Hulton Abbey Skeletal Digitisation Project

JISC / Academy Distributed e-Learning (DeL) Programme II

EXCAVATIONS AT HULTON ABBEY, STAFFORDSHIRE
1987–1994
WILLIAM D KLEMPERER
and
NOEL BOOTHROYD

THE SOCIETY FOR MEDIEVAL ARCHAEOLOGY MONOGRAPH 21
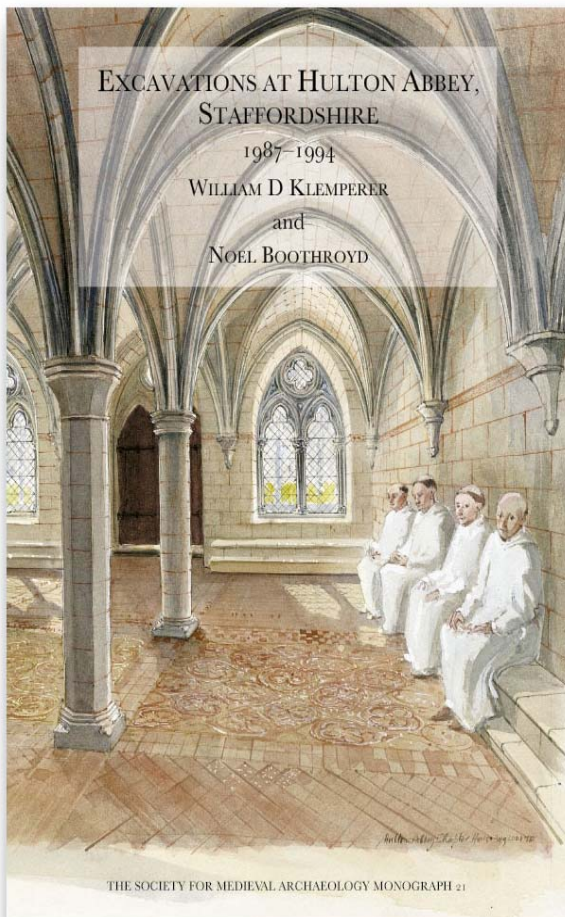
H A S D i P

The Hulton Abbey Skeletal Digitisation Project.

A Project by

Professor John Cassella
Department of Forensic Science
Faculty of Science
Staffordshire University
Mellor Building
College Road,
Stoke on Trent, ST4 2DE

in collaboration with

Dr Mary Lewis[1], Mr Roger Brown [2] and Mr Paul Lucking[3]

[1] Lecturer in Archaeology
Department of Archaeology
School of Human and Environmental Sciences
University of Reading,

[2] Senior Lecturer in Photography
Faculty of Arts, Media and Design
Staffordshire University

[3] Senior Lecturer
Entertainment Technology
Faculty of Computing, Engineering and Technology
Staffordshire University

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Project summary

Introduction

The aim of this project was to produce a digitised record/resources from skeletal material recovered from a well publicised excavation of historical importance in Stoke-on-Trent, Staffordshire. This excavation took place at Hulton Abbey and produced a published book as part of its work. Whilst the initial aim of this project was to produce digitised resources which will be actively used for forensic science teaching at Staffordshire University and Reading University these can equally and readily be adopted by other organisations and institutions. In addition, due to the interdisciplinary interest in this work, the potential for re-purposing and re-use of these digitised resources is enormous. Due to the anatomical nature of the skeletal excavations there is potential for use in anthropological and biological (e.g. disease) studies and there is also historical and religious sociological and cultural applications as well as in photographic studies, computing and e-learning technologies..

Excavations at Hulton Abbey, Staffordshire 1987-1994

Hulton Abbey was a minor Cistercian monastery in North Staffordshire (England), founded in 1219 and finally dissolved in 1538. The final report on the archaeological excavations undertaken there between 1987 and 1994 was published as a book in 2005. In particular, the chapter house was uncovered and re-assessed and the eastern part of the church and north aisle were completely excavated, together with the eastern half of the nave. The excavations are described by area and chronological phase with detailed specialist reports including architectural stonework and decorated floor tiles. An extensive programme of sampling and analysis of pollen remains from burials was also completed. The remains of 91 individuals, mainly men but also women and children, are reported on in detail, with sections on abnormalities and pathology as well as medieval burial goods such as a wax chalice and wooden wands.

Comparisons with other published monastic sites in the region help to place Hulton into a wider context.

An important element of the project was education and community involvement and today the site lies in a small urban park in Stoke-on-Trent.

The skeletal digitisation project will allow the skeletal material excavated from Hulton Abbey to be systematically and fully photographed and when appropriate, video recorded.

Once this has been achieved, the images and video clips will be catalogued.

Classification will be by:
    Bone type
    Age
    Sex
    Pathology

……..and as many other variables as are considered necessary. Scales will be included as far as possible so that measurement from photographs and video footage may be made

This cataloguing should allow comparisons and examination of the skeletal material in a full and precise manner so as to make it helpful and pedagogical useful for a variety of undergraduate and post graduate students.

The skeletons are to be used by educationalists to disseminate findings about the people that were buried at Hulton Abbey. The digitised *virtual catalogue* will allow the skeletons to be examined by a wider audience, whilst preventing the unavoidable damage that occurs when handling such friable material and should ensure the skeletons live-on for many years after their physical manifestation ends.

Funding was requested to allow a pilot study to develop a full and systematic photographic recording of the skeletal and subsequently, the electronic cataloguing onto an appropriate software package.

Educational application

The primary partner for this bid was Staffordshire University (Professor John P Cassella) who is a Principal Lecturer in Forensic Science in the Faculty of Science. He is in partnership and assisted by expert colleagues in photography, computing and archaeology. Staffordshire already has established links with the University of Reading Archaeology Department, for using the actual skeletal material. However this project is of particular interest to the educational world as it will ensure a digital preservation of the material for their future.

Forensic science is a relatively new and emerging discipline within the physical sciences arena and as such, the Physical Sciences Subject Centre has sometimes been restricted to offer resources to a discipline which is quickly expanding. This project will provide initial resources that may be utilised by the whole forensic science community and further afield. In addition, there is great potential for wider use of the resources and therefore this project has the potential for offering great educational impact.

Due to its potential for educational use in forensic science The Physical Sciences Centre supported Staffordshire in the development of the digitised resources. As part of the project, extensive dissemination to other disciplines/subjects about the methodology of making and using such digital resources of such digital resources has been undertaken.

