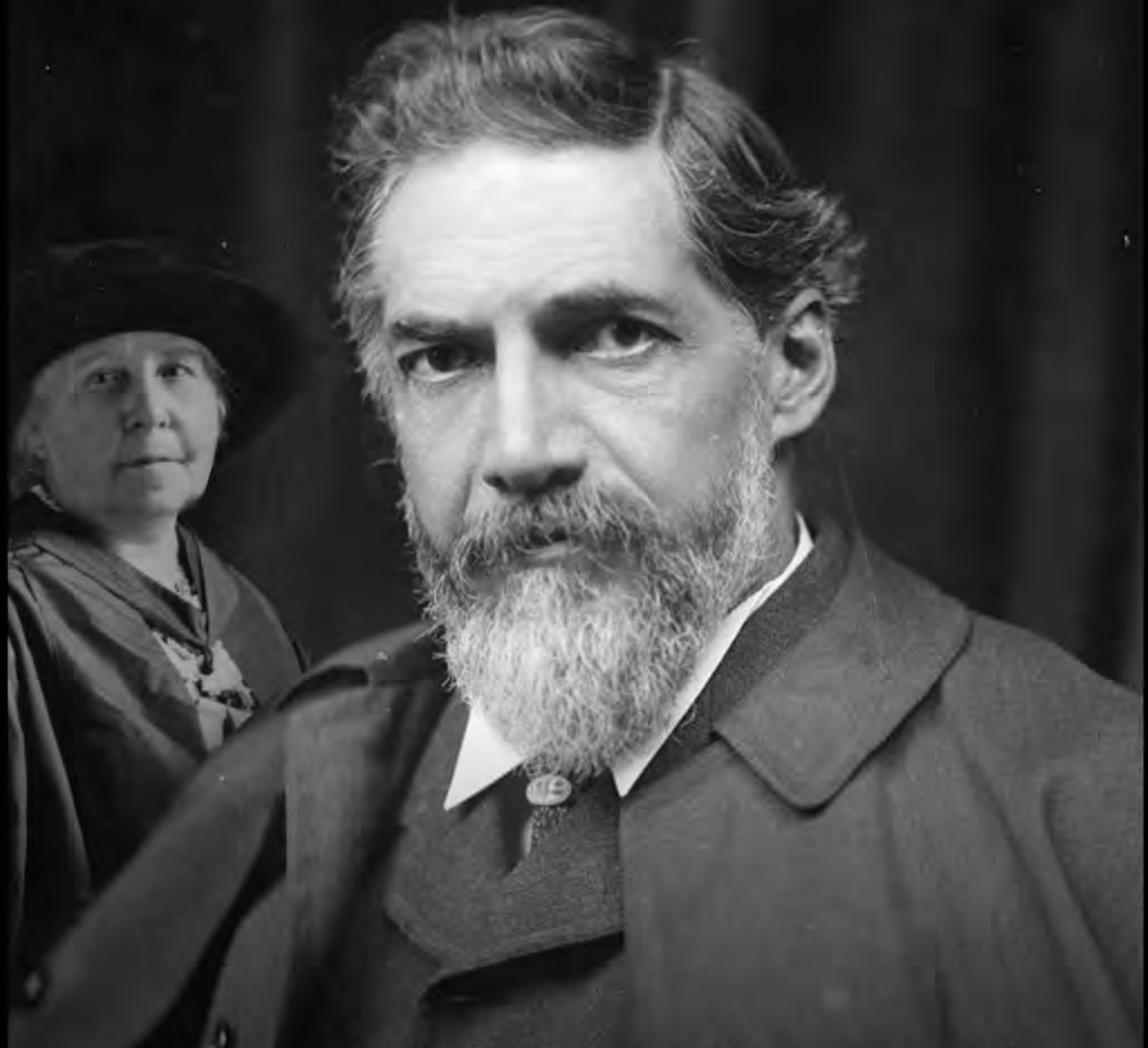#49 MAR 2017

The PostHole

The student-run archaeology journal

Archaeological Heroes: Flinders Petrie

Violence and Group Cohesion in the European Mesolithic

Coinage and Identity in Early Roman Corinth

Acknowledgements & Awards

The Post Hole was shortlisted for 'The Best Public Presentation of Archaeology' and the journal's efforts and growth over the past 6 years were 'Highly Commended' by the British Archaeological Awards in July 2014.

Editorial team
Who's who at *The Post Hole*.

Issue 49 contents
What's in this issue of *The Post Hole*?

Editorial: ISIS and the Destruction of Culture
Daniel Gronow[1]

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It is with the greatest of pleasure that I sit down to write my first editorial as editor-in-chief of *The Post Hole*. It has taken more time than I intended to gather together a new team and to find our collective feet, but we are finally ready to publish Issue 49! I would very much like to thank the previous team for their excellent work on the journal, and to offer my appreciation both to those old members who have stayed on, and to our new members for their patient enthusiasm!

Before discussing the articles included in this issue, I wish, if I may, to address the recent reports that ISIS (or Daesh, if one wishes to play the pedant) has severely damaged the Roman amphitheatre and tetrapylon monument in the ancient Syrian city of Palmyra. When Syrian forces retook the city in March, supported by Shia militia and air strikes out of Russia, the discovery that much of the site had escaped harm was a source of great relief to many archaeologists. Hearts sank when Palmyra fell out of governmental control for a second time in December, and fears for the surviving architecture have since, to my great distress, been realised. Everyone should mourn this loss, and yet those who do invariably find themselves faced with the sanctimonious platitude that 'the loss of a few stones is nothing compared to the death of a single living person'. Respectfully, and with all the sympathy in my heart for the victims of ISIS, I must disagree. For full disclosure, the following is modified from an article I wrote for the University of York student newspaper in June. It remains, I feel, quite pertinent:

To claim that every life is 'sacred' is an act of self-delusion, indicative of moral laziness. It is a prosaic byword used by the naïve and the conceited, and it should be contemplated only that it may be thrown away. Monuments, history and heritage; all of these things are more important than any single individual, or any group of individuals whose death falls short of populicide. It is not people, but rather *a* people which matters here. The determiner makes all the difference. As long as there are survivors (and what civilisation has ever been truly extinguished?), then monuments stand for everything. Without culture and without heritage, any survivors of the conflict in Syria would hardly be survivors at all. Under the pretence of religious devotion (a pretext entirely undermined by the destruction of the secular Roman amphitheatre), ISIS are systematically

effacing Syrian identity. This is nothing less than an attempt at subjugation via cultural genocide. To dismiss this in favour of 'the Syrian people' is to abandon those very people to oblivion.

With that out of the way, here is a summary of the articles published in this issue. It is worth noting that from now on one article from each issue will be singled out as my 'Editor's Choice'. There will be a small badge next to the article title on the contents page, and my reasons for choosing the featured paper will be outlined in each issue's editorial.

The 'Editor's Choice' for this issue is a deeply engaging piece of work by Alison Waller, whose article takes an exceptionally balanced and thoughtful approach to the question of violence and warfare in Mesolithic Europe. As the two terms are often used interchangeably, or rather without any clarity of definition, Waller takes the time early on to differentiate the former from the latter. In the subsequent discussion of skeletal trauma, similar care is taken to expound the difficulties of interpretation. The line between accidental damage and deliberate harm is particularly problematic, for example, but is navigated with aplomb. The proposition that organised, large-scale violence was far from endemic is competently argued, and the implications that this conclusion has for notions of prehistoric social cohesion are well-reasoned. All in all, Waller's paper makes for fascinating reading.

However, that is not to say that the other three papers are not worth your time! Sam Heijnen has written an interesting article on Roman coinage and Corinthian cultural identity. Robert Barratt's piece on photogrammetry and its increasingly important role in archaeology is beautifully written, and Heather Barrass's examination of the achievements and shortcomings of Flinders Petrie is a pleasing reappraisal of the great man.

As always, if you would like to share any of your thoughts, research or experiences with the archaeology community, then please submit your work to submissions@theposthole.org. We are always looking for interesting articles to publish, and accept pieces on a wide range of archaeological topics, from prehistory to the present day. For guidance on submission, please visit our website at www.theposthole.org/authors.

Kindest regards,

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Archaeological Heroes: An evaluation of Flinders Petrie's contribution to Archaeology

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In this essay I will be critically evaluating the contribution of W. M. Flinders Petrie – a renowned British Egyptologist and pioneer of systematic methodology - to the field of archaeology. I will be focusing more specifically on the ways in which general archaeological practice and thought has changed over time in response to his work, along with briefly recognising and highlighting some of the criticism he has faced both posthumously and during his life–looking particularly at the overshadowing of Margaret Murray and her work as an Egyptologist and archaeologist. It can be argued with a considerable amount of support that "the whole attitude towards archaeology has undergone a complete change, due in large measure to the work of Flinders Petrie" (Murray, 1961:9). Some of his most noteworthy contributions include the surveying of prehistoric monuments in order to get a better understanding of their geometry. This led to his accurate survey of Stonehenge at the age of 19, which prompted further work and led to his surveys of the pyramids of Giza. However, Petrie's most influential contribution to archaeology is perhaps his work with predynastic graves in Diospolis Parva, during which time he pioneered a new method of dating known as contextual seriation, and as a result began to teach archaeologists the importance and general need for context within archaeology to provide meaning and purpose.

W. M. Flinders Petrie is considered by many to be the father of scientific archaeology and is credited with developing a chronology of Ancient Egypt through the use of nondescript artefacts which other archaeologists had previously ignored. Towards the end of the 19th Century, whilst Petrie was in Diospolis Parva in Upper Egypt, he excavated several predynastic graves which could not be stratigraphically linked to each other nor to a historical king list. He desired to put the graves in chronological order and began to construct an inventory of the contents of each grave before grouping them into columns where the greatest number of individual types had the shortest duration. This allowed him to arrive at a sequence of assemblages and thus of graves (Renfrew & Bahn, 1991:126-27). Further work in Egypt has shown that the technique of serial ordering generally does reflect the true chronological sequences of assemblages. This technique is

undoubtedly an invaluable methodological development in the field of archaeology, and aspects of it are still used today along with more modern methods of dating.

