Digital Dilemma 2018

Conference Programme
Conference Schedule

9:00 - 10:00  **Conference Registration:** Registration is on 6th floor where there will also be a morning snack available. Posters should also be set-up during this time also on the 6th floor.

10:00 - 10:15  **Opening Remarks**

10:15 - 11:00  **Podium Session 1:** Ground Floor Lecture Theatre G6
10:15 - 10:35 ~ Fair use of born-digital data – the experience of Digitised Diseases
10:35 - 10:50 ~ Three-dimensional digital collections: a cautionary warning*
10:40 - 11:00 ~ Multiple and Mobile: Mapping the repatriation archive

11:00 - 11:30  **Break:** Posters, tea, coffee and biscuits will be available on the 6th floor. During this break all odd numbered poster will be presented.

11:30 - 12:25  **Podium Session 2:** Ground Floor Lecture Theatre G6
11:30 - 11:50 ~ The media careers of past Londoners
11:50 - 12:05 ~ Making A Clean Scrape?: The Ethics of Data Mining Social Media to Investigate Cultural Property Trafficking
12:05 - 12:25 ~ Data silos, dying data and realistic start-up costs-dirty secrets of the digital revolution

12:25 - 13:00  **Lunch:** Food and drinks will be provided on the 6th floor.

13:00 - 14:40  **Podium Session 3:** Ground Floor Lecture Theatre G6
13:00 - 13:50 ~ Comedy = tragedy + time: The “meme-ification” of archaeological human remains
13:50 - 14:05 ~ Portugal residents opinion regarding the showcasing of three-dimensional digital replicas of human bones*
14:05 - 14:25 ~ 3D digital documentation of mummies: our experience with the Llullaillaco child mummies
14:25 - 14:40 ~ Ethical Digital Bioarcheology: Sharing Data Online*

14:40 - 15:10  **Break:** Posters Tea, coffee and biscuits will be available on the 6th floor. During this break even numbered poster will be presented.

15:10 - 16:10  **Round Table Discussion:** Ground Floor Lecture Theatre G6

16:10 - 16:30  **Closing Remarks and Conference Prizes**

16:30  **Evening Reception:** A selection of drinks and snacks will be available on the 6th Floor.

*Digital podium presentations
Fair use of born-digital data – the experience of Digitised Diseases

Andrew S. WILSON (University of Bradford, UK); Tom SPARROW (University of Bradford, UK); Andrew D. HOLLAND (University of Bradford, UK); Jo BUCKBERRY (University of Bradford, UK); Chris GAFFNEY (University of Bradford, UK); Keith MANCHESTER (University of Bradford, UK); Rebecca STORM (University of Bradford, UK); Alan OGDEN (University of Bradford, UK); Emma BROWN (University of Bradford, UK); Carina PHILLIPS (Royal College of Surgeons, London); Emmy BOCAEGE (Royal College of Surgeons, London); Don WALKER (Museum of London Archaeology); Mike HENDERSON (Museum of London Archaeology); Natasha POWERS (Museum of London Archaeology); Jelena BEKVALAC REDFERN (Museum of London) and Rebecca REDFERN (Museum of London)

Digitised Diseases www.digitiseddiseases.org is a born digital resource of pathological type specimens made up of more than 1600 photo-realistic 3D digital models of human remains, with associated contextual information, ranging from description of the pathological lesions, through to radiographs, CT data, videos and clinical synopses. This contextualized approach to presenting digital models was upheld as an example of best practice within the session on Digital Bioarchaeological Ethics and subsequent Resolution adopted by the 8th World Archaeological Congress, Kyoto 2016. Whilst seeking to make the resource free for users to access for educational purposes under the Creative Commons license attribution CC BY-NC-ND 4.0, we have been clear to request no derivatives. In large part this was chosen to reflect the varied and wide-ranging nature of the donor collections that contributed to Digitised Diseases. Some, such as the Royal College of Surgeons (RCS) are bound by strict licensing arrangements with the Human Tissue Authority (HTA), making them obliged to inform the HTA of any misuse of images involving modern human remains from their collections. This paper will provide commentary on our experience of how the user community have responded to the resource over the 5 years since we launched Digitised Diseases in 2013. We will discuss our fair use policy in the context of technological developments and case studies that show varied viewpoints relating to our restriction for 3D printing and our desire to avoid approaches that divorce content from associated contextual information. We will also share forthcoming updates to the resource.
Three-dimensional digital collections: a cautionary warning *

Vanessa CAMPANACHO (University of Coimbra) and Thomas O’MAHONEY (University of Manchester)

This presentation will cover the utility and limitations of the construction of three dimensional digital collections. We will cover areas such as complexity of workflows; accuracy of equipment used; limitations of scan data and metadata capture. This paper aims to discuss such parameters, with the recognition of the current limitations of the 3D scanning equipment.

