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The student-run archaeology journal

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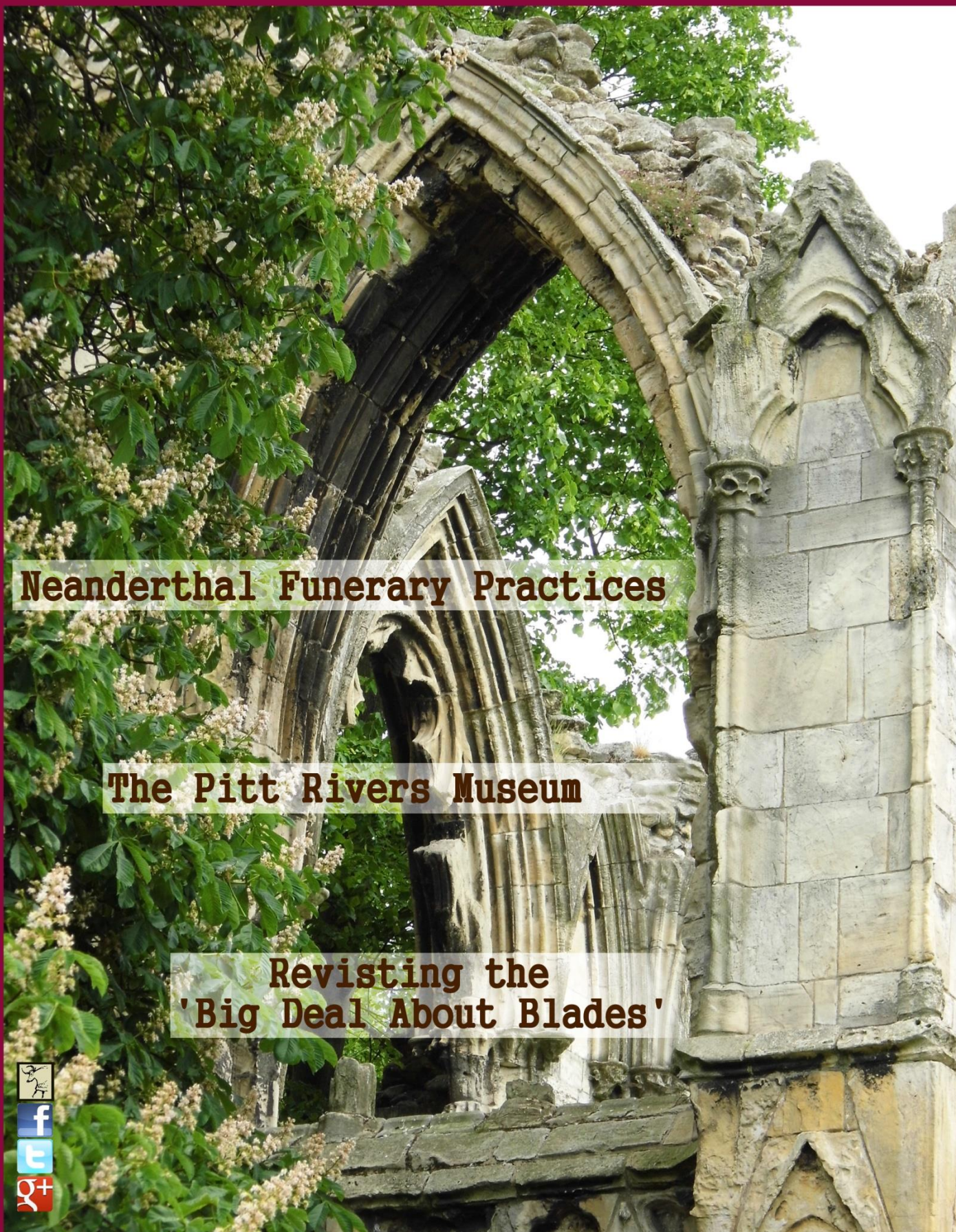
Neanderthal Funerary Practices

The Pitt Rivers Museum

Revisiting the
'Big Deal About Blades'

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Front cover: *The Post Hole's* Photo Competition winner: 'A View of St Mary's ruins in Museum Gardens, York' (Image Copyright: Kerrie Hoffman)

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Editorial: what is archaeology?

Each time I write this editorial, I think of what is happening within the discipline and current media reports. I always end up questioning what is archaeology and what determines our definition, *The Post Hole* – a student run *archaeological* journal.

At universities, the discipline is broken up into Historical Archaeology, BA Archaeology, Archaeological Science and so on. I wish to merely pose the question, should we separate archaeology into different categories? I understand that the discipline is split in order for degree and teaching programmes to be balanced out, however, once this study is completed and you graduate, must this term solely define your interests? Are you regimented by the term, and labelled either a ‘prehistorical archaeologist’ or a ‘historical archaeologist’? Faced with questions such as: why did you choose that module and how would you define your interests? – Can archaeology really be split into separate categories?

Today, we have categorised history into separate periods, in order to help learning and accessing the past easier, but really the past is one long evolutionary process, each period affected by that before and affecting the one after. This evolutionary process continues up to the present day. Our lives are one long process, split by age categories, rites of passage at certain times; 16, 18, 21, 30, 50 and marked by key events; birth, marriage and death. However when we refer to ourselves in interviews and conversations, we don’t define ourselves completely by these processes; they are only a factor adding to our personality. So, the question I ask you is, should we define archaeology into categories? For practical reasons, possibly, but as each category is individual, it is also interlinked with the others. That leads onto the question, can we really teach archaeology? Each new piece of research changes the way we think about the past and interpret our surroundings, so the question is if we can teach archaeology, can it keep up with the quickly changing, greatly improving discipline? Archaeology is a complex field, and an interesting one, and one that I hope will continue for future generations to enjoy, as we change the past each day with new investigations and research.

In January, we released the second interview in our series ‘Digging through the profession of archaeology’ (<http://www.theposthole.org/read/interviews>). Through our most recent interview, with Samir S. Patel, readers can explore the profession of journalism and archaeology. We hope to release an interview each month, and we already have February and March’s interviews lined up. These are conducted by Alex Cameron, exploring historical archaeology and archaeobotany with Dr. Sarah Walshaw, and working as a researcher and lecturer with Dr. Matthew Pawlowicz, who holds a position at Virginia Commonwealth University. Information on when these are released will be made available via our **Twitter** and **Facebook** pages. As always, if you would like to become involved within this interview series, please email your details to editor@theposthole.org.

I would like to introduce a new member of the team to *The Post Hole*. James Perkins, an undergraduate at UCL, University College of London, joins the team as a PR coordinator at his university. If you would like to become involved with *The Post Hole*, please email your details and interests to editor@theposthole.org

The last month flew by, and *The Post Hole* has been up to so much in such a short space of time. Between December and January, we ran our exclusive *The Post Hole* Photo Competition. Please find the first article within this issue, written by Managing Editor **Rianca Vogels**, to find out the results and what we are planning to use the images for next. A massive congratulations to **Kerrie Hoffman** for winning *The Post Hole* Photo Competition with her superb image, and a big thank you to everyone who contributed images and illustrations. The team were overwhelmed by the number of entries and we received some excellent images.

Imogen Burrell, explores 'whether the Pitt Rivers Museum is a 'real museum' or a museum of museums'. Burrell provides a background history to the museum, then delves into exploring the museum's content and how it operates. A stimulating and appealing article, it is well worth a read.

PhD Archaeology Student, **Sarah Schwarz**, explores 'Neanderthal Funerary Practices: Complexity and Variation in Structured Responses to Death'. The article covers some sensitive issues, and Schwarz provides a thought-provoking and engaging piece. For those of you who attended the first ASA Conference in York, June 2013, you may recognise this paper.

Taryn Bell provides an interesting perspective that I hope will provoke some debate surrounding whether 'archaeology should be more multidisciplinary'. The article links well with the opening paragraph of this editorial, and gives you readers some food for thought. It would be excellent if we could get some responses to this article, and publish them in the next issue. Please send any in to submissions@theposthole.org.

Christian S. Hoggard explores the 'Big Deal about Blades': a full contextualisation of prismatic (volumetric laminar) technology before Marine Oxygen Isotope Stage (MOIS) 5. An interesting and well executed article, we are extremely lucky to have this paper, as Hoggard is a PhD/MPhil Archaeology Postgraduate Student at the Centre for the Archaeology of Human Origins (CAHO), University of Southampton.

The last article covers a controversial topic. **Will Engelen** explores the actual role of a metal detectorist in 'Archaeology versus metal-detecting (and/or magnet-fishing)'. Like Taryn Bell's article, it would be interesting to get some responses to this article and feature them on the website, alongside our poll 'how could relations between archaeologists and metal detectorists be improved?'