Currently there appears to <u>no</u> be obvious and publicly available resource of this kind

There was clearly an opportunity to develop a valuable resource and also to have the added value of preserving the existing skeletal material that is very delicate and friable. There are some resources available to the archaeology community, but nothing of the scope that this project aimed to achieve.
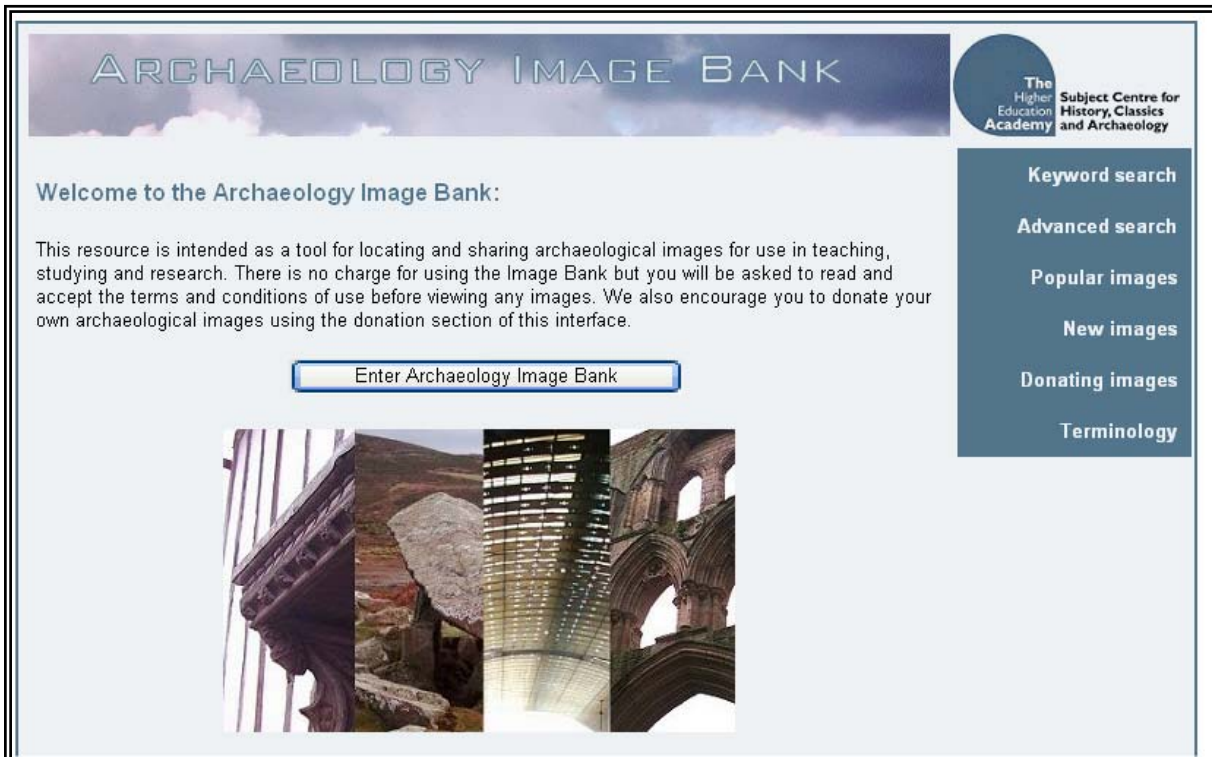

There are digitised databases such as http://ads.ahds.ac.uk/learning/image_bank/ which is Created and hosted by the ADS/AHDS Archaeology for the Higher Education Academy for History, Classics and Archaeology, the Archaeology Image Bank is intended as a tool for locating and sharing archaeological images for use in teaching, learning and research. The Image Bank allows users to search for archaeological images to use themselves, for example as PowerPoint slides, and also encourages them to submit their own images to the bank for others to use. However these do not include skeletal material and so this project will add to this knowledge bank

such practices.

12.8 Decapitation

Recording of decapitated skeletal remains is relatively straightforward if it is clear that the head was removed prior to burial. However, sometimes the cervical vertebrae have been severed but the skeleton is in

Figure 17 Non-human bone showing breakage patterns associated with butchery. Note the concave surface on the near end. Such patterns are useful for comparison with perimortal trauma in human postcranial bones (illustration by Caroline Needham and reproduced by permission of Dr Ingrid Mainland).
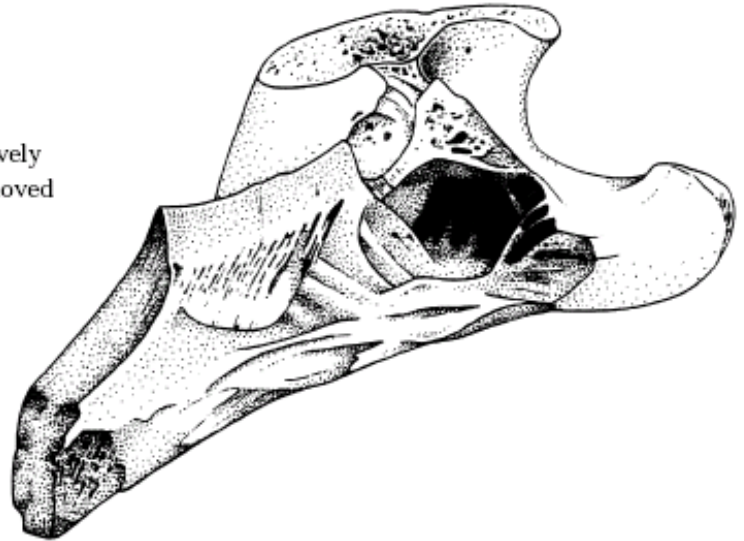
12.9 Conclusion

In summary, the recording of weapon trauma on bone is far from being a straightforward procedure and it is important for the historical record that it is not over-recorded since some lesions can be difficult to distinguish from post mortem breakage. Many cemeteries – particularly medieval – are found to contain at least one or two cases of healed or unhealed weapon-related trauma and it is, therefore, crucial that we familiarise ourselves with the subject.

Hulton Abbey Skeletal Digitisation Project

The information shown in the two image boxes on the previous page, demonstrate the importance of correct recording of skeletal trauma wounds. This is one of the key outcomes from this current project which allows greater details than ever before to be visualised on the skeletal material photographed and measured and recorded.

The drawing showing the breakage patterns associated with butchery exemplify the problems of attempting to record something as subtle as small injury marks on bones that have been in the ground for many years and hence subject to post-mortem wear.