Creating 3D digital replicas is the product of a more complex process than pointing the scanner’s camera towards a bone. Many of the complexities of this workflow are often unacknowledged. Bone shape, scanner resolution, software selected and functions used may all impact the 3D model morphology.

3D scanners may not capture every feature a bone may possess due to its small size, narrow or deeper shape. For example, it can be questioned if all anthropological analysis can be performed on 3D digital models without direct access to the bone, especially for the analysis of pathological lesions. This is especially pertinent with popular low-cost surface scanners, and the ‘return on investment’ of using this type of equipment should be explicitly questioned at the outset of a project.

Finally, metadata is often lacking in collections of scans regarding both scanning procedure and precision checks of resulting data. Although ISOs and guidelines exist, these are not applied consistently. We will outline some of these with an emphasis on creating greater transparency between researchers.

Critical engagement with the above areas will hopefully enable a more sustainable and critically informed adoption of scalable methods for the digitization of collections.

@VCampanacho

@bones2bytes
Multiple and Mobile: Mapping the repatriation archive

Sarah MORTON (Bath Spa University)

The repatriation of ancestral human remains is a process that both creates and facilitates the duplication and movement of digital information, yet the continued meanings, use and management of this data, once the physical remains it relates to are absent, has received little attention within the wider repatriation debates. Using research into the repatriations from the Royal College of Surgeons of England (RCS) as a case study, this paper will examine the mechanisms by which information about ancestral human remains is made multiple and mobile and how digital technologies are transforming the meanings of repatriation archives.

What emerges is that the digital documentation is more than a trace through which the absent remains are made present. It has its own agency and mobility that is interwoven with, and yet distinct from, the physical remains it relates to. However, although the recognition the RCS archive contains information that can be considered as Indigenous knowledge foregrounds its meaning and potential, it also raises difficult questions around who is legitimate, who are the authorised and alternative voices and who get to make those decisions. Therefore, if we are to fully understand the digital legacies of the repatriation process and the role of the museum in the stewardship of this material, how digital information is created, curated, disturbed, displayed and circulated should be considered as part of the ongoing discussions and reviews of human remains and repatriation policies.

@DrSarahMorton

Making A Clean Scrape?: The Ethics of Data Mining Social Media to Investigate Cultural Property Trafficking*

Huffer DAMIEN (Department of Archaeology & Classical Studies, Stockholm University) & Graham SHAWN (Department of History, Carleton University).

In the 21st century, the licit and illicit trade of cultural property has increasingly moved away from high-end auction houses to e-commerce and social media platforms such as eBay, Facebook and Instagram. To investigate how collecting and dealing communities for human remains operate and use visual and textual ‘rhetoric’ to subtly advertise items for same (the theme of our ongoing research), we have made ready use of image and text data ‘scraping’ using such software as Google Inception v. 3.0 and TensorFlow (e.g. Huffer and Graham 2017, 2018). As we seek to expand this work, this presentation will discuss the ethical implications of how this data is harvested, why it is anonymized, and how and when it is published.

@DamienHuffer
Ethical Digital Bioarchaeology: Sharing Data Online *

Priscilla ULGUIM (Teesside University)

Digital technology presents many opportunities for archaeologists to engage and interact with communities across the globe. Today, outreach and communication from research projects and institutions often takes place on digital platforms. However, there are growing concerns over privacy, security as more personal data are published online. Similarly, sharing bioarchaeological data online raises many challenges, including metadata curation, accessibility, openness, copyright, storage and the rights of the subjects of study. Once published, data may be manipulated in unforeseen ways outside of their original context and legislation. While such practice may raise issues, sharing and interacting with digital data is essential for fostering engagement and collaboration in research, especially given the great interest in understanding the stories behind human remains.