However, Petrie's contribution is not limited to methods of dating and the chronology of Ancient Egypt. It can be argued that in recognising that all archaeological material has research potential regardless of their inscriptions or artistic merit, and consequently through his examination of a large range of artefacts to discover the past, that his systematic and scientific approach greatly influenced archaeological practice and thought in the late nineteenth and early twentieth centuries. This stands in contrast to the many 'archaeologists' of the period, more appropriately known as antiquarians, who were focused primarily on acquiring attractive artefacts for personal collection rather than pursuing and advancing knowledge.

Alongside contextual seriation, one of Petrie's greatest contributions is undeniably his "meticulous excavations and insistence on the collection and recording of everything found along with publication" (Renfrew & Bahn, 1991:34), as well as other general works which helped develop archaeology as a distinct practice, opposing the old-fashioned idea of antiquarianism. Indeed, Margaret Murray states that the decline of antiquarianism "can be argued to be entirely due to him" (Murray, 1961:10).

Additionally, he stressed the importance of pottery as something more than just a "chronological key" (Petrie, 1904:48), describing it as "the greatest resource of the archaeologist" in addition to being "in every respect the most important material for study" (Petrie, 1904:15) due to the variety of form, texture, decoration and rapid change over time which is easily noticeable even to archaeologists at the beginning of their careers. He also acknowledged that regional differences in tastes meant that pottery, along with other objects of archaeological interest, could be influenced by culture. Furthermore, he saw how foreign imports could be used to link said objects to regions with better dated sequences, which at the time was revolutionary. While highlighting this importance he also noted how form alone was not enough and that the context of artefacts "had to be recorded accurately and intelligently" (Sparks 2013) because this meant that the process of knowing the precise find-spot of an artefact made a division between "plundering and scientific work" (Petrie, 1904:48). This was ultimately the final goal for making his working practices explicit through methodological studies, field reports, publicity material and personal correspondence. To archaeologists, artefacts without context can be extremely problematic. The lack of critical contextual information can often preclude new interpretations, there being no spatially contemporaneous artefacts from which to draw comparison. Furthermore, without context the archaeological evidence regularly becomes less credible. In order for them to have full meaning, "archaeological provenance must be strictly reported…" (Petrie, 1904:145). This would allow the

data and information, if shared or published formally, to teach others about the past and ensure that material culture with potential does not go to waste as it did previously, under the methods used by antiquarians. Petrie's understanding that "every discovery does destroy evidence unless it is intelligently recorded" (Petrie, 1904:48) is a defining moment in archaeology. However, despite Petrie's recognition of the theoretical importance of all artefacts and his criticism of antiquarians who excavated without adequate recording and publishing, it is, in reality, clear that he commonly collected and kept archaeological material which had little or no provenance.

Although his contributions to archaeological practice and thought have been highly significant and influential, W. M. Flinders Petrie was by no means perfect, nor were his methods and ideas regarding archaeology. This becomes particularly clear in Whitehouse's paper titled '*Margaret Murray (1863-1963): Pioneer Egyptologist, Feminist and First Female Archaeology Lecturer*' in which it is competently argued that Margaret Murray does "appear in many histories of archaeology as a mere footnote to Petrie" (Whitehouse, 2013). Despite her many positive contributions to the fields of archaeology and Egyptology in particular, she is often regarded and mentioned as one of Petrie's assistants and "her work is wrongly overshadowed by that of the 'great man'" (Whitehouse, 2013). A statement from the paper sums up this criticism: "Flinders Petrie himself, a supporter of eugenics, believed that Egyptian Civilisation could not have been the product of African peoples but was created by a race of intrusive white people – a view that is as clearly discredited as Murray's witch cult, and arguably more damaging, but which is rarely considered to tarnish Petrie's reputation" (Whitehouse, 2013).

In conclusion, it is evident that Flinders Petrie, described as an "exceptional archaeologist" (Trigger, 1996:24), contributed massively to archaeological practice and thought, and that this was hugely important and effective in the development of a much more ethical, systematic and scientific approach to the field known as New Archaeology. This is evident in his successful changes to methodology, particularly in recording and the publication of data. This has made archaeology a much more objective and methodical discipline, with the effects of his contribution still being felt to this day. Petrie not only stated, but proved with his efforts that "without the ideal of a solid continuous work, certain, accurate and permanent – archaeology is as futile as any other pursuit" (Petrie, 1904:3). He emphasised that "an excavator must make up his mind to do his work thoroughly and truly, or else to leave it alone for others who will take the trouble which it deserves and requires" (Petrie 1904:8). This work is necessary, in order for us as archaeologists, but also as a society, to develop our understanding about the past, and to use this knowledge to better the future.

Bibliography

- Drower, M.S. (1985) *Flinders Petrie: A life in archaeology*. London: V. Gollancz.

- Gertzen, T.L. and Grötschel, M. (2012) 'Flinders Petrie, the Travelling Salesman Problem, and the Beginning of Mathematical Modeling in Archaeology', *Documenta Mathematica*, Extra Volume ISMP, pp. 199–210.

- Murray, M. (1961) 'First Steps in Archaeology', *Antiquity*, 35(137), pp. 8–13.

- Petrie, W.M.F. (1904) *Methods and Aims in Archaeology*. New York: Benjamin Blom, Inc.

- Renfrew, C. and Bahn, P. (1991) *Archaeology: Theories, Methods and Practice*. Fifth edn. London: Thames & Hudson Ltd.

- Sheppard, K.L. (2008) *Antiquity Journal*. Available at: http://antiquity.ac.uk/projgall/sheppard/ (Accessed: 2 February 2016).

- Sheppard, K.L. (2010) 'Flinders Petrie and Eugenics at UCL', *Bulletin of the history of Archaeology*, 20(1), pp. 16–29.

- Sparks, R.T. (2013) 'Flinders Petrie Through Word And Deed: Re-evaluating Petrie's Field Techniques and their Impact on Object Recovery in British Mandate Palestine', *Palestine Exploration Quarterly*, 145(2), pp. 143–159.

- Trigger, B.G. (2006) *A History of Archaeological Thought*. 2nd edn. New York: Cambridge University Press.

- Whitehouse, R. (2013) 'Margaret Murray (1863–1963): Pioneer Egyptologist, Feminist and First Female Archaeology Lecturer', *Archaeology International*, 16, pp. 120–127.

Experimental approaches for 'Photogrammetric Pottery Reassembly (PPR)', demonstrated by Iron Age pots from Ham Hill, Somerset

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Introduction

Given the rapidly increasing role Photogrammetry is taking in the recording of archaeological sites, it is worth exploring the distinct advantages that this technology brings to the recording of artefacts (Allen et al. 2004). Although a methodology for acquiring 3D data from objects has been previously established by a number of scholars, research into the wide plethora of applications this data allows is still in its infancy (Pollefeys et al. 2002; Forte and Kurrillo 2010; Westoby et al. 2012; Olson et al. 2013).

Over the course of the excavation carried out at Ham Hill, Somerset, during the 2013 season, a number of fragmented decorated vessels were found on the outskirts of an Iron Age enclosure. One of the ideas suggested at the time of discovery was the possibility of using Photogrammetry to "stitch together" the different parts, to see if it was possible to recreate the vessel digitally, as if it had been physically glued back together.

In part, this was guided by three principles: 1. Research questions concerning the refitting of pot sherds across the site, and the contribution that digital reconstruction could potentially offer; 2. Conservation, and the desire not to add glue to sherds prior to additional scientific analyses. 3. Visualisation – first to provide a means to present pottery to specialists during the excavation (i.e. on-going informative feedback during fieldwork), and second, as a presentation tool for broader outreach.

This paper is a summary of the methodology adopted, which will be referred to as 'Photogrammetric Pottery Reassembling (PPR)', and as a showcase of the results.

About the pots

The four pots reassembled digitally were found during the 2013 excavation of the site of Ham Hill, Somerset. The site is located outside a Mid to Late Iron Age enclosure, which was previously excavated in the 2011 and 2012 campaigns (Slater et al. 2012; Brittain et al. 2013). The peak of occupation of the area appears to be the Mid to Late Iron Age, with a number of ditch defined dwellings, and post structures with multiple clusters of pit grain stores associated with this phase.

Two of the pots found were located in a pit rich in finds, including loom weights and ironwork, while the other two were found in a nearby ditch, cut by, but broadly contemporary with, the main enclosure. The pots themselves were only partial and fragmented, yet in relatively good conditions. They were given individual finds numbers and 3-D located using an Electric Distance Meter (EDM).

The reason these pots were chosen to test this methodology was to ensure the safety of the fragments, which would not have benefited from being glued together due to their fragility. In addition to this, three of the pots contained decoration, so one of the aims of this project was to find out if it was possible to emphasise this decoration digitally.

Additionally, the number of fragments was key to this choice, as they range from three to nine shards, making it possible to test the method without putting a strain on the programs used. The actual limits in fragments is hard to define, as it depends on the size and quality of the models, but even with nine fragments the program started having computational issues.

Programs and Photogrammetry methodology

Photogrammetry was chosen over Laser Scanning, as it is more cost effective and thus more accessible.

The programs used to reassemble the pottery were 123D Catch and Blender, both of which are freeware. 123D Catch was used to create the original mesh from photographs through the use of Photogrammetry. Although the results here were achieved using solely 123D Catch, similar results can be obtained using any Photogrammetric program of choice, provided that this allows exports in .obj format. Blender is also a freeware program that was used to stitch the different fragments together. Meshlab was originally used, but proved to be unreliable.

The individual fragments were photographed and then made into models with 123D Catch. Each fragment was photographed from 17 different angles, completing two full circles around the object

with a 45 degree shift from one position to the other, and with a difference in height between the two circles. A final photo was taken as bird's eye view. 123D Catch does not require calibration for the cameras, making it possible to simply estimate where the camera would be rather than having to measure the distances accurately. In order to further simplify the process, an automatic setting was used on the camera, which recorded them in a fine .jpeg format.

The use of a brightly coloured surface, with faintly recognisable bumps to increase the noise, was useful in improving the accuracy of the models. In the case of this project a bright blue plastic base, originally a TV stand, was used with good results, as the contrast between the pottery and the bright base was substantial. This, however, did cause blue "staining" on the texture, an issue addressed below.

