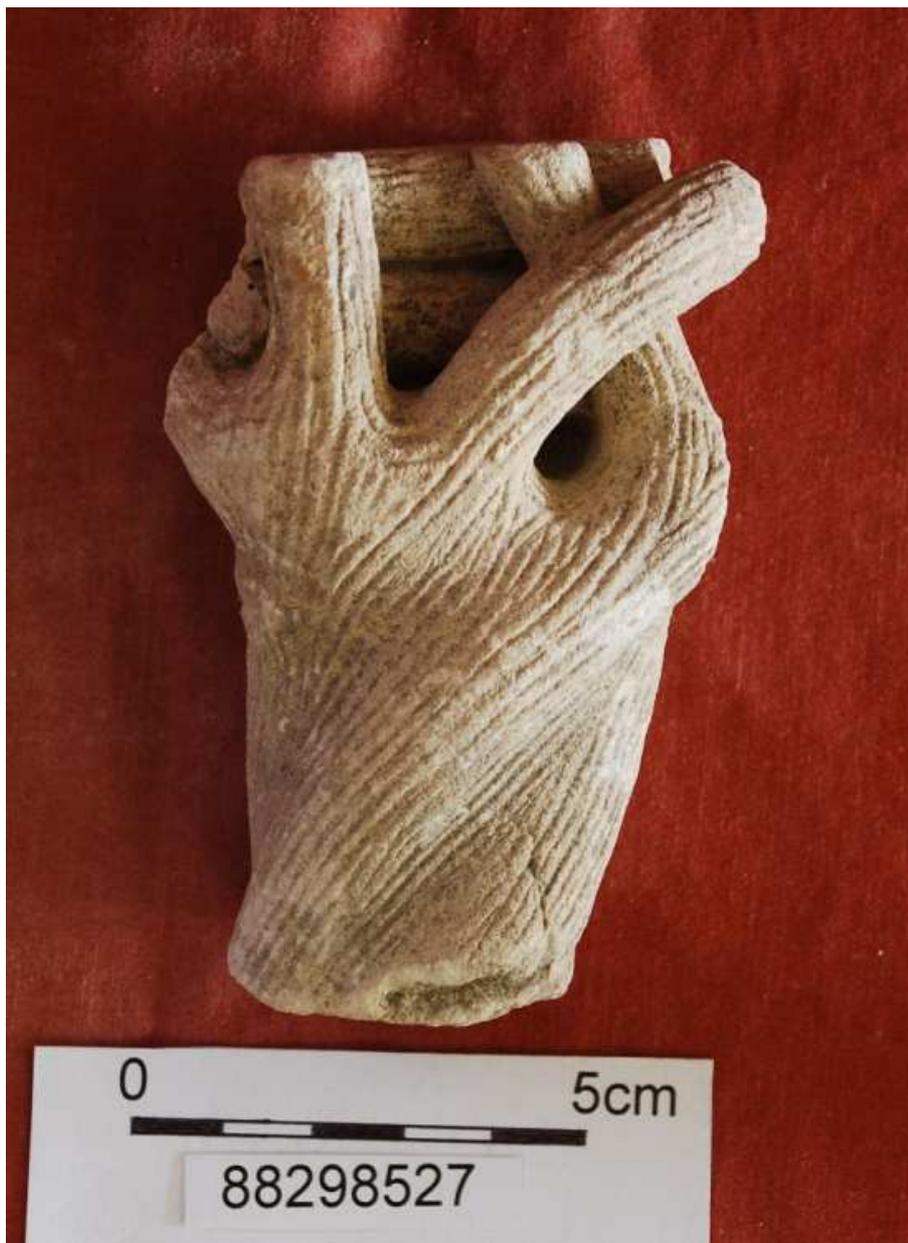


Fig. 8 – One of hundreds of delicate fragments found in the presbytery in the clearance excavations; here, a tiny piece of vine that wound round to make a hollow shaft (Photo: Jackie Hall, with kind permission of English Heritage)

Compared with the wonderful monastic ruins of Yorkshire, this is not much, but in stone-poor East Anglia, it could be read as suggesting that this area of the church was left roofed, tided and in use for a period. By the time the roof was lost, perhaps much later, the floor was already covered enough to protect it.