Finally, I have only been Editor-in-Chief of *The Post Hole* since September, however I would like to say a big thank you to all our readers for the articles they contribute and the regular feedback we get. *The Post Hole* relies heavily on our readers, and without you, we wouldn't have been as successful as we are today. *The Post Hole* may be run by a team in York, but with a number of PR coordinators across the country and further afield, the journal is still growing. The team are about to face some important deadlines soon, with undergraduate dissertations nearing completion date and others facing important decisions about future study or prospects into the big wide world, and we thank you for your continuing support and patience as we publish each issue and new feature. We hope to be able to continue running for many more years and expanding our impact further. Please continue sending your submissions into submissions@theposthole.org and any questions to myself at editor@theposthole.org.

Best wishes,

Emily Taylor
(Editor-in-Chief of *The Post Hole* - editor@theposthole.org)

The Post Hole's Photo Competition

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Archaeology is a field that is blessed with many different facets and with many nuances. With a few overlapping aspects, one that is central to all parts of archaeology would have to be - images. Whether you're an archaeologist interested in the scientific side – biomolecules, archaeobotanics, bones (human or animal); regardless of period – prehistoric, historical or modernity; whether involved in research or dissemination to the general public, all of them have a need for images. As *The Post Hole* is an undergraduate-run journal dealing with research and debates, it is only natural that we would employ a technique that has been vital since the birth of archaeology as a science.

The idea of creating an image gallery was easy, but how to start something from scratch? How would we get entries? How to encourage people to send their images? A competition was created that would run for a period of time, as a way to obtain some images submitted by readers. This was realised at the end of 2013, and the competition began. Even though the team worked hard on spreading the word, I would have been glad with 10 different entries, hopefully also from people outside of the team or university. At the first meeting in the New Year, I was completely surprised to find out that we already had obtained 21 entries, and the deadline was still a few weeks away. In the end, a total of 46 entries were in the running. A hard task was ahead; how to choose a winner? It would have been impossible to look at all the entries and vote for a single one, as there were more entries than team-members. With great difficulty, the number was reduced to 20, and just choosing one from them would be too much, so we called upon the voting system of the Eurovision Song Contest (inspiration has to come from somewhere – 'douze points'). This way, ten of the twenty entries would obtain points from every single member and the winner would not be decided by just one person on the team...

It has been a very exciting week, and the winner has finally been chosen. Before we have a closer look at the winning image, here are the top three:



Number 3: Gold pendants displayed at the Museum of Antiquities in Leiden, the Netherlands.
Photographer: Rianca Vogels, University of York (69 points)



Number 2: Taula situated at Talati De Dalt in Menorca, a village occupied until about 300AD.
Photographer: Pete Moore (77 points)



Number 1: View of St Mary's ruins in Museum Gardens, York. Photographer: Kerrie Hoffman, University of York (84 points)

Although not indicated before the competition, I approached the photographers, in order to get the story behind the image and have their reaction to their position.

The photo that came in third place was my own, to my surprise. For my dissertation I visited the National Museum of Antiquities in Leiden, the Netherlands. After my initial work was finished, I visited the museum, and went to the wing with the Dutch history. These pendants seen on the picture were on display, and I liked the way they had been arranged.

The runner up photo belongs to Pete Moore, who was genuinely surprised to be voted runner up. "There aren't many competitions I enter where anything happens!" he explained. The image was chosen to show the diversity of monuments worldwide as well as having some personal importance. "I took this picture on my 14th birthday, the first time I truly understood this diversity first hand, rather than reading about it in a book".

The image that gained the first place and is gracing the cover of this issue belongs to Kerrie Hoffman, who explained: "The picture was taken on the 8th June 2013. I was experimenting with my new camera. The picture is a view of St Mary's Abbey in Museum Gardens, York. This is along my route to lectures at Kings

Manor, where the Archaeology Department of the University of York is situated. I have tried on many occasions to take a decent picture, and on this particular day the lighting was in my favour. I aimed to capture the second arch through the first to create an interesting composition. I chose the picture mainly because of the lighting. The image has not been edited at all, and it is my favourite of my many attempts to take a picture from this angle.

Winning the competition is fantastic, completely unexpected! It is often the image that you, yourself, do not expect to be popular that other people favour. Being an artist myself, it is not usually my photography which takes centre stage, and this is also the first image competition I have entered! Although I am part of the team as creative design editor, voting was anonymous and I was really surprised and ecstatic that my image won. To have my work on the cover of *The Post Hole* is a very different experience to its design; it is amazing, as is the experience of working with such a great team. The image competition and gallery allows viewers to be involved and to promote the journal in the future, and I hope that it continues to grow due to the initial success of the competition”

With the release of this issue, the image-gallery also goes live. Please keep uploading your archaeology photos and drawings, and we will strive to incorporate at least one in each issue.

Is the Pitt Rivers museum a 'real' museum or a museum of museums?

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Christopher Howse (2009) described The Pitt Rivers Museum (PRM) as "a real museum". The museum differs to numerous contemporary and architecturally Victorian museums which have been modernised. This accounts for museums such as The British Museum and The Victoria and Albert Museum, both of which are situated in London and are renowned for reinventing their museums' position in the popular tourist industry. However, the idea of what constitutes as "a museum" varies greatly and is also dependent on individual members of the public and what they wish to gain from their time at the museum. The PRM has not dramatically changed over time, however, it has expanded to an extent, and since entering the computer age in 1986 (University of Oxford, n.d.), it has become a very desirable centre for learning. By analysing the PRM's approach to ethics, the types of display it incorporates, the text and labels used, the progression of Cultural Anthropology and how it could be adapted further, I hope to distinguish whether the PRM's appeal as "a museum of museums" is outdated or not.

The construction of the museum building began in 1885 and finished in late 1886. The building's architecture was pioneering at the time, especially the cast iron work, which bears resemblance to railway stations such as King's Cross Station in London (1852). Even today, the Victorian architecture, dominant central totem pole and dark-coated cases juxtaposed with coloured spotlights is aesthetically pleasing and creates an exquisite atmosphere. During the years of its existence, the museum's collection has increased considerably from approximately 20,000 specimens to over half a million including objects, photographs and manuscripts which reside in the Archives. The museum has followed an arrangement of display initiated by General Pitt-Rivers, the museum's founder. Blackwood (1970) suggests the arrangement consists of large collections by subjects, with sub-groups, geographical variation and diffusion of ideas and on occasion expression of the complete technical process, both types of display were aimed to show a classification of all forms a object can take (University of Oxford, n.d.). The museum still conforms to this type of display today. There are variations between cases – for example, the special exhibition gallery features contemporary interpretive display types. However the typological style of display is dissimilar to the majority of ethnographic and archaeological museums which choose to display material culture according to geographical or cultural areas. The density of artefacts can be compared to The Museum of Rural Life in Reading. Numerous reviews posted online regarding the PRM highlight the word repetition – for example, the cases can be interpreted as 'over-crowded'. There are

suggestions of a slight reduction in artefacts, enabling a closer concentration on those which remain as some of the artefacts at the bottom-centre of the case are obscured.

However, the large percentage of artefacts on display at both museums is not coincidental and in both instances, the 'displays' are primarily visible storage, often referred to as "open-storage" or 'open access exhibitions' (Lord, B., 2001). The Museum of Reading interactive box room gallery is similar to this, as the loans boxes are visible to visitors and can be used as a teaching recourse (Reading Museum, n.d.).

Lothar P. Witteborg (1958) suggested that 'the primary purpose and function of a museum and its exhibits is to educate.' The PRM encompasses this idea as it is primarily a teaching and research institution. In addition, the curators also practice in either Cultural Anthropology or Archaeology, due to the fact that it is a University museum rather than an attempt to replicate an 'old museum'. Many museum professionals would agree that the educational function of a museum is very important (Hudson, 1975), while others argue that the 'telling a story' approach to museum display or 'Linear sequence exhibitions' (Lord, B., 2001) is the best way of achieving a 'meaningful reputation'. The PRM favours the 'exploration' layout, which enables students and visitors to make their own opinions and emotions about exhibitions, rather than a small amount of objects being picked out for them (Pitt Rivers Museum [2], n.d.). The PRM contains two types of circulation patterns, the 'Court' follows the 'Block circulation system' (Communications Design Team R.O.M, 1999), an approach which is preferable to some, as a result the museum lacks a sense of direction and guidance; dissimilar to national museums, there is no pre-planned route in which visitors can take. The 'Lower Gallery' and 'Upper Gallery' follow the 'Arterial circulation pattern' (Communications Design Team R. O.M, 1999) in which the main path is unbroken, taking museum visitors around in a fixed chronological sequence, this is appropriate for the 'Lower Gallery' which contains sequences of 'Childhood' but can be interpreted as too rigid.