First step: individual model creation

The initial phase of this method was to identify the fragments of pottery that were originally joined together. As the stitching of the individual parts has to be done manually, and scaling is an issue, defining beforehand which fragments would eventually form the vessel meant that the process was quicker and more accurate. This was done by placing the fragments on a surface, roughly in their position, and then taking a photograph for reference.

Each pot fragment was photographed and made into a model using 123D Catch, applying the maximum rendering settings. The sherd was carefully removed from its background by selecting portions of the latter and deleting them using the 123D Catch tools. It was then exported as an object file, with extension .obj. This resulted in three separate files in the folder, the actual .obj file that contains the information regarding the point coordinates, a .mtl file that pinpoints the position in which the textures are to be placed within the model, and a .jpeg image file, which represents the actual textures.

Second step: from parts to the whole

Once the individual pot fragments were created, the models were reassembled to recreate the complete pot. The first fragment was imported in Blender, and a few lights were created in order to increase visibility. The fragment was then positioned so that it would fit in with the rest of the vessel. As this was the first piece to be imported, and due to the relative dimension nature of Blender, it was not necessary to scale it.

After the first fragment was in place, the successive one was imported as before. This was then moved into the position and scaled using the first sherd as a reference. The main issue with the

precision of the method is visible here as the scaling and positioning requires a level of guesswork. Switching between textured and un-textured mode proved to be of some use in this case, but although visually the results seem compelling, the accuracy suffers somewhat. Further observation on this issue will be discussed in detail below.

Once the second fragment was positioned using the Blender tools, the other sherds were also uploaded. Larger models (more than 130,000 points in this case) caused computational problems, but switching to non-textured mode seemed to ease the pressure.

Third step: final editing and rendering

Once all fragments were positioned, the textures were altered so they would appear more uniform. The first concern was some blue edges that had appeared on a few fragments due to the background used in the photographs. Using the colour selection tool these were corrected using the texture just next to it as a reference.

Similarly, the texture of some of the fragments was adjusted to provide consistent lighting, as the associated models were too light or dark due to the conditions in which the photographs were taken.

Once the textures were relatively attuned, the camera was positioned for the final rendering. The result was a series of 2D images, some of which are found in the appendix. A series of 2D un-textured images were also produced for some of the vessels, as the shades of white effect allowed some of the decorations to become more visible (see Appendix 1 – Figure 4).

Uses of PPR

The methodology used to reconstruct these pots has a number of applications within the world of archaeology.

First and foremost, it allows the user to reconstruct a pot in digital form that might otherwise have to be glued together, a process which can be harmful to the vessel itself or that could impede further scientific analysis.

Another important aspect of this method is that the finished product is also a fully interactive 3D model. This can be made available to the general public through a number of ways, often creating proper galleries of artefacts that people can virtually explore. A good example of this is the website http://www.sketchfab.com, which allows delicate objects and transient archaeological features and

sites to be more accessible. Also, models can be easily shared using 3D PDFs, which require little space and can be uploaded to websites with ease.

However, this method is also a good indicator of some of the other things Photogrammetry can do for archaeology. First of all, it shows how it is possible to digitally catalogue artefacts, and how this can be an accurate exercise with great potential regarding accessibility to the public, the research community and other archaeological practitioners. Secondly, merging multiple models can prove advantageous to field archaeology recording. Each feature excavated could be made into a model, and then the entirety of a site could be recreated by stitching the individual models together.

Finally, through the use of a 3D printer, the model that has been created could be replicated as a separate entity. As an addition, using software such as Maya by Autodesk, the rest of the pot (if it is not complete) can be reconstructed, hence making a tangible vessel out of a number of fragments.

Observations

Having access to the original fragments while stitching them digitally provided a valuable comparison that greatly increased the accuracy of the final product. Although the pots shown here were reconstructed only in the exterior, it would be entirely possible to reconstruct the other side of the vessel as well, making two separate models for either side.

Finally, a number of alternative programs may be used to achieve the same goals. For example, Agisoft Photoscan or VisualSFM (especially for Mac) can easily replace 123D Catch, and Meshlab can be used instead of Blender, although it does have some issues with stability.

Limitations

Given the experimental nature of this project, the results do carry some limitations, especially with regards to accuracy. As no reference scale was employed, each fragment had to be manually adjusted. This meant that although visually compelling, the results are subjective and imprecise. Other programs may provide solutions for this, and the addition of a consistent scale within the models themselves can greatly increase the scientific value of the results. Consistency between the fragments also generated some concerns since editing the textures taints the objectivity of the models. A solution to this is improving the photographic conditions, especially with regards to lighting

Conclusion

Although this method has room for improvement, 'Photogrammetric Pottery Reassembling (PPR)' is an interesting approach to digitally reconstructing objects from fragments. It boasts a wide range of applications, both for artefact and field recording, which go beyond mere visual effects. It could help bridge the gap between researchers and general public, by creating digital spaces where people can view and interact with archaeological artefacts.

The methodology described demonstrates the flexibility of Photogrammetry. From the initial passive approach of simply collecting data, we have moved on to a new area of research, in which interaction with the data itself can provide valuable insight into a wide range of archaeological queries. And with the advancement of computing, these possibilities will only increase, hopefully giving us a broader understanding of archaeology as a whole.

Acknowledgements

Bibliography

- Allen, P., Feiner, S., Troccoli, A., Smith, B., Benko, H. and Ishak, E. (2004). *Seeing into the Past: Creating a 3D Modeling Pipeline for Archaeological Visualization.* 2nd International Symposium on 3D Data Processing, Visualization, and Transmission : proceedings : 6-9 September, Thessaloniki, Greece.

- Brittain, M., Evans, C. & Sharples, N. (2012). *Excavations at Ham Hill, Somerset (2012).* Cambridge: University of Cambridge. p16-17.

- Forte, M. and Kurillo, G. (2010) *Cyberarcheology - Experimenting with Teleimmersive Archeology.* 16th International Conference on Virtual Systems and Multimedia, Oct. 20-23, 2010, Seoul, South Korea.

- Olson, B. R., Placchetti, R. A., Quatermaine, J. and Killebrew, A. E.. (2013). 'The Tel Akko Total Archaeology Project (Akko,Israel): Assessing the suitability of multi-scale3D field recording in archaeology'. *Journal of Field Archaeology*. 38 (3), p244-262.

- Pollefeys, M., Vergauwen, M., Cornelis, K., Tops, J., Verbiest F. and Van Gool, L. (2002). *Structure and Motion from Image Sequences.* Proc. Conference on Optical 3-D Measurement Techniques V, Grün, Kahmen (Eds.), pp. 251-258, Vienna, October, 2001.

- Slater, A., Brittain, M., Evans, C. and Sharples, N. (2011). *Excavations at Ham Hill, Somerset (2011).* Cambridge: University of Cambridge.

- Westoby, M., Brasington, J., Glasser, N., Hambrey, M. and Reynolds, J. (2012). ''Structure-from-Motion' Photogrammetry: A Low-cost, Effective Tool for Geoscience Applications'. *Geomorphology* 179 (1), p300–314.

Appendix 1

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R. P. Barratt, P. Smith & W. Tregaskes
Date 2013/08/09 14:40:16
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Figure 1: Pot composed of 9 fragments, mostly flat in shape (Barratt, Smith and Tregaskes).

R. P. Barratt
Date 2013/08/08 10:35:04

Figure 2: Pot composed of 3 large fragments, with decoration (Author's own copy).

R. P. Barratt
Date 2013/08/08 11:44:12

Figure 3: Larger pot, with decoration. Nine fragments in total (Author's own copy).

R. P. Barratt
Date 2013/08/07 09:31:43

Figure 4: Same pot, un-textured, with emphasis on decoration (Author's own copy).

R. P. Barratt
Date 2013/08/18 22:29:23

Figure 5: In this instance, the difference in shading is somewhat significant, making it less visually appealing than the other pots (Author's own copy).

The Greek Past and Roman Present: Coinage and Local Identity in Early Roman Corinth

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Just over a century after its destruction by Lucius Mummius, the ancient Greek city of Corinth was re-founded as a Roman colony. Many contemporary sources present this new Corinth as wholly and unswervingly Roman, with no interest in its Greek heritage. However, Corinthian coins dating from the city's foundation in 44 BCE to 51 CE show a comfortable pairing of Roman and Greek imagery. Local deities appear just as often as Roman emperors, and in many cases they are found on either side of the same coin. This shows that the Corinthian *duovir* wished to present a new, unique identity that was both Roman and Greek, implying attempts to find simple and clear cultural identities in Roman colonies should be avoided.

In 146 BCE, the Roman commander Lucius Mummius sacked the city of Corinth following its involvement in the Achaean League's resistance to Roman dominance. More than a century later, in 44 BCE, the city was re-founded as a Roman colony by Julius Caesar, who named it *Colonia Laus Iulia Corinthiensis*. According to Polybius, Mummius' soldiers had very little respect for the ancient Greek city's heritage. 'I saw with my own eyes pictures thrown on the ground and soldiers played dice on them' (39.13), notes Polybius.[1] The new settlers apparently continued the practices of Mummius' soldiers. Strabo records, for example, that they 'were removing the ruins' and 'digging open the graves', and as such 'they left no grave unransacked; so that, well supplied with such things and disposing of them at high price, they filled Rome with Corinthian mortuaries' (8.6.23). In the 2nd century CE, Pausanias writes that 'Corinth is no longer inhabited by any of the old Corinthians, but by colonists sent out by the Romans' (2.1.2) and 'after Corinth was laid waste by the Romans and the old Corinthians were wiped out, the new settlers broke the custom of offering those sacrifices to the sons of Medea, nor their children cut their hair for them or wear black clothes' (2.3.7). Thus, according to the ancient authors, the new settlers had very little concern for

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1. All translations of the accounts of the ancient authors are from the Loeb Classical Library. Available at https://www.loebclassics.com/.

their city's past as they sold its artwork and broke religious customs. This image has become an influential view of early Roman Corinth in academia (e.g. Walbank 1997, 107; Barrett 1971, 1-2).