The project shows that more detailed information in and on the skeletal remains can be recorded and demonstrated than previously thought possible. This data can subsequently be easily measured and quantified.

Compare the decapitation image (drawn) above to the photograph showing decapitation by cutting through the cervical vertebra (above)

Project Learning Outcomes for Users

For this project to be a successful, not only is the permanent preservation of the friable skeleton paramount, but so too, is the use of the digital resource by a variety of users for their *own* particular learning outcomes.

Ideally, those who utilise this digitised resource for their own purposes will have set learning outcomes which generically could include:

1. Understand and undertake the methods of producing accurate archaeological/anatomical drawings/photography
2. Understand and apply the requirements of archaeological/anatomical recording procedures.

In addition, the following transferable skills could be developed and enhanced:
Critical thinking

1. Team working and independent working
2. Communication skills, written and oral
3. Observational skills
4. Problem solving skills
5. Recognition, description and reporting skills
6. Accuracy in working and reporting
7. Analytical and practical skills
8. Numerical skills.
9. Enhanced visual literacy in the making, understanding and interpretation of forensic photography.

Feedback from Academics and Students

Feedback will be gathered over the next 12 months and added to this report under this section

Dissemination Opportunities

There are a number of primary dissemination opportunities which could elicit a great deal of interest in the use of this material across a diverse range of users.

Some of these dissemination opportunities include:

1) FORREST (**For**ensic **Res**earch and **T**eaching) conference July 2009 at the Liverpool John Moore's University (This conference is run in conjunction with HEA Physical Sciences Centre).

2) The 'Science Learning and Teaching Conference' organised by *Higher Education Academy* Physical Sciences Centre – Herriot Watt University 2009

3) Uploading of materials onto JORUM (see data box below)

4) Used in teaching for students on the BSc (Hons) Forensic Science programmes at Staffordshire University and the University of Reading

5) Used in teaching by/on BA (Hons) Photography

6) Within the biological anthropology international community to the BRITISH ASSOCIATION FOR BIOLOGICAL ANTHROPOLOGY AND OSTEOARCHAEOLOGY annual conference, Oxford, 2009

7) Archaeology Image Databank

   (http://ads.ahds.ac.uk/learning/image_bank/)

An Introduction to Jorum

Fact Sheet
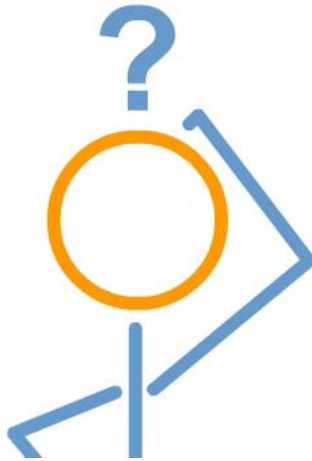
An Introduction to Jorum

Jorum is a free online repository service for teaching and support staff in UK Further and Higher Education Institutions, helping to build a community for the sharing, reuse and repurposing of learning and teaching materials.

Summary

Jorum is a JISC[1]-funded collaborative venture in UK Higher and Further Education to collect and share learning and teaching materials, allowing their reuse and repurposing. Jorum stands as a national statement of the importance of sharing, and there are two strands to the service:

Jorum Contributor – "Putting resources in"
This is open to any institution or publicly funded project team that wants to share their learning and teaching materials with colleagues in the UK. Jorum hosts materials that have been publicly funded and also materials developed within institutions.

Jorum User – "Getting resources out"

The User Service provides access to the shared repository of resources. Teaching and support staff in institutions that take this service will be able to find, preview, download, reuse and repurpose materials for use with learners in their institution.

They will also find teaching support and staff development materials to assist them in using the learning materials with students.

A research and development strand runs in parallel with the Jorum Services in order to ensure that Jorum keeps up with the evolving repositories landscape and expanding user requirements.

What is Jorum?

The Jorum repository offers a searchable online collection of learning and teaching resources for use by academic and support staff in the UK. Jorum contains information about resources, i.e. "metadata", and in most cases the resources themselves. The resource metadata allows users to search or browse for resources using specific educational classification systems, vocabularies and keywords. Jorum uses a repository system called intraLibrary, procured from Intrallect Ltd[2].

Who is managing Jorum?

Jorum is an online service offered by the JISC-supported national data centres, EDINA[3] and MIMAS[4]. The data centres offer 24/7 infrastructure, servers, security and management of data, and technical operational support, along with registration, user support, helpdesk, training, and documentation services.

[1] Joint Information Systems Committee http://www.jisc.ac.uk

[2] Intrallect Ltd http://www.intrallect.com

[3] EDINA national data centre, University of Edinburgh http://edina.ac.uk

[4] MIMAS national data centre, University of Manchester http://www.mimas.ac.uk

[5] JISC Information Environment http://www.jisc.ac.uk/ie/

[6] Contributor Corner http://www.jorum.ac.uk/contributors/cregister/

[7] Jorum JISC Collections http://www.jisc.ac.uk/coll_jorum.html

How will Jorum be used?

Teaching and support staff in UK F/HEIs can access Jorum FREE from computers with web access. Users can then browse and search for resources, preview and export them for use locally within the institution, via their Virtual Learning Environment (VLE), Learning Management System (LMS) or intranet.

What is available in Jorum?

Jorum hosts learning and teaching materials of all kinds, ranging from simple single-file assets and links to external resources, to more complex learning objects such as structured content packages. Content is collected from a number of sources, including publicly funded projects and individual institutions.

Resources are dependent on contributions to the repository by the community, but will broadly include:

Learning Resources

Resources that teaching staff can use with learners, in blended learning, classroom or online learning activities. Examples include single assets (documents, images, video clips, diagrams) or more comprehensive learning objects (interactive units made up of several elements such as images, text and self-assessment exercises). Resources cover a broad range of subject areas, at educational levels across FE and HE.

Teaching Resources

Resources of this type support teaching staff in doing their job. Examples include tutor guides, lesson plans, schemes of work and staff development materials.

Jorum Vision

As a JISC funded "Service-in-Development", Jorum has been developed to be a component of the JISC Information Environment (IE)[5] and interoperable with other services within it. As such, Jorum will be one component of a distributed network of repositories, and will be free indefinitely at the point of use for staff.

Jorum will provide long-term access to publicly funded project outputs. In addition, Jorum will also offer the facility for any institution or project that wishes to store its learning and teaching resources in Jorum, as long as it is willing to share with colleagues in FE and HE across the UK.

