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## Presentation of the third issue of IJSRA

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I am immensely proud to be presenting the third issue of the International Journal of Student Research in Archaeology. The wonderful community of editors, contributors, and readers is a constant source of inspiration and motivation to us, and we hope that through our work, our aspiration of a more inclusive publishing landscape for the promising students that are the present and future of our discipline will be a step closer.

We have been refining the publication layout, in pursuit of a distinctive visual style, and restructure the numbering sequence for the issues, which will follow a successive counter.

The two main themes for this issue are ‘heritage’ and ‘gender in archaeology’. The first two contributions tackle the issue of how heritage is imagined and constructed, and the various challenges facing preservation issues at the moment. The following two assess the extent to which contextualised osteoarchaeological evidence may inform us about attitudes to gendered persons and their bodies. Despite potential limitations, it will continue to grow as a fundamental avenue of enquiry into past human experiences.

As part of this issue, we have also incorporated an original feature, combining a series of interviews of leading and aspiring archaeologists in a comparative regional overview of the discipline. We are very grateful to Jeanette Deacon, Shadreck Chirikure, Gavin Whitelaw, Ndukuyakhe Ndlovu, Peter Mitchell, and Kenneiloe Molopyane for their

\* **Gonzalo Linares Matás** has just finished a BA Archaeology & Anthropology at St Hugh's College, University of Oxford (UK). He is starting a Research Master's in Human Evolution and Palaeolithic Archaeology at the University of Leiden (The Netherlands), focusing on vertebrate taphonomy, early bone technologies, and faunal analysis. He was the former President of the Oxford University Archaeology Society (Michaelmas 2015), and he has recently been invited to join the WAC (World Archaeology Congress) Student Committee.

He is particularly interested in the socio-political contexts of heritage management and ownership, contemporary archaeological theory, and the histories of the academic disciplines of archaeology and anthropology as practical modes of inquiry. He is also very interested in transforming the academic publishing landscape.

insightful perspectives on what inspired them to become archaeologists, the challenges that the discipline is facing in Southern Africa and potential avenues for addressing these issues. This Q&A session is seasoned with exhilarating anecdotes derived from many years of experiences in the field.

Featuring on our cover, Petra was a crossroad of desert caravan routes in ancient times. The reaped benefits afforded the Nabatean kings to carve monumental sandstone tombs and temples in their capital throughout the first century B.C. Valletta Verezen, in a lavishly illustrated paper, warns how risk- and damage-assessments of its geoarchaeological data are showing that this fragile wonder is rapidly deteriorating due to weathering; and firm and prompt actions are paramount for the safeguard of the region's heritage.

Synthesising sources in English and Spanish, Frances Koziar and Camilo Gómez present a thorough and comprehensive review of the history of archaeological praxis in Mexico. A full range of diachronic changes are threaded together through ideological and political shifts in the conceptualisation of heritage and the indigenous past since the colonial period, particularly in the wake of post-colonial imaginations of the Mexican nation. They also consider recent attitudes to contemporary issues in archaeological practices, such as tourist-oriented conservation, and the role of the past in the consolidation of mestizo identities.

Dannielle Croucher delves into the remarkable osteoarchaeological databases of the Museum of London Archaeology (MOLA) to quantitatively assess changes in interpersonal violence patterns in Medieval and post-Medieval London (11th–19th centuries), through a gender-oriented perspective. The predominance of blunt and sharp injuries and the decrease in the number of sites with interpersonal violence is further supported by legal documents against (lethal) personal violence. The specific trend of increasing violence against males in post-Medieval London is at odds with broader patterns, highlighting the importance to consider specific local factors in the assessment of trends from osteoarchaeological data.

In 'Gendering the Traces', the elegant prose of Amanda Padoan provocatively illuminates the debate surrounding the study of gender in prehistoric archaeology, using the presence of women sacrifices at the elite male 'Birdman' burial in Cahokia Mound 72 as a main case study. She also engages with the broader question of what it means and entails to study gender in the past for the present and future of academic enquiry, and attempts to explore beyond the paradigm of "live women saving dead women from dead men".

We also include in this issue reviews of both the NEBARSS Conference on Neolithic and Bronze Age archaeology, and the Australian Archaeological Association Conference, closing the volume with a book review on bone histology by Ariane Maggio.

In the chapter of future developments, we are preparing special issues for the publication of Conference Proceedings, and we welcome prospective organisers to enquire about the process. Furthermore, we are developing a Newsletter that will aim to further connect subscribers to the IJSRA team, providing additional archaeology content, information about world archaeology events and news, and opportunities to engage in research and outreach. We welcome feedback and suggestions for its successful implementation, as

well as potential contents. If you have a fieldwork/lab picture that you would like to see featured in our website/social media, we would love to see it! We also welcome blog reviews of our issues/Journal: do send us an e-mail with any queries. As part of our constant efforts to reach as wide an audience as possible, we are always looking for people with diverse research interests to join our international team. If you are committed to improve the presence of excellent student scholarship in archaeology through any aspect of our free, open-access, not-for-profit publication, please do get in touch!

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## Part I

### INTERVIEW



## Regional feature: Perspectives from southern African archaeology professionals

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**S**outhern African archaeology is diverse in topic and practice. From human origins to the historical period, archaeology in this region provides a kaleidoscope of life ways over a vast amount of time. From colonial roots, followed by apartheid restrictions, to current initiatives to decolonise the discipline, the practice of archaeology is undergoing transformation. Southern African archaeology is facing challenges. These challenges are protecting local heritage and sites, addressing the claims of various stakeholders, connecting with non-academic audiences, and developing and retaining archaeologists, by no means an exhaustive list or challenges entirely unique to southern Africa. We invited archaeologists to respond to a questionnaire about the state of archaeology in southern Africa, and the impact student led initiatives have on the discipline.

These individuals have aimed to contribute to the discipline in different ways. Embedded in the tales of their achievements and experiences are some of the challenges faced by both young academic and professional career archaeologists in southern African archaeology. Jeanette Deacon, shares her initiation into the discipline, a story studded with key individuals in the establishment of southern African archaeology. Shadreck Chirikure, describes how he was seduced into archaeology, away from a more conventional degree

\* Cherene de Bruyn is a 2016/2017 Chevening Scholar and a Masters student in Archaeology at the Institute of Archaeology, University College London. She was awarded her BA, BA Honours in Archaeology and BSc Honours in Physical Anthropology degrees from the University of Pretoria, SA. She has been part of teams working on various projects related to burials as well as Stone and Iron Age archaeology in SA, directed by local and international archaeologists.

<sup>†</sup> Jacqueline Jordaan is a PhD candidate in the department of Anthropology at the University of Manitoba. She received a M.A. from University of Pretoria, SA. Her studies concern southern African archaeology and heritage-making. She is involved with local and international efforts to promote student archaeological research and practice, as a past executive member of the Southern African Archaeology Student Council (SAASC) and as a current editorial board member for the International Journal of Student Research in Archaeology (IJSRA).

with higher career employment, and with unyielding optimism shares his hope for the future of the discipline. Gavin Whitelaw, provides a realistic account of career prospects in the discipline and encourages extending our audience base. Ndukuyakhe Ndlovu, a strong advocate of transformation, developing and supporting of indigenous archaeologists and locally relevant research, shares his journey as an African practicing archaeology. On the other hand, Peter Mitchell, provides a well-informed outsider's perspective to the challenges and practice of southern African archaeology. Lastly Kenneiloe Molopyane, a PhD candidate from the University of Witwatersrand provides a young professional perspective on southern African archaeology.

Archaeology is a changing discipline, with more academic journals, conferences, student-led research and public archaeology programs than a few decades ago. As part of this change it is also hoped that those conducting the research reflect the local stakeholders and interpretations of our shared human past. This feature presents personal accounts of people who followed their passion, though this is regionally framed, it is an experience shared across the archaeology community. As much as we endeavoured to represent a range of voices, we readily admit that the feature is dominated by male professional archaeologists. In this light, we propose future features that amend this bias and satisfy a broader audience, presenting the views of young career and professional archaeologists in both Academic and Cultural Resource Management environments. Thus we call upon students to confront the challenges faced by archaeologists in both local and global contexts, to create an open dialogue between academics and CRM professionals, making this discussion accessible through the IJSRA platform. This leads us to hope, that our diverse audience can find inspiration, solidarity, or some form of comfort in our shared experiences and challenges within Archaeology and that through engaging with these challenges we can contribute to a more diverse, transformed, and open archaeology.

#### Commonly used Abbreviations:

#### Abbreviations

<b>SA</b>	South Africa
<b>ASAPA</b>	Association of Southern African Professional Archaeologists
<b>CRM</b>	Cultural Resources Management
<b>IJSRA</b>	International Journal of Student Research in Archaeology
<b>SAHRA</b>	South African Heritage Resources Agency
<b>UCT</b>	University of Cape Town
<b>WITS</b>	University of Witwatersrand.

\* \* \*

Shadreck Chirikure, is an associate professor at University of Cape Town, SA. He runs the Archaeology Materials Laboratory at UCT, the only facility dedicated to the study of African indigenous technology. He sits on the advisory board of the 'African

Shadreck Chirikure



Shadreck Chirikure

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Archaeological Review' and advocates practices that bring archaeological knowledge to the public (see his tedtalk on African indigenous technology).

**IJSRA** *What drew you to archaeology and what path did you follow to become an archaeologist?*

**Shadreck Chirikure (SC)** I got into archaeology through chance. My desire was to work in finance but my A level points were not enough for me to embark on my dream career. I was then given a Bachelor of Arts programme specialising in Archaeology, History and Economic History. I remember liking Economic History a lot, largely because of the economic prefix! Things changed however that by my fourth year I was beginning to like Archaeology. I had to pull out of a competition to become a trainee banker because I got a scholarship to study a Master's in Archaeology (Artifact Studies stream) at the Institute of Archaeology, University College London.

**IJSRA** *Archaeologists usually have at least one story to tell around the campfire about their career or fieldwork experiences, do you have one to share with us?*

**SC** Mine is short. I liked finance to the extent that after graduating with a PhD, I enrolled for an honours in Finance. I then realised archaeology was much more than that, and so I remained in archaeology. I cannot imagine the boredom I would be experiencing.

**IJSRA** *What are your thoughts on the state of archaeology in southern Africa? What changes need to be addressed?*

**SC** Southern African archaeology is a very healthy discipline as shown by the very high levels of local and international interest. The strengths and weaknesses differ from country to country. To generalise a bit, there appears to be many researchers interested in the Stone Age but mostly working in South Africa and Tanzania. This somewhat gives the impression that the other areas had no human ancestors. I am thinking of countries like Zambia, Namibia, Mozambique, Angola, Zimbabwe, Malawi and so on. It will be important for young and upcoming archaeologists to consider research in these areas. In some countries such as Zimbabwe and SA, Iron Age research is very strong which is good. However, there is a need to broaden up areas of academic enquiry to include the deployment of more scientific techniques such as isotopes, DNA and other techniques that will help us understand the past better. Even in the Iron Age, more students are needed to engage with multiple theories and ideas. The problem with the domination of a sub-discipline by a few people and their interests (this happens elsewhere as well!) is that it appears as if the past was that limited when in fact it is only one's imagination that can be limited. Whatever the case may be, we need more students and their energy to advance our understanding of the past. It is my hope that in a few years' time southern African archaeology will have developed local competency in understanding plant economy, various aspects of archaeological science, computer modelling, demography and much more to create a diverse but vibrant discipline.

**IJSRA** *What are your thoughts on the state of archaeology in southern Africa? What changes need to be addressed?*

**SC** Funding, funding, and funding is one of the major stumbling blocks. Unlike some subjects such as accounting where one can have a successful career with an honours degree, archaeology is not like that. One has to do a Masters and even a PhD to get a reasonable job. Post-graduate studies require funding, which is either non-existent or not enough. My advice to aspiring archaeologists is that no matter what difficulties you encounter on the way up, it's worth the while. Archaeology is a rewarding career that gives one an opportunity to think critically and independently and contribute to community development.

**IJSRA** *Do you think the IJSRA and other student archaeology platforms and groups impact the discipline?*

**SC** Precisely! In fact, more support should be given to platforms that encourage student involvement in the discipline. Publishing is an important component of any archaeologist's career and routine. It is important to publish where, as a student, you are given utmost care and encouragement. This does not happen with big international journals. Student journals make superstars, while established big journals cater for superstars, which explains the huge significance of the former. My own publishing career was helped by strong involvement with student journals!

\* \* \*

Peter Mitchell is a professor of African Archaeology at University of Oxford and a honorary research fellow at the school Geography, Archaeology, and Environmental studies at the University of Witwatersrand. He is the co-editor for "Azania: Archaeological research in Africa" and is an editorial board member for several international journals. Over the years, he has conducted fieldwork in Lesotho and has raised concerns about the management of local heritage.