The museum does not use one theme font or labelling system. While some labels have clear readability, others were written on small letter tags with even smaller writing size which makes for a very challenging read. In the 'Transport and Navigation display', the text is very word-heavy and consists of black text on a yellow background. The text, which is sub-headed 'Outrigger and Double Canoes' (Figure 1), goes in to great detail in to the development and use of both components. 'Body Art, Jewellery and Accessories' display cases contain a range of text including black printed text on a white background which engage the attention of the reader. Some of the labels found within the PRM are very revealing while others are small and hand-printed, reflecting the old customs of the first curators and editors of the museum. While this is an example of the museum conserving the history of museums, it does encroach upon the issue of empathy or the lack of it

during the beginnings of Cultural Anthropology, where anthropologists did not practice in fieldwork and are considered by today's standards as "armchair anthropologists" who lacked cultural relativism (Ferraro, G. & Andreatta, S., 2010) and viewed other cultures as primitive.

Cultural artefact and human remains placed in museums are de-contextualised, but the markers and users of the object are also anonymous. Some argue that the possession and representation of foreign cultural artefacts in Western museums may hinder the source community's ability to take back the responsibility for its future (Marstine, J., 2011: 249). The PRM can be interpreted as a large "curiosity cabinet" (Ma, L. 2003). A high standard of care for human remains and artefacts made with human remains is arguably one of the PRM's accomplishments. The display of human remains is always being considered for remodelling in order to achieve the best method of communication for educational and cultural purposes and to be respectful to both the dead and the visitors. For example, in 1987 removed the Maori moko mokai (tattooed heads), replacing them with a textual explanation of their meaning and the pardon for their removal as a result of advice from a visiting member of a Maori community (Pitt Rivers Museum [1], n.d). This example does not stand alone, the museum staff work with source communities around the world in order to fully understand their collections. The case on 'Treatment of the Dead' (Figure 1) features dimmed lighting due to the organic nature of human remains, the shrunken heads are also hung from the ceiling of the cabinet perhaps to imitate the three ritual festivals where the heads would have been strung on a cord and worn (Peers' L., 2011). Despite an overwhelming popularity amongst visitors, 'Treatment of the Dead' case is not a prominent wall display, instead it is nestled behind the 'Human Form in Art' case. This may be an example of concealment to respect the dead. This is similar to the location of bog bodies in the 'Kingship and Sacrifice' exhibition at The National Museum of Ireland whereby the human remains are in glass cases, enclosed in small rotunda-like structures creating a physical barrier for those who do not wish to see them (The National Museum of Ireland, n.d.).



Figure 1. 'Treatment of the Dead': shrunken heads (*Tsantzas*), scalps, and trophies (Image Copyright: I. Burrell).

The Oxford University Museum of Natural History is also an example of Victorian Gothic architecture, however its large glass roof over the central part of the museum with cast iron shafts (Oxford University Museum of Natural History Museum, n.d.) gives the impression of a much lighter and larger open-plan space, as a result, by comparison the PRM appears exotic. However the idea of cultural artefacts from foreign countries being identified as exotic is a misinterpretation which has long been disregarded. Interestingly, the online description of the Victorian Natural History Gallery at Ipswich Museum which contains taxidermist examples of foreign animals refers to the specimens as 'exotic' (Colchester + Ipswich Museums, n.d.). However despite the public's reputation of the PRM, perhaps due to its overall design, the museum has approximately '44,015 objects and 6,593 photographs and an unknown quantity of manuscript collections' from England (Pitt Rivers Museum [4], n.d.).



Figure 2. *Elephants and cases displayed in Central Hall, The Natural History Museum, London c1924* (Available at: <http://www.nhm.ac.uk/visit-us/history-architecture/index.html>).



Figure 3. *An interior view of the Botany Gallery, The Natural History Museum, London in 1911* (Available at: <http://piclib.nhm.ac.uk/results.asp?image=012575>).

The central hall of The Natural History Museum in London in 1924 (Figure 2) and the interior view of the Botany Gallery in 1911 (Figure 3) are similar displays to the modern-day PRM. Both of which contain a number of black-framed cases containing natural artefacts. This therefore shows how other museums have changed their image while the Pitt Rivers Museum has remained with the customs of the early 1900s. However, this is not to say that the PRM has not adapted over time. While the PRM does not incorporate 3D technology, digital learning, electronic display, interactivity nor hand-held guides within its physical facility, it does have a very large web presence especially in relation to social media, namely Twitter and Blogger.com. The museum also uses Quick Response (QR) codes which can be scanned using

a mobile device, offering more information concerning a particular object, other archival records and directing visitors to other web pages that may be of interest. This is a very useful tool for conserving space, especially as there is an evident lack of it at the PRM. In addition, the museum is also featured on the 'Oxfords University Museum' app and their website contains audio and video podcasts produced by the PRM in collaboration with local film-makers, schools and academic experts from all around the world which provide an insight into the inner workings of the museum.

The absence of technology within the museum does not make it less significant than museums which use a lot of electronic display, as these can become confusing. The presence of digital technology within the PRM would distract visitors from the aesthetic pleasures of its artefacts. However, online technology used by the PRM adds a layer of interpretation for the visitor. The second phase of its development in 2008 (Pitt Rivers Museum [2], n.d.) changed the PRM from what some may have called a 'fossilised Victorian Museum' into a museum which offers a research and reference centre in sympathy with the Victorian building through the various display-related tasks such as the installation of new cases and displays, suspending the outrigger canoe and 'assessment, storage and redisplay of over 5000 objects' (Pitt Rivers Museum [3], n.d.). An area on the 'Lower Gallery' has been cleared of cases (moved to the front of the museum) in order to provide a new space for public activities and Museum Studies. The dark-coated cases did create an issue of light especially toward the back exhibition cases situated on the ground-floor, however, on further research the museum has received a grant by The Heritage Lottery Fund, supporting vital conservation and redisplay of selected cases, plus improvements to gallery lighting, in addition to a programme of free public activities which are aiming to promote human creativity and initiative. The 'Need, Make, Use' programme therefore directly tackles the question of visibility. During renovations in 2009, unobserved artefacts from the reserve collections were exhibited in the Museum's characteristic style, therefore celebrating the museum's more historic displays and long-cherished atmosphere (Pitt Rivers Museum [5],n.d.).

In conclusion, the PRM does try to retain of the display features and incorporate some aspects of the first anthropological museums including the style of cases, the 'exotic' feel and the hand-printed labels written by the first curators which suggest, in part, that the museum is trying to show the progression from earlier museums. However such aspects do not constitute the PRM being labelled as a 'real' museum. There is no one single mould of what a museum should be, and if anything the PRM is a refreshing change from other contemporary museums, especially 'white box' museums which hand-pick items which they believe to be worthy of display, making objects untouchable and exclusive. Instead, the PRM allows students and visitors to make their own opinions and construct their own interpretations of material culture. The museum does not express traditional views of foreign cultural artefacts being 'strange' but rather incorporates earlier traditions of material culture with contemporary traditions to show the relations and

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common parallels. In addition, it does not ignore the importance of e-resources which shows that the museum is making efforts to be modern.

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Neanderthal Funerary Practices: Complexity and Variation in Structured Responses to Death

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Introduction

Death and dying are sensitive issues, but they are a natural and inevitable aspect of every culture around the world. The capability to understand the inevitability and conclusive nature of death, and the ability to honour and pay tribute to the dead through funerary practices are important cognitive steps forward. But to what extent are these features seen in the world of our closest relatives in the hominid family tree – Neanderthals? For example, they could hunt, work stone tools, and make clothes just as early *Homo sapiens* did, but did they really possess any of our ‘human’ affinities for mortuary practices? If Neanderthals did honour their dead, which funerary practices (if any) are evident in the archaeological record? If so, how variable are the practices in use, and are there any patterns in the data (for example, males subjected to one practice and females treated with another)? These are just a few of the questions I aimed to answer during my Masters dissertation, and I continue to explore in my PhD.

It all began, quite literally, with a ‘big bang’ as the remains of the first (recognised) Neanderthal were blasted out of the Neander Valley in August 1856. But the shockwave extended far beyond the reaches of the Neander Valley and the German borders, as the news of a new species of human being rocked the archaeological world. Some 150 years later we continue to debate every aspect of Neanderthal life and, of particular interest to this article, the intentions of the Neanderthals to dispose of the remains of their dead. The first remains challenged a number of preconceived ideas, such as Creationism, and presented the scholars of the late 19th century with some challenging questions (Trinkaus & Shipman 1993). How did the remains get here – were they accidental, or were they deliberately buried? And if so, how could these ‘primitive savages’ depicted in popular culture be capable of complex emotions?