Jorum will promote the sharing, reuse and repurposing of resources for the long–term, supporting individuals, teaching teams, collaborative groups and communities in the development and sharing of these resources.

Licensing

Contributing Institutions complete and return the Jorum Deposit Licence[6] in order to submit resources to Jorum. Institutions sign up for Jorum User through the Jorum JISC Collections site[7], this allows access to the resources.

Contact

Website www.jorum.ac.uk
Email support@jorum.ac.uk
JORUM-UPDATE Mailing List http://www.jiscmail.ac.uk/lists/jorum-update.html

Appendix 1
A Report on photography made at Reading University, Department of Archaeology
in association with Dr Lewis

Author – Roger Brown

Summary

1. The 660 digital photographs made in controlled studio conditions demonstrate the feasibility and value of the digitisation project; in particular the ability to:

   - Reveal new information about the pathology of the skeletal remains.
   - Reveal in greater clarity known details about the pathology.
   - Reveal details not seen before about the pathology.

2. 660 exposure bracketed photographs were made of the whole remains of 1 skeleton, and the skull and jawbone of a second skeleton.

   - The exacting nature of the record photography proved surprisingly time consuming, resulting in fewer skeletons being photographed than the 3 specimens originally envisaged.

3. The Nikon D80 digital camera and lenses used proved suitable.

4. The Bowens Gemini 500 Digital electronic flash lighting units used proved suitable.

5. The Apple MacBook Pro G4 laptop and Apple Aperture vs.1.5 image management software used proved suitable.

6. 99% of the photography was made at or near 1:1 macro levels of magnification. This revealed a critical lack of precision in the working of anciliary equipment such as

the camera tripod, artefact supports, measuring scale supports. Here small incremental adjustments are necessary to achieve reliable and consistent results. The lack of precision caused time consuming delays but is easily remedied for the future.

The skeletons photographed are:

Skeleton 1: HA 16, attributed to *'Hugh le Despenser the Younger'.* This partial skeleton shows evidence of the individual having been executed by being drawn, hung and quartered.

Skeleton 2: HA 94, no known attribution. The skull and jawbone only of a robust male showing post mortem damage to the left forehead.

Shot selection methodology.

Dr Mary Lewis advised on the skeletal artefacts to be photographed. We discussed and labelled each object and the pathologies they exhibited that needed to be seen in the photographs.

I subsequently called on Dr Lewis for further advice as needed. We reviewed the photographs together on the laptop as the photographs were made and she advised further on what could be improved to reveal their pathology, what could usefully be re-shot, and patiently corrected what I may have thought valuable evidence but was not necessarily so because of my forensic inexperience, e.g: the difference between 'wet bone' pathology and post-mortem damage and degradation.

Photography protocol.

1. All the photography was digital (not film analogue and subsequently scanned).
2. The photographs were made using a standardised production, lighting and exposure regime.
3. The lighting technique used was relatively low angle *contra-jour* modified with soft boxes and supplementary reflectors. This technique produces controlled specular highlight reflections and defined shadows that together reveal fine details, cuts, lesions, fractures, abrasions, surfaces and textures in the bone morphology.

4. All the photographs were made in RAW format (Nikon NEF-RAW) @ 100 ISO and *f*22 to maximise depth of field and manually (M) composed, focussed and exposed. The objective was to produce an archive of detailed record photographs containing the maximum raw data achievable with the equipment used.

5. Exposures were bracketed using the digitally controlled switching on the Bowens Gemini digital electronic flash lighting units in 1/10th stop increments.

6. No in-camera image modifications such as 'image sharpening' were used.

7. Further image enhancement, meta-tagging and management was confined to a post-production process using suitable software such as Apple Aperture vs.1.5 (or Adobe Photoshop CS3 or similar).

8. In-camera controls were limited to a simple sequential exposure numbering system cross referenced to a separate written log made simultaneously. All other camera settings and custom settings were set to the manufacturer default settings.

9. The written log allowed later cross referencing and means of checking the subjects.

10. All the photographs were made with a black background and auto white balance.

11. The photographs were downloaded each day to a separate folder, one for each day's production. Each folder was meta-tagged post-production using Apple Aperture vs.1.5 software and archived in the Aperture Library on the laptop hard drive.

12. Each tagged folder was subsequently archived onto separate DVD discs and to a Lacie 80Gb external hard drive, thus providing 3 levels of archival storage.

Photography equipment.

Camera: Nikon D80

Prime Lens: Nikkor 60mm *f*2.8 AF Micro-Nikkor D

Supplementary lens: Nikkor DX E GD 18mm-135mm AF-S zoom. (Used only for whole skeleton photographs.

Trigger:

Nikkor MC-DC1 tethered remote release.

Although classified as a "Pro-sumer" rather than a fully "Professional" camera by the manufacturers the D80 proved adequate to the use and purpose. The principal lens used was the Nikkor 60mm *f*2.8 AF Micro-Nikkor D at ca. 1:1 image magnifications. The lens resolution and sharpness appeared very good and suitable to the purpose being free of distortion and colour aberrations, revealing fine detail and details hard to see or invisible to the naked eye. The 60mm focal length (90mm equivalent on 35mm) is sufficient to produce images free of perspective distortion at close magnifications whilst allowing an object to lens working distance sufficiently great for tailoring the lighting to suit. It is a 'sweet' lens although the manual focus is a little coarse compared to an equivalent Nikkor non-autofocus lens but acceptable with care.

Lighting:

Bowens 500 Gemini Digital monolight electronic flash units of 500 watt/seconds maximum output. Supplied as a manufacturers kit of two units with softbox, umbrella and stands. I used them with a variety of supplementary reflectors and light shaping tools. The units are designed specifically for use in digital photography and their power output with the modifiers used proved sufficient to light images made at 100 ISO, *f*22, at between a 5 – 10 feet light to object working distance. Apart from a modelling light failure and an inconsequential colour and exposure drift as the new units 'bedded-in' the units proved very suitable to the purpose.

Laptop:

Apple MacBook Pro G4, configured to Adobe 1998 ICC profile at 1.8 gamma, 3Gb RAM and running Apple Aperture vs.1-5 Image management software. Each day's photography produced a file of approximately 1.8Gb of images. The laptop and software was stable and easy to use. Although not used tethered to the camera, the ability to download and view the images is easy to achieve. As a professional photographer I find the Apple Aperture software

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intuitively 'photographic' rather than 'graphic'. Reviewing the images is simplicity and subsequent meta-tagging and management easily done.