Making generalisations of any sort from this rather small and miscellaneous set of observations is speculative at best, but the sculpted tomb fragments show the clear involvement of the priory's patronal family very late in its life. The observations in the lady chapel strongly suggest that parts of the church stayed standing for some time. The vault gives us mixed evidence. It confirms what documentary evidence suggested (MARKS 1984, 254-5), that Thomas Howard's body was moved after the Dissolution with perhaps two stages of 'tidying up', the first represented by little-worn screen and tomb fragments and the second by

very worn and damaged tracery and other window elements. This again suggests that after initial damage, parts of the building stood for some time.

Another hint that the buildings were not immediately destroyed, despite a presumption that the new owners would slight the buildings (KNOWLES 1971, 384), comes from a 1547 heraldic survey of the church (MARTIN 1779, 162-4) in which it is clear that some of the ceilings (and hence the roofs) are still intact. Moreover, the new owner of the priory was its old patron, Thomas Howard, 3rd Howard Duke of Norfolk, head of a family that, in fact, never converted from Catholicism. He had already tried to rescue 'his' priory and burial place from Dissolution by Henry VIII, resulting in it being one of the very last religious houses in England to go, as late as February 1540.

The Dissolution in Thetford

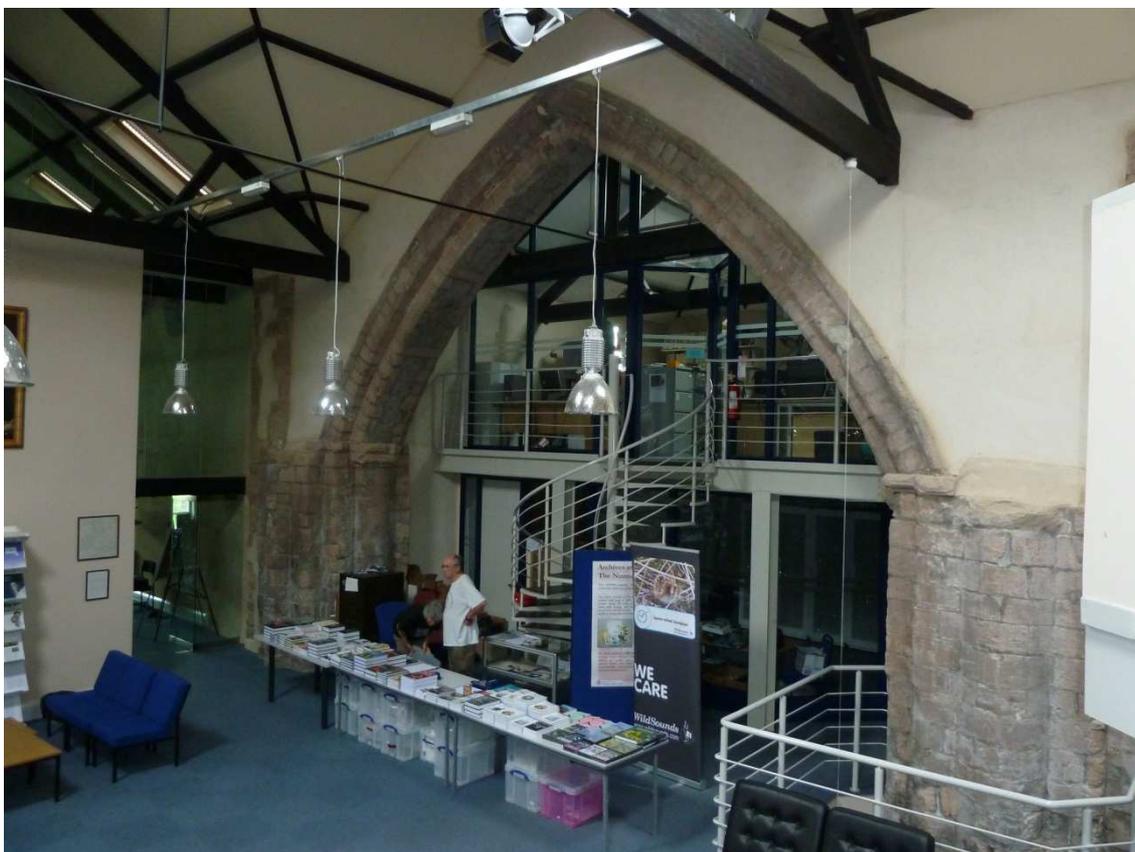


Fig. 9 – Thetford, St George's Nunnery, interior of church, looking south-east (Photo: Jackie Hall, with kind permission of the British Trust for Ornithology)

There were four other major religious houses in the town of Thetford (not counting the hospitals and colleges), and all of these came into the ownership of Richard Fulmerston, a close associate of the Howard family (DYMOND 1995-6, 59). There is evidence to suggest that these houses also escaped immediate damage (for comparisons see HOWARD 2003). A convincing case has been made for the chancel of the Dominican friary (also called Thetford Priory) surviving into the 17th century (NORTON et al 1987, 92-5). Very little is known about the fate of the Austin friary, but we know that Fulmerston preserved the churches

of the other two religious houses he acquired: the church of the canons of the Holy Sepulchre, which was in use as a barn in the 18th century and the church of the Benedictine nunnery of St George, turned into a house ('The Place') and now the home of the British Trust for Ornithology (Fig. 9).