Skeletal remains and recent research certainly suggest that Neanderthals were aware of their own mortality, and were capable of honouring their dead. Research by Aiello and Dunbar (1993) demonstrates they had a large cranial capacity, indicating they were capable of more complex cognitive processes than they are sometimes given credit for. Examinations of Neanderthal skeletal remains suggest they were aware of their own mortality and that of their peers, which can be found in elderly or infirm individuals found at various locations, such as individuals at Shanidar (Klein 2009; Trinkaus 1983). If an injury or condition was debilitating enough to require assistance from others in order to survive, the fact that these individuals have survived into late adulthood demonstrates that they were cared for by the rest of the group, who understood that without such attention the individual would die. It would also suggest that

they were willing to provide such assistance, even knowing that the individual might not be able to contribute to the rest of the group, with the possibility of the group's help being largely unreciprocated. One can therefore assume that this unreciprocated care could be extended to the deceased as well, and therefore focus remains on signs of funerary practices on specific sites, rather than on whether or not Neanderthals buried their dead.

Funerary Practises in Use

A funerary practice is an act utilising rites in order to remember and honour a deceased individual within the community, but there are a number of different funerary practices. The most familiar and widely used practices at present in the Western World are inhumation (or burial) and cremation, but there are many others used in cultures across the globe and throughout human history.

Table 1 lists just a few of the funerary practices examined in this project, and characteristics which could identify them in the archaeological record. It is by no means an exhaustive list, but provides an idea of the range and types of characteristics to look for. They cover most practices from the most basic of techniques, such as curation (carrying all of a small part of the deceased), to lengthy and involved techniques such as defleshing (removal of all the soft tissue from the bones) (Pettitt 2011). The more characteristics demonstrated on a particular site, the higher the chance that this specific funerary practice or technique was employed.

Funerary Practice	Example Characteristics
Burial or Inhumation	Pit feature; articulation; preservation ('completeness'); absence of gnaw marks; grave goods; multiple individuals
Structured Abandonment	Natural disarticulation due to decomposition; localised area; gnaw marks; lack of occupation layer
Funerary Caching	Numerous mixed individuals; lack of occupation layer; concentrated bone masses; specific body parts represented
Curation	Isolated small elements of body; modification for transport
Defleshing or Excarnation	Cut marks on bone (including arrangement as per fauna); disposal as per fauna
Disarticulation	Cut marks on bone (particularly at muscle or ligament attachment sites); disposal as per fauna
Marrow Extraction	Fracture breaks on long bones; percussion and chop marks; lack of cut marks on minimal marrow bones (eg. phalanges)

Table 1. Summary table of characteristics of funerary practices (after Defleur et al. 1999; Klein 2009; Larsen 1997; Parker Pearson 1999; Pettitt 2011).

Although we discuss terms such as defleshing and disarticulation, use of the term ‘cannibalism’ is deliberately avoided as it is not yet possible to conclusively prove that the living were consuming the remains (this is to be addressed through further research) – and if so, exactly what the purpose of this act was. Instead, this project has focused on the primary actions of the group which has been recorded in the archaeological record, rather than assuming that this must mean that their final intention was cannibalism.

It is important to note that the funerary practices employed are statements of the beliefs and actions of the living, not of the dead. Although it is the corpse which we have as evidence, they can only demonstrate the thoughts of the living who ultimately decided which practice to use and actioned them. Therefore, we are attempting to unravel the intentions of the (then) living group, and not of the deceased, who would have had at best, limited input into their own funerary rites.

Methodology

In order to examine Neanderthal remains for evidence of a variety of funerary practices, a database of all known remains was compiled to include information such as: gender; age at death; ‘type’ of Neanderthal (see below); and a brief inventory of the remains. Data gathering began by using a collection of known sites as listed in a paper by Serangeli and Bolus (2008), which includes European Neanderthal sites, which was then augmented to include other non-European sites using a range of other published primary data. Information regarding age at death was gathered from a number of published sources per individual and, as in most cases, there was not enough of the individual remaining to produce a precise age, an age range was produced for each individual. They were then placed into an age category, based on categories as outlined in White and Folkens (2005).

In addition, each set of remains was categorised as either an “Early Neanderthal” or a “Classic Neanderthal” in order to examine changes over time, and potentially cognitive changes (Serangeli & Bolus 2008). An “Early Neanderthal” is defined as not yet displaying the full range of typical Neanderthal anatomical features, but is definitely a separate species from *Homo heidelbergensis*, which would include sites from ca. 200,000 – 115,000 years BP (for example, Bau de l’Aubier, France and Krapina, Croatia). A “Classic Neanderthal” displays the full range of typical Neanderthal features, such as large brow ridges and a low cranial vault, and includes sites from the start of the last glacial at ca. 115,000 years BP and later (for example, La Chapelle-aux-Saints and La Quina, France). Although these definitions were initially applied to the list of European Neanderthals, for standardisation they were also applied to other non-European sites using information from other sources.

To examine changes in funerary practices due to geographical location within the Neanderthal world, each site was categorised into one of the following categories: Western Europe, Eastern Europe (the border between the two lying approximately between Germany, the Czech Republic, and Austria), and

Asia. Although these are based on modern borders they were sufficient for the initial dissertation project, and random enough in terms of the Neanderthal world to have minimal impact on the study.

As discussed above, a set of characteristics of funerary practices was compiled, and each set of remains was examined for the presence or absence of those characteristics and recorded in the database. The final data set will then be analysed to identify the types of funerary practices that the presence of these characteristics suggest occurred.

Once all of the data was assembled, each site was assessed for suitability in the final data set. Sites or specific individuals were excluded for two reasons, due to time constraints and available resources: firstly, if sufficient information could not be obtained for specific individuals because the information was inaccessible; secondly, where dentition alone was excluded as it was not possible to conclude if they had been lost ante-mortem or post-mortem, and therefore whether they were part of any funerary actions. Deciduous teeth were most likely the result of natural loss as the juvenile matured, and fully adult teeth could have been lost due to decay. By following these two rules, approximately half of all known Neanderthal individuals from across the world were included in the final data set.

Results

The results of the initial research were generated using 197 Neanderthal individuals from the database (approximately half of the entire database) and included 38 “Early Neanderthals” and 142 “Classic Neanderthals”.

Results appeared to show that variability in funerary characteristics increases from the “Early” to the “Classic Neanderthals” (see figure 1), which suggests a greater variety of funerary practices are in use. “Early Neanderthals” appear to begin with characteristics such as defleshing and disarticulation implying corpse processing, and later “Classic Neanderthals” also introduced characteristics which are reminiscent of burial or internment, such as pit features. This suggests that as the species evolved into later “Classic Neanderthals”, they began to explore more options for funerary practices, eventually operating both corpse processing and burial at the same time.

The greatest variability by geographic location is in Western Europe, where most characteristics examined are accounted for. However, this could be due to a bias in the amount of data available for Western European sites (a point which will be addressed through continued research), and the number of individuals in this area.

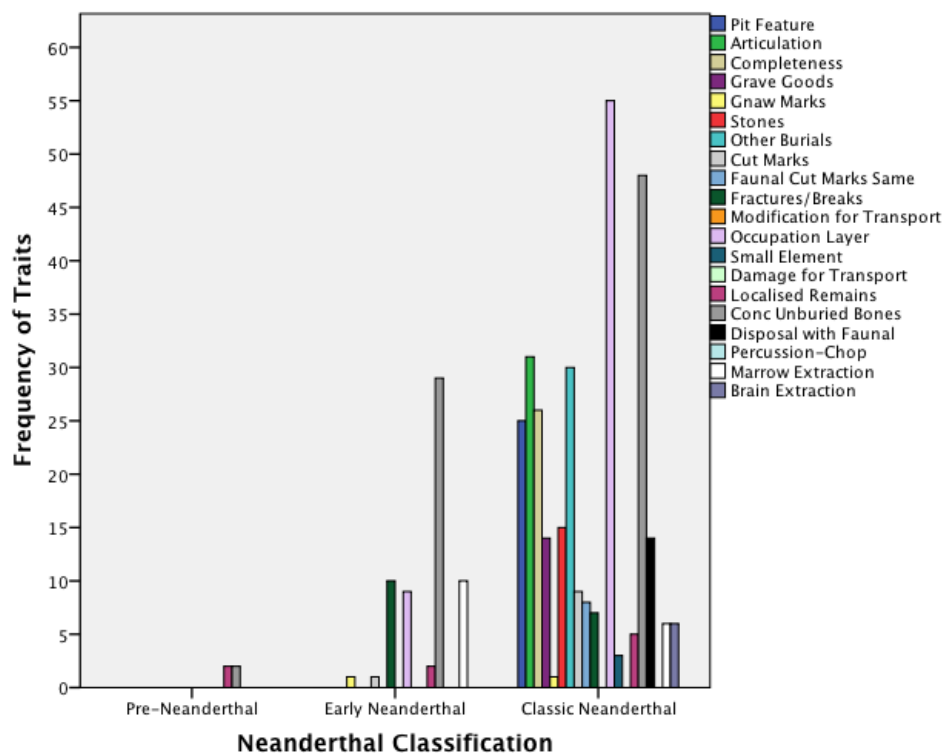


Figure 1. Neanderthal funerary characteristics by classification (Image Copyright: S. Schwarz).