Context:

A black background was chosen to photograph the objects against for:

- Aesthetics and ease of viewing for the DVD user.
- Contrast, with the viewer's attention concentrated on the objects and their details more easily seen without background distractions.
- To avoid unwanted colour casts in the shadow regions of the objects.
- Ease of post-production enhancements, additions and manipulations of the images, for example over laying text.

Appendix 2
A Report on software development – Mr Paul Lucking

Adobe Director was used with plug-in technology from INM (Integrated New Media) to build a cross platform capable delivery system. This allowed access to high quality document data through a database driven architecture. Due to the high quality nature of the document data media delivery is facilitated on a DVD-Rom. Steps were taken to ensure a minimal amount of manipulation to the original photographic image data to ensure that their quality was not compromised, followed by the process of conversion into searchable Acrobat documents that can be protected to prevent access outside the main interface.

A Traitors Death - The identity of a drawn, hanged and quartered man from Hulton Abbey, Staffordshire – Dr Mary Lewis
Antiquity 2008 82 113-124.

The full published paper may be found using the citation above

A Traitor's Death? The identity of a drawn, hanged and quartered man from Hulton Abbey, Staffordshire

Mary E. Lewis

Department of Archaeology, School of Human and Environmental Studies, University of Reading, Reading, Berkshire RG6 6AB UK (Email: m.e.lewis@reading.ac.uk)

Introduction

The disarticulated skeletal remains (HA16) of a mature adult male, around 5 foot 8 inches in height (178 cm), were uncovered during the 1970s excavation of the Cistercian monastery of Hulton Abbey, Staffordshire (AD 1219-1538). Hulton Abbey was a relatively poor estate owned by the Audleys of Heleigh whose family rose to prominence in the courts of Edward I and Edward II. In the original report of the site (Wise, 1985) it was proposed that the skeleton had been disturbed from its original coffin burial after the dissolution, and was re-deposited, along with some bones of an adult female, near a post-medieval well in the Chancel area (Figure 1). The location of the remains suggests that they belonged to a wealthy member of the congregation, and potentially, to one of the Audley family (Wise, 1985). The bones of this individual are remarkable because they display numerous perimortem cut marks throughout. Browne (2004) has suggested that the cut marks are battle injuries and that additional cut marks were added when the body was 'divided' and boiled to allow for its transportation back to Hulton Abbey for burial. A re-analysis of the remains suggests that in fact, the body had been quartered; a brutal form of execution reserved for the most notorious of criminals. This has led to a new

investigation into the possible identity of the remains, and the first osteological description of the lesions associated with this practice.

Distribution of cut marks

The distribution of the cut-marks on HA16 can be seen in Figure 2. The skeleton comprised an almost complete set of spinal vertebrae, from the third cervical (neck) vertebra to the second lumbar (L2), right and left arms and shoulders, right femur, left and right lower legs. The ribs were poorly preserved and the sternum was not recovered. There were some fragments of the ilium, and one pubic symphysis, suggesting that the pelvis had been included in the burial. No hand or foot bones were linked to this skeleton. Although no skull was present, cut marks on the third cervical vertebra (C3) of the neck indicate the individual was beheaded (Figure 3). Additional cuts marks on the right superior facet of C3 indicate that further slices were necessary to completely remove the head. Although badly eroded postmortem, the next vertebrae (C4 to C6) appear normal. A smooth depression on the superior aspect of the seventh cervical vertebra, triangular in shape and measuring 9.8mm by 5.9mm, indicates that the individual was stabbed in the throat (Figure 4). It is not possible to know if this happened before or after the beheading, but the fact that following first thoracic vertebra (T1) is not affected suggests that this was not a provisional wound made at the start of quartering. A further possible stab wound is located in the right inferior margin of L2 suggesting that the victim had also been stabbed in the stomach (Figures 5 and 6).

The normal process of this type of execution involved evisceration; where the intestines were removed and burned in front of the crowd. This would have meant cutting through the soft tissue of the belly, and is unlikely to have left any cuts on the bone itself. Sectioning of the body is indicated by the division of the second and third thoracic vertebrae along the sagittal plane (vertically) which ceases at T4, with no further cut marks until T11, with T11 to L2 again cleanly cut along the sagittal plane (Figure 7). Notably, the first lumbar vertebra (L1), positioned just above the pelvis in life, also displays a horizontal (transverse) cut, suggesting that after the vertical division, the body was chopped in half (Figure 8) and the entire thorax treated as one section.

Both hands have been removed, with the left radius (lower arm bone) cut further up the wrist than the right. The left radius also displays two small hesitation marks along the shaft, which are in the wrong position to constitute parry or defence wounds, but may suggest an attempt to remove flesh from the bones.

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The deliberate nature of the division of the body is best demonstrated by the chop marks on the left shoulder. The clavicle (collar bone) bears the marks of an old soft tissue injury that caused ossification of the trapezius muscle and the formation of a new joint (pseudo-arthrosis). This mass of bone would have been unexpected in a normal dissection, and so may account for the numerous chop marks. These cuts have been made from right to left, running from the medial aspect to the lateral aspect of the shaft. There is an additional sharper cut at the acromial end, made in the opposite direction, and overlies the second chop mark (Figure 9). Other evidence for the deliberate removal of the arm from the shoulder is the removal of the humeral head, cut marks on the shoulder blade (scapula), and a chop mark at the position of the coracoid process at the top of the shoulder. These cuts are consistent with someone attempting to cut around the ligaments that hold the shoulder joint in place (Figure 10).

On the lower body, the right hip has been dissected below the greater trochanter, which was not recovered. This bone however, is the only part of the proximal femur preserved on the left side, suggesting a similar pattern of removal for both legs. Chop marks to the back of the right femur, along the linear aspera, may be the result of trauma from a blade, similar to that seen in battle injuries. On the right lower leg, the fibula appears to have been cut just below the midshaft, with the blade injury following a line through to the tibia.

No cases of suspected quartering have ever been described in the archaeological literature, although Marfart *et al.* (2004) did report on an instance of postmortem heart ablation from Ganagobir Priory in France. It is possible that the lesions seen on HA16 are the result of medieval funerary practice (mos teutonicus), where nobles who died away from home were dismembered and the pieces boiled in water or wine, with their viscera buried at their place of death (Park, 1995). This 'division of the body' was outlawed by an outraged Boniface VIII in 1299, but generally involved the disembowelment, dismembering and boiling of the body, with usual requests for the heart to be buried at home (Brown, 1981). Heart ablation may have occurred in the case of HA16, but this involves the sternum, which was not recovered. The ribs are in poor condition, but none of the fragments reveal evidence of cut marks. The lesions to the vertebral bodies are inconsistent with the incidental and superficial cuts that might result from evisceration, and they have not been reported in the osteological literature before.