Peter Mitchell

**IJSRA** *What drew you to archaeology and what path did you follow to become an archaeologist?*

**Peter Mitchell (PM)** Probably like several other people of my generation, the arrival of the Tutankhamun exhibition in Britain in 1972 provided the first spark of interest, followed up by numerous holidays that took in ancient sites across the UK. Having got to Cambridge, I was fortunately able to take an option in African archaeology with David Phillipson to complement my main area of specialization, the Neolithic, Bronze Age and Iron Age of Europe. Captured by this, I decided to look around for postgraduate opportunities in African prehistory. Though as things turned out I went straight into doing a doctorate, I chose Oxford because it offered a two year course based Masters degree. Ray Inskeep, who was the Africanist at Oxford, had taught in Cape Town in the

1960s and early 1970s and, together with Pat Carter back in Cambridge, we worked out topic that might prove a viable DPhil thesis.

That thesis focused on the late Pleistocene Robberg industry from Pat's Se-honghong site in Lesotho and it was to compare my observations of that with similar material from sites in SA that I first visited SA in 1985, principally being hosted in Stellenbosch by Hilary and Janette Deacon. Once I completed my DPhil I was lucky enough to get a post-doctoral research fellowship from the British Academy that allowed me to undertake my own fieldwork in Lesotho, followed by teaching experience and another postdoc in Cape Town before coming back to Britain in 1993 and returning to Oxford two years later to take up the post from which Ray had retired the year before.

**IJSRA** *Archaeologists usually have at least one story to tell around the campfire about their career or fieldwork experiences, do you have one to share with us?*

**PM** Several come to mind, but only one that is obviously printable. Anyone who looks at the field notes from the site I excavated in Lesotho – Tloutle – may wonder what happened to context 128. The brief answer is that it was the subject of a disagreement between me and a local goat! The deposit was so damp that I had to sieve everything in the local stream and then dry it on plastic bags in the sun. This particular goat decided it wanted to investigate the plastic and despite trying my best to pull the bag back out of its mouth bag, stone flakes, bone fragments, and the rest of context 128 disappeared never to be seen again. I was more careful thereafter!

**IJSRA** *What are your thoughts on the state of archaeology in southern Africa? What changes need to be addressed?*

**PM** SA – and South African archaeology – are very different from when I first visited the country and it has been a privilege to see the country move out of the apartheid era and into a full democracy, however troubled. As far as the current state of its archaeology is concerned I think several things come to mind. First, the archaeological community, whether we think of students or professionals, is self-evidently still not reflective of the overall demographic make-up of the population as a whole. That has to be a serious matter both in terms of overall equity, but also in terms of what it may portend for the subject's future in universities and more generally. Second, there seems, as far as I can gauge things, still to be a very serious shortfall in the efficient and thorough working of the relevant heritage bodies in many areas, with many provincial institutions , and perhaps SAHRA too, scarcely able to monitor threats to heritage resources or take pro-active measures to forestall them. The recent debacle over Canteen Kopje is a case in point. And finally, the CRM (Cultural Resources Management) field really needs, I think, to try and create jobs and training opportunities for more students – and for non-students who work within it – to build capacity among non-white sections of the South African population. None of these challenges are easy to meet, and I am very aware that many, many archaeologists have striven, and are striving, to make progress on



Peter Mitchell  
© by Peter Mitchell

them, but they need action if archaeology is to have a future within SA. And to achieve that too I think it goes without saying that it is absolutely essential that universities and museums are well funded and given the academic freedom necessary to undertake research that can continue to be of a world-class quality.

Some of these things are, of course, also relevant to other southern African states, but I also think it is important not to confuse matters. There is great variety here. ‘Transformation’ in the sense it is used in SA is simply not relevant in Botswana, for instance, and focusing on it in ASAPA raises the difficult issue of whether ASAPA genuinely is a fully southern African organization or a narrowly South African one: there is a tension, hopefully a creative tension, here that is still not fully resolved. And of course, in some countries (Swaziland, Lesotho) there is no, or next to no, local archaeological community, making it exceptionally difficult to sustain any kind of research work or CRM presence.

**IJSRA** *What difficulties do you think local students face in pursuing a career in archaeology? What advice would you give to aspiring archaeologists?*

**PM** As elsewhere, including the United Kingdom where I am in the midst of starting to select undergraduates for admission in 2017, one of the major problems is that students, and even more so perhaps their families and teachers, may perceive archaeology as a dead-end, a degree choice with no obvious future employment. That gains even more impact when thinking of moving into postgraduate study and it is easy to imagine the pressures on students when faced with the uncertain future of pursuing a career in archaeology in contrast to the allure of government jobs or the private sector. So, two things follow. First, academics need to do a really effective job of advertising and marketing their subject, stressing the intellectual rigour that it demands and the ‘transferable skills’ that it teaches so that potential students can realise that if they do well on an archaeology degree they have a product that will empower them in whatever they choose to do afterwards. And second, students from disadvantaged backgrounds in particular need to be nurtured and encouraged at every opportunity: this happens, but maybe SA, in particular, can learn here too from the kinds of strategies deployed in places like Tanzania, Zimbabwe, and Botswana in the 1980s and 1990s.

**IJSRA** *Do you think the IJSRA and other student archaeology platforms and groups impact the discipline?*

**PM** I think they have to and they should. You – as editors, contributors and, I hope, readers, are the discipline’s future. Use IJSRA and every other opportunity you have within your universities and at conferences to convey what you think, what you value, and where you think archaeology – and archaeology teaching – should go. One of the great benefits of teaching where I do is that the very intimate, tutorial system we use gives me the opportunity to learn from undergraduates on a weekly basis as we discuss the essays they have written and the books and papers they have read. That kind of learning is exactly what IJSRA and other student archaeology platforms can offer the discipline as a whole.



Janette Deacon  
© by Janette Deacon

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Janette Deacon is retired, but was a lecturer, a journal editor, a rock art specialist, and the appointed archaeologist for the National Monuments Council. Janette managed the South African Rock Art Initiative, which trained tourist guides at South African world heritage sites on the presentation and protection of rock art. In 2016 UCT conferred Janette Deacon with an honorary Doctor of Literature.

**IJSRA** *What drew you to archaeology and what path did you follow to become an archaeologist?*

**Janette Deacon (JD)** I did not go to university with the intention of becoming an archaeologist, nor even of studying archaeology. I registered for Archaeology (then only a 2-year major at the University of Cape Town [UCT]) in 1959 as part of a BA in Geography, because students had to select at least one course from a list of several subjects. I chose Archaeology because it fitted into my timetable. Associate Professor A.J.H. (John) Goodwin was the only lecturer, and had been there for more than 30 years. By that time, he had been diagnosed with lung cancer and was often unable to complete a lecture.

In the middle of the year Goodwin went to Switzerland in the hopes of a cure. Glyn Isaac, a young graduate about to leave SA to study archaeology at Cambridge, took over the lectures and things began to make sense to me. He also took students into the field to look for handaxes, and encouraged us to attend lectures arranged by the South African Archaeological Society. I became friends with Carmel Schrire who introduced me to "Ginger" Townley Johnson, Hym Rabinowitz and Percy Sieff whose hobby was to search for and record rock paintings in the Cederberg. We went on two or three camping trips with them which I really enjoyed.

At the beginning of 1960, I had not made up my mind whether to do Archaeology II or another second year subject to complete my BA degree. When I went to register, I met Carmel who told me that Goodwin had died in December 1959 and that there was a rumour that the university would not offer archaeology courses in 1960. This would have been a problem for Carmel as she needed to complete her degree with Archaeology II that year in order to apply for entrance to the Cambridge tripos in 1961. She persuaded me to go with her to talk to the head of African Studies, Professor Monica Wilson, and convince her that both of us had to do Archaeology II that year in order to complete our degrees. Whether the rumour was true or not I cannot say, but Archaeology I was cancelled in 1960 and Archaeology II was not. During the first quarter we had lectures from staff in the Geology and Anatomy departments. In the second quarter, Brian Fagan, who at the time was employed as an Archaeologist at the Rhodes Livingstone Museum in Zambia (then Northern Rhodesia), was appointed as a temporary lecturer and patiently took us through a shortened version of the archaeology course he had recently completed at Cambridge. More importantly, he took us to the South African Museum to see the archaeological collections and taught

us how to sort stone artefacts. I was given the task of drawing some of them and enjoyed that very much.

UCT had advertised the post of Senior Lecturer in Archaeology and Ray Inskeep, a Cambridge graduate, was appointed from 1 July 1960. His enthusiasm was infectious and he went out of his way to take us into the field and even participate in excavations at Elandsfontein near Hopefield with Professor Ronald Singer from the UCT Anatomy Department. It was this stimulating environment, and particularly the fieldwork, that gave me confidence.

I had done well in Geography III and Professor William Talbot offered me a job as a research assistant for his work on Swartland agriculture in 1961. During that year I had valuable experience in mapping from aerial photographs, drawing maps and diagrams, and analysing weather patterns, while often joining Ray and his archaeology students (including Carmel Schrire, Garth Sampson and Renee Hirschon) on field trips. Towards the end of the year, the African Studies Department created a new position of Junior Lecturer in Archaeology and Ray persuaded me to apply, despite the fact that I did not have an Honours degree and my knowledge of archaeology was barely sufficient. During the summer vacation, Ray took Renee Hirschon and me on a road trip to visit museums and archaeologists between Cape Town and Livingstone on the Zambezi. It was a wonderful introduction to archaeologists and museum staff, some of whom became lifelong friends, and to key archaeological sites in southern Africa.

At the age of 22, I was duly appointed as Junior Lecturer, and also became Secretary of the Western Cape Branch of the South African Archaeological Society and was responsible for organising monthly lectures and excursions. Hilary Deacon, who had graduated with a BSc in Geology and Archaeology in 1955 and had worked as a field geologist in Tanzania, Kenya, Ghana and the UK, returned to UCT in 1962 to do an Honours degree in Archaeology. He admired my skills in drawing and organising field trips, and I admired his wide knowledge of geology, skill in reading stratigraphy and the landscape, and repairing Land Rovers. We were married at the end of December 1962 and drove to Grahamstown where he had been appointed as Archaeologist at the Albany Museum.

We left Grahamstown in mid-1971 when Hilary was appointed to start the Department of Archaeology at Stellenbosch University. I had the opportunity to teach again at UCT from 1972 to 1975 when Ray Inskeep left for the Pitt Rivers Museum in Oxford. John Parkington and I were responsible for lecturing until Nikolaas van der Merwe was appointed as the first full Professor, and Andrew Smith joined the department in 1976. As a research assistant at Stellenbosch I was able to finish my PhD in 1982 and when the grant funds dried up, I joined the National Monuments Council as Archaeologist in 1989. As Editor of the *The South African Archaeological Bulletin* from 1976 to 1993 I was able to keep up to date with publications and with developments in the discipline. This was especially useful during the drafting of the National Heritage Resources

Act which replaced the National Monuments Act in 1999. I only became an archaeologist because I had encouragement from Ray Inskeep and Hilary Deacon. I am deeply grateful to them both for having faith in me.

**IJSRA** *Archaeologists usually have at least one story to tell around the campfire about their career or fieldwork experiences, do you have one to share with us?*

**JD** In the mid-1980s when we were excavating at Klasies River, I went one day with my 11 year-old daughter, Melissa, to do the shopping for the camp. We had an old Volkswagen kombi and although Hilary had reminded me that he had put his keys under the front bumper, I forgot and used my own keys. The farm track was narrow and bumpy for about 3 km, then became a gravel road for 10 km, and finally tarmac for another 20 km. We despaired of finding the missing keys when I remembered the following day. We walked back up the hill to where the kombi was parked, but of course the keys were no longer under the bumper. Melissa and I walked the track searching for them, but to no avail. We had been talking about experimental archaeology around the campfire and Melissa suggested we use the same reasoning. If we put my bunch of keys (without the ignition key of course) under the bumper with a red ribbon, we should be able to see where they fell off, and there was a strong chance that the missing bunch would be found nearby. I drove the kombi (mini van) and she followed behind to see when they fell off. After about 1km, they were still in place so she got into the car with me and we stopped at regular intervals to check the bumper. At last, after about 2 km, where the road dipped and then went up a short hill, the keys were no longer there. To our considerable relief, we found the red ribbon and my keys in the path, and the missing bunch was found within 1 m of them. So, all other things being equal, archaeological experiments can be successful.

**IJSRA** *What are your thoughts on the state of archaeology in southern Africa? What changes need to be addressed?*

**JD** The number of people with academic qualifications that enable them to be regarded as professional archaeologists in SA has grown exponentially over the past 5 decades, from fewer than 10 in the early 1960s to more than 200 today. Although the job opportunities at universities and museums have grown as well, and some archaeologists are able to generate income independently in the private sector, there are far more qualified people than there are jobs to sustain them. Productivity in the form of published research results has not kept pace with the increased number of archaeologists. Professionals in full-time positions are overworked and undervalued and only university staff members are rewarded for publishing research results. The newly-qualified tend to contribute to knowledge, but not to long-term development of archaeology in southern Africa. It is not only about money. The grants from the National Research Foundation are higher than they used to be, but the red-tape to apply for them is considerable and competition is stiff. Students need inspiration, moral support and role models, as well as remuneration.