Thus, the immediate preservation of the churches of the religious houses of Thetford following their dissolution may be intimately connected with Howard patronage: patronage both of the priory and personal patronage of a family friend, just as the preservation of the tombs was also due to the Howard connection.

Tomb Scanning and Disassembly

The tombs and the fragments of the tombs are in many places. The extant tombs are in Framlingham Church, as described above, but each contains work of at least two different phases (MARKS 1984; LINDLEY 1997). The loose pieces, found at Thetford Priory can be found in three different museum stores and two different museum displays in southern and eastern England (with more temporarily at the Space Research Centre, University of Leicester). As the tombs cannot be taken apart all manipulation has to be carried out in a virtual environment, under the direction of Dr. Phillip Lindley.

3D Scanning

3D scanning is where a digital three dimensional virtual image of a 3D object is created by scanning surface data of said 3D object. It is a technique developed for surface mapping but has recently been used in archaeological work and art preservation as it is non-destructive e.g. BROWN et al 2008; LEVOY et al 2000. In a virtual environment 3D models can be created of both the tombs and fragments via scanning, allowing for accurate reconstructions to be formed by fitting the tomb and fragments together much like a giant 3D jigsaw, without any further damage to them. Ideally, one system should be used to scan both tombs and fragments, allowing for the same specifications to be met for both.

There are numerous techniques by which a 3D model can be created and multiple apparatus are available on the market. The type of scanner required depends on the size and resolution of the object being scanned as well as other factors, such as budget. The best known methods for 3D scanning include laser, photogrammetry, white light interferometry and structured light interferometry. Each method has advantages and disadvantages depending on the specifications required for scanned surface. Laser scanners were chosen due to the high level of resolution achieved and the ease with which a single system could be employed to scan both large and small objects at awkward angles.