This study also aimed to address whether factors such as gender or age at death had an impact upon the type of funerary practice an individual was subjected to upon their death. Initial research suggests that this is not the case, and no statistically significant pattern could be found for these factors. In addition, there appears to be no preference or strict use of particular funerary practices in particular geographical areas, and instead we find that the same types of characteristics (indicating the same funerary practices) are found across the Neanderthal world. Instead, the results thus far indicate that Neanderthals treat everyone in broadly the same way at the same time – for example, an elderly male Neanderthal in Western Europe is likely to be treated in the same way as a young female in Asia.

Conclusions

The conclusions thus far indicate that Neanderthals had no particular cultural or social patterns when it came to funerary practices – as already discussed, factors such as gender or geographical location were unlikely to influence what type of funerary practice an individual was subjected to upon their death. On the other hand, we also do not see a strict approach to funerary practices, where every burial or every corpse processing site appears the same in the archaeological record. What is apparent is that different characteristics and practices used increased over time, perhaps with the increase in cognitive ability allowing for more complex approaches. Although the concept of corpse processing may seem particularly alien to us, to Neanderthals it may have been viewed as a more natural first step to funerary practices than to us. As hunter-gatherers, they would have been more than capable of hunting, killing, and butchering an animal, and therefore applying these processing techniques to another hominid would not have been a large step to take.

With the arrival of the “Classic Neanderthals”, they begin using two different types of funerary practices: burial and corpse processing (defleshing and disarticulation). With no statistically significant pattern indicating why a particular practice would be chosen over another in each individual case, this may suggest a more ‘ad-hoc’ approach to funerary practices where Neanderthals lacked strict rules on the matter, instead adopting a more fluid and flexible approach.

It is important to remember that evidence of defleshing and disarticulation does not necessarily indicate evidence of cannibalism. In the past, scholars have immediately concluded that cut marks on bones means cannibalism and interpersonal violence, but this should be treated with caution. Although some remains demonstrate evidence of marrow extraction, which would almost certainly be intended for consumption, a large number show only cut marks and therefore we cannot be certain. In addition, we cannot assume the person has been killed specifically for the purpose of being consumed, and instead could have been consumed after their natural death. This distinction is a critical aspect of unravelling the intentions of the living group, and therefore their attitudes to death, and potential rituals employed.

Future Research

Further research throughout this PhD project will continue to explore the funerary practices used by Neanderthals through the augmented database produced in the preliminary stages of the project (with additions and updates). The categories of “Early” and “Classic Neanderthals” will be further divided into more specific time frames in order to examine in more detail the spread of funerary practices over the Neanderthal world, focusing on the European sites for which we have many reliably dated sites.

In addition, the sites will be mapped in order to examine the spatial relationship to each other, in order to determine whether there is any variability in terms of preferred locations and relationship to other Neanderthal sites (e.g. hunting sites) to examine the place of funerary sites within the Neanderthal landscape.

Further updates will be posted onto the author’s Academia page, which can be found at: <https://soton.academia.edu/archaeosarah>

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(Note: For a full list of references for the information held in the database, please contact the author directly.

This paper was based on a poster presented at the first ASA Conference in June 2013.

Comment: archaeology needs to be more multidisciplinary

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During last term, I studied a module on ancient DNA. As a third year BA student at the University of York, and one who had hated science at school, it was a huge step into the unknown. However, despite all that I learnt about science and its applications during the term, the main, and perhaps most important lesson I took away from the term's work was this: archaeology needs to be more multidisciplinary, and work harder to make links with other fields. In the lectures and seminars over the term, I heard and read much about the ways in which archaeology and other sciences can, and have, worked together on a variety of subjects. The reading that I undertook while studying this module emphasized the importance of a multidisciplinary approach to ancient DNA studies, and it was obvious why. Seeing how techniques devised by those in other fields, such as biologists and geneticists, have been used to great success in archaeological studies, was inspiring. In cases where such integrative methodologies were undertaken, the conclusions reached were all the stronger for it.

However, it seems peculiar that this view is not more widely shared, or, at the very least, that it is not more widely discussed in other areas of archaeology. Much of the literature relating to archaeological science seems to make more of an effort to include the discussion of multidisciplinary methodologies than other areas, and to advocate a multidisciplinary approach (Araújo and Ferreira 2000, 89; Buikstra 2010, 407; Buzon 2012, 60; Dittmar 2009, 365; Wright and Yoder 2003, 56; Zimmerman 2012, 154). And while there do appear to be some less scientific archaeological books involving a multidisciplinary approach, these are few and far between. Having a quick look through the dozen or so archaeology books scattered around me right now, the term 'multidisciplinary' (as well as its oft-used peer, 'interdisciplinary') doesn't appear in the vast majority. In fact, the only book in which it does appear is Trigger's 700-page *A History of Archaeological Thought* (2006) – although even then, it is only mentioned in a couple of paragraphs.

This just isn't sufficient. We need to acknowledge that there are limitations to what can be achieved without the help of other fields, whether they be history or biology, classics or pathology. These fields can provide support to existing conclusions or challenge those which are erroneous (Trigger 2006, 514). The best way to prove our findings is to have them challenged, and other fields have the ability to do this, with their expert knowledge on particular subjects that have a link with archaeology.

It could be argued that archaeology must be, at its core, a multidisciplinary subject. We must work together with other fields and disciplines in order to improve our understanding of various topics, but also

our understanding of archaeology as a whole. If we challenge and aid one another through multidisciplinary research, we can improve the conclusions we make, but more importantly the way in which we make said conclusions.

However, multidisciplinary links could be taken even further. Many authors have argued that archaeologists need to be trained in a wider variety of subjects, be they in other sciences or in ethical and legal matters (Gillespie 2004, 15-16; Schroeder 2009, 169), not just to improve the academic side of archaeology, but also to prepare them for the working world of archaeology. A rounded educational system for archaeology would enable this to be achieved. Better links between different departments at universities would be the first step towards this, encouraged by the choice to take elective modules in other departments. This would allow students to widen their own knowledge whilst simultaneously considering the links between archaeology and other fields.

In order to move forward as a field, we need to constantly assess our discipline and ourselves, and look at where improvements can be made. One important improvement, I believe, comes from considering a more multidisciplinary archaeology. Advocating a multidisciplinary approach has the potential to improve the skills and techniques used by those within archaeology and similar fields, which in turn would improve the field of archaeology itself. And while some might argue that this is too difficult, why should that stop us?

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Revisiting the ‘Big Deal about Blades’: a full contextualisation of prismatic (volumetric laminar) technology before Marine Oxygen Isotope Stage (MOIS) 5

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Introduction

Since the earliest classifications and sub-divisions of the Palaeolithic (Lubbock 1865; de Mortillet 1867; Brueil 1912), prismatic (volumetric laminar) blade technology has been seen as a recent and sophisticated technological strategy. Originally seen as a hallmark of “modern behaviour” (see Mellars 1989; Mithen 1996), laminar technology has now been refuted as a technological strategy solely used by anatomically and behaviourally modern *Homo sapiens* (Bar-Yosef & Kuhn 1999; Henshilwood & Marean 2003). It is now evidenced throughout Neanderthal populations in Western Asia, and Europe, and their contemporaries in Africa. The most extensive and descriptive review of laminar technology, throughout early prehistory, is Bar-Yosef & Kuhn’s (1999) publication *The Big Deal about Blades*. In this publication, laminar technology before the Upper Palaeolithic was outlined, alongside Levalloisian blades, and compared to selected sites from early Upper Palaeolithic contexts e.g. Chatelperronian and Bohunician sites (Bar-Yosef & Kuhn 1999). However, given new data and refined radiometric dates for these contexts, and more extensive investigations in the earliest manifestations of blade technology, a new review of blade technology is essential. Furthermore, the origins and significance of laminar technology is poorly understood and has not been theorised before.

This article provides a review of the author’s Masters dissertation on this subject. It will review the evidence for laminar technology, prior Marine Oxygen Isotope Stage (MOIS) 5, c. 120,000 BP. Evidence after this period has been investigated before by the author (Hoggard 2012) and, given extensive reviews into techno-complexes during MOIS 5 (Delagnes 2000; Delagnes & Meignen 2005; Locht *et al.* 2010), it is much more pertinent to discuss the earliest occurrences. It will initially outline the fundamentals of laminar technology, how it is a different technological strategy to Levalloisian blade technology, before highlighting the evidence in Europe, Western Asia and Africa, and hypothesising the origins of this technique through the construction of a spatio-temporal chronology. It will also outline current research undertaken by the author.