**IJSRA** *What difficulties do you think local students face in pursuing a career in archaeology? What advice would you give to aspiring archaeologists?*

**JD** I get the impression that whereas 40-50 years ago it was relatively easy for a university lecturer or museum archaeologist to access a vehicle and fuel, take students into the field, and give them the opportunity to see archaeological sites and learn how to recognise and record them. It seems that the higher numbers of students today make it a more costly and complicated exercise and as a result there may be fewer opportunities for students to fully grasp the significance of archaeological method and techniques. I would advise them to go out of their way to gain experience on their own, either through voluntary work at museums, universities and archaeological heritage resource management organisations, through attending conferences, and/or joining the South African Archaeological Society and similar Non-Governmental Organisations.

Another major change has been an exponential increase in the number of published articles that a student who hopes to make a career in archaeology is expected to be familiar with. It is significantly easier to access publications and information through the internet, but finding time to read them is a challenge. I would advise students to read as widely as they can while they have access to sources available at universities.

**IJSRA** *Do you think the IJSRA and other student archaeology platforms and groups impact the discipline?*

**JD** Yes, I certainly believe they have the potential to do so, not only because of the experience they can obtain, but also to build social ties with their peers who they will work with in the future when contributing to the growth of the discipline.

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Ndukuyakhe Ndlovu is a senior lecturer in archaeology at the University of Pretoria, SA. He has 15 years' experience in heritage management in South Africa, having worked for both national and provincial heritage authorities. He is also the chief editor for the *South African Archaeological Bulletin* and an executive member of the World Archaeological Congress.

**Ndukuyakhe Ndlovu**

**IJSRA** *What drew you to archaeology and what path did you follow to become an archaeologist?*

**Ndukuyakhe Ndlovu (NN)** It was through lack of career guidance that I studied archaeology. Following the realization that the subjects I was registered for in my first year were not compatible with each other, I decided to seek advice. It was at this period that I was informed of a subject called archaeology. I registered for it in the following year, as there were no modules back then. I studied the first year of archaeology and thought I should continue to the second year. After finishing my third year, I did an honours in geography majoring in climatology,



Ndukuyakhe Ndlovu  
© by Ndukuyakhe Ndlovu

environmental studies, and palaeogeomorphology. This decision was heavily influenced by my thinking that I stand a better chance to secure employment, and that climatology had been an interest of mine from a younger age.

Following my successful attainment of my honours degree, I decided to go back and study archaeology. The main reason for this decision was that I wanted to challenge the notion that there were no Africans employed anywhere in SA as archaeologists. I got registered for a Masters degree in archaeology majoring in rock art studies. After finishing the coursework component, I secured my first employment which led to me not finishing my mini-dissertation. I registered for a Masters degree with the Department of Anthropology at Rhodes University. This decision was inspired by the notion that an anthropologist will have a better appreciation of the ideas I have for heritage management in SA. When I finished my studies, I then took a four-year break before registering for my PhD in Archaeology at Newcastle University. Since then I have worked in various capacities within the discipline of archaeology.

**IJSRA** *Archaeologists usually have at least one story to tell around the campfire about their career or fieldwork experiences, do you have one to share with us?*

**NN** I have had a wonderful time as an archaeologist in SA. What stands out for me is how, against my original fears, I was so welcomed by my white class mates when registered for my second and third years in archaeology. Besides that, also politically motivated, I will never forget how my dark skin meant that I was thought of as a domestic assistant to my classmates. In a few farms we visited as students, farm employees always spoke about how nice my employers were to me and how much they would appreciate me putting a good word for their daughters so that they also secure some employment.

Amongst the other experiences, three stories come to mind. First, during a survey for Iron Age sites in Limpopo, it got so hot we all pretty much ran out of anything to drink. I recall our fruitless attempts to get shade from anything: a small tree, under the bakkie, etc. Then, unannounced, one of the students quietly opened a can of Appletiser which he drank without sharing. No one was impressed because he knew how desperate we were for anything to drink. When we eventually reached a small shop selling drinks amongst other items, I bought and drank the coldest can of coke in SA on that day. Second, one of my classmates had a belief that he should not appear on photographs. He was of the view that photos take a part of his soul. We were always on alert so that no one should photograph him. I still don't understand this view but respected his belief. Third, while on a rock art field school, I ran out of water. I then asked my one classmate for something to drink. He was more than willing to share his water bottle with me. Other students laughed as I was about to take a sip but I did not read much into it. They laughed because they knew it was actually vodka coloured with some powdered orange juice. The taste said it all and everyone who witnessed me taking a sip laughed so hard. I could not believe that someone would be drinking vodka while on a field survey.

**IJSRA** *What are your thoughts on the state of archaeology in southern Africa? What changes need to be addressed?*

**NN** Archaeology in southern Africa has always enjoyed better access to funding, as SA has always been better resourced, compared to other regions in the continent. It is thus not surprising that, besides language issues, most of the archaeological publications have emanated out of southern Africa. What I think is critical, going forward, is the following:

- a)** Transformation: we need to ensure that there are more Africans of South African descent entering and playing significant roles in the field. Currently, archaeology is unsurprisingly viewed as a white discipline.
- b)** Transformation of a racial nature will have, I argue, further benefits beyond having the discipline being seen as transformed. Most importantly, transformation should also bring about new ways of interpreting the archaeological record, informed by theoretical approaches that are African defined in their origin.

**IJSRA** *What difficulties do you think local students face in pursuing a career in archaeology? What advice would you give to aspiring archaeologists?*

**NN** We are still teaching a curriculum that is focused on training archaeologists for the academic jobs even though they are not widely available. Most archaeology students secure employment in government and the contract archaeology sectors. I'm of the view that our curriculum does not fully prepare students for the two sectors. My advice would be that students must avail themselves to as much fieldwork opportunities as possible. Furthermore, I will advise that they secure internships even during their undergraduate studies to acquire meaningful experience which shall then prepare them for life after their degrees.

**IJSRA** *Do you think the IJSRA and other student archaeology platforms and groups impact the discipline?*

**NN** Indeed, I think such platforms have a critical role to play. For instance, as a student myself, I was an editorial assistant and later, became the editor of a student journal at Newcastle University in the U.K. The experience I acquired was immensely important. It served as a platform for me to learn important aspects about editing and other publishing aspects. I am today an Editor-in-Chief of a successful journal thanks to this opportunity. Another student journal we had at the university enabled me to publish a paper based on my PhD proposal which had been considered the best presentation made at a student conference. Such an opportunity gave me confidence that I could publish anything of significance. I used this platform to begin writing other journal articles and I have never looked back since.

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Gavin Whitelaw

© by Gavin Whitelaw

Gavin Whitelaw, is a chief curator in Human Sciences at KwaZulu-Natal Museum, SA. His research focus is on the nature of southern African farming societies in the first millennium A.D. He has presented southern African archaeology to the public through museum exhibits as well as through a travel nature series, called Shoreline.

**IJSRA** *What drew you to archaeology and what path did you follow to become an archaeologist?*

**Gavin Whitelaw (GW)** Since early childhood I have had a wide-ranging interest in the way the universe works. Natural history was my principal focus, but I was also fascinated by the past. Because of my natural history interest, I chose subjects at university that would prepare me for environmentally oriented work. But I got side-tracked. I had time, so I did archaeology as an extra subject and was very quickly swayed. It helped that I did sociology too, as the two subjects reinforced one another in terms of social theory. Sociology also gave that theory a special and immediate significance in early-1980s SA, because we covered topics such as Christian National Education and labour in the apartheid state. It became increasingly clear that archaeology had the capacity to disrupt and undermine dominant political narratives. For me, this realization mixed irresistibly with my feeling that SA then, and the University of Witwatersrand (Johannesburg) in particular, led the world in archaeological research.

**IJSRA** *Archaeologists usually have at least one story to tell around the campfire about their career or fieldwork experiences, do you have one to share with us?*

**GW** Campfire storytelling is not something I do. Perhaps the best response is to acknowledge the time I have spent with leading figures in archaeology, on the road, in the field, over meals and at the tea table: lecturers at the University of Witwatersrand who treated undergraduate (even first-year) students with respect and tolerance, who provided opportunities and encouragement and training; senior colleagues at the Natal Museum for their support and honing skills; and prominent foreign scholars for their humour and open friendship. Their (seeming) easy acceptance of me in their world was and is of immeasurable value to me.

**IJSRA** *What are your thoughts on the state of archaeology in southern Africa? What changes need to be addressed?*

**GW** It is like it always has been and always will be – mixed. There is some good and excellent work and some that is of lesser value. I thought the presentations from southern Africa at the recent Society of Africanist Archaeologists conference in Toulouse, France were mostly very good indeed. I was similarly impressed at the last ASAPA conference I attended, in Gaborone, Botswana in 2013. Since many of these presentations were by students, I think there is a lot to be positive about. I wonder, though, where these students will find employment in the future. The main employers of archaeologists, universities and museums, are under severe pressure in a commoditized world that cares little about research that does not

put bread on people's tables. There is not anything we archaeologists can do to force large-scale structural changes to society (although our teaching might inspire challenges – after all, archaeology shows that different ways of being in the world must be possible). But perhaps we can do something about improving our communication of archaeological information to the wider public, a kind of educational enrichment in a variety of media. Archaeological research adds value to life and for that reason alone should be supported. Some years ago, Richard Pithouse (2010) quoted from a poem that Upton Sinclair wrote after a strike by textile workers in Massachusetts in 1912.

*Our lives shall not be sweated from birth until life closes;  
Hearts starve as well as bodies; give us bread, but give us roses!*

Archaeology provides the roses. It's our job to convince the public of its sweet smell.

**IJSRA** *What difficulties do you think local students face in pursuing a career in archaeology? What advice would you give to aspiring archaeologists?*

**GW** Because I work at a museum, I do not deal regularly with students and I'm not familiar with the challenges they face, other than those general difficulties already alluded to – limited jobs in the formal sector, often with poor salaries. It's been a long-term problem: in 1945 the archaeologist Leonard Woolley told Roger Summers, "Things are better nowadays, but it's just as well not to be entirely dependent on your salary. Museums can be very mean at times." So warned, Summers went on to spend more than 20 years in the museum and heritage sector in Rhodesia (now Zimbabwe), where he was initially the only professional archaeologist in the country (Summers, 1995). Woolley's warning sadly still carries weight, and the jobs, though more numerous now, still provide limited employment opportunities. Today, archaeological consultancy offers other openings, but it requires skills that can only really be acquired from experience in the field, so here again new graduates need positions and mentors. Students, I suspect, also suffer from the demands that universities today place on professional staff, with increased workloads meaning that less time can be dedicated to each student. From the outside, there seems to be a primary concern with numbers rather than quality.

Of the students I've met and worked with, the ones that have encouraged me most are those with an obvious, self-motivated enthusiasm for the discipline, for the daily work of recovering and processing artefacts, and for learning about them. I'm always happy to support these students.

**IJSRA** *Do you think the IJSRA and other student archaeology platforms and groups impact the discipline?*

**GW** It's a difficult question to answer because I have never been part of any student group. They did not exist when I was student. Also, because I work at a museum I do not interact with students on a regular basis. So I cannot comment on the kind of support these groups might offer students or the role that they do or

could play. I wonder, though, about the need for these student groups and the desire to create them. Why should students want to distinguish themselves formally from the professionals in the discipline? Who benefits?

Do the student groups have an impact on the discipline? My sense is no, or at least, none that I have experienced. For me, student groups are most visible on the programmes distributed prior to conferences, which place their activities firmly outside the normal conference programme. At most, we hear a brief report on these activities at conference business meetings.

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### Keneiloe Molopyane

Keneiloe Molopyane is an Associate lecturer and current PhD candidate of the University of Witwatersrand. She had been involved in an international collaborative project focused on the Trans-Atlantic Slave Trade. She completed her BHCS Heritage and Cultural Tourism and BA Honours degrees in Archaeology at the University of Pretoria and an MSc in Bioarchaeology at the University of York.



Keneiloe Molopyane

© by Keneiloe Molopyane

**IJSRA** *What drew you to archaeology and what path did you follow to become an archaeologist?*

**Keneiloe Molopyane (KM)** What drew me to archaeology? The most simple of questions, yet the hardest to answer. My first encounter with archaeology was actually from watching an episode of “The Adventures of Tintin: Cigars of the Pharaoh”. This was then followed by Indiana Jones movies (so cliché but true), and, and, and... I was the ripe young age of seven years when I decided this is what I wanted to do. I could not even pronounce the word “archaeology” until I was about nine or ten, do not get me started how old I was when I could actually spell the word. I have always been the curious kid and I guess the investigative properties of archaeology are what lured me in and kept me occupied for more than 30 minutes at a time.

Having graduated from highschool, I went straight to varsity to pursue a degree in archaeology. This was then followed by an honour's in archaeology, an MSc in Bioarchaeology, and finally I find myself in the first of many final years of a PhD in anatomy.

**IJSRA** *Archaeologists usually have at least one story to tell around the campfire about their career or fieldwork experiences, do you have one to share with us?*

**KM** There are just so many stories to pick from, like the time I nearly fell into the campfire because I was laughing so hard at one of the many stories being told, or the time my classmates and I climbed up a cliff in an attempt to avoid a leopard so we could get back to the campsite after a long day of surveying, or the many times I suffered from heatstroke in the field and went all crazy. I guess the best stories I have to share are about my underwater adventures. Having dived on shipwrecks in the crazy “washing machine” like waters of Clifton Beach, Cape

Town and Durban have been the best. I have lost so many dive knives over my underwater archaeology stint, it is ridiculous.