These accounts provide us with an image of new settlers who disassociated themselves from the ancient Greek city, and instead identified themselves as Roman. It appears they were successful in this because even after approximately six generations, Pausanias did not think of the city's inhabitants as Greeks (2.1.2). Whether we should regard these settlers as Romans or Greeks has been heavily debated. From an ethnographic point of view, the new settlers were mostly freedmen who originated from all over the Roman Empire, but especially from the Greek East (Spawforth 1996; Millis 2010). From a more general point of view, the city had characteristic Roman features such as a consolidated scheme of urban planning, the predominant use of the Latin language, and Roman buildings including the Julian Basilica and the Rostra (Williams 1987). Corinth could thus be regarded as a 'mini-Rome' (Aulus Gellius 16.13.9). However, features of the old Greek city were still present, such as the worship of local gods, the remains of Greek buildings, and the Isthmian Games. Surely, there was more than enough 'Greekness' for Pausanias to write about when he visited the city in the second century CE.

This paper argues that it is not fruitful to assess the amount of 'Romanness' or 'Greekness' of the city in order to determine its cultural identity because it was the conjuncture and mediation of both that constituted the identity of the Corinthians (Pawlak 2013). Moreover, drawing sharp distinctions between the two is also problematic because neither are fixed categories or necessarily opposites. Instead, the meaning of the two was dependent on the specific context of employment rather than predetermined definitions (Wallace-Hadrill 1998). In order to determine the identity of the new colony, it is more fruitful to analyze the way the new inhabitants imagined and presented *themselves*.

Whereas several studies have emphasized Corinth's connection to its past by focusing, for example, on topography and architecture (Romano 2005), this paper analyses the Corinthian coins from the founding of the Roman colony (44 BCE) until the mid-first century CE (c. 50 CE). It will argue that the colony's coins explicitly referred to the ancient Greek city. As such, the settlers anchored the Roman colony as the successor of the Greek city. Roman and Greek elements on Corinthian coinage did not conflict with one another; rather, it was precisely their coexistence and interaction that aided Corinth in creating a new political and cultural identity appropriate for a Roman colony within the cultural milieu of the Greek East. Opposed to the dominant view that communities in Roman Greece became Roman while trying to stay Greek (Woolf 1994), the situation in Corinth presents almost the opposite: they tried to become Greek, while staying Roman.

The potential and aim of the colony to develop itself as a political and cultural entity in Greece is apparent from the fact that the city opened an active local mint immediately after its founding. The coins can be used to distill how the magistrates in charge (the *duovir*) presented their new city. The Corinthian coins have been collected by Michel Amandry in his 1988 monograph as well as in the first volume of the Roman Provincial Coinage (*RPC*) series (Amandry 1988; Burnett and Amandry 1992).

The first issue of the new colony is, in many ways, exemplary to processes mentioned above (Fig. 1). The coins were minted in 44-43 BCE under supervision of the *duovir* - Aeficius Certus and C. Iulius. On the one hand, the *duovir* emphasized their connection to Julius Caesar, who founded their colony, through placing his laureate head on the obverse. The reverse, however, indicates that the *duovir* were familiar with the ancient Greek city and its myths because it depicts Bellerophon mounted on a flying Pegasus, which was one of the most important myths of the ancient Greek city. According to legend, the hero Bellerophon tamed Pegasus with the help of

Figure 1: Julius Caesar and Bellerophon (*RPC* I, 1116). *Bronze as*, from Corinth, 44-43 BCE. *Obverse*: laureate head of Julius Caesar, with the legend LAVS·IVLI·CORINT (Laus Iulia Corinthiensis). *Reverse*: Bellerophon mounted on Pegasus and striking downward with a spear, with the legend L·CERTO·AEFICIO C·IVLI(O)·IIVIR (L. Aeficius Certus and C. Iulius duovir). Reproduced with permission of www.wildwinds.com.

Athena at Corinth. The popularity of the story is widely attested from the 5th century BCE well into the Roman age. The story was specifically connected to Corinth and was not surprisingly a constant in Corinthian pottery and coinage. The size of the coin type, although caution is necessary in combining finds with fixed numbers, seems to have been large: over 123 coins minted between 44-42 BCE have been found. Christine Thomas has interpreted the appearance of Bellerophon and Pegasus on this first issue as an 'obvious reference to Roman domination of Greece' (Thomas 2010, 139). The taming of Pegasus would then be an emulation of how the Romans tamed Greece. However, since the myth had always been present on Corinthian coinage, and would remain so at least until the reign of Septimus Severus (193-211 CE), there is no

evidence to suggest that the iconography of the myth would suddenly be differently understood. Neither are there any indications that Rome used myths like this to express their dominance in Greece. Rather, the juxtaposition of the colony's founder with the old Greek myth on this first issue illustrates how the city presented itself as a new colony, and yet as a continuation of the old Greek city.

Corinthian coinage swiftly followed tendencies in Rome. Corinth was quick to respond with appropriate coin series upon the accession of a new emperor. Moreover, the coins from Corinth show that on multiple occasions the Corinthians went beyond representing the emperor and his wife by putting the portraits of potential successors on their coins. For example, in 2-1 BCE, Gaius and Lucius Caesar (Augustus' grandsons) were put on the reverse of Corinthian bronzes (*RPC* I, 1136). The two grandsons of Augustus were additionally honored with statues in the Julian Basilica. Furthermore, on a special issue in 4-5 CE (probably to celebrate the half-century anniversary of the colony), the Corinthians struck alternating heads of Tiberius, Germanicus, Agrippa Postumus, and Drusus Minor, all potential successors in the imperial lineage, on the obverses (*RPC* I, 1140-1143). In 32-33 CE, the Corinthians even placed Caligula and Tiberius Gemellus, joint-heirs of the emperor Tiberius, on their coins (see Fig. 2). Tiberius Gemellus is hardly represented in our source material because he was quickly removed from the imperial lineage by his joint-heir Caligula. However, in Corinth he appears on coins and even on an inscribed plaque from the Julian Basilica. One of the Corinthian *duovir* at that time, Publius

Figure 2: Pegasus, and Caligula and Tiberius Gemellus (*RPC* I, 1171). *Bronze as*, from Corinth, 35-37 CE. *Obverse*: flying Pegasus, with the legend COR. *Reverse*: Busts of Caligula and Tiberius Gemellus, face to face, with the legend CAE GEM. Reproduced with permission of www.wildwinds.com and www.cngcoins.com.

Vipsanias Agrippa, probably a descendant from a freedman of Marcus Agrippa (Hekster 2015, 124), might have had a special preference for the latter's line in the imperial lineage as Tiberius

Gemellus was in fact the great-grandson of Marcus Agrippa, Publius' ancestral *dominus*. In addition, in 37-38 CE, the Corinthians placed Nero and Drusus Caesar (brothers of Caligula) on their coins (*RPC* I, 1174-1175), and under the reign of Claudius, Nero and Britannicus appear standing face to face on Corinthian bronzes (*RPC* I, 1182-1184). In conclusion, the range of representations of members of the imperial family in Corinth shows that the city was well-informed;as remarked by Christopher Howgego, the city, being founded by Julius Caesar, remained in some sense 'under the patronage of the imperial family' (Howgego 1989, 202). This too was a status which the Corinthians proudly advertised, even occasionally demonstrating local preferences, as we have seen with Tiberius Gemellus.

At the same time, the Corinthians used their coins to pay homage to the myths and deities of Corinth, nearly all of whom originated from the ancient Greek city. These included Pegasus, Poseidon, Isthmus, Aphrodite, and Melicertes, the latter being famously connected with the founding of the Isthmian Games, a festival organized by Corinth.[2] As so many festivities in the ancient world, the Games were initated as funeral games, in this case for Melicertes. His story was well-known in the Greek and Roman world: a young boy whose life was abruptly ended when Hera drove his father to madness and made Ino, the boy's mother, throw herself down the Molonian cliffs together with her son. A dolphin then carried the dead boy's body to the Isthmus, where one of the legendary rulers of Corinth, Sisyphus, buried him and initiated the first Isthmian

Figure 3: Isthmus and Melicertes (*RPC* I, 1168). *Bronze as*, from Corinth, c. 27 BCE. *Obverse*: Melicertes sitting on a dolphin, holding a thryos over his shoulder, with the legend COR. *Reverse*: standing Isthmus, holding rudder in each hand. Reproduced with permission of Ino Ioannidou and Lenio Bartzioti, American School of Classical Studies at Athens, Corinth Excavations (www.ascsa.net).

Games in his honor. For this reason, Melicertes often appears with a dolphin on Corinthian