Defining laminar blade technology

Laminar blade technology refers to the series of stereotyped blade removals, down the lateral edge of the core. Often labelled as “prismatic” or “volumetric” technology, the reduction strategy, as the name suggests, utilises some or the whole volume of the core, and is a proceduralised strategy involving many stages. For blade *débitage*, the convexity, or the longitudinal curvatures of the blade core need to be maintained for successful laminar removals; this is achieved through platform *débitage* (Inizan *et al.* 1999: 75). Vertical ridges/crests on the transverse edge of the core are also prepared, by a series of alternating/bifacial knapping strikes, for the initial blade removal (crested blade/*lame à crête*). Once struck, the removal leaves two arrises which continues the sequence of *débitage* removal. This technology can be divided into five broad categories of volume management, with one or more systems present within an assemblage (see Figure 1). Distinguishing between Levalloisian and laminar blades has been problematic for decades. There are, however, many proxies for distinguishing between these systems. These include:

- The observation of a crested/semi-crested blade (*lame à crête*);
- The degree of standardisation between end-products (laminar products are often more standardised than Levalloisian products);
- Laminar products are often narrower and longer with a lack of convergence on the parallel edges (with the exception of retouched laminar productions into elongated points);
- A trapezoidal or triangular cross-section is more apparent in laminar systems of blade production;
- The butt of a laminar product is often narrower than its maximum width;
- The appearance of a “*chapeau de gendarme*”, or *éclats débordants*, characteristic of some Levallois products, may be apparent.

For more extensive discussions on the process of laminar technology see (Anderson 1970; Boëda 1988; Cahen 1984; Crabtree 1968; Meignen 1995, 2000; Rasif & Andrefsky Jr. 2001; Tixier 1963, 1972, 1984).

The archaeological evidence for laminar technology

In total, there are forty-two different contexts featuring laminar technology before c. 120,000 BP (see Figure 2). Many of the typical features of laminar reduction strategies are not apparent in all instances. In some cases, the natural ridges are utilised and the degree of platform preparation is minimal. Nevertheless, all examples utilise the volume of the core similarly to Upper Palaeolithic systems of laminar technology.

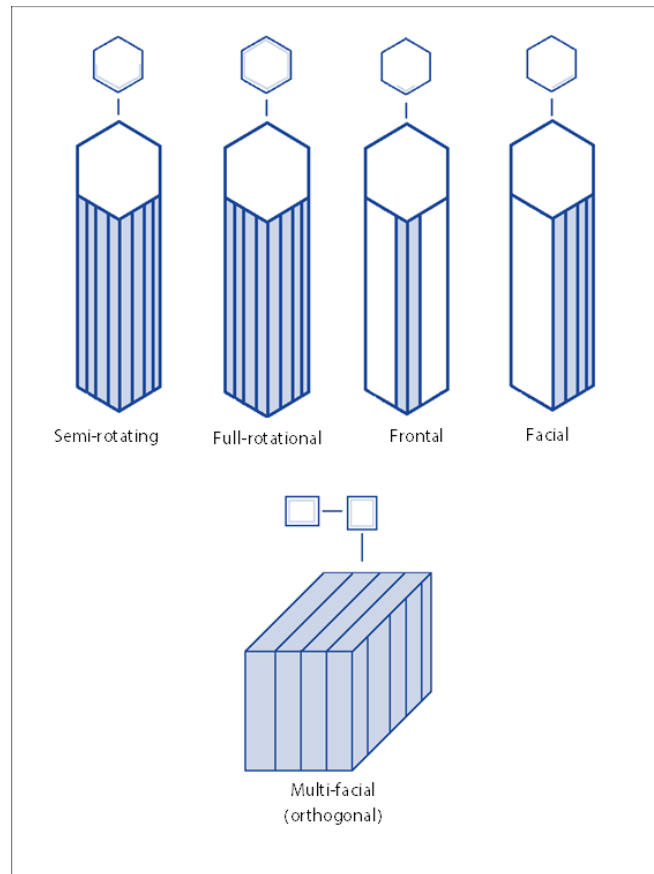


Figure 1. A schematic representation of the different core volume management strategies (modified from Delagnes & Meignen, 2005).

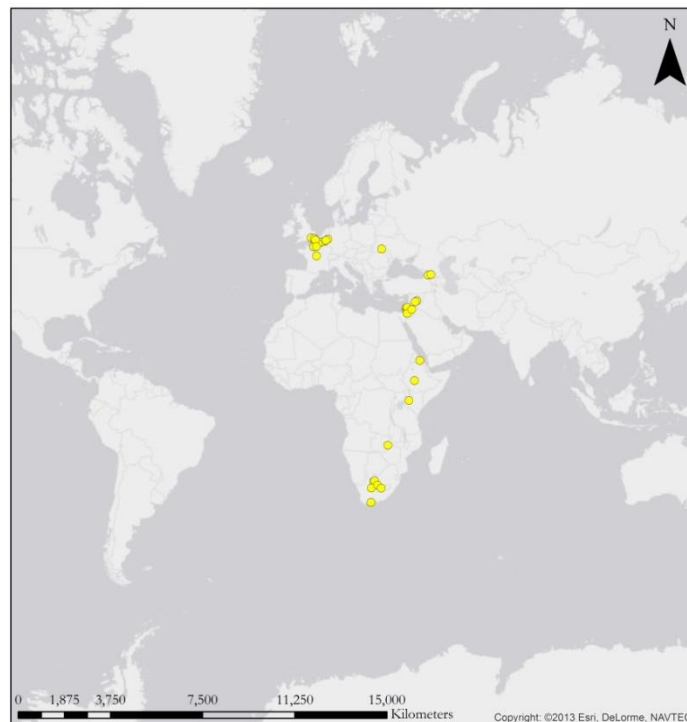


Figure 2. A map of all known contexts to feature laminar technology (yellow dot = context) (Image Copyright: C S. Hoggard).

In Europe there are fourteen individual contexts to feature laminar technology, with only one known context outside north-west Europe. These range from c. 300,000 BP, are not restricted to interglacial or glacial conditions, and are constantly seen throughout until the beginning of the “North-west Technocomplex” (see Delagnes 2000). The number of laminar products range from 11 to 103, very rarely feature retouch, and represent a small percentage of the overall assemblage.

	Site														
	Rissori	Mesvin	Saint-Valery-sur-Somme	Bagarre	Bakers Hole	Rheindahlen	Crayford	Tourville-la-Riviere	Coquelles	Bapaume-les Osiers	Korolevo Cave	Therdonne	Veldwezelt- Hezerwater (VLL)	Veldwezelt-Hezerwater (VLB)	
Marine Oxygen Isotope Stage (MOIS)	8	8	8	8/7	8/7	7	7	7	7/6	7/6	7/6	6	6/5	6/5	
Presence of Levallois (Yes/No)	Y	Y	N	Y	Y	Y	N?	Y	N	Y	Y	Y	N	Y	
Laminar Count (n=)			18					50		103		73	33	11	
Levallois dominant?			N				N		N				N		
Elongated core exploitation (Yes/No)	N	N	Y	N	N	N	Y	Y	N	Y		N	Y	Y	
Percussion Strategy (Hard/Soft)	H	H	H	H	H	H	H	H	H	H	H	H	H	H	
Bipolar or unipolar exploitation? (Both/Bi/Uni)	U	B	Bi		Bi	Bi	Bi	Bi	U	Bi	B	B	B	B	
Tech. Behaviour (shading= present)	De-cortification/modification														
	Platform creation														
	Exploitation surface preparation														
	Cresting/Semi-cresting														
	Natural ridge utilisation														
	Volume management technique (Semi-rotating; Frontal; Full-rotating; Unknown)	Sr	U	Sr	U	U	U	U	U	Sr	U	U	Fr	Fr	Fr
	Rejuvenation														
	Platform maintenance														
	Standardised morphology														
	Retouched laminar products														

Table 1. An overview of European contexts which feature laminar industries (for references see-appendix).

The production of laminar material is not dictated by raw material morphology and type, with a variety of raw materials utilised. In almost all examples (with the exception of Saint-Valery-sur-Somme), Levalloisian technology is present and is the dominant component of the assemblage. Throughout the Middle Pleistocene there is an increase in the number of behaviours associated with laminar technology. Later

examples appear more standardised, feature more retouch, and greater standardisation of the platform, suggesting increased proceduralisation. See Table 1 for an overview of European evidence.