Drawing, hanging, and quartering as a form of execution

Fourteenth century England was plagued by political tension and turmoil (Phillips, 2000) and treason was a crime which deserved the worst torments and cruellest death that could be devised (Finucane, 1981). This form of public execution was high theatre which aimed to demonstrate the power of the government to the masses (Cohen, 1989). Before 1283, the common punishment for treason was to be dragged to the place of hanging by a horse's tail (hence 'drawn'). The family of the accused would lose their property and in some cases, the children would also be executed (Bellamy, 1970: 28). In the late thirteenth century, Edward I added disembowelling, burning, beheading and quartering to the ritual, specifically for the execution of Dayfd ap Gruffydd, leader of the Welsh rebellion (Royer, 2003). High treason dictated that the perpetrator should suffer more than one death. Hence, each part of ap Gruffydd's execution ritual was designed to make a statement about each of his crimes. Because he betrayed the king, he was drawn at the horse's tail, he was hanged for murder, disembowelled for sacrilege and his entrails burned, and because he had plotted the king's death in several different parts of the realm, his body was to be quartered and limbs dispatched to where they could act as a warning to others (Pollock and Maitland, 1968: 501; Bellamy, 1970: 26).

By the time Edward I died in 1307, several men had been executed in this fashion. They were usually dragged to the place of execution on a hurdle to ensure that they would be alive when they were hanged, before being disembowelled and finally beheaded (Barron, 1981). The head and quarters of the body were parboiled, and sent to locations where the traitor had found support, or where treason had been conspired, and hung on town gates, walls and gibbets, using poles or chains. Relatives would have to wait until they were officially 'thrown down' before they could retrieve the remains for burial (Bellamy, 1979: 208). This form of execution reached its height in the 1320s, and by the fifteenth century, it was more usual for nobles to be punished by beheading (Royer, 2003).

Depictions of the actual mechanisms behind quartering of the body do not survive, and there was probably no call for them to be written down. What constituted 'quarters' may be inferred from the description of ap Gruffydd's execution, where his limbs were cut in four parts and sent to be displayed '…to wit – the right arm at Bristol; the right leg and hip at Northampton; the left leg at Hereford.' (Maxwell, 1913:35). This does not suggest division of the torso, but evidence for that practice may be found in medieval woodcuts, for example, that of the execution of Thomas Armstrong in 1683 (Figure 11).

Identity of the remains

Radiocarbon analysis carried out by the Oxford Laboratory in 1990 (Hedges *et al.*, 1991) dated the remains to AD 1215-1285 (one sigma, 68% confidence) or AD 1050-1385 (two sigma, 95% confidence). In her report on the Hulton Abbey skeletal remains, Browne (2004) proposed Sir William Audley (AD1254-1282) as a likely candidate for the burial. William, aged 28, was killed in Anglesey on 6 November 1282 fighting for Edward I during the rising of the Welsh Princes. William and his men crossed the Menai Straits on a bridge of boats, but their return was cut off by the rising tide (Wrottesley, 1887). The Welsh attacked and 213 men were slaughtered. Browne went on to suggest that William may have been captured and mutilated by the Welsh rebels, and his body later retrieved by his brother Nicholas who performed mos teutonicus on the body to allow for its transport to Hulton Abbey.

Osteological analysis of the remains identified the male to have been over 34 years of age (mean 61 years) based on the morphology of the pubic symphyses, and too old to be William. Hence, Tomkinson (1997) has argued that William's cousin, Sir Hugh Audley was a more likely candidate. He had been one of the nobles who had sided with Thomas, Earl of Lancaster against Edward II in 1322, and had been imprisoned for treason at Wallingford in 1325. He would have been 65 years of age. There is no evidence that Audley was ever released from prison and it is more likely that he died in Wallingford Castle in 1326 (Cockayne, 1916: 348). Hugh Audley was never executed. Dating of the Hulton Abbey skeleton indicates that he died no later than AD 1385, when this very brutal and public form of execution was handed out only to the most notorious political prisoners. This suggests that the skeleton at Hulton Abbey was a well known political figure during this period. There is one far more notorious candidate for the identity of the remains at Hulton Abbey: Sir Hugh Despenser the Younger.

Hugh Despenser the Younger was the son of Hugh Despenser, Earl of Winchester, and an advisor to Edward II. Hugh was married to Eleanor de Clare, niece of Edward II who, with her two sisters Margaret and Elizabeth, was heiress to one of the largest fortunes in England. On the death of Eleanor's brother, Gilbert de Clare, Despenser used his political influence to appropriate the lands that should have been divided equally between the sisters (Holmes, 1955). In order to succeed in his plan, Despenser attacked his brothers-in-law, Roger Damory, married to Elizabeth, and more importantly, Hugh Audley of Hulton Abbey, who had married Margaret. In 1317, Despenser claimed that Audley was withholding his share of the Welsh estates from him. Not wishing to wage war, Audley exchanged his Welsh estates for poorer lands in England. Despenser next exerted similar pressure on Damory and later, had them both falsely charged and convicted of treason.

Despenser's influence in court came from him being a favourite of Edward II, and it was rumoured that he was the King's lover. When England was invaded in 1326 by Queen Isabella and her consort Roger Mortimer, Despenser was captured and executed at Hereford (Holmes, 1955). He was 40 years of age. Edward II abdicated and was killed in 1327 (Valente, 1998). The power that Despenser had wielded in the court, and perhaps his personal relationship with the king, had outraged Isabella to such an extent that his execution was particularly public and brutal. His crimes and their punishments are outlined thus:

> …as a thief therefore you shall be hanged; as a traitor…you shall be drawn and quartered, and your quarters dispersed throughout the kingdom; and as you were outlawed, by our Lord the King and by general consent, and have come back to the court…you shall be beheaded; and because at all times you have been disloyal and a formenter of strife between our Lord the King and our most noble Lady the Queen…you shall be disembowelled, and after that you bowels shall be burned. Confess yourself a traitor and a renegade! And so go to meet your doom. Traitor! Evildoer!! and Convicted!!! (Brigstocke Sheppard, 1889:413)