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2. Pegasus: RPC I, 1116-1117, 1127-1128, 1133, 1145, 1147, 1162-1164, 1166, 1169, 1170-1173, 1181, 1224, 1226-1228, 1223, 1235-1237; Edwards 1933, 77-78. Poseidon: RPC I, 1117, 1125-1126, 1137, 1185, 1223, 1225-1226, 1234-1236. Isthmus: RPC I, 1164, 1167-1169; Edwards 1933, 79. Aphrodite: RPC I, 1127-1128. Melicertes: RPC I, 1162, 1165, 1168, 1170, 1186-1188; Edwards 1933, 77-79.
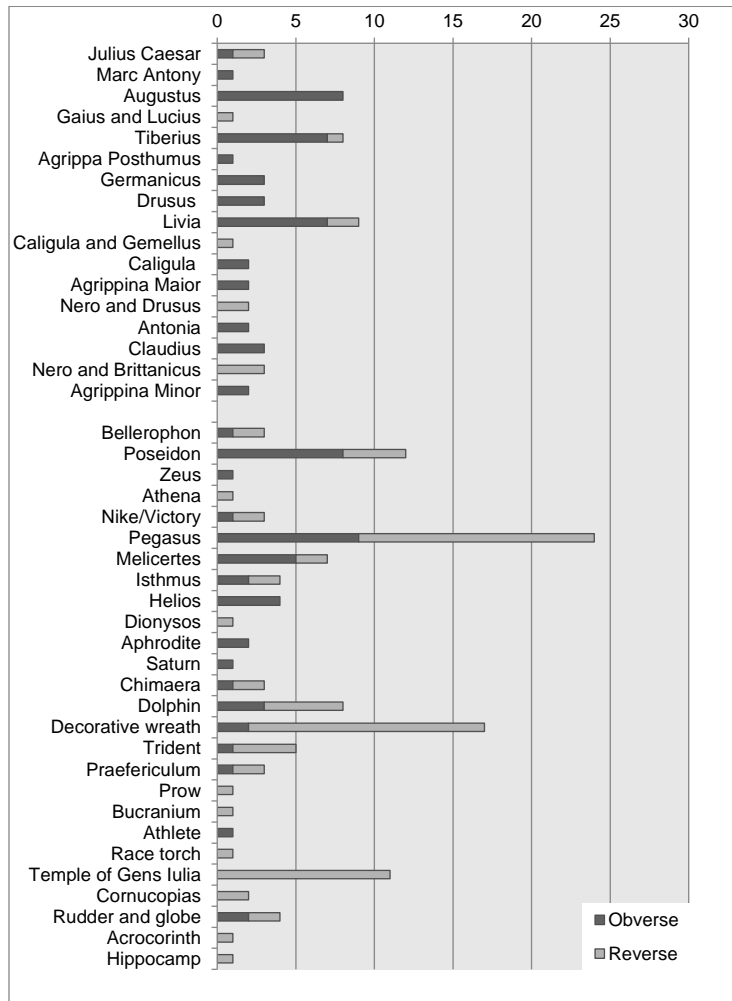
Figure 4: Corinthian coinage struck between 44 BCE and 51 CE. The figure shows how many times the *duovir* chose a certain image as they minted a new coin type. The Corinthian minted 101 coin types between 44 BCE and 51 CE. See also supplementary data. *Note:* Data from *RPC* I, 1116-1188, 1223-1237.

coinage: for example, on the reverse of one coin from circa 27 BCE, on which the personification of the Isthmus is placed on the obverse (Fig. 3). Melicertes appeared frequently on Corinthian coinage (Fig. 4), and his Games were considered a fundamental aspect of Corinthian identity. Almost immediately after Corinth's refounding in 44 BCE, the Games returned to Corinth (Gebhard 1994; Kajava 2002), and a new cult to Melicertes was installed at Isthmia (Gebhard 2005). This shows that the new settlers aimed to establish their city as the legitimate successor of the old Greek city.

Corinth's coins followed this interest in the local past. During the first ten years of the colony, approximately 62 percent of the coin types referred to the deities mentioned above (80 percent when counting the deities' attributes, such as dolphins and tridents). With the establishment of the Principate, a great number of coins became understandably devoted to the emperor and his family, as mentioned above and as shown on Fig. 4). Yet even then, the Greek deities appeared

frequently on the coins. Approximately 31 percent of all coin types struck between 30 BCE and 51 CE refer to these deities (33 percent when counting the attributes). In addition, these deities were the most prominent to appear on Corinthian coinage. Through their coinage, the *duovir* thus emphasized their interest in events in Rome as well as Corinthian myths and gods who found their origin in the ancient Greek city.

Figure 5: Caligula and Pegasus (*RPC* I, 1173). *Bronze as*, from Corinth, 44-43 BCE. *Obverse*: head of Caligula, with the legend C(AIVS) CAESAR AVG(VSTVS) (Gaius Caesar Augustus). *Reverse*: Pegasus, with the legend M BELLIO PROCVLO IIVIR COR (M. Bellius Proculus duovir). Reproduced with permission of www.wildwinds.com.

To conclude, Mary Walbank has drawn a clear distinction between the coins of the 1st and the 2nd century CE, stating that 'the 1st-century coinage indicates that Corinth was primarily a Roman colony' and that in the 2nd century 'Corinth becomes increasingly eager to acknowledge a Classical past (…) in which local cults and myths play a very important part' (Walbank 2003, 348). We can now surmise that, although the link to the past might have become a stronger in the 2nd century, Corinth's interest in its past is already apparent in coinage of the 1st century, on which the city's most important myths and deities already appeared frequently. Of course, the city presented itself also as a colony founded by Julius Caesar, and subsequently payed homage to the imperial family, as any other city in the Roman Empire. The real problem with Walbank's statement is the fact that she contemplates the coinage within a framework of dominance of one identity over the other. Instead the conclusion has to be that the *duovir* chose to present both change and continuity, new and old, Roman and Greek (Howgego 1989), in some cases quite literally as the emperor appeared on the obverse and a reference to one of Corinth's myths or deities on the reverse. For example, on the large coin type of 37-38 CE, which depicts a bust of Caligula on the obverse and Pegasus on the reverse (Fig. 5). The two sides of the coin should not be seen as contradictory but as complementary to Corinth's identity, which was tied closely to both Rome and its own past.

Whether or not the Corinthians were successful in establishing this new identity is a different question. The 2nd century orator Favorinus stated that he deserved a statue in the city because

'though Roman, he has become thoroughly Hellenized, even as your own city has' (Dio Chrys. 37.26). Yet others addressed the difficulties the Corinthians had in emulating their Greek heritage. Pausanias' account on Corinth is exemplary in this regard. However, although Pausanias clearly states that he did not think of the Corinthians as true Greeks, his account of the city is extensive and filled with references to the city's past, which had been kept alive by the new settlers. As a traveller searching for 'true Greekness', Pausanias must have had second thoughts after devoting almost his entire second book to Corinth, which he believed to be inhabited by non-Greeks. The emperor Hadrian surely did think of Corinth as truly Greek when he allowed the city to be a member of the Panhellenion, of which an important requirement was the 'Greekness' of a city (Spawforth and Walker 1985).

In conclusion, the review of this evidence makes it clear that the Corinthians did not convince everyone of their identity, but one would do well to remember that the city did not aim solely on their Greek past. The city's coinage striking shows this duality. The city could become Greek, while staying Roman. In the end, the identity of Corinth was imagined and shared by its inhabitants. If we would judge this identity as modern scholars on truth- or falseness, we would follow in the footsteps of Pausanias in search for authenticity. However, in doing so, we would seriously undermine the underlying processes that constituted to the creation of this new identity. Ultimately, the Corinthian identity was not determined by the dominance of one culture over another; rather, it was precisely the coexistence of both a Greek and Roman identity that resulted in a dynamic new Corinthian identity.

Notes

Recent excavations in ancient Corinth have unearthed a significant amount of coins which have not yet been published. Dr Paul Scotton kindly informed me that the finds of the recent excavations do not contrast the results of this paper (personal communication, October 2016).

Bibliography

- Amandry, M. (1988). *Le monnayage des duovirs Corinthiens.* Bulletin de Correspondance Hellénique Supplément. 15. Paris: De Boccard.
- Barrett, C. (1971). *The first epistle to the Corinthians.* London: Hendrickson.

- Burnett, A. and Amandry M. (1992). *Roman provincial coinage: volume I: from the death of Caesar to the death of Vitellius (44 BC-AD 69).* London: British Museum Press.

- Edwards, K. (1933). *Coins, 1896-1929.* Corinth: Results of Excavations conducted by The American School of Classical Studies at Athens. 6. Cambridge MA: Harvard University Press.

- Gebhard, E. (1994). The Isthmian Games and the sanctuary of Poseidon in the Early empire. In T. Gregory (Ed). *The Corinthia in the Roman period.* Journal of Roman Archaeology Supplementary Series. 8. Ann Arbor: Cushing-Malloy Inc. 78-94.

- Gebhard, E. (2005). Rites for Melikertes-Palaimon in Early Roman Corinth. In D. Schowalter and S. Friesen (Eds). *Urban religion in Roman Corinth: interdisciplinary approaches.* Harvard Theological Studies. 53. Cambridge MA: Harvard University Press. 165-203.

- Hekster, O. (2015). *Emperors and ancestors: Roman rulers and the constraints of tradition.* Oxford: Oxford University Press.

- Howgego, C. (1989). After the colt has bolted: a review of Amandry on Roman Corinth. *The Numismatic Chronicle.* 149, 109-208.

- Kajava, M. (2002). When did the Isthmian Games return to the Isthmus? (Rereading "Corinth" 8.3.153). *Classical Philology.* 97 (2), 168-178.

- Millis, B. (2010). The social and ethnic origins of the colonists in Early Roman Corinth. In S. Friesen, D. Schowalter, and J. Walters (Eds). *Corinth in context: comparative studies on religion and society.* Leiden; Boston: Brill. 13-36.

- Pawlak, M. (2013). Corinth after 44 BC: ethnical and cultural changes. *Electrum.* 20, 143-162*.*

- Romano, D. (2005). Urban and rural planning in Roman Corinth. In D. Schowalter and S. Friesen (Eds). *Urban religion in Roman Corinth: interdisciplinary approaches.* Harvard Theological Studies. 53. Cambridge MA: Harvard University Press. 25-59.

- Spawforth, A. (1996). Roman Corinth: the formation of a colonial elite. In A. Rizakis (Ed). *Roman onomastics in the Greek East: social and political aspects. Proceedings of the international colloquium on Roman onomastics, Athens, 7-9 September 1993.* Meletemata. 21. Athens: Research Center for Greek and Roman Antiquity. 167-182.

- Spawforth, A. and Walker, S. (1985). The world of the Panhellenion. I. Athens and Eleusis. *The Journal of Roman Studies.* 75, 78-104.

Violence and group cohesion in the European Mesolithic

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Editor's Choice

This article takes an exceptionally balanced and thoughtful approach to the question of violence and warfare in Mesolithic Europe. As the two terms are often used interchangeably, or rather without any clarity of definition, Waller takes the time early on to differentiate the former from the latter. In the subsequent discussion of skeletal trauma, similar care is taken to expound the difficulties of interpretation. The line between accidental damage and deliberate harm is particularly problematic, for example, but is navigated with aplomb. The proposition that organised, large-scale violence was far from endemic is competently argued, and the implications that this conclusion has for notions of prehistoric social cohesion are well-reasoned. All in all, Waller's paper makes for fascinating reading.