Clear guidelines are required to support the ethical sharing of digital data in bioarchaeology. To understand current recommendations, a collection of guidelines was analysed for information on digitization, copyright, storage, dissemination, and ethics. Results indicate that many were developed for different purposes, few focus directly on digital bioarchaeology, with a clear lack of guidance for archaeologists sharing digital bioarchaeological data.

To address this gap, frameworks for ethical decision-making are proposed to support the sharing of digital bioarchaeological data online. The frameworks emphasize contextual decisions and the need for data acquisition, sharing and storage strategies, as well as standards for metadata and paradata to improve accessibility and interoperability. In summary, best practice for digital bioarchaeology will require assessment on a case by case basis, as part of a well-planned, integrated and reflexive approach.

@priscillaulguim
Data silos, dying data and realistic start-up costs-dirty secrets of the digital revolution

Thomas O’MAHONEY (University of Manchester)

Much has been made of the ‘digital revolution’ in biological anthropology, but in the rush to digitise material, some aspects of data curation and realistic long-term costs have been overlooked. I shall review some of the lessons learned from almost a decade in collecting 3d anthropological data, as well as from setting up imaging labs. The following will be discussed: Case studies of large-scale data silos and smaller-scale orphan data, ways forward in terms of long-term data curation and suggestions for building business cases for the construction of sustainable imaging laboratories.

Data silos are a perennial problem in anthropology and especially palaeoanthropology. This can be seen in the historical move away from the publication of raw measurements in reports on material, and continues with the hoarding of 3d data by powerful research groups. It is also a problem in smaller projects, where the cost of long-term archiving of material has often been omitted from budgets.

The average life span of a hard drive is 3-5 years. Discussion of long-term data curation is something that should form part of researcher training and project planning from the outset. This is especially pertinent due to the requirements from data funders for proper data archiving plans to be put in place.

Finally, money. Start-up costs for imaging labs are often unrealistic, especially when the above two topics are taken into consideration. I will draw on experience of multiple setups to suggest effective practices.

@bones2bytes
Comedy = tragedy + time: The “meme-ification” of archaeological human remains

Katherine CROUCH

Earlier this summer, archaeologists working in the Regio V area of Pompeii unearthed the skeletal remains of a man who appeared to have been crushed to death by falling masonry while attempting to flee the catastrophic eruption of Mount Vesuvius almost two millennia ago. Photographs of their discovery were subsequently released to the media—despite the sequence of events leading to the individual's death remaining undetermined at the time of publication—and the "unluckiest man in history" quickly became a social media sensation. Rendered both tragic and uncanny through his serendipitous preservation, the "unlucky man" follows in the footsteps of his fellow Pompeians who—with no self-representational agency of their own—have already provided rich fodder for the internet's meme-creators.

This paper will examine the internet's response towards the fate of the "unlucky man" and explore the motivations behind creating and sharing memes that contain images of archaeological human remains. In turn, this will lead to a consideration of the ethics relating to the dissemination of photographs of the ancient dead online by archaeology professionals and what happens when such images become "internet famous". In exploring how the "digital dead" may develop their own ontological existence and lead uncontrollable (after)lives of their own, this paper will interrogate our own attitudes towards mortality in a society in which we consume "spectacular" death on a colossal scale, yet the material intimacy of death remains an unusual experience for the vast majority of people.

@_KateCrouch
Portugal residents’ opinion regarding the showcasing of three-dimensional digital replicas of human bones *

Vanessa CAMPANACHO (University of Coimbra) and Francisca ALVES CARDOSO (Universidade NOVA de Lisboa)

The widely use of three dimensional (3D) scanners in bioanthropology has increase the production of 3D digital replicas of human bones, which are starting to be freely distributed online and easily accessible to anyone. Ethical considerations on the use of these 3D models has not reached Portuguese society at large, making it impossible to access its societal impact, and the real perception of people on how these models are created. To explore this, Portuguese residents were asked to take part on an online survey. The ratio of male to female participants, as classified by selves, was 0.5:1, in a total of 105 partakers. The age of the participants ranged between 18 and 69 years, and the majority had a higher education degree. Only 53.3% of the inquired have seen a 3D model of a human bone, and 48.6% considered the replicas to be the same as real bone. Also, 85.6% would be willing to allow for their skeleton, and those of family to be 3D digitalized after death, and 59.4% considered that the dissemination of the 3D models should be controlled through registration and login, as well as a description/context always should be associated with the models (75.0%). Overall, the results suggest agreement in the dissemination of 3D digital replicas of human bones. Also noteworthy was the limited number of participants, which may be interpreted as a lack of interest on the topic, or more importantly a low self-assessment on their opinion on the subject.