In June 2011, an external company, Europac3D, was employed to scan and process both the tombs and fragments. A Perceptron laser scanner with a V5 laser head mounted onto a Romer Absolute 2 m arm was used, obtaining a point collection rate of 458,000 points per second and point accuracy of 4.5 microns, giving a far greater resolution than the required 0.2 mm (WS 1). The scan data collected was then aligned and post-processed using PolyWorks (WS 2), a specialist reverse engineering software, to create watertight models of the scanned tombs and fragments. An example of the high resolution achieved can be seen in Figure 10, which shows a small masons mark on the 3rd Dukes tomb barely visible by eye, however clearly visible on the scanned image.



Fig. 10 – Masonry marks found on the South side of the 3rd Howard duke of Norfolk's tomb. The mason marks are very difficult to view by eye as can be seen in the left and middle photo, however the mark is picked up easily on the scan data. (Photos: Nishad Karim)

Disassembly

The tomb of the 3rd Howard Duke of Norfolk and that of the Duke of Richmond have been constructed out of hundreds of small, individual carved blocks. The block boundaries can be seen on the tombs when closely inspected by eye, and measured drawings were made by Dr. Lindley and architectural artist Jill Atherton to aid this.

The virtual tomb models were to be disassembled block by block, as requested by Dr. Lindley. This work was completed using the already available Siemens NX (WS 3), specialist comprehensive CAD forward engineering software designed to work with mass databases and multiple part assemblies, such as the tomb blocks and fragments. Each block was manually cut from the scanned tomb models using the visible block boundary lines on the tomb. The results of this can be seen in Figure 11. With the tomb segmented, disassembly and reassembly work could begin prior to a virtual redesign of the tombs. However this work is not discussed here.



Fig. 11 – An exploded view of the disassembled East side of the 3rd Dukes tomb. Created using Siemens NX

Other Work Using 3D Scans

Although the overall aims of this project centre around reconstructing the Framlingham tombs, the disassembled models have also been used in other ways, including:

Solid Models

With the tomb models segmented, rapid prototype models of the individual blocks can be made allowing for tombs' structure hypotheses to be visualised in a more tangible way. A single tomb panel from the 3rd Duke's tomb has been rapid prototyped using the Physics and Astronomy department's Dimensions Elite 3D printer (WS 4) using plastic ABSplus thread (Fig. 12). The selected panel was cut from the scan data and manipulated using a mixture of MeshLab (WS 5), Netfabb (WS 6) and Blender (WS 7). Netfabb is a scan merging software similar to MeshLab. Both MeshLab and Netfabb were used to check and remove any physical holes or peculiarities in the model, such as non-connected faces, where a random polygon face appears, that does not fit onto the model surface. Blender is open source software used to extrude the surface body of the panel so that it has a depth associated with it, as it would otherwise be a depthless surface skin. Once a watertight model was achieved, the model was printed successfully.



Figure 12 – Plastic rapid prototype model created using scan data of the central panel on the east side of the 3rd Duke's tomb. Scale bar at the bottom represents 5 cm.

Weight and Transport

It is of particular interest to the project to estimate the weights of the individual tomb panels for transportation purposes. As physically deconstructing the tombs to find the individual panel weights is not possible, the scanned models of the individual blocks can be used to determine the volume of the chosen piece by creating solid models. As the block depth is unknown, without deconstructing the tomb, an estimate of the depth is found by measuring similar deconstructed blocks. As pointed out by Dr. Lindley, two examples of such blocks are at the British Museum depicting the bust of a king and prophet (MARKS, 1984, plates XVII-XVIII). The thickness of both panels was measured by Dr Lindley and found to be ~9.5 cm. Using this as a basis for the depth of the Framlingham tomb blocks, solid body models of the largest panels, the apostles, on the 3rd Duke's tomb were created, via blender, and their respective volumes calculated, via netfabb software. By estimating the density of the stone used for the tombs construction, in this case limestone (density ~ 2000 kg/m³), the weight of the big apostle panels on the 3rd Duke's tomb were found to

be ~ 90 kg. Although this makes the panels heavy, it is still possible to transport blocks of this size across the given distance. Further work has to be done on this.

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