	Qesem Cave	Hummal (7c)	Hummal (7a)	Tabun	Abu Sif	Hummal (6c)	Rosh Ein Mor	Misliya Cave	Hummal (6b)	Hayonim (Lower E and F)	Douara	Hummal (6a)	Djrchula Cave	Tsona Cave	Koudaro Cave	'Ain Difla	
Marine Oxygen Isotope Stage	9/8	8	8/7	8/7	8/7	8/7	7	7	7	7/6	7/6	7/6	7/6	7/6	7/6	6	
Presence of Levallois (Yes/No)	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Laminar count (n=)	684	23	4	76		51	20	458	316		64	6				42	
Levallois dominant? (Yes/No)	N	N	N	Y	Y	N	Y	N	N	N	Y	N	N			Y	
Elongated core exploitation (Yes/No)	N	N	N	Y	Y	N		N	N		N	N				N	
Percussion Strategy (Hard/Soft)	H	H	H	H	H	H	H	H	H	H/S	H/S	H	H	H	H	H	
Bipolar or unipolar exploitation? (Both/Bi/Uni)	B	B	B	B		B	U	B	B	B	B	B	B	B	U	B	
Tech. Behaviour (shading= present)	De-cortification/modification																
	Platform preparation																
	Exploitation surface preparation																
	Cresting/Semi-cresting																
	Natural ridge utilisation																
	Volume management technique (Multiple; Semi-rotating; Frontal; Facial; Full-rotating; Unknown)	Sr	M	U	Sr	U	M	Sr	U	M	M	U	M	Sr	U	U	Sr
	Rejuvenation																
	Platform maintenance																
	Standardised morphology																
	Retouched laminar products																

Table 2. An overview of contexts in Western Asia which feature laminar industries (for references see-appendix).

In Western Asia there are at least twenty contexts to feature laminar technology. There are many others, such as Nadaouyieh Ain Askar, Aarida Sud A and Ain Juwal; however, these are poorly contextualised or dated. Chronologically, these date from 350,000 BP up until 150,000 BP, and are considerably different to the European evidence. Behaviours including standardisation, cresting, rejuvenation and retouch are present throughout, and are unparalleled in nature throughout the Middle Pleistocene. They also occur in bulk (n = <684) and are present in a variety of environments and altitudes, in a variety of laminar and Levallois dominant sites. In all but one example, they co-exist with the Levalloisian system of reduction. See Table 2 for an overview of laminar products in Western Asia.

In Africa, there are fifteen known examples of laminar technology occurring as early as 545,000 BP (some 200,000 years before its earliest appearances in the Middle East and Europe, and the proliferation of the Levallois technique c. 300,000 BP). It can be seen throughout the Middle Pleistocene, and throughout all three regions of Africa (North, Central and South). Again, Levalloisian technology is associated with all but one of the archaeological sites and, like other regions, the use of varying local non-elongated raw material demonstrates how raw material does not dictate the use of laminar production. Furthermore, similarly to other regions, laminar technology occurs in a variety of environments and interglacial/glacial conditions. Many of the behaviours associated with laminar technology such as platform maintenance, rejuvenation, and exploitation of surface preparation are absent, similarly to Europe. See Table 3 for an overview of sites featuring laminar technology.

The origins of the laminar technique: the construction of laminar technology

To understand the origins of this technique, two fundamental ideas need to be explained - 1) why does this technological strategy occur? and 2) how does this strategy become widespread? To truly understand this technique, a spatio-temporal chronology can allow a better insight into the distribution of sites over space and time. By plotting such sites over time and by region, interesting points are raised (see Figure 3). It is evident that the earliest occurrences are situated within Africa, almost 75,000 years before the use of laminar technology elsewhere. This absence of laminar technology may be substantially larger given a preference for a later date at Kathu Pan (Wilkins & Chazan 2012) and poor confidence in the dating of Asfet (see Beyin 2013). Following 350,000 BP onwards, there is a significance increase in the number of sites, right throughout until the end of the Middle Pleistocene. By cross-referencing the data with palaeoclimatological data (benthic 18-Oxygen records in Lisiecki & Raymo 2005), it is further emphasised how laminar technology is produced in a variety of climates. Further dating in the Levantine Mousterian, at such sites as Abu Sif, Hummal and the Djruchula-Koudaro complex, and African sites such as Bundu Farm will further refine this chronology.

The earliest occurrences of laminar technology in Central and South Africa satisfy many archaeologists' view of an origin, a single point in space and time where laminar technology was produced. However, given the absence of data between c.450-350,000 BP there is a distinct lack of continuity in the archaeological record. Furthermore, given that the earliest occurrences total seventy-five laminar products (Hoggard 2013), and the increase in the number of laminar products after 350,000 BP (sites featuring up to six-hundred-and-eighty-four), it is the author's view that (at least) two different origins can be theorised.

		Site											
		Kapthurin Formation	Kathu Pan	Asfet	Wonderwerk Cave (MU4)	Bundu Farm	Biesiesput	Wonderwerk Cave (MU3)	Gademotta	Twin Rivers Kopje	Wonderwerk Cave (MU2)	Rooidam 1	Pinnacle Point
Marine Oxygen Isotope Stage		14/13	12/11	12/11	10/9	9/8/7	8	8	8	8/7	7/6	6	6
Presence of Levallois (Yes/No)		N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Laminar count (n=)		19											50
Levallois dominant? (Yes/No)		N	Y	Y		Y							N?
Elongated core exploitation (Yes/No)		N	N	N	N	N			N	N		N	
Percussion Strategy (Hard/Soft)		H	H	H	H	H	H	H	H	H	H	H	H/S
Bipolar or unipolar exploitation? (Both/Bi/Uni)		U	B	B	U	B	B	Bi	B	B	B	Bi	B
Tech. Behaviour (shading= present)	De-cortification/modification												
	Platform preparation												
	Exploitation surface preparation												
	Cresting/Semi-cresting												
	Natural ridge utilisation												
	Volume management technique (Multiple; Semi-rotating; Frontal; Facial; Full-rotating; Unknown)	Sr	U	Sr	Fr	U	U	U	U	Sr	U	U	Fr/Sr
	Rejuvenation												
	Platform maintenance												
	Standardised morphology												
	Retouched laminar products												
Number of procedures		5	4	4	3	4	2	3	2	4	4	3	7
Extended or Non-extended system? (<50% of procedures – non-extended) (50%> of procedures – extended)		E?	N	N	N	N	N	N	N	N	N	N	E

Table 3. An overview of contexts in Africa which feature laminar industries (for references-see appendix).

The first occurrences of laminar technology, before 350,000 BP, can be seen as innovations, centred around Central and South Africa, whether as an act of ‘Competence Transfer’ (Slimak, 2008), the realisation that tasks undertaken by flake technology can be completed to similar efficiency with laminar technology, or as an extension from parallel flaking systems of core reduction. Its absence elsewhere, may be accounted for by a lack of “extended” networks (Gamble 1999) within Lower Palaeolithic societies. The transfer of information, in this case a reduction scheme, may not be wide-ranging given the weak nature of “extended” networks and the nature of social structures in the Lower Palaeolithic, i.e. small group numbers and local hominid networks. Their occurrence after 350,000 BP coincides with the widespread use of Levalloisian technological strategies (Boeda 1994; Geneste 1988; White & Pettitt 1995); this cannot be ignored given their coexistence with laminar strategies in 86% of all examples. This may accompany

the wider social, cognitive and behavioural changes in Europe (see White and Ashton 2003 for the ‘Neanderthalisation’ of Europe) and Western Asia, accompanied by the deeply rooted modern behavioural package in Africa (McBrearty & Brooks 2000; White *et al.* 2011).