@VCampanacho
3D digital documentation of mummies: our experience with the Llullaillaco child mummies

Chiara VILLA (University of Copenhagen, Denmark); Tom SPARROW (University of Bradford, UK); Mario BERNASKI (Museo de Arqueología de Alta Montaña, Salta, Argentina); Gabriella RECAGNO (Museo de Arqueología de Alta Montaña, Salta, Argentina); Johan REINHARD (National Geographic Society Explorer, USA); Tim TAYLOR (Vienna Institute of Archaeological Science, Austria); Niels LYNNERUP (University of Copenhagen, Denmark); Andrew S. WILSON (University of Bradford, UK)

Mummies are silent witnesses to ancient cultures and represent unique opportunities to shed light on health conditions, disease and cultural rites. Here, we will present our experience on working with the Llullaillaco child mummies in a British Academy supported study. The frozen bodies of three children, ritually killed as part of the Inca capacocha rite 500 years ago, were discovered close to the summit of Volcán Llullaillaco, one of South America’s highest mountains (6739m) in 1999. Given their exceptional state of preservation, these children are very recognisable as individuals and as such have powerful emotional impact for many today. We will discuss the challenges and sensitivities of working with such a unique assemblage; the importance of the children for the indigenous community and how the community are involved in the ongoing study and curation of these children. Finally, in this context we will discuss the importance of using complementary non-destructive of 3D imaging techniques and their potential use for conservation purposes as well as interpretation – delivering new understanding and meaningful experience to the indigenous community and wider public.
The media careers of past Londoners

Rebecca REDFERN (Museum of London) and Tim THOMPSON (Teesside University)

Our research tackles several thorny issues about digital content and participation which curating institutions are being challenged with, because of the increase in digital media and the expectations of visitors and researchers.

The Museum of London curates the remains of over 25,000 individuals, and over the past 15 years these collections have featured in numerous media outputs and digital content. The Museum has policies and guidance to govern human remains, access, copyright and intellectual property. Increasingly, we have found it ever-more difficult to balance Museum policies with the expectations of users, and how images and data are used online and broadcast by them. Fundamentally, we identify a chasm of knowledge between heritage institutions and their users regarding copyright and intellectual property law. This disparity leads to confusion, often anger, and a perception that institutions are failing to honour their commitment to openness and public engagement.

We focus on two case-studies: ‘Roman Dead’ exhibition and the skeleton of a Roman adolescent to explore to trace how these activities have changed over time, how the Museum attempts to keep-pace through policy change, and the variety of ethical problems and conflicts arising from attempting to maintain openness, balance and access.

@MuseumofLondon
@tjuthompson
#1

**What do we do with all the photographs?**

David BRYSON (University of Derby)

This presentation aims to introduce the digital photographic techniques that can enhance the visualization of skeletal materials whilst addressing issues of storage, metadata and image quality.

Digital photographic techniques include; High Dynamic Range Imaging (HDRI), focus stacking, stitching, 360° object recording and stereo-photography. The presentation will demonstrate how these techniques can enhance the value of osteological materials for research, teaching and publication.

These techniques individually only produce a few images, so a focus stack could comprise 20 photographs or HDRI a series of 7. However, when techniques are combined so the number of photographs to produce the final photograph increases. So, focus stack x HDRI would need 140 photographs. Further combining focus stack, HDRI and stitching and then a range of other modalities like reflected ultraviolet, fluorescence, infrared and false colour infrared, could easily lead to a thousand or more photographs for one bone let alone a complete skeleton.

These techniques allow us to produce, what are viewed as amazing photographs, but they do raise issues of quality and quantity.

- Do we keep all of the pre-cursor photographs? Reasons for and against.
- How are the techniques and stacks attributed in the final photograph’s metadata.
- How should we store and back up the quantity of photographic data?
- Should existing photographs/photographic collections be evaluated, and if found wanting, have the skeletal materials re-photographed accurately?
- Should training in photography be part of archaeological or osteological courses rather than assuming anyone can use a camera or that a camera set on auto will be good enough?