Debates about the presence or absence of violence in prehistory have often hinged upon how we see ourselves as a species. Are we innately violent, or have we become violent as a response to our increasingly complex social organisation? Is it true that "war...appeared with the first man", as Barack Obama claimed in his Nobel Prize acceptance speech (The Nobel Foundation 2009)? The question is complicated by imprecision regarding the definition and use of the terms 'violence' and 'warfare'. Violence encompasses both individual and group aggressive actions, which may be inter- or intra-group. By contrast, warfare is "organized aggression between autonomous political units" (Thorpe 2003, 171) and includes raiding and group feuding. Another important element of warfare is "social substitutability…violence is not personally directed, but directed towards the group" (Rogers 2004, 13). Warfare contains acts of violence, but is not just interpersonal aggression 'scaled-up'. This paper will show that there is clear evidence of violence throughout the Mesolithic period in Europe. The evidence for warfare is less apparent and clearly varies widely both geographically and chronologically. The implications this has on group cohesion and identity will also be considered.

The evidence for violence in prehistory falls into four categories: weapons, fortifications, artistic representations and skeletal evidence (Schulting 2006, 224; Thorpe 2003, 172; Knüsel 2005, 49). Of these, skeletal evidence is the most useful in the Mesolithic period. Artistic representations of violence or war are lacking, as is evidence for the types of fortifications or military buildings that

have been found in later periods. Until the advent of the sword, no implements have been identified in prehistory whose sole use was for inflicting violence on other humans (Thorpe 2005, 6). Instead we see "tool-weapons" (Chapman 1999) such as the axe and arrow. Without further use-wear and residue analysis, the use of certain tools cannot be fully understood. The tools used to fell trees and kill animals would have been equally efficient at damaging humans. Smashed skulls and projectiles embedded in bones show clearly that such tools were used as weapons, and it is this skeletal evidence which can provide the most information (Knüsel 2005, 50).
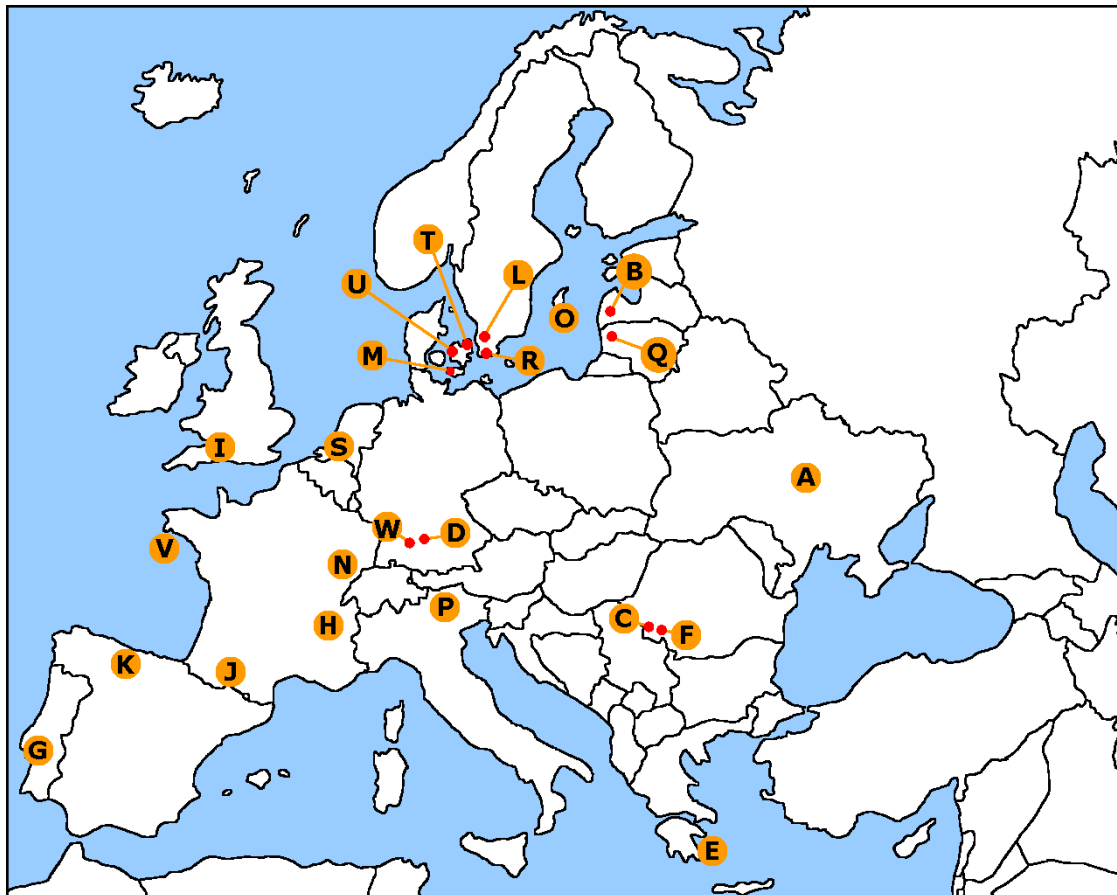

Figure 1: Mesolithic burial sites with evidence of violence according to Estabrook (2014). Chronology is represented alphabetically, with A representing the earliest site, and V the latest. The exception is W, which is not included in Estabrook's list. *A: Voloshkoe and Vasilyevka, Dneiper Rapids, Ukraine; B: Zvejnieki, Latvia; C: Vlasac, Lepenski Vir (Iron Gates), Serbia-Romania; D: Ofnet, Germany; E: Franchthi Cave, Greece; F:Schela Cladovei, Romania; G: Muge, Portugal; H:Culoz, France; I: Gough's Cave, UK; J: Trou Violet, France; K: Colombres, Spain; L: Tågerup, Sweden; M: Møllegabet, Denmark; N: Mannlefelsen, France; O: Stora Bjers, Norway; P: Vatte Di Zambana, Italy; Q: Donkalnis, Lithuania; R:Skateholm, Sweden; S:De Bruin, Netherlands; T: Gøngehusvej, Denmark, U: Korsør Nor, Denmark; V: Téviec and Hoëdic, France; W: Hohlenstein Stadel, Germany. (Basemap from* www.youreuropemap.com)

Although skeletal evidence provides the best clue, it is still subject to interpretive difficulties (Jackes 2004, 23). The skeletal evidence is often fragmentary and damaged, trauma is hard to identify and classifying this trauma as violence is even harder. Although much work has been done on European Mesolithic remains (e.g. Meikeljohn et al 2010; Estabrook 2014; Grünberg 2013;

Radovanic 1996), a database of all burials is not readily available. An attempt to make such a database runs into problems of data availability, inaccurate reporting and disagreement between experts. Estabrook (2014) has tabulated 90 instances of bone injury which were probably a result of violence (see Figure 1). These are from a total of 2000 buried individuals that have been identified on 232 burial sites, many of which contain only one or two individuals (Grünberg 2013, 231). The majority of these burials, whether they are single or multiple interments, contain only fragments of bone, which have often been damaged by taphonomic processes.

Living bone fractures in a noticeably different way to dry bone (Knüsel 2005, 51-4), and ante-mortem injuries will show signs of healing if the wound survived for more than two weeks (Roksandic 2004a, 54). Thus ante- and post-mortem injuries are relatively easy to differentiate. However, determining whether perimortem fractures are due to fatal injury or damage after death, such as from ritual mortuary practices, is extremely difficult. Bone takes time to dry out, and can retain green, plastic qualities for up to two months after death (Roksandic 2004a, 54). Finally, deciding whether this skeletal trauma is accidental or due to human violence can verge on impossible (Roksandic 2004b, 4). As there is no universal indicator of violence, we must rely on 'best judgement' based on the evidence of the bones, the context and cross-cultural knowledge (Rogers 2004; Knüsel 2005, 53).

Figure 2: The possible parry fracture from Vlasac, right radius and ulna shown (image: Roksandic 2006).
After: Roksandic, M. (2006). Violence in the Mesolithic. Documenta Praehistorica XXXIII, Oddelek za arhelogijo. Slovenia: Filozosofska fakulteta, University of Ljubljana. [Online] Available at: http://arheologija.ff.uni-lj.si/documenta/pdf33/roksandic33.pdf [Accessed 7 March 2016].

Postcranial Trauma

The postcranial skeleton suffers the most from post-depositional damage due to its relative fragility (Schulting 2006, 229). As assailants are more likely to attack the head and neck (Walker 1997, 160), trauma on the postcranial skeleton is usually attributable to accident. Exceptions to this are injuries to the arm and hand, often seen as 'self-defence' injuries (Rogers 2004, 12), such as the 'parry fracture' of the ulna (Schulting 2006, 229). Although this has been widely interpreted as evidence of violence, it could also indicate damage due to certain active lifestyles (see Jackes' 2004 study of Portuguese middens). In the case of Vlasac 51a from the Iron Gates region (see figure 2), a fractured ulna has been interpreted as a parry fracture; despite lack of associated craniofacial trauma. As is often the case, insufficient cranial material remained, and as such, the question of whether this could represent violence remains ambiguous (Roksandic 2004a, 64).

Cranial trauma

"The cranium is often the target of blows" (Knüsel 2005, 55) and "is a plastic medium that faithfully records the details of the objects that strike it" (Walker 1997, 146). Thus, healed and unhealed cranial damage is both recognisable and usually indicative of violent trauma in adolescents and adults (Walker 1997, 163). Despite disputes over the numbers and interpretations of cranial trauma in individual cases (e.g. Ofnet, compare Frayer 1996 and Orschiedt 2005), the fact that such trauma is widespread and abundant throughout the European Mesolithic (Schulting 2006, 227) is incontrovertible. Two of the 30+ crania found at Ofnet had both healed and unhealed trauma (Orschiedt 2005, 69), and Bennicke's studies of Danish Mesolithic skeletal remains also indicated that both non-fatal and fatal cranial trauma was common (Thorpe 2000). It is conceivable that cranial trauma could be due to accident, but seems more likely to be the result of violent encounters. At Ofnet, the "lozenge shaped" (Frayer 1996, 192; see figure 3) marks are "consistent only with the use of a chopper-like instrument" (Orschiedt 2005, 71), such as the axes of antler and polished stone found at other sites in the region (Ibid.).