**IJSRA** *What are your thoughts on the state of archaeology in southern Africa? What changes need to be addressed?*

**KM** An article on this very topic has been written by Bradfield (2016) in *The South African Archaeological Bulletin*. A very somber read, but it does highlight a number of good points. I would like to see some young fresh blood, willing to take on new sectors of archaeology come through the system. Archaeology is a relatively young discipline in southern Africa and there are a range of fields one could slot into, it all depends on your skills. Reflecting on my years as an undergraduate sitting in archaeology lectures, I realised that in order to make it in this industry I needed to have a unique set of skills and be good at it, all whilst still having a firm handle on the general skills and knowledge sets of a “traditional” archaeologist, whoever they are. Specialist archaeologists seem to be all the rage these days, there is nothing wrong with that, but why limit yourself to one genre. By expanding your skill set you become adaptable and suddenly your perceptions of the state of archaeology in the country begin to change. No longer do you see a desolate and barren landscape, but rather one lush with opportunities if the right questions are asked. How many South African forensic archaeologists, or let’s just keep it simple, archaeologists that are familiar with human remains do we produce? What about local maritime and underwater archaeologists? I may be a bit naïve in my response to this question, I blame my youth, but by stepping out of the traditional research spheres transformation of archaeology in southern Africa can begin to take place.

**IJSRA** *What difficulties do you think local students face in pursuing a career in archaeology? What advice would you give to aspiring archaeologists?*

**KM** The most common question I get from both undergraduate and postgraduate students I teach is “what jobs are out there for archaeologists”. I then usually go on about jobs in academia, heritage management and the private sector...at this point their eyes are glazing over. Then there is the question of how much money will I be able to earn with a degree in archaeology? There seems to be a misconception about what a career in archaeology truly is. Not that I know the answer to what a career in archaeology is, but it is not an Indiana Jones type adventure all the time. The majority of my time has been spent sitting in a lab or in front of my computer researching or writing reports. When I do get to go “play” outside, the adventures just happen. I might not get paid as much as my peers who chose to go into economic or medical careers, but I do get to visit and work in an array of remote and sometimes exotic (depending on what your definition of exotic is) locations and get to do incredible things, that they may never get the opportunity to experience.

Any advice for aspiring archaeologists? Ask yourself if this is the career choice you want, and then ask yourself how badly you actually want it and how willing

you are to put yourself out there. Then buckle up for the rollercoaster ride, because as much as there are ups, there are many downs.

**IJSRA** *Do you think the IJSRA and other student archaeology platforms and groups impact the discipline?*

**KM** Such platforms are great initiatives that have been set up to get students to start networking and finding their way around archaeology to see where they “fit in”. It is a ‘Publish or Perish’ world in academia they say, so student journal platforms are a great way to get one started if a career in academia is intended.

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## Part II

# ARTICLES



# The Crumbling Wonder: A damage- and risk-assessment of sandstone monuments and natural features in the Petra Archaeological Park (Jordan)

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**Keywords:** Archaeology, Heritage Preservation, Safety-Risks, Nabataean, Weathering, Monuments

*Petra, famous for its monumental archaeology, is in danger: it is ‘crumbling’. This fragile sandstone wonder has fallen victim to degradation. This research sheds light on the deterioration of valuable archaeology in the Petra Archaeological Park. It is aimed to clarify the factors contributing to this decay and the need for active and continuous protection. Additionally, it highlights specific monuments and natural features within the archaeological park which require attention regarding their deterioration and safety-risks. Protecting Petra equally means the safeguarding of perishable data. Through reviewing Petra’s geo-archaeological data, applying safety regulations, and conducting extensive risk- and damage-assessments, its archaeology and safety can be maintained.*

## Introduction

L ocated in the south of Jordan is a marvellous ancient sandstone city carved by the Nabataeans known as Petra (fig. 6). This site lies adjacent to the Sharah Mountains and is located 265 kilometres South of Amman, Jordan’s capital city. This archaeological wonderland was rediscovered in August 1812 by the Swiss explorer Johan Ludwig Burckhardt (Harding, 1938:1–5). Beside European expeditions, much of its current fame has been contributed by the Hollywood block-buster movie *Indiana Jones: The Last Crusade*. In 1985, UNESCO listed Petra on the *World Heritage List* which forced

\* Valletta Verezen is an Archaeologist from the Netherlands who graduated from Leiden University in February 2016. She is specialised in archaeobotany and the archaeology of the Near- and Middle-East, with a particular interest in Nabataean culture. Valletta has a certificate in Osteoarchaeology and a certificate (with Honours distinction) in Heritage Studies. She has conducted fieldwork at Jebel-Qurma (Azraq, Jordan) and at Udruh, a Nabataean / Roman legionary fortress and outpost in the hinterland of Petra, located along ancient caravan-trade routes and the Via Traiana Nova. She currently lives in the Bedouin village of Petra (Umm Sayhoun), studying the rich history of this ancient monument. With her work, Valletta aims to raise awareness about the fragile state of preservation of Petra in dire need of protection in order to safeguard its future.

the local inhabitants<sup>1</sup> to relocate to the government-built village of Umm Sayhoun. In 2007, Petra was nominated on the list of *New Seven Wonders of the World*. This acquired title gave a boost to the tourism-sector of Jordan. Previously, the Petra Archaeological Park (PAP) received around 200,000 visitors per year whereas after the acquired status it annually welcomed approximately 1,000,000 visitors (Paradise, 2013:176).

Petra is a magnificent site, but unfortunately, great deterioration is affecting its future. Therefore, its protection should be of increasing concern. However, so far only three of the approximately 2000 monuments in Petra have been subjected to sandstone conservation<sup>2</sup> to prevent further decay (Balaáwi et al., 2011:267-284). Having personally visited Petra, I was overwhelmed by its archaeology and sandstone rock formations. However, upon spending one month in Petra, from July to August 2014, I started to observe the significant degradation, the negative impacts of mass tourism, natural weathering, and the unprotected status of the fragile and weathered monuments. These basic observations were the principle beginnings for researching the current state of issues in Petra. The purpose of this research is to clarify the vulnerability of the Petra Archaeological Park's archaeology, to assess current safety-risks and suggest recommendations for the protection and preservation of the park's archaeology. In order to gain further understanding of the issues, I aim to answer the following research question: what factors cause the degradation of Petra's archaeology and destabilization of natural features and could also pose safety-risks? Additionally, what are the options to prevent further damage and to maintain safety in the archaeological park?

The observed monumental destruction in Petra, during the first visit from July to August 2014, allowed for the realization of the disastrous effects of continuous weathering on the archaeological monuments. Resulting from this, three monuments were selected as case studies based on their deteriorated condition (fig. 1 and table 1), assessed by visual inspection, in the Petra Archaeological Park (PAP). These monuments were chosen in order to reflect the impact of physical weathering present throughout Petra and the dire need for protection and conservation. The visual inspections took place during 36 separate field-surveys spanning a 9-month period, from; September 2014 until June 2015, after already having visited Petra from the end of July until the end of August 2014. The field-surveys took place in the Petra Archaeological Park and had an average duration of three days. This 9-month time-span witnessed the shift from the winter to summer season and various weather extremities, such as heavy rainfall, snowfall, flash-floods and daily and seasonal temperature cycles. Additionally, three possible hazardous natural features were selected in order to provide examples of the possible safety-risks in the Petra Archaeological Park (fig. 2 and table 2).

## Methodology

While collecting visual data, there was an intention of selecting mainly the severely affected monuments that are lacking protection and conservation in regards to preser-

<sup>1</sup> The local inhabitants of Petra are Bedouins known as the Al-Bdoul. Before being relocated to the government-built village of Umm Sayhoun, they were reusing ancient Nabataean caves as their homes. Some refused to be moved and remained on their tribal lands in Petra (Bille, 2012:108–110; McKenzie, 1991:139–140; Mustafa and Abu Tayeh, 2011:89).

<sup>2</sup> The extent to which conservation work can be conducted in Petra is highly dependent on the financial support from global funding agencies such as USAID (Balaáwi et al., 2011:273–275).

**Table 1:** Overview of the selected monuments. Their location (left column), name (middle), and state of degradation (right).

Location	Name	State
Mu'Eissa Area	Tomb 609	Collapsed
Ad-Deir Mountain	Monastery's Urn	Heavily Eroded
El-Khubta Mountain	Corinthian Tomb	Heavily Eroded

**Table 2:** The selected natural and potential hazardous features inside the Petra Archaeological Park. Its location (left column), type (middle), and duration of its presence (right).

Location	Type	Presence
The Treasury (Al-Khazneh)	Stuck boulder; possible threat	Year-round
Al-Habis Mountain	Freestanding boulder; possible threat	Year-round
Petra Archaeological Park (entire area)	Flash floods	Seasonally; mainly winter

vation. During field-surveys, famous monuments were inspected such as; the Treasury (Al-Khazneh), the Monastery (Ad-Deir), the Qasr-al Bint (the Daughters Palace), and the Royal Tombs. Additionally, more remotely located monuments were explored such as: the Triclinium, the Roman Soldier Tomb, the Turkmanniye Tomb, and various numbered tombs such as the collapsed Tomb 609 (figs. 1 and 5). Likewise, the selection of natural features in Petra was based on visual observation. This selection was based on the feature's proximity to crowded areas, the park's facilities, and archaeological structures. These criteria were chosen in order to evaluate the safety-risk in case of its collapse. The state, risks, and cause of degradation of the selected monuments and natural features were assessed through the conducted observations, inspections, and literature studies. Various scholarly studies, regarding monumental degradation, likewise offered helpful insights in the factors affecting the deterioration of sandstone.

#### Results: Degradation of Monuments

The selected monuments offered a chance to determine the factors that are the most responsible for its sandstone decay. These monuments also reflect the deteriorating situation of many other monuments in Petra. The section below summarizes the factors causing degradation to the ancient monuments and affecting the natural features that could create potential safety-risks in the park.

#### Weathering Factors

Various factors can cause physical weathering, a process responsible for the decay of bedrock and the removal and transportation of unconsolidated debris, known as regolith. It is the breakdown of rock without triggering chemical reactions (Nichols, 2009:90–92). The factors causing physical weathering in Petra are: flash-floods, rain- and snow-fall, wind<sup>3</sup>, salt crystallization, rising humidity-levels, seismic activities, anthropogenic activities, and daily temperature fluctuations, which cause expansion and

<sup>3</sup> Wind causes destruction in the form of wind-blown sand. This is known as wind-ablation and mainly abrades the base of monuments that come in touch with the airborne particles (Balaáwi et al., 2011:267–284).

contraction of minerals, leading to rock-failure (Alshawabkeh and Bala'awi, 2010:126; Heinrichs, 2008:667–669; Nichols, 2009:90–97; Paolini et al., 2012:12–14; US-ICOMOS, 1996:66). During the field-surveys, a variety of these factors were observed and personally experienced, such as flash-floods, snow-fall, and heavy rain-fall. The force of surface run-off water, deriving from rainfall, became clear upon observing the rapid formation of flash-floods and small waterfalls in the archaeological park.

Surface run-off water removes and transports regolith, which abrades the sandstone surfaces (Heinrichs, 2008:650–668; Papamichos, 2010:1130–1131; Paradise, 1995:207–208). Furthermore, remaining water enters the porous sandstone and evaporates. This evaporation causes the deposition of salt-crystals, which expand and widen existing fissures, that can trigger rock-falls and monumental collapse. This process is known as salt-wedging and is a great contributor to the degradation of Petra's archaeology and natural features (Nichols, 2009:90; US-ICOMOS, 1996:66). Salt-wedging, along with other weathering factors, undoubtedly contributed to the collapse of Tomb 609, which was inspected for this research.

Vegetation is another factor contributing to the sandstone decay in Petra since rock-penetrating plant roots are known to create and widen existing cracks (Alshawabkeh and Bala'awi, 2010:125–126; Turkington and Paradise, 2005:230–242; US-ICOMOS, 1996:66). There are likewise anthropogenic factors, or human activities, inflicting damage to Petra. The increased tourism-flow has affected the local environment and enhanced the physical weathering of Petra's geological features and archaeology resulting from irresponsible tourist behaviour, such as illicit climbing activities (Mustafa and Abu Tayeh, 2011:90).

A consequence of the increased number of visitors is the rising humidity levels in Petra, which significantly accelerates the decay of sandstone (Paradise, 2010:75–76). Throughout the field-surveys, unauthorized climbing activities were mainly observed at the Monastery where visitors and locals would climb up the monument to sit at its Urn. This activity, accompanied with visitors carving their names in the soft sandstone, afflicted considerable damage to the Monastery's Urn. The numerous tourist facilities have also affected Petra's environment in terms of noise-pollution caused by the facilities' power-generators (Assante di Panzillo et al., 1993:88). Due to its vulnerable nature, Petra has several times been listed on the *World Monument Watch List* for endangered sites (Comer, 2012:58–62; Heinrichs, 2008:643; Paolini et al., 2012:16; ICOMOS, 2005; Fund, 2017).