@davidbryson
Digital Poster

Applications and methods of the Virtual Morphology Lab at the National Museum of Natural Sciences (Madrid, Spain)

Nicole TORRES-TAMAYO (National Museum of Natural Sciences, Madrid, Spain); Francisco Javier FERNÁNDEZ-PÉREZ (National Museum of Natural Sciences, Madrid, Spain); Daniel GARCÍA-MARTÍNEZ (National Museum of Natural Sciences, Madrid, Spain); Alberto RIESCO-LÓPEZ (National Museum of Natural Sciences, Madrid, Spain); Pedro OSBORNE-MÁRQUEZ (National Museum of Natural Sciences, Madrid, Spain); María ÁVILA (Universidad Complutense de Madrid); Pilar LÓPEZ (National Museum of Natural Sciences, Madrid, Spain) and Markus BASTIR (National Museum of Natural Sciences, Madrid, Spain).

In paleoanthropology and archaeology, the manipulation of fossils and skeletal remains is limited to very specific situations and to partially privileged persons because of the fragility and scientific value of these remains. However, recent technological advances have made possible the production of 3D digital data and 3D models that allow the virtual and physical interaction with the objects. In anthropology, these methodological advances are known as “Virtual Anthropology”, and they allow the researcher to extract information from the real world, to model this information in a computer and to produce physical outputs for manipulation, comprehension and effective communication. Here we present the activities in our Virtual Morphology Lab (National Museum of Natural Sciences, Madrid, Spain) by means of an overview of this digital technology to produce (and reproduce) 3D anatomical models for research, teaching and museum exhibitions and virtual conservation. We review our different surface scanning equipment and post-processing techniques that are useful for scanning museum collections. This section is followed by an overview of available 3D geometric morphometric software packages for rigorous morphological quantification. In the last part, we address our experience in 3D-printing using fused deposition model (FDM) technology of differently sized printers and various PLA (polylactic acid) materials. We finally discuss the above-described workflow and its potential applications for morphological research and for communications in different institutions.
Beyond the cutting edge: high-resolution digital analysis of potential lacerations from the Jucu de Sus Necropolis (Transylvania)

Kori Lea FILIPEK (Durham University, Transylvania Bioarchaeology); Matthew CROWTHER (Teesside University, Transylvania Bioarchaeology); Dave ERRICKSON (Teesside University); Katie TUCKER (German Archaeology Institute (Berlin)); Transylvania Bioarchaeology); Ioan STANCIU (Romanian Institute of Archaeology and Art History (Cluj-Napoca)); Kelly Elaine BLEVINS (Arizona State University, Transylvania Bioarchaeology); Jordan SNYDER (Durham University, Transylvania Bioarchaeology) and Liam LANIGAN (Centre for Geogenetics (Copenhagen)).

The Jucu de Sus necropolis is a multi-phased cemetery (8th to 12th centuries AD) located in the Transylvania region of Romania. Previous investigations in 2007 reported a large number of burials (n=80), and the bioarchaeological training excavation carried out by Transylvania Bioarchaeology is currently investigating these individuals, and others presently being excavated. This case study examines a young adult male from the 11th-12th century, with subperiosteal new bone formation on the anteromedial portion of the proximal diaphysis of the left femur. In addition, there are a number of perpendicular incision-like marks on this surface. The individual was selected for further investigation to determine whether these marks were a consequence of palliative care (e.g. Lacerating an ulcer), or a by-product of abnormal taphonomy. The individual was fully documented in three-dimensions using a PicoScan structured light scanner (4D Dynamics, Belgium). In addition, the linear marks were microscopically analysed using a Hitachi TM3000 Tabletop SEM. The results highlight the benefits of using high-resolution digitization for the documentation of skeletal pathologies to make more meaningful and accurate interpretations. Furthermore, the study supported the notion that further investigations using microscopic imaging are beneficial for analysing traumatic lesions.
A CT examination of accidental and intentional craniofacial fractures in adults

Tuusa ERIKSSON (University College London)