Figure 3: A reconstructed skull recovered from Ofnet Cave, showing distinctively shaped bludgeon wound. (Image: Ludwig-Maximilians-Universität, München).
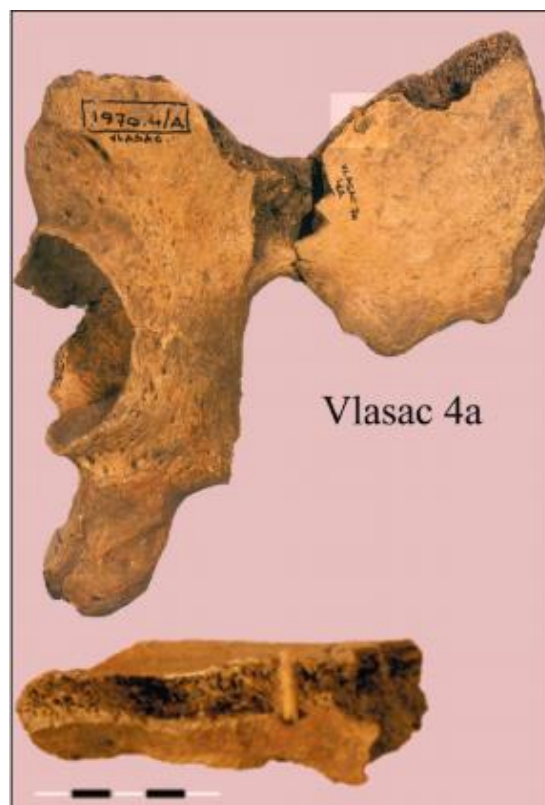

Figure 4: reconstructed ilium of Vlasac burial 4a, showing embedded projectile. (Image: Roksandic, 2006). After: Roksandic, M. (2006). Violence in the Mesolithic. Documenta Praehistorica XXXIII, Oddelek za arhelogijo. Slovenia: Filozosofska fakulteta, University of Ljubljana. [Online] Available at: http://arheologija.ff.uni-lj.si/documenta/pdf33/roksandic33.pdf [Accessed 7 March 2016].

Projectiles

The most convincing evidence comes from cases where projectiles have been found embedded in bone (see figure 3). Burials at the Dnieper rapids sites in modern Ukraine include multiple examples of this, such as Burial 17 at Vasilyevka I, which had injuries from four projectiles, evident through bone damage, embedded points and fragments of points with impact damage (Lillie 2004, 92). The question of loose projectiles found in graves is more controversial. While they are often recorded as grave goods, they could alternatively represent soft tissue injuries. Arrows don't often strike bones and wounds may be as many as "three times the number that left indelible marks on skeletons." (Milner 2005, 150-1). Projectile trauma must surely be underrepresented, but this could only be rectified with careful and costly analysis of use wear, blood residues, minute bone damage (e.g. on ribs) and impact damage on the projectile. At Voloshkoe, two of the 19 burials (burials 5 & 3) had projectile points embedded in bone (Lillie 2004, 91). Nearby, Burial 16 had two points in close proximity, one with residue of bone mass, and Burial 10 had a point with fracture damage (Lillie 2004, 91). Despite this, the lack of skeletal trauma means these individuals are not classed as suffering violent trauma.

Even taking a sceptical approach, it is undeniably clear that there was some degree of interpersonal violence in the European Mesolithic. While some of the skeletal injuries could be explained by accidental trauma, it is implausible to suggest that they all were. The evidence of violent trauma, despite under-reporting (due to the fragmentary record), lack of soft tissue evidence and cautious interpretation must surely point to greater numbers of unidentified traumatic injury and possible violence.

Warfare in the Mesolithic?

A bigger question for many scholars, particularly those outside the field of archaeology, is not about individual acts of violence, but about the causes and origins of warfare. The literature on prehistoric violence and warfare has largely been written by sociologists, philosophers and anthropologists; often using cherry-picked and unrepresentative archaeological evidence (e.g. Pinker 2011, compare Ferguson 2013a). A starting point in many discussions are the writings of Hobbes (*Leviathan*, 1651) and later, Rousseau (*Discourse on inequality*, 1755). Their views are distilled and polarised, then placed in opposition, as Hobbes' 'brutish' savage and Rousseau's 'noble savage' (a term he in fact never used). Although still influential in the debate on the origins and nature of warfare, neither are based on archaeological evidence, as both were formulated centuries ago. They seek to establish universal truths about humans, though both are rooted in the perspectives of the age, and reflect more upon their own culture than upon prehistory.

A consideration of both the archaeological and ethnographic evidence for violence in hunter-gatherer societies throughout time, shows that there is no universal truth, but considerable variability (Thorpe 2005, 3). Few hunter-gatherer groups studied ethnographically are fully pacifist, and few are always involved in violent conflict (Parker Pearson 2005, 22). The situation in the Mesolithic period will be shown to be similar. For evidence of organised conflict, we must again rely on the skeletal record and burial information. The majority of the sites with evidence for trauma contain single individuals (see table 1). This can be taken as evidence for interpersonal violence, but not warfare. Multiple interments or mass graves are one possible sign of organised conflict (Frayer 1997, 183, Schulting 2006, 232). These could be explained by disease, starvation or accident, but even in cases where there is no obvious sign of violence, it cannot be ruled out. For example, the eight people of varying ages found within a mass grave in Sjællend, Denmark, showed no sign of skeletal trauma (Brinch Petersen 1987, 8). Far less ambiguous is the famous 'skull nest' site at Ofnet, which combines a mass grave with widespread evidence for cranial blunt force trauma, and seems unequivocally to be evidence of "warlike conflict" (Orschiedt 2005, 74).

It is difficult to prove trauma is the result of violence on a case-by-case basis, let alone determine if it was due to intragroup violence or organised warfare (Roksandic 2004b, 2). However, sites which show a very high percentage of violent trauma are the most obvious possibilities for warfare. Schela Cladovei, the Dnieper Rapids and Ofnet are all candidates for this interpretation. At Schela Cladovei, on the Danube outside the Iron Gates region, as many as five individuals had embedded projectile points, five displayed cranial trauma, and a further nine had postcranial trauma, out of a total of 57 burials (Roksandic 2004a, 71). Particularly for area III, where seven of 25 burials showed signs of violent trauma, the burials were similar, and restricted in time (Roksandic 2004a, 72). This suggests a short, violent period which could be considered indicative of organised conflict. At the Vasilyevka and Voloshkoe burial sites at the Dnieper rapids, Ukraine, trauma has been interpreted as conflict for resources at a fishing site (Lillie 2004, 94). Not only was trauma evident, but the differences in projectile points suggested they were from another group (Lillie 2004, 95). This external technology gives us the most compelling evidence for intergroup conflict.

The fact that only three burial sites indicating possible conflict have been identified shows that the Mesolithic cannot be seen as a time of endemic warfare. Furthermore, "defence structures and differentiated implements for hunting *versus* warfare are lacking" (Roksandic 2004a, 53), and would be expected if organised conflict was truly pervasive.

Implications for social relationships

Intergroup conflict can only occur when both groups have a clear group identity and strong social relationships and organisation: when their society is segmented (Roksandic 2004, 3-4). Thus in those areas where we see evidence of conflict, we can assume that these people clearly self-identified, and were identified by others, as a group whose shared interests and culture were defined and understood clearly enough to be placed in opposition to an external group. In the past, warfare was seen as arising only among settled agricultural societies (Carneiro 1970, 735) who fought over land. However, the evidence for conflict seen in the Mesolithic shows that, though uncommon, it did occur with earlier complex hunter-gatherer societies. The possible evidence of violence at the Dnieper rapids and Schela Cladovei may show that such groups felt that they had, or could assert, territorial rights over the land and rights over resources.

However, the fact that levels of violence were low elsewhere does not necessarily indicate that most Mesolithic groups had low levels of social cohesion and organisation, or lacked the shared group identity required to wage external war or prevent internal conflicts. Jackes' (2004, 35) ethnographic work suggests that the levels of skeletal trauma indicating violence does not correlate with levels of social cohesion. A cohesive group might be united in their preference for warfare, ritual violence or domestic abuse as easily as in non-violent, cultural expressions. As excessive or fatal violence within any group is not conducive to survival, most foraging societies studied ethnographically have mechanisms in place to avoid it, and it is only when these fail to resolve conflicts that violence erupts (Kelly 2013, 156). Schulting suggests that the "large proportion of cranial injuries [which] are healed could suggest a more controlled form of violence in which the death of the participants was not seen as appropriate" (2006, 228). It is possible that this controlled violence may have been part of a mechanism for reducing interpersonal and intergroup violence by allowing controlled aggression. The skeletal record shows plentiful non-lethal trauma. High levels of healed cranial trauma in Southern Scandinavia may reflect a culture of duelling with clubs (Thorpe 2005, 11), without intent to kill. A strong aversion to killing other humans is evident in healthy modern individuals (Hughbank and Grossman 2013), and there is no reason to believe that would not have always been the case. Of the 90 instances of trauma identified by Estabrook (2014, 62), 40 were non-fatal. This evidence of healed trauma and trepanation, possibly associated with the healing of cranial trauma, also gives insight into cultural practices of caring for and treating the sick and wounded (Estabrook 2014, 50). This also seems indicative of strong social relationships and group identity.

Exotic artefacts and grave goods show that groups may have been trading and coming into contact regularly; that individuals, groups and artefacts were certainly moving through the landscape (Jochim 2008, 217; Cristiani and Borić 2012, 3463). Although the skeletal record shows us that there may at times have been warfare, other cemeteries reveal that peace often prevailed. Even larger burial sites such as Lepenski Vir (Iron Gates) and Olenii Ostrov Mogilnik (Karelia) show very little evidence for trauma in burial populations of hundreds (Chapman 1999, 105; Roskandic 2004a). So perhaps we should ask, why was there peace? We see that groups must have been making contact, and yet evidence suggests they were not always at war. There must have been mechanisms for keeping the peace that were held in common between and within groups, as well as strategies of conflict resolution and mediation (Fry 2013, 228). While group cohesion may be a necessary precondition of war, it does not necessarily lead to it. Conversely, lack of evidence for warfare does not necessarily indicate lack of group cohesion, but may instead indicate concerted, active efforts to maintain peace.