Various collapsed monuments in Petra are the greatest examples and silent witnesses of the continuous forces of weathering and degradation. The most recent example is Tomb 609 with the collapse of its façade (fig. 1) after heavy rainfall in March 2010, known as the Mu'Eissra collapse (Heinrichs and Azzam, 2013a:583). Tomb 609 followed a lengthy process of weathering through natural agents such as: water erosion, seasonal and daily temperature fluctuations, salt-wedging and wind ablation, which caused physical stress and rock failure. The rainfall was likely the last of a series of natural events causing its façade to collapse.

Tomb 609



**Figure 1:** *The monuments assessed in this research.*

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#### The Monastery's Urn

This monument has the largest façade<sup>4</sup> in Petra and is known as the Monastery (Maqsood, 1994:117–121). The focus, regarding degradation, for this case-study was on the sculpted urn, which tops the monument. Not observable from the front-view, is the severe deterioration of its South-East side (fig. 1). This side of the Urn has been eroded through natural weathering and anthropogenic activity. During the field-surveys in Petra, locals and tourists were observed performing unauthorized climbing activities on this monument. These illicit activities and irresponsible behaviours, occurring throughout the Petra Archaeological Park, has created enhanced degradation (Paolini et al., 2012:86). The natural agents most affecting the Monastery itself are wind ablation, surface runoff water, salt-crystallization, and vegetation (Alshawabkeh and Bala’awi, 2010:126–

<sup>4</sup> The Monastery's façade measures roughly 50 meters in width and 45 meters in height. The urn-like top is about 9.5 meters high (Maqsood, 1994:117–121; Alshawabkeh and Bala’awi, 2010:129–130).

130; Doehne, 2002:1–2). These are the same factors damaging its Urn's surface and structure. Without intervention, the Urn will further deteriorate and this could lead to destabilisation and eventual collapse. The latter will pose a threat to visitors of the Monastery.

Another affected monument is part of the Royal Tombs, which are carved out of the Al-Khubta mountain. The chosen monument is known as the Corinthian Tomb, the façade is extremely weathered and resembles a water-damaged painting (Sachet, 2010:257). Various processes are responsible for the degradation of the Royal Tombs, such as: salt-wedging, surface run-off water, vegetation, wind ablation, and tectonic movements (Balaáwi et al., 2011:267–284; Doehne, 2002:1–3; Nichols, 2009:90; icomos2005). In the case of the Corinthian Tomb, surface run-off water and consequential salt-crystallization are the main contributors to its façade's decay and destabilization. The latter could result in collapse; this is a threat to the integrity and safety of the souvenir shops, people, and archaeology in its proximity. Vegetation is another factor contributing to the deterioration of archaeological monuments (Balaáwi et al., 2011:267–284). Likewise, vegetation is observed on the façade of the Corinthian Tomb and indicates that plant removal is necessary. If degradation and the absence of protection continues, its façade might be unrecognizably weathered or collapsed in the future.

The chosen natural features of Petra shed light on the presence of possible hazards in the archaeological park that might threaten the integrity of the archaeology and the safety of visitors.

The first selection was a significant sandstone boulder stuck between a wedge-shaped fissure located to the upper-right side of the Treasury (fig. 2). The boulder is trapped in a rock-fissure; however, it could yet pose a safety-risk upon movement resulting from significant surface run-off water or earthquakes. Steel safety nets could be installed to catch falling debris upon collapse, whereas ignoring this risk could otherwise threaten the park's safety and the Treasury's façade (Volkwein et al., 2011:2617–2639).

The second natural feature is the boulder topping the Al-Habis mountain (fig. 2). If this boulder falls downward in the East direction, it could tumble down the adjacent hill into archaeological structures and tourist facilities. This indicates a safety-risk in the case of dislocation caused by substantial forces such as earthquakes, which are not uncommon in this region. Petra has witnessed powerful earthquakes in the past, which inflicted great damage to its archaeology<sup>5</sup> (Alshawabkeh and Bala'awi, 2010:126; Heinrichs, 2008:644). Due to the Habis boulder's unconsolidated state and the possibility of an earthquake, it should be subjected to further risk-assessment and safety procedures.

Throughout time, flash-floods are natural hazards occurring inside Petra and are known for their destructive force and capability of removing significant amounts of debris (Franchi et al., 2009:78–84; Ortloff, 2005:104). The debris-filled floods will affect any archaeological and natural sandstone in its path. This force was observed during a

#### The Corinthian Tomb

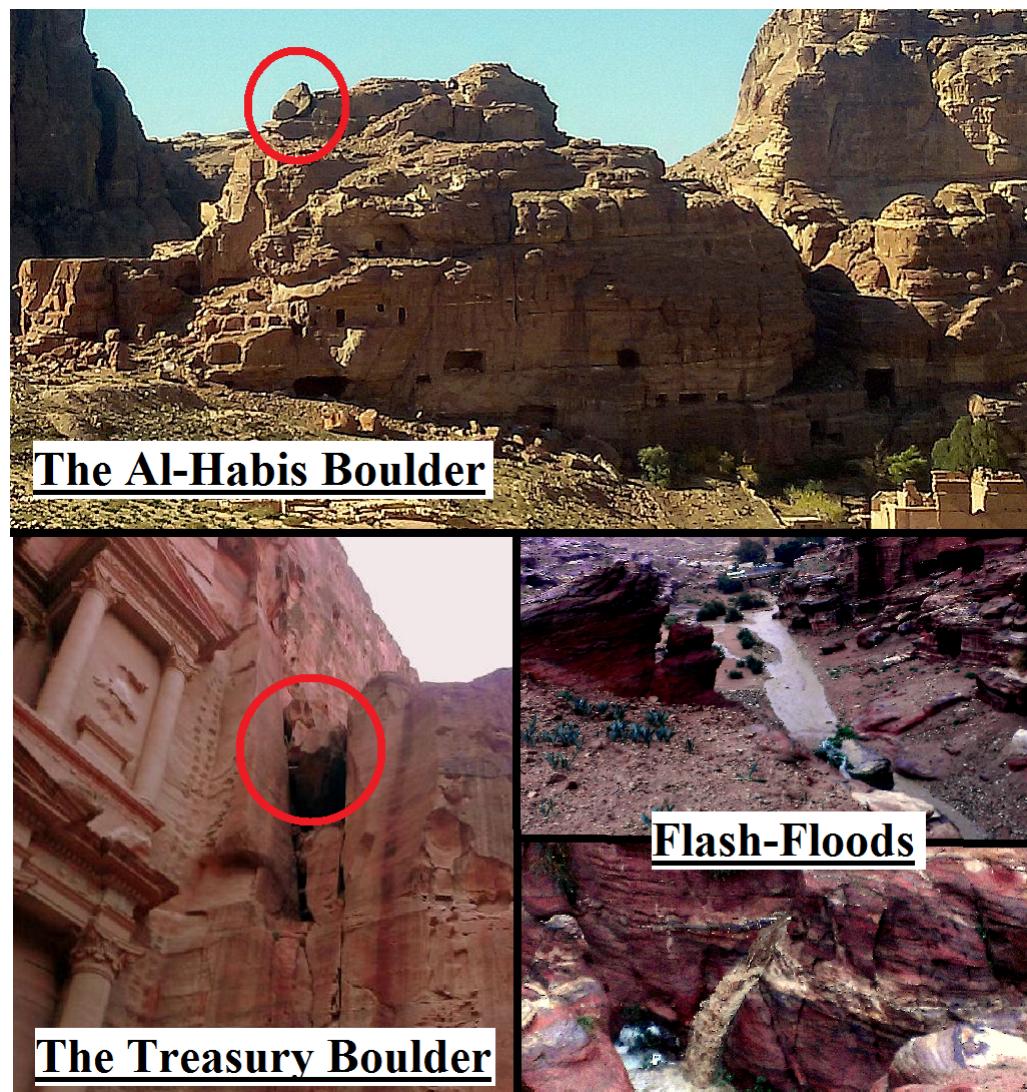
#### Results: Natural Features

#### Treasury's Boulder

#### Al-Habis Boulder

#### Flash Floods

<sup>5</sup> Several earthquakes were recorded through history; this allows us to retrieve the years in which Petra has been subjected to extreme natural forces. Petra underwent devastating earthquakes in 31 B.C., 114 A.D., 363 A.D., 551 A.D., and 747 A.D. (Rababeh et al., 2014:63–64; Peterman, 1994:98–103).



**Figure 2:** *The three natural and potential hazardous features.*

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field survey in the winter of 2014, when a rapidly formed flash-flood transported and deposited an ancient basalt grinder (fig. 3) and various large boulders. The force and volume of the flash-flood depends on the amount of rainfall and surface run-off water supplied through nine catchment areas located in the Petra area (Al-Weshah and El-Khoury, 1999:171–172; Nichols, 2009:130). Flash-floods pose a major threat to people inside Petra; this was proven by the flash-flood of 1963, which killed more than 20 French tourists (Comer, 2012:55–57; Lingis, 2002:55).

#### Discussion

The results indicate that sandstone monuments and natural features in Petra are mainly susceptible to physical weathering and detrimental circumstances such as; weather extremities, root-growth, flash-floods, and human activities that are responsible for the



**Figure 3:** An ancient basalt grinder transported and deposited by a flash-flood.

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abrasion and detachment of stone material, such as collapse, rock-falls, and fissures (Balaáwi et al., 2011:267–284; Heinrichs, 2008:653; Turkington and Paradise, 2005:230). The discussed natural features point to the presence of potential safety-risks in the archaeological park that could threaten nearby archaeology, locals, and visitors.

Much is known about the various weathering factors in Petra as is attested by the numerous scholarly studies. Unfortunately, many monuments in the archaeological park still lack protection, as was observed during the field-surveys in 2014 and 2015. Most monuments are in dire need of protection and conservation, as is clear from presented case-studies in this paper. In order to protect and preserve the chosen, and in fact all other, monuments, strict protection measures and visitor regulations should be enforced.

In the presence of the ongoing weathering impacts, and without further preventive measures, the degradation and consequential collapse of monuments is inevitable. It is agreed by various scholars that risk- and damage-assessments are necessary to prevent further damage and to safeguard Petra's archaeology. One of those scholars, for example, is Tom Paradise who has argued:

Moreover, the Jordanian government and regional Petra tourism council have developed plans to continually increase visitation across the valley. Therefore, in popular and susceptible tourist destinations like Petra, research that investigates natural and anthropogenic influences on architectural decay and environmental degradation is essential before it is too late and irreversible changes have occurred in these vulnerable sites.

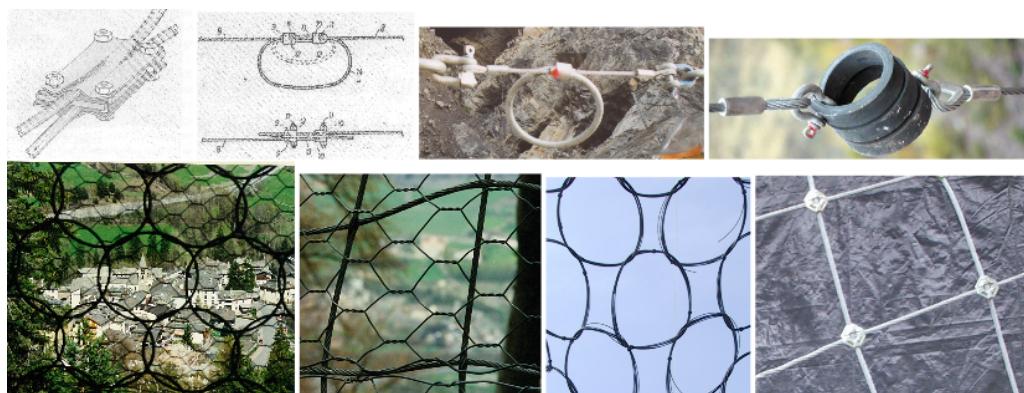
—Paradise, 2010:75

The condition of the Monastery's Urn and the Corinthian Tomb both indicate the urgent need for attention and protection. Additionally, the collapsed Tomb 609 makes clear that continuous damage-assessments throughout Petra are required in order to safeguard Petra's archaeology (Heinrichs, 2008:672). Several conservation works have been fulfilled in Petra however, not all are successful. One unsuccessful attempt occurred at the Qasr-al Bint where structural parts were impregnated with an incorrect mortar-type causing further damage. This partially was due to the lack of a single conservation-policy in Jordan's heritage sector which then led to various unaligned conservation interventions. Various mortar-types have negative and positive merits that should be kept in mind during conservation works in Petra (Al-Saad and Abdel-Halim, 2001:926–932). Desalination techniques are available, which reduce salt-crystallization; however, this needs improvement since some techniques increase decay (Matyšcák, Ottosen, and Rörig-Dalgaard, 2014:561–563; Rörig-Dalgaard, 2015:1915–1916; Young, Urquhart, and Laing, 2003:1125–1129). Furthermore, the process of salt-weathering remains poorly understood and requires further research. Currently, the 'petraSalt' research-project is aimed at gaining a better understanding of salt-weathering that may lead to improved methods that reduce the impact of salt-weathering (Heinrichs and Azzam, 2013b:347–348).