Access to anonymised digital medical images has the potential to enable the study of a large cohort of patients from across the world and make global comparisons regarding accidental and intentional injury in adults. This study demonstrates the potential of such images for investigating differences in craniofacial fracture patterns between accidental and intentional injuries in adults. Trauma head CT scans of 79 patients from Kuopio University Hospital, Finland were assessed for fracture type(s), fracture location(s), fracture number, presence of suture line crossing fractures and percentage of skull affected by fracturing. Results indicate that there was no difference in fracture number, presence of suture line crossing fractures or percentage of skull affected between the groups. A statistically significant difference in the prevalence of orbital blowout fractures was found between the groups, with a higher occurrence in those with intentional injuries. Patterning was also observed in fracture location between the groups. In the intentional injury group, fractures were heavily concentrated on the front of the cranium, particularly the facial region. In accidents fracture location was more varied. Previous literature on intentional and accidental injury in adults is scarce and tends to include homicide cases in intentional injury consideration. Subsequently, intentional injuries are often presented in the literature as more severe than accidents. This study does not support these results and provides a new perspective on the differences between accidental and intentional fractures in adults who have survived their injuries. The use of digital CT images therefore allows for the non-invasive evaluation of surviving patients’ injuries providing data that cannot be gained from the skeletal record.
Digital Poster

Questioning the Use and Ethics of Social Media in Bioarchaeology *

Thomas SIEK (University College London)

Social media has slowly been adopted within academia and has now added another dimension to how researchers interact with each other. Academic social networks such as academia.edu and researchergate.net facilitate networking and publication/data sharing. However, other social networks such Facebook and Twitter are now also being used by academic associations, conferences, field schools, and general interest groups. This includes asking for advice and opinions regarding bioarchaeological finds and posting photos of skeletal material from archaeological sites. The spread and use of Facebook and Twitter within the bioarchaeological academy raises questions about how these social networks are used and the ethics linked to it. This topic will be explored via a live-digital survey to be completed by the conference participants. The aim is to gage the opinion of conference participants regarding social media use in bioarchaeology. Depending on the results, this may have implications as to how researchers in bioarchaeology incorporate social media in the future.
Perspectives of Digitisations of Human Remains Compared to Physical Remains: A Public Survey

Cara Stella HIRST (University College London); Annabelle-Louise LOCKEY (Eberhard-Karls University of Tübingen; University College London) and Sian SMITH (University College London)

3D scans and prints of human remains are being increasingly used in research, teaching and displays of human remains as the confer numerous benefits. One frequently stated benefit of digital and printed remains is that they can be used in contexts when it would be considered inappropriate or unethical to use the original remains. Examples of this include outreach events with children, providing them to students to rent out and take home for study in the same way they would a library book or retaining them in cases of repatriation of the original. At the same time there are other instances where these prints and scans are considered similar enough to be a replacement to the original remains. The relationship between the original and the digital or 3D print seems to be determined by the requirements of individual projects/studies and the biases of those involved. This project aims to understand the public perspective of digitisations and 3D prints of human remains in order to gain an unbiased view on the ethical consideration of digitisations and 3D prints of human remains. Results from an online survey disseminated by museums and later on twitter indicate the digitisations and 3D prints are arguably more similar to original remains in terms of ethical use than indicated by previous research and use. These results also highlight current uses of digitisations and 3D print of human remains which may be considered unethical or inappropriate by the public.
#5

**3D printing of Gorm the Old, the first King of Denmark.**

Chiara VILLA (University of Copenhagen, Denmark) and Niels LYNNERUP (University of Copenhagen, Denmark)

In 1978, human skeletal remains were found in the church of Jelling, Jutland (Demark). The skeleton was relatively complete: cranial bones, most of the long bones, fragments of pelvic bones, vertebrae, scapulae and few bones from the right foot. The remains were attributed to King Gorm the Old, the first king of Denmark who reigned from Jelling from c. 936 to his death c. 958. The remains were reburied in the church in 2002, but fortunately, they were CT scanned. Using the newest 3D imaging and modeling techniques, we are able to reconstruct and reexamine the remains, as well as 3D print the bones of King Gorm the Old.

This study shows the importance of performing CT scanning of skeletal remains, not only for permanent documentation, but also as basic tool for reexaminations of the remains, 3D reconstruction of fragmented remains and 3D printing of bone, which enables museum exhibition.
#6

Next top 3D models – using 3D modelling technology to improve accessibility of osteoarchaeological data

Stephanie EVELYN-WRIGHT (University of Southampton)

This presentation outlines some parts of the 'Stories through Skeletons' project, which is an interdisciplinary venture undertaken by the Osteoarchaeology and Engineering departments based at the University of Southampton. As part of this project we have been exploring the potential of using 3D printing technology to improve the accessibility of physical anthropological data for a wider audience. One particular case study involves the remains of skeleton 766 from the Romano-British cemetery site of Alington Avenue in Dorset. The skeleton's palaeopathology demonstrates a rare incidence of mesomelic dwarfism. This skeleton forms a major part of a thesis concerned with the themes of impairment and disability in Roman Britain.