Conclusion

To return to Hobbes and Rousseau, it is clear that not all societies in the Mesolithic were peaceful, but they were not all brutal either. Subscription to these artificially 'polar ideologies' (Ferguson 1997, 321) is unhelpful and obscures the chronological and regional variation shown in the skeletal evidence. It has been suggested that in the 20th century we are deliberately pacifying the past with our interpretations; perhaps looking for proof that as a species we are not innately violent (Keeley 1996). Certainly some evidence of trauma has previously been overlooked or classed as ritual, but the caution used when interpreting evidence should be common to all archaeological interpretation, and is not reserved solely for warfare. While interpersonal violence is clearly apparent in the archaeological record, there is simply not sufficient evidence for extensive, widespread intergroup violence in the European Mesolithic. While it was not unknown, it was sporadic and contained, rather than endemic.

Bibliography

- Brinch Petersen, E. (1987). Eight People in One Grave—The Mesolithic Record? *Mesolithic Miscellany* 8(1), 14 - 15.

- Carneiro, R.L. (1970). A theory of the origin of the state. *Science* 169, 733-8 [Online] Available at: http://www.jstor.org/stable/1729765 [Accessed 26 Feb. 2016].

- Chapman, J. (1999). The origins of warfare in the prehistory of Central and Eastern Europe. In J. Carman and A.F. Harding (Eds). *Ancient warfare: Archaeological perspectives.* Stroud: Sutton pp.101-142.
- Cristiani, E. and Borić, D. (2012). 8500-Year-Old Late Mesolithic Garment Embroidery from Vlasac (Serbia): Technological, Use-Wear and Residue Analyses. *Journal of Archaeological Science* 39 (11). Elsevier, 3450–69.

- Estabrook, V. H. (2014). Violence and Warfare in the European Mesolithic and Paleolithic. In M.W. Allen and T.L. Jones (Eds). *Violence and warfare among hunter-gatherers.* California: Left Coast Press (e-book), pp. 49 - 69.

- Ferguson, R.B. (1997). Violence and War in Prehistory. In D.L. Martin and D.W. Frayer (Eds). *Troubled Times: Violence and warfare in the past.* New York: Gordon and Breach, pp. 321-355.

- Ferguson, R.B. (2013a). Pinker's List: Exaggerating Prehistoric War Mortality. In D.P. Fry (Ed). *War, Peace, and Human Nature: The Convergence of Evolutionary and Cultural Views.* Oxford Scholarship online. pp. 115-128 [Online] Available at: DOI:10.1093/acprof:oso/9780199858996.003.0007 [Accessed 26 Feb 2016].

- Frayer, D.W. (1997). Ofnet: evidence of a Mesolithic massacre. In D.L. Martin and D.W. Frayer (Eds). *Troubled Times: Violence and warfare in the past.* New York: Gordon and Breach, pp. 181-216.

- Fry, D.P. (2013). *War, Peace, and Human Nature: The Convergence of Evolutionary and Cultural Views.* Oxford Scholarship online. [Online] Available at: DOI: 10.1093/acprof:oso/9780199858996.001.0001 [Accessed Feb 26 2016].

- Garcia Guixe, E., Richards, M.P. and Eula`lia Subira, M. (2006). Palaeodiets of Humans and Fauna at the Spanish Mesolithic Site of El Collado. *Current Anthropology,* Volume 47, Number 3, June 2006, 549-556.

- Grünberg, Judith M. (2013). Animals in Mesolithic Burials in Europe. *Anthropozoologica*, 48 (2), 231–53.

- Hobbes, T. (1999). *Leviathan, or the matter, forme, & power of a common-wealth Ecclesiasticall and Civill.* McMaster University Archive of the History of Economic Thought.

- Hughbank, R.J and Grossman, D. (2013). The Challenge of Getting Men to Kill: A View from Military Science. In D.P. Fry (Ed). *War, Peace, and Human Nature: The Convergence of Evolutionary and Cultural Views.* Oxford Scholarship online. pp. 495 - 513. [Online] Available at: DOI:10.1093/acprof:oso/9780199858996.003.0025 [Accessed 26 Feb 2016].

- Jackes, M. (2004). Osteological evidence for Mesolithic and Neolithic violence: Problems of interpretation. In M. Roksandic, (Ed). *Evidence and meaning of violent interactions in Mesolithic Europe.* BAR International Series 1237. Oxford: Archaeopress, pp. 23-39.

- Jochim, M. (2008). The Mesolithic of the Upper Danube and Upper Rhine. In G. Bailey and P. Spikins (Eds). *Mesolithic Europe.* Cambridge: Cambridge University Press, pp. 203–20.

- Keeley, L.H. (1996). *War before civilization.* Oxford: OUP.

- Kelly, R.L. (2013). From the peaceful to the warlike: Ethnographic and archaeological insights into hunter-gatherer warfare and homicide. In D.P. Fry (Ed). *War, Peace, and Human Nature: The Convergence of Evolutionary and Cultural Views.* Oxford Scholarship online. pp. 495 - 513. [Online] Available at: DOI:10.1093/acprof:oso/9780199858996.003.0009 [Accessed 26 Feb 2016].

- Knüsel, C.J. (2005). The physical evidence of warfare - subtle stigmata? In M. Parker Pearson and I.J.N. Thorpe (Eds). *Warfare, Violence and Slavery in Prehistory.* 1374 British Archaeological Reports. International Series. Oxford: Archaeopress. pp.49-65.

- Lillie, M.C. (2004). Fighting for your Life? Violence at the Late-glacial to Holocene transition in Ukraine. In M. Roksandic (Ed). *Violent interactions in the Mesolithic. Evidence and meaning.* Oxford: Archaeopress, BAR International Series, pp. 89-96.

- Milner, G.R. (2005). Nineteenth-Century Arrow Wounds and Perceptions of Prehistoric Warfare. *American Antiquity*, Vol. 70, No. 1 (Jan., 2005), 144-156 Society for American Archaeology. [Online] Available at: http://www.jstor.org/stable/40035273 [Accessed: 28 Feb 2016].

- Meiklejohn, C., Chamberlain, A.T. and Schulting R.J. (2010). Radiocarbon dating of Mesolithic human remains in Great Britain. *Mesolithic Miscellany* 21(2),20-58.

- The Nobel Foundation (2009) Nobel Lecture by Barack H. Obama, Oslo, 10 December 2009. [Online] Available at: https://www.nobelprize.org/nobel_prizes/peace/laureates/2009/obama-lecture_en.html [Accessed: 24/01/2017]

- Orschiedt, J. (2005). The Head Burials from Ofnet Cave: An Example of Warlike Conflict in the Mesolithic. In M.Parker Pearson and I.J.N. Thorpe (Eds). *Warfare, Violence and Slavery in Prehistory.* British Archaeological Reports International Series 1374, Oxford: Archaeopress, pp.67–74.

- Parker Pearson, M. (2005). Warfare, violence and slavery in later prehistory: an introduction. In M.Parker Pearson and I.J.N. Thorpe (Eds). *Warfare, Violence and Slavery in Prehistory.* British Archaeological Reports International Series 1374, Oxford: Archaeopress, pp.19-34.

- Pinker, S. (2011). *The better angels of our nature: why violence has declined.* London: Allen Lane (Penguin Group).

- Radovanic, I. (1996). *The Iron Gates Mesolithic.* Ann Arbor: International Monographs in Prehistory.

- Rogers, T. (2004). Recognizing inter-personal violence: a forensic perspective. In M. Roksandic (Ed). *Violent interactions in the Mesolithic. Evidence and meaning.* Oxford: Archaeopress, BAR International Series, pp.9-21.

- Roksandic, M. (Ed). (2004). *Violent interactions in the Mesolithic. Evidence and meaning.* Oxford: Archaeopress, BAR International Series.

- Roksandic, M. (2004a). Contextualizing the evidence of violent death in the Mesolithic: burials associated with victims of violence in the Iron Gates Gorges. In M. Roksandic (Ed). *Violent interactions in the Mesolithic. Evidence and meaning.* Oxford: Archaeopress, BAR International Series, pp.53-74.

- Roksandic, M. (2004b). How violent was the Mesolithic, or is there a common pattern of violent interactions specific to sedentary hunter-gatherers? In M. Roksandic (Ed). *Violent interactions in the Mesolithic. Evidence and meaning.* Oxford: Archaeopress, BAR International Series, pp.1-8.

- Roksandic, M. (2006). Violence in the Mesolithic. *Documenta Praehistorica XXXIII, Oddelek za arhelogijo.* Slovenia: Filozosofska fakulteta, University of Ljubljana. Available online: http://arheologija.ff.uni-lj.si/documenta/pdf33/roksandic33.pdf [Accessed 7 March 2016].

- Schulting, R.J. (2006). Skeletal evidence and contexts of violence in the European Mesolithic and Neolithic. In R. Gowland and C. Kusel (Eds). *Social archaeology of funerary remains.* Oxford: Oxbow books, pp. 224-237.

- Thorpe, N. (2000). Origins of war: Mesolithic conflict in Europe. *British Archaeology*, No 52, [Online] available: http://www.britarch.ac.uk/ba/ba52/ba52feat.html [Accessed 23 Feb 2016].

- Thorpe, I.J.N. (2003). Death and violence- the later Mesolithic of southern Scandinavia. In L. Bevan and J. Moore (Eds). *Peopling the Mesolithic in a Northern Environment.* Oxford: Archaeopress, British Archaeological Reports International Series 1157, pp.171-180.

- Thorpe , I.J.N (2005). The ancient Origins of warfare and violence. In M.Parker Pearson and I.J.N. Thorpe (Eds). *Warfare, Violence and Slavery in Prehistory* British Archaeological Reports International Series 1374. pp. 1-19.

- Walker, P.L. (1997). Wife beating, boxing and broken nose: skeletal evidence for the cultural patterning of violence. In D.L. Martin and D.W. Frayer (Eds). *Troubled Times: violence and warfare in the past.* New York: Gordon and Breach, pp. 321-355.

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