In regards to the chosen natural features, various options could contribute to maintain the safety for Petra's archaeology and visitors, such as steel-nets (fig. 4), which retain falling debris during rock-falls (Volkwein et al., 2011:2638). The Al-Habis boulder and the Treasury's boulder (fig. 2) are proofs of the silent, and often unnoticed, presence of safety-risks and are just a glimpse of the collective amount of hazards in the park. This suggests that extensive and continuous risk-assessments should be enforced in order to maintain a safe environment. The rapid formation of flash-floods, after a rain- or snow-fall, likewise point to the need of the continuous monitoring of weather patterns and its effect on Petra's archaeological and natural features.

#### Conclusion and Implications

Concluding from the information gained throughout this research, direct attention is required for the selected monuments and natural features. Previous studies have not highlighted architectural features of the monuments that were degraded and of potential



**Figure 4:** An example of safety-measures.

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safety risk. This indicates the need for thorough damage-assessments of all and entire monuments including architectural features, such as the Urn of the Monastery. Likewise, a national conservation policy should help in achieving aligned conservation works in Petra (Bala'awi et al., 2011:267–284).

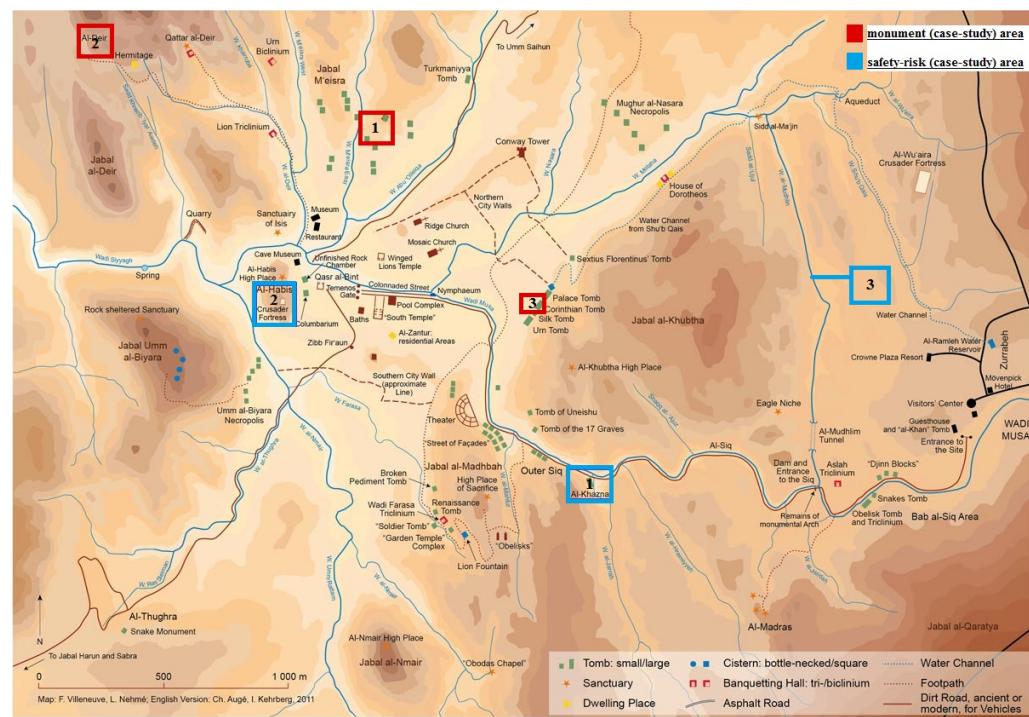
Regarding the protection of monuments, there should be an increased attention on reducing and researching salt-weathering and on petrographic and geomorphological studies (Heinrichs and Azzam, 2013b:347–348). Similar research, regarding salt-weathering, has been done at the sandstone Luxor Temple and the Karnak Temple in Upper Egypt that are, similarly, in a severe state of degradation (Fitzner, Heinrichs, and La Bouchardiere, 2003:1009–1102). Deterioration caused by continuous natural processes can be controlled through periodic damage-assessments and the monitoring of weather-patterns in the region. ICOMOS (2005) has published examinations on the impact of anthropogenic activity on Petra's archaeology. Based on these publications, a solid tourism- and heritage-management plan for Petra could be designed (Comer and Willems, 2011:499–501). Furthermore, tourists should be prevented from climbing on monuments and scratching and writing on sandstone surfaces. The placement of warning signage and the imposing of fines could prevent people from causing damage in Petra (Mustafa and Bala'awi, 2013:80–85).

Continuous risk-assessments of unconsolidated natural features, such as the Al-Habis and Treasury boulder, should be conducted. Rock-fissures, which could lead to collapse, should be monitored and filled with the correct mortar which should first be technically evaluated (Al-Saad and Abdel-Halim, 2001:926–932). Strict regulations regarding the allowance of visitors during significant rain- or snowfall should be applied to prevent dangerous situations. As well, installing steel-safety nets (fig. 4) will contribute to the park's safety in case of rock-falls (Volkwein et al., 2011:2617–2639). Through the enforcement of safety regulations, protection measures, extensive risk- and damage-assessments and mapping affected monuments, damage can be reduced and prevented (Alshawabkeh and Bala'awi, 2010:127; Delmonaco, Margottini, and Spizzichino, 2013:441–446). If implemented, these options will contribute to the protection of Petra's archaeology,

visitors, and future; and with that, the protection of irreplaceable and valuable data required to retrieve an understanding of this region's past.

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**Figure 5: Map of the Petra Archaeological Park (PAP).**

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**Figure 6: Map of Jordan.**

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# From Colonialism to Nationalism, the Indian to *Indigenismo*: A History of Central Mexican Archaeology

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*Most published work on the history of Mexican archaeology has been in Spanish, and most publications in article format have focussed on developments during or since the 1900s. This paper presents a concise, English summary of the origins and development of the practice of archaeology alongside the changing political landscape of Mexico through from the 1500s to the present. This article explores: the colonial concept of the “Indian” and the initial conversion effort of the 1500s; the birth of antiquarianism and archaeology in the 1700s and 1800s respectively; the establishment of archaeology as a discipline with Manuel Gamio; the Revolution of the 1910s and the *indigenismo* movement; and modern controversies around tourist archaeology, the status of living indigenous peoples in Mexico, and the relationship between archaeology and the Mexican government. “Archaeology” is defined here as the study of the (human) past through material remains, an “archaeologist” as one who practices archaeology, a “practice” as the application of certain ideas and methods, and a “discipline” as a branch of knowledge taught in a school system. It is argued that archaeology in central Mexico (the practice and discipline) developed alongside Mexican nationalism during periods when the pre-Hispanic past and particularly the Aztec empire was viewed positively, and thus developed in tandem with *indigenismo* and the notion of Mexico as a *mestizo* nation.*

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Nationalism and the perceived importance of the pre-Hispanic past were closely linked to the development of archaeology in Mexico, and the colony of New Spain that predated it. The study of indigenous populations in what is now central Mexico began immediately after the fall of the Aztec capital of Tenochtitlan in 1521 (the “conquest”) with the work of friars like Bernardino de Sahagún and Bartolomé de Las Casas, with the aim of converting indigenous people to Catholicism. However, it was not until the late 1700s that artifacts and material remains began being studied directly for information about the past with Antonio de León y Gama, and not until the early 1800s, with the first wave of nationalist and indigenist sentiment that glorified the pre-Hispanic past in the years leading up the War of Independence, that archaeology became an established practice in the colony. Archaeology was a tool used to help create a nation with a unique identity out of the colony of New Spain, and the pre-Hispanic past garnered popular interest for the first time for providing Mexico with part of that unique identity. It was not until the Porfiriato (1880–1910) and the work of Leopoldo Batres that archaeological research and restoration work began to receive governmental funding, and not until after the Revolution (1910–1917) and the work of Manuel Gamio that archaeology became a trained and regulated discipline. With the Revolution, Mexico sought to unify itself culturally and socially beneath a proud *mestizo* (mixed-racial of Spanish and indigenous) label, spawning the controversial *indigenismo* movement that both spurred archaeological study of the pre-Hispanic past and encouraged the assimilation of living natives. Archaeology in the 1900s was initially driven by a nationalist pride that favoured “advanced” cultures of Mesoamerica and showy sites for tourism, but increasingly became scientifically, intellectually and theoretically driven, as the rights for living indigenous people also slowly improved.

This paper provides a concise English summary of these key periods and personages in the development of archaeology and its precursors in central Mexico, presenting a unified trajectory that places early colonial research alongside the better-known developments of the 1900s, and explores the relationship between the development of archaeology and the nationalist and indigenist movements of Mexico.

Although there were no antiquarians<sup>1</sup> or archaeologists in Mexico before the 1700s, and although archaeology as an acknowledged practice did not exist till the 1800s, research on the indigenous people of central Mexico began a few short years after the fall of Tenochtitlan, with the arrival of twelve Franciscan missionaries in 1524. After Charles I of Spain (Charles V) became ruler of the Holy Roman Empire in 1519, Spain saw herself as the new divinely chosen country for spreading Christianity across the world through political domination, and Hernán Cortés, having given this same holy conversion mission as the purpose and validation for his campaign against the Aztecs, requested that the missionaries be sent (Cortés, 1971:40; Díaz Balsera, 2005:168–169). “The Twelve”, their number echoing the twelve apostles of the Bible, came with the intent of stamping out idolatry and sacrifice, and they learned Nahuatl and studied the customs of the Nahuas in order to do so (Díaz Balsera, 2005:4; Swarthout, 2004).

#### The 1500s—Christianity and the Noble Savage

<sup>1</sup> Historians who studied the past through manuscripts and artefacts. Collectors of antiquities.

The initial responses to the Nahuas, and particularly the Aztecs or Mexica (the ethnic group of the Aztec capital of Tenochtitlan), were varied. Cortés and his soldier Díaz del Castillo both describe their awe upon entering Tenochtitlan and seeing the Templo Mayor and Moctezuma's palace, as well as their deference for Mexica manners and accomplishments, yet Cortés recounts the natives' ignorance of Christianity and their human sacrifices in horror, and calls the Mexica "barbarous" (Cortés, 1971:35,105-109; Díaz del Castillo, 1963:216). This supposed "contradiction" of Mexica barbarity coupled with their accomplishments is still puzzled over today (this idea largely lingers in discussions of Aztec sacrifice, ex. Carrasco, 1999:51), and at the time, Cortés' views were not unique. Generally speaking, the indigenous people of the Americas were a puzzle and a mystery: they were perfect or primitive; cultureless or innocent; beast or child; stupid or gullible; cannibals and sodomites and all of the above (Restall, 2003:105).

The question of the capacities, value, and place in the world of these indigenous people was debated fiercely in Spain and the New World. The controversy around the natives' "barbarity" was one with huge implications. At risk was the legitimization, morally and legally, of the invasion of Middle America, as well as the (proper) treatment of the so-called "Indians"—a word that only reinforced their liminal status as people, and has been argued to have reinforced their subjugation as well (Swarthout, 2004:29-30; Bonfil, 1977). Myths of humanoid monsters—including cannibals, people with tails and people without heads—had existed in Europe for hundreds of years before Europe discovered North America, and some Europeans argued that the New World indigenous people fit those myths (Restall, 2003:103). They were either inhuman creatures who didn't possess reason and were created as natural slaves by God, or were half or "imperfectly human" (Todorov, 1984:150) because they lacked Christianity and "proper" clothing and weapons (Restall, 2003:103). On the opposite extreme, some argued that the indigenous were innocent and pure like Adam before sin, better suited to a utopia than Spanish society, and the Church argued that the indigenous people only needed guidance and could learn to be Christian (Restall, 2003:104; Swarthout, 2004:31).

Despite the mixed and often negative views of the natives, the Spanish did have a genuine concern for their welfare because of their interest in exploiting their labour. When Bartolomé de Las Casas (ca.1474–1566), a Dominican friar who was controversial for defending the natives and critiquing Cortés and the Spanish, claimed that the indigenous people were dying out because of Spanish brutality<sup>2</sup>, the Crown took it seriously (Restall, 2003:129). In 1537, Charles V agreed to Pope Paulo III's declaration saying the natives were rational human beings with souls who could understand Catholicism and were thus not to be exploited, and in 1542 the New Laws outlawed any sort of Indian slavery (Swarthout, 2004:32).

That this ruling did not reflect an agreement on the status of the indigenous people is illustrated in the Valladolid Debate of 1550, arranged by the king of Spain between the scholars Juan Ginés de Sepúlveda (1494–1573) and Las Casas. Las Casas defended a positive and romanticized view of the indigenous people, arguing that they were morally sound as well as deserving of respect and compensation for their suffering. By

<sup>2</sup> Disease was actually the main cause for these extreme population declines (Restall, 2003:128).

contrast, Sepúlveda maintained that the natives were naturally inferior and were made by God to serve the Spanish, likening them to “wild beasts” who “hardly deserve the name of human beings” (Restall, 2003:107,132); the practice of human sacrifice was his strongest case for their inferiority, and Sepúlveda argued that the primitiveness of the Indians justified the violence of Spanish colonialism (Swarthout, 2004:32-33; Todorov, 1984:186). Like many at the time, Sepúlveda also called all of the indigenous “cannibals” in a circular argument: they were barbaric and were thus cannibals; they were cannibals and thus barbarians (Restall, 2003:107). The contradictory views of New World natives reflected in the Valladolid Debate formed the foundation for the dichotomous concept of the “noble savage” that was coined more than fifty years later (Restall, 2003:107).