As part of the ongoing PhD, the author tries to engage with as wide an audience as possible, including members of the disabled community. The author found that describing the palaeopathology to such audiences, especially visually impaired individuals, was extremely difficult; hence the need for tactile aids. These models have been demonstrated at several conference events and such devices have proved useful to visually impaired and non-disabled audiences alike. The paper outlines the methods used to create the 3D model including CT scanning and the feedback received from the preliminary showing of the models at outreach events. The next step in this project is the possibility of making these 3D scans available online and we would like to explore the ethical considerations of this issue with the assembled crowd.

@archaeowright
#7

**The Histological Paradox: The value of dental histology Vs. The value of rare teeth**

Christopher ARIS (University of Kent)

Within the last two decades the field of dental anthropology has seen a drastic increase in the number of studies investigating the internal structures of dentine and enamel. Due to its relatively low cost and preparation time, and high degree of accuracy when employed, destructive histological analysis has become the workhorse of this line of research. However, despite its accuracy and presence within academic literature, institutions (including both universities and museums) often reject applications to perform histological analysis on their collections as standard procedure. Most frequently this is justified because destructive analysis prevents future research on the same material. As a result many studies are forced to utilise published data, or attempt to access the small number of dental histological slides already in existence, rather than producing a truly novel discovery. Here I will discuss how this is impeding the progress of anthropological research, and the possible unethical nature of denying destructive analysis as standard practice. I will further present how through a combination of old casting methods and the use of new digital software techniques, the worries regarding destructive sampling of teeth can be mitigated and future research on the sampled teeth can easily be conducted.

@ChrisJDAris
Who Owns 3D Digital Data of Human remains: A Survey of Researchers, Curators and Collections Managers
Cara Stella HIRST (University College London) and Sian SMITH (University College London)

Developments in 3D scanning technologies has led to the rapid expansion of digitisation of human skeletal remains. The digitisation of human remains is being conducted on both individual and institutional levels and utilised for a wide array of research topics as well as outreach, display and teaching. Despite the proliferation of these methods few archaeological collections have data collection agreements for 3D digitisations of human remains, moreover there has been remarkably little discussion regarding the use and ownership of digitisations of human remains. Without these agreements there is a lack of certainty about how individuals may use digitisations of external archaeological collections, which may lead to conflict or a lack of trust between researchers and archaeological collection but may also result in these data collections not being utilised to their full potential. In order to develop standardised research agreements for 3D digitisations of human remains an online survey was conducted of curators/collection managers and researchers to understand perspectives on how these data should be used and who owns these data and can therefore dictate data use and sharing. Results illustrate that there a lack of guidelines and regulations with curators and collection managers frequently uncertain of if their institution has guidelines and/or the parameters of these guidelines. Furthermore, results showed differences in options regarding the use of these data between researchers and collection managers/curators which highlight the potential areas where issues may arise in the future resulting in conflicts which limit the future of 3D digitisations in human remains.

@Cara_Hirst
#9

**Considerations for working with digital imaging data derived from modern human remains, forensic casework and modern populations**

Rachael CAREW (University College London), Madeline ROBLES (University College London)

Digital imaging data acquired from techniques such as surface scanning (e.g. photogrammetry) or volumetric scanning (e.g. computed tomography) are widely used in both research and casework by forensic archaeologists, anthropologists, radiographers, odontologists and pathologists. These techniques are advantageous as they can provide non-contact and non-destructive imaging, which both facilitates the visualisation of injuries or skeletal elements and allows greater possibilities for analysis.

There are extra considerations that require attention and engagement when working with forensic cases (< 100 years old), ante-mortem or modern population data (such as hospital scan data). Primary examples include recognising whether a study requires collection of identifiable or non-identifiable data or, ensuring that all data and results are non-identifiable.

Following an introduction to the advantages of utilising both digital imaging techniques and forensic/modern data in forensic anthropology, this poster will provide a comprehensive overview of the ethical considerations needed when working with these types of data. Additionally, we will outline why these considerations are important, how they can be overcome and advice for completing ethical reviews.