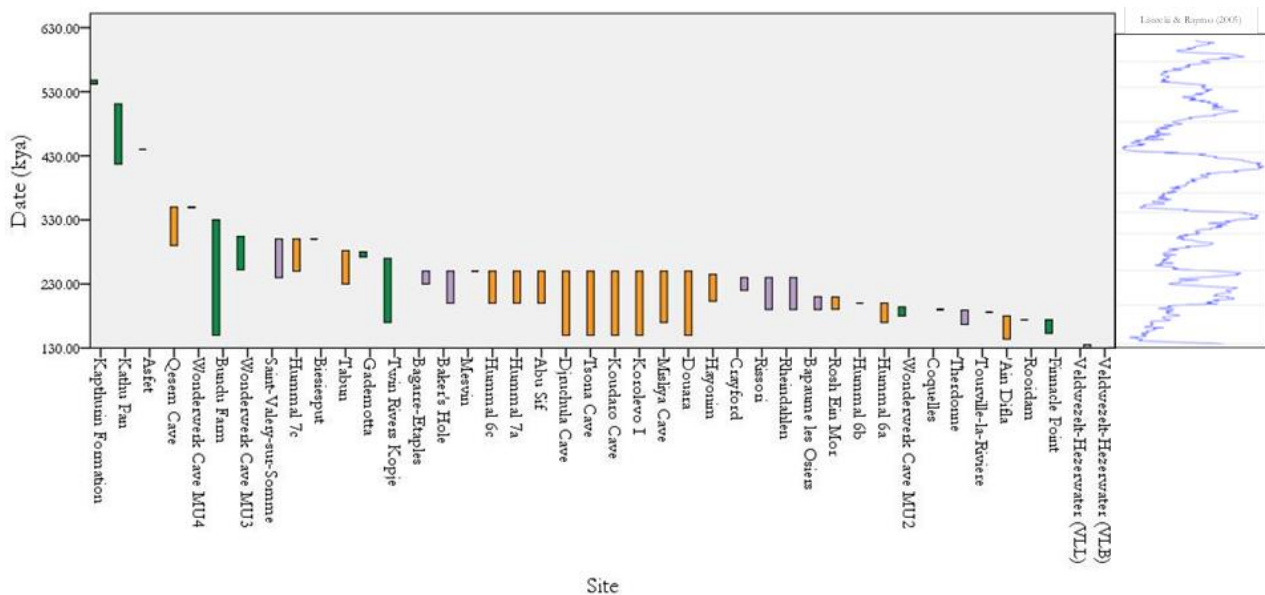


Figure 3. A spatio-temporal graph plotting the different occurrences of laminar technology over time alongside climatic Benthic 18-Oxygen (Lisiecki & Raymo 2005); different colours signify regions (see appendix for dates for these sites).

In their adoption, systems of “expedient” and “curated” technologies (Binford 1973; Binford 1979; Nelson 1991) can be theorised with sites in Europe and Africa representing expedient tools: unretouched and unstandardised artefacts, low in quantity, featuring few laminar behaviours and are from local, varying raw material. Laminar products in Western Asia represent a more curated system where artefacts featured a higher percentage of retouch and standardisation, a greater number of laminar behaviours, are substantial in number, and made from more selective homogeneous material sourced further from the contexts.

One final question remains in their origin and significance: why this strategy? Many examples are produced on a variety of raw materials (both heterogeneous and homogeneous), irrespective of size and type, and feature little decortification with natural ridges and longitudinal convexities exploited. These challenge and contrast many of the assumptions of laminar technology such as the criteria for raw material needed (Bar-Yosef & Kuhn 1999; Eren *et al.* 2008; Hayden *et al.* 1996). It is the author’s view that laminar technology is advantageous in the standardisation of constant thickness, blank shape and cutting edge morphology in comparison to other Middle Pleistocene technologies. This is being further explored throughout the author’s doctoral research.

Conclusion

Since the review of laminar production by Bar-Yosef & Kuhn (1999), there has been a substantial amount of data that has been published which can credibly contextualise laminar (volumetric) technology within the Middle Pleistocene. The days of laminar products being solely Upper Palaeolithic are over, and this article has highlighted the truly enormous amount of information on laminar technology now available. With such, the origins and significance of laminar technology can be theorised and this article provides an overview into its manifestations. Many questions are left unanswered, such as: 1) why do Levalloisian and laminar technologies occur concurrently on most sites? 2) do Levalloisian and laminar strategies represent different on-site behaviours? 3) why do laminar technological strategies become not as widespread as Levalloisian technology, given its proliferation in the Upper Palaeolithic? The PhD research by the author aims to provide answers for these questions and contextualise further the role of laminar production in the Middle Pleistocene through an analysis of the European data in much more detail.

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Appendix

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References for evidence pertaining to Western Asia are as follows:

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References for the Africa data are as follows:

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Archaeology versus metal-detecting (and/or magnet-fishing)

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Translated by: Rianca Vogels

Metal detectorists are often regarded as the destroyers of archaeological context which could provide important information to archaeologists, and is treated as very precious by them. But do metal detectorists really do this?

I always assume that the people who take up metal detecting, and metal-fishing, share the same kind of passion that caused archaeologists to go and study the subject for many years. Because archaeologists often have a degree and are involved in large-scale research projects, it means they are able to obtain more information than the amateur. Finding a single coin from the Napoleon era, faded by time, would probably not excite the professional archaeologist as much as an amateur (metal detectorist), and most likely will not encourage them to undertake more work, just to find another single coin.

The sandy soil in the county of Noord-Brabant in the Netherlands, means that the main archaeological interest lies much deeper than those reachable by metal detectorists, as we are not able to penetrate the earth more than 30cm (12 inches). The only thing we bring along is a small scoop and a metal detector with headphones. Bringing along tools suitable for the deeper layers, especially in the woodlands, are impractical to carry and this would take away most of the excitement. Personally I prefer feral woodlands, which are saturated with flared out roots of big old trees as well as the fact that many farmers used to use their own household furnishings in order to create pathways that would sustain horse and carriage.



Figure 1. *Musket balls found by metal detectorists (Image Copyright: W. Engelen).*

It is also quite common to find an enormous amount of disposed drink cans; these are picked up by the metal detector as being precious metal, which makes us dig to dispose of other people's trash. No-one

would believe it if we said we were happy with these kind of finds, including ourselves. It is frustrating that there are so many people that take their surroundings for granted and dispose of their rubbish where they have consumed it.



Figure 2. *Guild bullets* (Image Copyright: W. Engelen).

Due to this knowledge, my friend, also a keen metal detectorist, and I mainly explore agricultural fields, as these are ploughed deeper than 30cm by the farmers. This is needed as the main crop, corn, is not removed completely when harvested, and the roots will still be present in the soil. We therefore know that our best time is every year after the fields have been ploughed, because the metal in the soil will be ploughed to the surface. This is why we walk the fields every year. Our finds include more recent metal than older ones. We also find coins that the farmers have lost recently and in the more distant past. Other finds include belt buckles, sometimes with pieces of belt still attached. Items that really excite us are old buttons and old guild copper. We also take pleasure in retrieving iron cannons and musket balls (Figure 1) from either the soil or water; because they are often in a perfect state of preservation when extracted and from water they will be encased in a capsule of rust. The latter makes the find even more spectacular and we aim to preserve it the way it was found, as well as being able to see what is hidden within the rust encasing. Due to the fact that the farmers plough the soil so deep, we feel that we can't be a problem for the archaeologists. We understand that the modern day farmer has a need to plough deeper in order to keep the land fertile, which means that preserved layers will be disturbed.

Another way of obtaining old metal is by fishing for it in the local streams and rivers. By doing this, we clean the water as well in the process. Even though our initial reasons for metal-fishing is to retrieve metal finds, we mainly fish up the rubbish deposited in the more recent past. A magnet is attached to our lines (Figure 4) which has a pulling power between 70 - 300kg (155 - 650 pounds). It only attracts metal, which means that the damage to the soil is minimal. The local government uses heavy duty equipment to cut back the vegetation at the bottom. During this, they more than often lose blades from their machinery due to the trash that is deposited in the water. We find these by using our magnet.



Figure 3. *A perfectly preserved gun, found through metal detecting (Image Copyright: W. Engelen).*

In one of the local waters we once found the complete contents of a moped and bicycle shop including filing cabinets! Other finds include traffic signs with their concrete base intact, even solid metal water well covers, with a weight of 100kg (220 pounds). The rubbish that we fish up is removed from the waters and collected by the local county to be disposed of in the proper fashion. Essentially we are cleaning up the local rivers and streams, and in the process we are rewarded for it by the occasional more historical find, like musket balls and iron cannons.



Figure 4. *A magnet used to dredge waters for finds (Image Copyright: W. Engelen).*

By using the magnet above the stream or river bed, we are not disturbing anything that is in it, just that what is resting on top of it. Branches in the waters can cause the lines to become constricted, which provides us with additional work in trying to free the line.

In our opinion we are not disrupting any context layers, which would mean that we are not disturbing the archaeology in the waterbeds. We document our findings by taking various pictures as the find is removed either from the soil or water. Additional pictures are made after we have had a chance to look at them closer and their find location is noted with them.

As keen archaeological amateurs we would like to see a better cooperation between ourselves and the local archaeologists. This would enable us to expand our knowledge of our local history and learn more about our finds, as this is the main reason for us to go and find these objects. We would also like to be able to assist the archaeological field with our finds and believe that if we were informed regarding the professional practices and recording, that we would be able to assist and create a beneficial cooperation. In addition, I feel that a better relation could result in us understanding how to care for the objects recovered, especially those that are obtained from the water as their appearance can change rapidly after being uncovered. For me it is the thrill of finding something someone has lost a long time ago and being able to identify its purpose, which is what makes me go out to the agricultural fields and streams with either a metal detector and or magnet.

A special thank you must go to Ari Buijtendijk for making this all possible.

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