Bartolomé de Las Casas was one of the many friars who studied the natives in an attempt to convert them, and his debate with Sepúlveda reflects the conflict he and some others had between empathizing with the natives and his original mission to study them only to convert them (Todorov, 1984:201), including Bernardino de Sahagún. Sahagún (1499-1590) was a contemporary friar who studied the Nahuas in Mexico much as a modern anthropologist would (León Portilla, 2002:9). Because texts like Las Casas’ and Sahagún’s portrayed the natives too sympathetically, the Spanish crown increasingly censored native study (Díaz Balsera, 2005:162). After 1527, permission was required for any foreigner to access writing on the natives, and after 1556 every book written on them had to be approved by the Council of Indies. Sahagún’s own writings were confiscated in 1577 by Phillip II, after which it was forbidden for writings on Nahua beliefs of culture to be printed or circulated (Díaz Balsera, 2005:161-162). Because of these laws, many histories and codices written in the late 1500s or in the 1600s were not published until after Mexican Independence, a key exception being Ixtliloxochitl’s (of Texcoco and Spanish descent) *Relación*, commissioned by the viceroy of New Spain in the early 1600s.

Amongst the Spanish, Crown censorship stopped the publication and open distribution of such texts even if it did not stop their writing, but it had very little impact on native people. With the “conquest” of 1521, very few indigenous people had been “conquered” by any sense of the word; by contrast, in 1523, Spanish control over even the Aztec capital of Tenochtitlan was precarious and still dependent on their hundreds of thousands of native allies, Spanish campaigns against indigenous people in what was then New Spain and later Mexico were ongoing all the way into the 1900s, and even the natives who were defeated by or allied with the Spanish retained a great deal of cultural and political autonomy (Restall, 2003:70-73). Histories were still being written by and about indigenous people into the 1600s and yet the idea is still prevalent that by the end of the 1500s the pre-Hispanic past (and the cultures that belonged to it) was seen as unimportant, “dead” and “buried forever” (Matos Moctezuma, 1995:17), an idea that is wrong even if referring to only the Spanish, and harmfully silences native voices and native resilience in the centuries following the Spanish “conquest”<sup>3</sup>.

<sup>3</sup> There are many reasons that the word “conquest” was initially used: by the conquistadores, to emphasize the completeness of their (incomplete) domination and minimize the native (ally) role in that domination in order to secure titles and *encomiendas* from the Crown; by the Church, to exaggerate the swiftness and improbability of defeat in order to show that victory was divinely sanctioned (and morally justified); by

Since most indigenous groups of New Spain were not defeated in the 1500s but were still very much alive and independent, antiquarian or archaeological interest, had it existed, would only have applied to no longer extant cultures and ruins like that of Teotihuacan. However, in the 1500s there was no Spanish interest in studying the cultures of the New World for purposes other than conversion and assimilation. By contrast, the Church did their best to destroy the sites, monuments and manuscripts that pre-dated the conquest in order to wipe out reminders of Nahua beliefs (Bernal, 1980:36). Friar Durán suggested demolishing the newly built Spanish cathedral because it stood on Mexica constructions, and in a letter to his Franciscan order in 1531, Bishop Zumárraga described the destruction of five hundred temples and twenty thousand idols as part of the conversion effort (Bernal, 1980:36,39). Only the Maya were an exception: their architecture was admired from the start (Bernal, 1980:42).

In the late 1600s and early 1700s, interest in the pre-Hispanic past grew for legal and political reasons, propelled both by *criollos* (Americas-born Spaniards) fighting for more power within the Spanish caste system, and land dispute issues between different indigenous groups and with the Spanish, which became increasingly important in the 1700s as populations grew (Bernal, 1980:49; Restall, 2003:122). Land had never been an issue or a goal for the Spanish in their colonial endeavors—their interest lay in wealth, labour and religious conversion, not land or the “wholesale Hispanization” of indigenous peoples (Restall, 2003:75).

The 1700s also brought the first scholarly (non-indigenous) interest in the pre-Hispanic past, starting with the work of Carlos de Sigüenza y Góngora (1670–1750). A notable figure at the turn of the century, he was a famous *criollo* antiquarian and a chair at the Mexican university. Sigüenza was one of the first scholars to see New Spain as a blend of Spaniard and “Indian”, with a past that extended back beyond Cortés’ or even Columbus’ arrival. He expressed these views long before they became widely accepted, and more than half a century before they became tied to the Independence movement (Bernal, 1980:52). Following his conviction that native histories were an important part of New Spain’s, Sigüenza was the first to compile a large number of manuscripts and artefacts of Spanish, colonial indigenous and pre-colonial origins (Bernal, 1980:50-51), including

#### The 1700s and 1800s—The Birth of Antiquarianism and Archaeology

the Spanish, to reflect the new and immediate legal status of New Spain and its people as being already the property of Spain even before the Spanish had seen most of it (and thus, noncompliant indigenous people were “traitors” and “rebels” and could be punished accordingly); and now, as a half-accidental product of history, where the self-glorification of conquistador *probanzas* led to the same exaggerations in codices and histories and eventually solidified in Prescott’s popular history, where the “conquest” was an impossible feat of only a handful of exceptional Spanish men led by the hero Cortés, with no mention of other actors or factors (Restall, 2003:13,15,68). In addition to the word “conquest” being entirely inaccurate other than in referring to the fall of Tenochtitlan, the continuing use of the term “Spanish conquest” today to refer to the Spanish invasion and colonialism in Middle America is problematic for the following reasons: it helps to reinforce racist ideas of native inferiority and Spanish/European superiority; it contributes to misconceptions about the Spanish invasion and the place of indigenous people in the colonial period; and it silences the many indigenous groups who played critical roles in the fall of the Aztec Empire and in later campaigns by giving credit only to the Spanish. This is why the authors avoid referring to the “Spanish Conquest” in this essay, and more often refer to the fall of Tenochtitlan in 1521, particular wars or campaigns, or the Spanish invasion of Middle America more broadly.

censored texts like Chimalpahin's annals and Ixtliloxochitl's *Historia chichimeca* (named by Sigüenza) written in the early to mid-1600s.

Other than a few descriptions of archaeological sites and some antiquarian collectors like Sigüenza, little in the way of pre-Hispanic research occurred before its sudden increase in the late 1700s, accompanying rising nationalism and Enlightenment thought (López Luján, 2001:290). Although the Enlightenment took place earlier in Europe, ideas like Locke's *tabula rassa* and Rousseau's portrayal of the noble savage contributed to a growing interest in the pre-Hispanic past (Bernal, 1980:69,74). Another trigger for this new wave of research in the late 1700s was the discovery of two Mexica monoliths in the main plaza in Mexico City in 1790: the Sun or Calendar Stone and the statue of Coatlicue (Matos Moctezuma, 1995:18). Antonio de León y Gama (1736–1802) was the first to publish a description of these monoliths in 1792 (Villela, 2010a:50).

Gama, who has been called the first Mexican archaeologist, was a leading intellectual of the late 1700s and a symbol of the Enlightenment in New Spain (Bernal, 1980:80; Villela, 2010a:50). Gama wrote a history of ancient Mexico (though it was not published because of ongoing censorship (Villela, 2010a:51)), and was the first New Spaniard accredited with directly studying a monument for information about the past, recognizing that the *Ollin* glyph on the Calendar stone referenced the four ages of the Mexica past, and correctly ordering the Mexica months (Bernal, 1980:84; Villela, 2010a:51-52). A notable contemporary archaeologist was José Antonio de Alzate y Ramírez (1737–1799), who was the first person to provide descriptions of archaeological sites outside of the main valleys and the Mayan region, and who led one of the first archaeological excavations in New Spain in 1777 (Bernal, 1980:79-80; López Luján, 2001:290; Villela, 2010a:50).

Gama's ideas were built on by the traveller Alexander von Humboldt (1759–1859), who visited Mexico on his tour of the Americas. Humboldt published a book describing Mexican archaeological sites and monuments, spreading the use of the word "Aztec" to describe the Mexica ethnic group and the Triple Alliance Empire (Bernal, 1980:100; Matos Moctezuma, 1995:19; Villela, 2010b:81-82), a word based on their ancestors' homeland of Aztlan. Though he harshly concluded that there was no aesthetic merit in any pre-Hispanic creations (López Luján, 2006:23), after studying Gama's writings Humboldt did argue that the Mexica had an advanced understanding of math and astronomy and thus could not have been uncivilized savages (Villela, 2010b:81-82), an idea that persisted from early scholars like Sepúlveda.

In order for Humboldt to study the statue of Coatlicue, it had to be dug up from where it had been buried in the basement of the University of Mexico for protection and to prevent its use in the independence movement of the time (Bernal, 1980:85; Matos Moctezuma, 1979:10; Matos Moctezuma, 1995:20). Following the invasion of Spain by Napoleon in 1808 and the placement of Napoleon's brother on the Spanish throne, Mexico and other Spanish colonies revolted, and pre-Hispanic artefacts like the statue of Coatlicue were used as symbols of rebellion against Spain (Matos Moctezuma, 1995:20; Skidmore and Smith, 1989:31). The first rebellion, and the *mestizo* and native army led by Hidalgo and Morelos, ended with the reinstatement of Ferdinand VII on the Spanish throne (Skidmore and Smith, 1989:31-32).

In the early 1800s and increasingly throughout the War of Independence (1820–1836) the pre-Hispanic past was used to legitimize this rebellion, and thus the rebellion was important to the development of the practice of archaeology. In this first wave of indigenism, the leaders of the independence movement saw the Spanish government as an oppressive foreign power and Mexicans as heirs to the victims of the Spanish invasion (Caballero López, 2008:336), idealizing and romanticizing the pre-Hispanic past and particularly more “advanced” cultures like the Aztecs (Fowler, 1987:223); however, the Spanish and their role in the identity of (the colony and then) Mexico was controversial throughout the 1800s. On one end were those who saw Cortes as a villain, glorifying indigenous heroes<sup>4</sup> like the Aztec ruler Cuauhtemoc and those who supported natives like Las Casas, while on the other, some maintained that Cortes was the founding father of Mexico and that the pre-Hispanic past was not an important part of their identity (Restall, 2003:69). When the political importance of the pre-Hispanic past waned following Independence, an interest in it had nonetheless been established along with the practice of archaeology. During the 1800s, the first archaeological museum was founded, an encyclopaedia of the pre-Hispanic past and many previously censored texts were published, and the pre-Hispanic past was expressed in the fine arts.

At the end of the 1800s, archaeology flourished. During the dictatorship of Porfirio Díaz (1880–1910), positivism<sup>5</sup> increased archaeological interest for scientific reasons, and a new wave of nationalism increased it for political ones (Patterson, 1995:77). For the first time, the government funded archaeological expeditions, and Leopoldo Batres was instrumental in making this happen (Bernal, 1980:149,159). Batres (1852–1926) is best known for restoring the Temple of the Sun at Teotihuacan in the early 1900s, and the data from his many excavations (ex. at Mitla and Monte Albán) and his resulting publications are still referenced today; he has been critiqued for his poor technique (Bernal, 1980:149; Bueno, 2016:78), but archaeology had still not become a trained discipline, and archaeological methods had not been standardized. Although most archaeologists during the Porfiriato worked on museum collections, Batres and others at this time collected and increasingly published archaeological data from every part of what later became known as the cultural area of Mesoamerica (Bernal, 1980:159; Patterson, 1995:77; Swarthout, 2004:63). The importance of using this data also grew: anyone studying the pre-Hispanic past was now seen to need archaeological data in addition to textual data in order to do so, and positivist and scientific thought led to the discarding of old assumptions in favour of more rigorous empirical study (Bernal, 1980:159; Swarthout, 2004:64).

Just as it had in the early 1800s, this burgeoning of archaeology went hand in hand with nationalism; this time, with a move to create a unifying national history with which to strengthen Mexico as a country, nationally and internationally (Bueno, 2016:92; Swarthout, 2004:63). At the start of the Porfiriato, many Mexicans would still have

The Porfiriato, “Indians”, and Mexico as a Mestizo Nation

<sup>4</sup> This focus on heroes was typical of nationalist movements around the world in the 1800s; however, this adoption of indigenous (etc) heroes was also the antithesis of the heroification of Cortes.

<sup>5</sup> Positivism, from Auguste Comte in the 1830s, was based on the idea that human society, like the natural world, was governed by laws of causality that are possible to learn objectively through reason and empirical science (Howell and Prevenier, 2001:13).

identified more with their town, ethnicity and culture than any national identity, and to unite its people with a common origin and strengthen Mexico as its own nation with its own history, the idea of Mexico as a *mestizo* nation, as a mix of Spanish and pre-Hispanic indigenous cultures, was increasingly put forward by the government; this was a driving force in the restoration of ancient ruins, the erection of monuments to national heroes, and the new funding for archaeological work at this time (Bueno, 2016:6,92; Swarthout, 2004:63,66). Among other changes, the 1897 Law of Monuments made archaeological ruins the property of the federal government, and for the first time, exploring, modifying or excavating them without governmental permission became a crime (Bueno, 2016:81; Lobjois, 2013:180).