In the wake of the recent changes made by the GDPR (General Data Protection Regulation) and the frequent altering of UK data protection laws, this research aims to educate the audience to potential ethical hurdles when working with forensic/modern data, as well as demonstrate ways to mitigate and overcome these.
#10

**Post hoc spatial analysis of cemetery sites based on digital data from commercial companies: an examination of the spatial data from St. Michael’s Litten in Chichester, West Sussex.**

Conner WELTY (University College London)

Excavations conducted by Archaeology South-East at Eastgate Square, Chichester revealed an expansive cemetery site ranging from the Roman to post medieval periods. This work yielded 1643 skeletons from the excavation area which were illustrated in AutoCAD for the post excavation report. Stratigraphic analysis of the cemetery sequence undertaken to date is limited and thus, much of the sequence remains unphased. Most of the dating done at the time of the post excavation report was via associated post medieval coffin furniture. ASE suggested a number of variables may indicate separate phases of interment, however, lacking associated archaeological finds no concrete phases were presumed. This paper will examine the available digital data to determine if spatial evidence exists to support claims made by ASE in their post excavation report, and if any further information may be obtained using only spatial relationships. The spatial analysis conducted included visual assessment and use of algorithmic tools in QGIS. The work confirmed general trends discussed in the report, however, the results of this research found that there is limited spatial data which may be used to reconstruct the chronology of the cemetery space. This research demonstrated a need for additional information in these digital data sources for post hoc analysis of cemetery sites in particular. Improving methods of data acquisition and making data freely available for cross site comparison may allow better examination of excavated sites in rescue archaeology where limited resources are available. The data obtained from ASE is insufficient to meet the broader impacts of a spatial study which may be used to contextualise further research of this material.
#11

**An Epidemiological Study of Talipes at Great Ormond Street Hospital from 1854-1918.**

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Historic medical records can provide insights into the epidemiology of diseases that would otherwise be challenging to evaluate. For instance, Talipes (clubfoot) does not preserve well in the archaeological record, nor is it readily apparent in osteological specimens. Therefore, hospital records are one of the few options available to assess the condition throughout history. The digitisation of historic medical records allows this research to be carried out without the limitations imposed by budget or travel constraints and furthermore provides the potential for global comparisons. One such online archive is the Historic Hospital Admission Records Project (HHARP) database which has compiled the relevant data from 1574 admission records from Great Ormond Street Hospital in an open access online store. This project demonstrates the value of such an archive in an investigation of the epidemiology and treatment of talipes (clubfoot). Differences in the prevalence and outcome of patients with talipes was examined for the period between 1854-1918. A review of the contemporaneous literature as well as case studies compiled using the Great Ormond Street Trust archives and the UCL Pathology Collection provided context for the analysis. The results corroborate much of the known epidemiology of talipes in modern and historic times: the prevalence was higher in males, other disorders such as spina bifida were common among talipes patients, and multiple relapses of the deformity were not unusual. Furthermore, it was found that forceful manipulations and invasive operations became the main focuses of talipes treatments during this period, often resulting in poor outcomes for the patients.
#12

The Research Matchmaker
Samantha FIELD (University of Southampton), Jane CAMERON (Bromley Museum Collection), Lindsay MORETON (Haslemere Educational Museum), Alexandra REYNOLDS (Solent University)

Research Matchmaker is a Museums Universities Partnership Initiative project exploring the possibility of developing a digital platform to match academic researchers with curators of exciting but under-researched museum collections, including skeletal collections. Academics are often looking for new, original opportunities in the field of research, and museums have incredible treasures in their stores, many of which are ripe for interpretation and exploration. Survey results of 42 academics and 54 curators showed that both subject groups were particularly keen to use a match-making site to identify new partnerships, pitch research ideas and identify new and original content to research. Both academics and museums were also keen to see similar design features onsite, including advanced search functionally and user profiles displaying skills and interests.

The field of Bioarcheology would greatly benefit from the Research Matchmaker. Many of the well-known skeletal collections dominate osteological studies. This platform provides the opportunity for smaller collections to become easily searchable, unlocking new research opportunities and providing the field with a broader breadth of knowledge. The Research Matchmaker also aims to connect museums facing resource constraints with experts in the field, allowing museums to gain a better understanding of the skeletal material in their collections. Therefore, the Research Matchmaker aims to bring the academic and museum communities together to collaborate on exciting new projects: generating funding, producing new academic research and staging public exhibitions.

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