Hence, on the 16th November 1326, Despenser was publicly humiliated by being stripped and dressed in reversed arms, with a crown of nettles placed on his head (Fryde, 1979:192). He was then roped to four horses, rather than the usual two, and dragged through Hereford, where he was hanged, or rather choked, on gallows at 50 feet with his body supported by a ladder. Medieval chronicler Jean Froissart (c.1337-1405) reported that Hugh was castrated, with his testicles thrown into the fire below, because he was considered a heretic and suspected of 'unnatural' practices with the King (Johnes, 1808: 32). Still conscious, Despenser was dragged from the gallows, a knife was plunged into his abdomen and his entrails and heart were cut out and burned. The corpse was lowered to the ground and decapitated. Figure 12 shows Froissart's depiction of Despenser's dramatic execution. On 4th December 1326 his head was displayed on London Bridge and the quarters of his body were sent to be displayed above the gates of Newcastle, York, Dover and Bristol (Viard and Déprez, 1904-5; Cockayne, 1916: 267-270).

A few years later, Despenser's wife petitioned Westminster for his bones to be collected and buried on his family estate at Tewkesbury Abbey in Gloucestershire (Cockayne, 1916: 270). Eleanor is said to have recovered her husband's head, a 'thigh bone' and a few vertebrae (N. Strawford, pers. comm. Tewkesbury Abbey Archivist). The very bones that are missing from HA16 (see Figure 2).

The date of his death in 1326 fits with the C14 dates (AD 1219-1385) and his age is more consistent with the osteological evidence than William Audley. If the remains from Hulton Abbey are indeed those of Sir Hugh Despenser the Younger, then this is the first reported case of such an execution.

This case raises many interesting questions about how the remains came to be at Hulton Abbey. Although the pledge to distribute the quarters to four corners of the realm is well known, we do not know that this threat was actually carried out in this case, nor do we know if the 'quarters' included the torso as well as the limbs. If Hugh's remains were collected from their several display locations, then who did this? As a relative of the Audley's it may be expected that they would want to bury their disgraced relative in a quiet corner of their estate, Hulton Abbey would not have been of great significance to them. But, given Despenser's attempts to have his brother-in-law executed, is it likely they would go to such an effort? Perhaps a monk from the monastery took it upon himself to gather the remains and bury them in the Abbey, so that all of his remains rested in consecrated ground. The Cistercians believed that during the resurrection, such scattered bones would be reunited to form one complete body (Bynum, 1995:121). As for the remains themselves, the removal of the hands is not a recorded part of the execution ritual. However, if this is Hugh then these may have been amputated with reference to his being known as a pirate and a 'thief'. Equally, the potential stab mark in the first lumbar vertebra is consistent with the stabbing in the abdomen recorded in the historical accounts, so perhaps are the cut marks to the surviving femur. It is possible that Despenser's 'drawing' may have been used as an opportunity for the angry spectators to strike him with their swords.

This paper has described the first known case of a skeleton displaying trauma associated with the practice of quartering in medieval England. In addition, it attempts to identify the remains and place them within their political and historical context. The distribution and nature of the lesions is not consistent with battle trauma or evisceration during 'division' of the body, but fits with the historical accounts surrounding the execution of Despenser. The date of the remains, from the founding of the Abbey (AD 1219) to the end of the 95% confidence interval provided by the C[14] dates (AD 1385), fits with the period of his death and his age and sex is consistent with the osteological evidence. Probably most seductive in the identification of this body is the account of the remains buried at Tewkesbury Abbey, as these are precisely the skeletal elements missing from HA16. However, unless the remains in the vault at Tewkesbury become available for analysis, we will never know the man's true identity.

Acknowledgements

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Figure captions [Note: Figures not included in this report- refer to Journal article]

Figure 1.   Detail of burials in the chancel of Hulton Abbey showing the location of HA16 (adapted from Wise, 1985: 89).

Figure 2.   Distribution of perimortem cut marks in HA16. The green arrows indicate stab wounds; red arrows indicate cut marks on the anterior aspect of the skeleton; blue arrows show horizontal cuts and the yellow arrows indicate cut marks to the posterior aspect of the skeleton.

Figure 3.   Cut marks on the third cervical vertebra indicative of beheading.

Figure 4.   Close-up of stab wound on the seventh cervical vertebra (C7)

Figure 5.   The second lumbar vertebra viewed from the superior aspect, showing a knick on the anterior margin.

Figure 6.   Close-up of knick on the margin of the second lumbar vertebra, possibly indicating a stab wound to the stomach.

Figure 7.   Horizontal cut through the first lumbar vertebra suggesting separation of the thorax from the rest of the body.

Figure 8.   Sagittal cuts through T11 to L2.

Figure 9.   Cut marks to the left shoulder. Note soft tissue ossification on the clavicle and cut marks to the humeral head.

Figure 10.   Close-up of cut marks to the left clavicle, and pseudo-arthrosis.

Figure 11.   Engraving depicting the execution of Sir Thomas Armstrong in 1683. Note the vertical cuts through the spine and detachment of the legs through the hip.

Figure 12.   The disembowelment of Sir Hugh Despenser the Younger. Wellcome Library, London.

Examples of Photographs from Mr Roger Brown
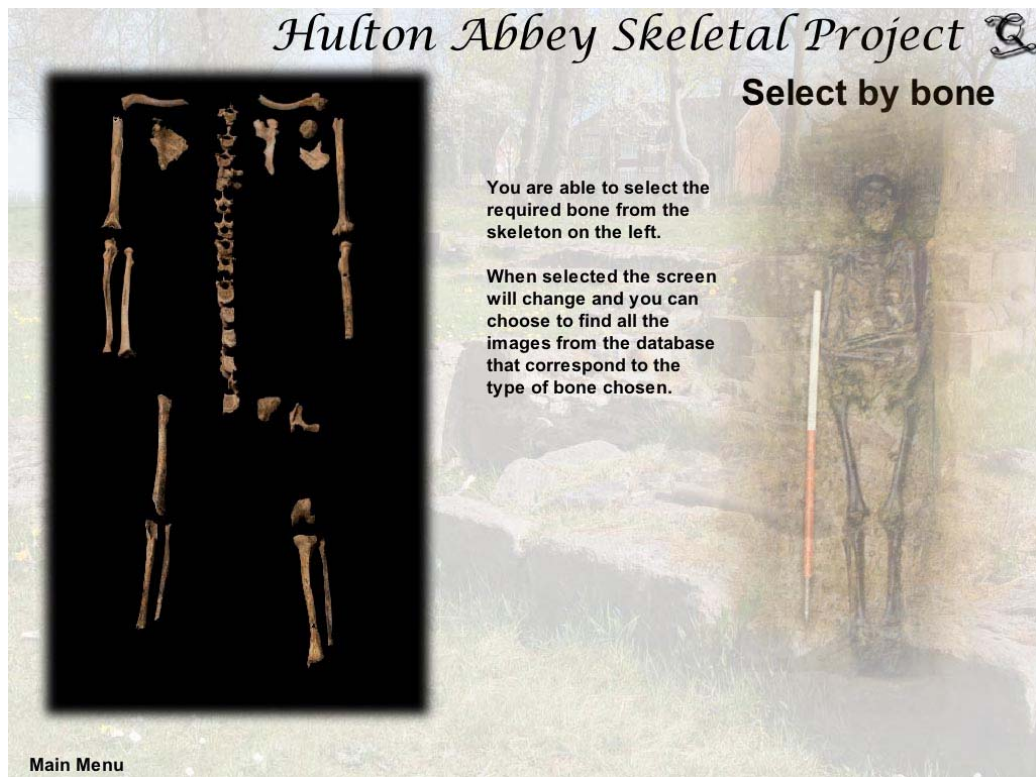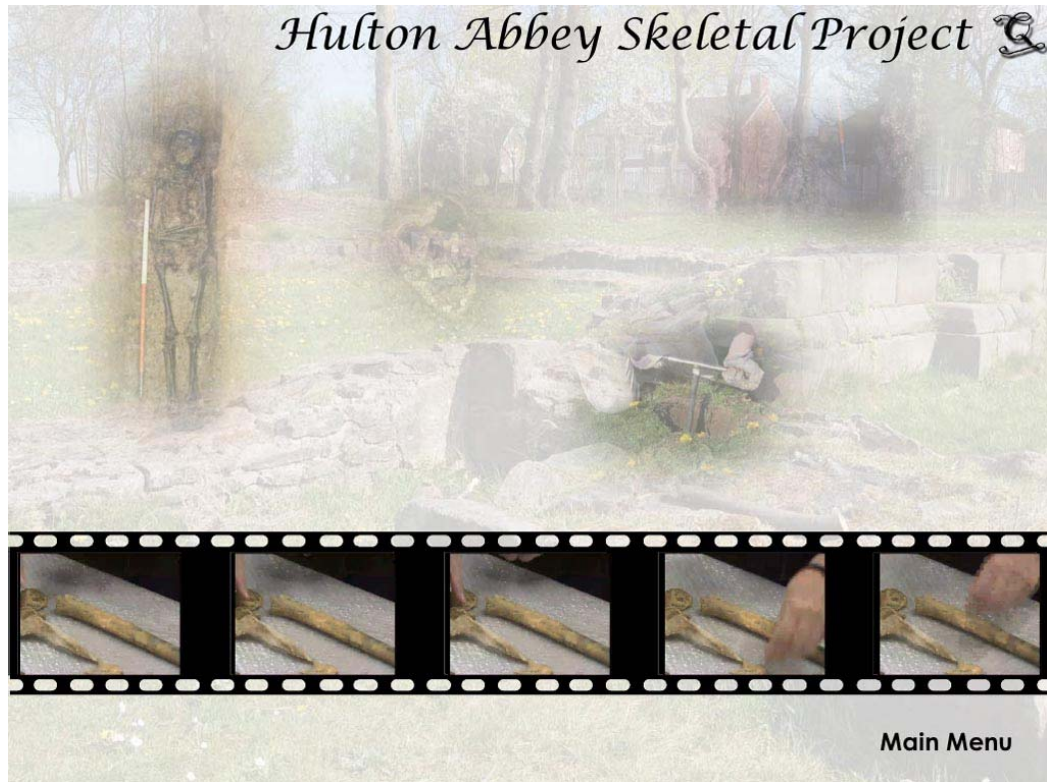

Sagittal cuts occurred through T11 to L2.

Hulton Abbey Skeletal Digitisation Project

Close-up of cut marks to the left clavicle

Close-up of cut marks to the left clavicle

Examples of Screen-shots from Software Package

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Workpackage and activity	Start date	Completion date	Outputs	Budgeted Cost	Responsibility
PROJECT: **Objective:** *Overview of project and why it is being undertaken.*					
WORKPACKAGE 1: **Objective: To digitise skeletons from Hulton Abbey**.					
Develop digitisation strategy for undertaking work	Mar 07	May 07	Documentation and strategy being adopted to digitise resources which will be informed by existing practices such as developed by English Heritage	**£1k**	Roger Brown
Undertake actual digitisation of skeletons	May 07	Jul 07	Full set of digitised images and videos of skeletons	**£3k**	Roger Brown
Create digital archive of raw material for use later in project	Jul 07	Jul 07	Set of digitised material backed up and available for access by project team. This also ensures preservation for resources across different sites.		Roger Brown
WORKPACKAGE 2: **Objective: To catalogue the digital resources**.					
1. Electronic cataloguing of resources onto an appropriate software package	Jul 07	Aug 07	Resources appropriately meta-tagged	**£1.5k**	Roger Brown Paul Lucking Mary Lewis

2. Explore transfer of resources to Jorum	May 07	Aug 07	Discuss process and strategy with JISC for transferring resources to Jorum		Paul Chin
WORKPACKAGE 3: **Objective: Develop teaching resource**					
1. Create stand alone teaching resource using appropriate software as recommended by the project technical colleague.	Aug 07	Oct 07	Interactive teaching resource available on CD	**£500**	Paul Lucking Mary Lewis
2. Pilot teaching resource	Oct 07	Dec 07	Pilot study of teaching resource with students		John Cassellla
3. Evaluation of teaching resource	Dec 07	Jan 08	Evaluation report on impact of teaching resource	**£300**	John Cassella Paul Chin
WORKPACKAGE 4: **Objective: Disseminate resources across disciplines**					
1. Run national event to showcase resources	Autumn/spring		National event publicising project outcomes	**£1700**	Paul Chin
2. Run collaborative event with related Subject Centres e.g. History, Classics and Archaeology and Archaeology CETL	Spring 08		Dissemination of resources to different disciplines	**£1000**	Paul Chin
2. Make resources available via Centre website	Spring 08				Paul Chin
3. Explore national interest in trialling resources	Spring 08			**£1000**	Paul Chin