However, despite this official embracing of pre-Hispanic indigenous peoples, there was still a stark contrast between their status and the status of living indigenous peoples because living indigenous people were not seen to be heirs to that past (Caballero López, 2008:337-338). The racist concept of the “Indian” persisted, and was only strengthened by the positivism that helped historical research. While in the colonial period “Indians” were seen as “a backward, uncivilized Other” in need of assimilation (Swarthout, 2004:63) and proven to be inferior by their “defeat” in the “Spanish Conquest”, now their subjugation was academically justified by observational “science” that identified them as inferior by physical attributes and circumstance (Patterson, 1995:70; Swarthout, 2004:64). Eduardo Matos Moctezuma (1979:12,14) argues that archaeology during the Porfiriato was used as a politico-cultural façade (“*fachada politico-cultural*”) that helped to further the subjugation of living indigenous peoples while justifying the power of the new *criollo* and *mestizo* elites in Mexico following Independence. If everyone in Mexico was *mestizo*, and neither indigenous people nor Spanish people existed anymore, then racism could not exist, poverty and subjugation were signs of inferiority and failure, and power was wielded by those who earned it.

There was another reason that this official embracing of the indigenous past in the national history was harmful to some indigenous peoples—it selectively embraced past indigenous cultures. It glorified the Aztec Empire and the other more “advanced” cultures of the area like the Maya and Toltec, and ignored many indigenous groups entirely, including the non-sedentary groups of northern Mexico (among them, the Yaqui of northern Mexico were not even defeated until the 1900s (Restall, 2003:72)) and many indigenous cultures that had historically been allies with the Spanish (Bueno, 2016:42). For these non-Aztec, non-state cultures, the suggestion that everyone in Mexico was (/is) part-Aztec, part-Spanish denied their cultures, silenced their voices, and glossed over key historical truths: that many indigenous groups had been happy to see the Aztecs fall because they had either been enemies of them (ex. the Tlaxcalla), or exploited by them. The Huejotzingo, for instance, were one of the conquistadores’ staunchest allies both in defeating the Aztecs and in other Spanish campaigns in the following decades (Restall, 2003:49). Even the Maya, glossed under this umbrella label, fought against each other, some on the side of the Spanish and some against, with independent polities existing into the 1900s (Restall, 2003:50,72). There was never, before or after the Spanish invasion or now, an acceptance by Mexican indigenous peoples that they were all of one culture and identity, much less that they were or are all “Aztec”.

### The Revolution and the Indigenismo Movement

These social changes, the new national history, and the adoption of the singular *mestizo* or indigenous-Spanish Mexican identity solidified with the revolution that ended Díaz's dictatorship (Swarthout, 2004:66-67). Unifying the country and enculturing (and Europeanizing) "Indians" had been a concern of the Mexican government(s) for some time (Caballero López, 2008:336; Restall, 2003:75), and with the Revolution for the first time the impoverished lower classes were officially incorporated into the nation socially and politically; colonial-period injustices were acknowledged, social and economic reforms were promised, and Mexico sought to unify and democratize itself while minimizing foreign influences (Swarthout, 2004:66-67; Trigger, 2006:276). The Revolution solidified the new national history and a new favouring of the pre-Hispanic past over that of the Spanish colonial period (Caballero López, 2008:330; Trigger, 2006:276), because the pre-Hispanic past was what gave Mexico its unique identity.

The glorification of the pre-Hispanic past and the re-writing of history fit into changes in Western history itself at that time, and the rise of "social history" in the 1900s which focussed on minorities and ordinary people rather than institutions and elites (Howell and Prevenier, 2001:14). However, the re-writing and re-interpreting of history went a step further in Mexico following the Revolution. Caballero López (2008) describes how the history of Milpa Alta, now one of the districts of Mexico City, illustrates this. The official history of Milpa Alta as written post-Revolution proudly and nostalgically identifies its origin in the Mexica Empire, describing the Mexica as the ancestors of all indigenous people. In striking contrast, the official narrative of the city's history as written in an administrative document in 1690 describes the founding of Milpa Alta as the moment when its patron saint appeared to them shortly after Tenochtitlan fell. The origins they acknowledged in the colonial period were tied to the Spanish and to Catholicism, but after the Revolution they extended their history backward into the newly glorified Aztec past (Caballero López, 2008:331-333). Many native communities and cultures described the past differently from Milpa Alta, but they all used history politically. Some Maya, to emphasize how long-lived and resilient their culture was, described the Spanish invasion as only one change of many in their much longer history, while some indigenous groups needed to emphasize their Christian piousness, their loyalty to the Spanish, or their legal claim to their territory (Restall, 2003:122).

This rewriting of history to include proud origins in the pre-Hispanic period on a country-wide scale was part of the *indigenismo* movement, which celebrated the role of indigenous people in Mexico's past while putting the position of poverty and the "Other" status of living indigenous people on the national agenda. Unlike during the War of Independence, the *indigenismo* movement of the 1900s was not just about venerating pre-Hispanic natives, but also about dealing with the "problem" of Indians in a country of *mestizos*, and though it directly faced long-building problems around native rights, its solution was assimilation (Ortiz Elizondo and Hernández Castillo, 1996:60). At once a discriminatory and a hopeful movement, it saw indigenous peoples as not quite Mexican, *mestizo*, or possessing the admired qualities of their ancestors, but it also saw them as redeemable and able to achieve these goals. In the decades following the Revolution, some indigenous groups were forbidden from speaking indigenous languages or wearing

traditional clothing in order to promote “equality” and to make everyone culturally the same (Hernandez Castillo, 2002:91,97).

The glorification of *pre-Hispanic* natives and their cultures, by contrast, was now part of Mexico’s identity and pride, and as archaeology was called on to disprove ideas of pre-Hispanic native inferiority that went back to the 1500s (Swarthout, 2004:95), a great deal of money was put into the budding discipline. In 1910, a school for archaeology (the *Escuela Internacional de Arqueología y Etnología Americana* or EIAEA) was founded, though it closed a decade later from the turmoil of the ongoing revolution. At this time, the first systematic archaeological studies and academic training in Mexico began (and thus archaeology became a “discipline”), influenced by Franz Boas’ theory of historical particularism, in a generation that included Manuel Gamio, George Vaillant, Alfred Kidder, and Alfred Tozzer (Caballero López, 2008:330; Fowler, 1987:234; Trigger, 2006:277).

Manuel Gamio (1883–1960), called the “Father of Mexican Anthropology”, saw himself as both belonging to an anthropological tradition going back to Sahagún and as beginning a “new anthropology” that was practical and scientific, and unlike Batres, he saw archaeology as a branch of anthropology rather than history (Lobojos, 2013:185; Zermeño, 2002:321). Gamio was a leading intellectual and the leading anthropologist of the Revolutionary and post-Revolutionary periods, and it was he who spread the notion of the greatness of the Aztec (and particularly the Mexica) widely (Caballero López, 2008:337; Patterson, 1995:77), furthering the favouring of the Aztec over other pre-Hispanic groups that had already begun. After training under Boas in the United States (Bernal, 1980:164), in 1913 Gamio created the first prehistoric chronology for the Valley of Mexico from excavations at San Miguel Amantla (Trigger, 2006:277), in 1917 he founded the first organization for anthropological study (*La Dirección de Antropología*) (Bernal, 1980:164,186), from 1917–1922 he worked at Teotihuacan and turned the partially-restored ruins (thanks to Batres’ nationalist restoration project in 1910 (Trigger, 2006:267)) into a public archaeological site and a tourist attraction (Caballero López, 2008:338), and in 1927 he did ethnographic work on Mexican immigrants in the US, the first study of its kind since Sahagún (Zermeño, 2002:317). Like Sahagún however, Gamio saw his research as a tool for “curing” the Indians—of their “backwardness”, rather than of idolatry (Zermeño, 2002:323). He saw Mexico’s indigenous populations as degenerations of pre-Hispanic cultures that were holding Mexico back from progress, but he also saw the problem as solvable through modernization and education because of their respected heritage (Caballero López, 2008:338; Patterson, 1995:78). Gamio was one of the first big proponents of these *indigenismo* ideas, advocating for the assimilation of indigenous peoples, and ethnographic work that might hasten this assimilation, as a solution to the Indian “problem” and the need for national progress (Ortiz Elizondo and Hernández Castillo, 1996:60).

Alfonso Caso was another indigenista anthropologist and an important member of what some call the “Mexican school” of archaeology, working to show the pre-Hispanic past through his many excavations (Litvak 1978 in Matos Moctezuma, 1979:13). In the 1930s, Caso excavated the major sites of Teotihuacan, Monte Alban, Tula and Chichen Itza (Caballero López, 2008:340; Fowler, 1987:234), and founded the National Institute of

Anthropology and History (INAH), in 1939, which still grants all licenses for Mexican excavations (Patterson, 1995:79; Trigger, 2006:277), though like Batres his work still suffered technically (Matos Moctezuma, 1979:15).

Archaeological technique improved in the 1930s and 1940s as Mexican archaeology became culture-historical and focussed on creating unique cultural chronologies with little theory. Although the use of stratigraphy in excavations had become common with the founding of the EIAEA in 1911 and the work of Eduardo Noguera, stratigraphy only became an essential archaeological method during this period in order to create chronologies in place of the old descriptions of ruins and artefacts (Bernal, 1980:161,172,188). At this time, chronologies were established for the Valley of Oaxaca and the Central Plateau valleys (Bernal, 1980:188), and in 1938, the year before Caso founded INAH, The National School of Anthropology and History (ENAH)—which offered degrees in archaeology—was co-founded by Paul Kirchoff, a German-born Mexican.

Paul Kirchoff coined the term “Mesoamerica” in 1943, fundamentally altering Mexican archaeology. “Mesoamerica” was originally intended to be an analytical tool based on a cultural area rather than the largely geographic one it became, and rose out of culture-history’s love of categorization and evolution-driven models (Runggaldier, 2001:4809,4811). It was initially based on contact-period cultures and similarities they shared in agriculture (including a reliance on maize), clothing, architecture, writing, calendars (a shared ritual and solar calendar), ritual, and military practices (Runggaldier, 2001:4807-4810). It was an etic term that did not reflect any perceived shared culture amongst the people, but problems also arose with the concept because of its application to both post-contact and very early (up to 1000 years ago) contexts in the following decades, and because it was based on an idea of progress leading to civilization which put the cultures of central Mexico, and particularly the Aztec, Teotihuacano, and Toltec, as more advanced than the rest (Runggaldier, 2001:4807-4809,4812).

The introduction of the concept of Mesoamerica changed what was studied by archaeologists and impacted funding. Starting in the 1940s, systematic archaeological research expanded from the Basin of Mexico, Oaxaca and Maya regions to include the entire region of Mesoamerica (though not beyond, to the nomadic cultures of northern Mexico, for instance), and cultures were reinterpreted as being part of a larger Mesoamerican context and trajectory; regional projects working within the unifying idea of Mesoamerica only grew in the coming decades as “Mesoamerican archaeology” became its own sub-discipline (Runggaldier, 2001:4810). Starting with the introduction of the concept, archaeological projects that demonstrated the greatest achievements of Mesoamerican civilizations were also favoured financially (Runggaldier, 2001:4812).

One of the first scholars to begin using the concept of Mesoamerica was Pedro Armillas in his research on cultural boundaries. Armillas was critical of the focus of Mexican archaeology in the 1940s on creating chronologies out of ceramics, and he wanted archaeological research to work toward finding cross-cultural universals and to involve more theory and analysis (Runggaldier, 2001:4810). Armillas brought the theories of Gordon Childe—and through him, Marx and Durkheim—to Mexico in the mid-1900s (Matos Moctezuma, 1979:17). Only then, around 1950, did the focus of archaeology

The  
Mid-1900s—Culture-History  
and “Mesoamerica”

begin to shift from creating chronologies to implementing more multi-disciplinary and interpretive approaches. The ENAH pushed this change and helped direct Mexican archaeology to become more scientific and address theoretical problems (Matos Moctezuma, 1979:19). By 1950, archaeology in Mexico had established itself as a field much as we know it now: since the start of the Porfiriato, it had transitioned from an unfunded practice of self-taught scholars to a discipline and paid profession with its own institute, laboratories, museums and trained practitioners who collaborated with specialists for excavations and analysis (Bernal, 1980:188).

### The Late 1900s to the Present—Tourist Archaeology, INAH, and Mexico's identity

From the Revolution until the 1970s (and to a lesser degree until the present), archaeological study was heavily influenced by the ability of sites to gain revenue from tourism, because of the ongoing link between archaeology and Mexico's national identity. In order to create and present a past that would foster national unity, the pre-Hispanic past was popularized through museums and large, accessible and showy sites (Trigger, 2006:277), sites that, not coincidentally, often showed the most "advanced" Mesoamerican cultures. After the Tlatelolco massacre in 1968 when hundreds of protestors advocating for democracy were shot down by police in Mexico City, a huge wave of anti-state sentiment was accompanied by critiques of archaeology (Patterson, 1995:80), as well as critiques of *indigenismo* ideas (Ortiz Elizondo and Hernández Castillo, 1996:61). Among the criticisms of the discipline was a demand for archaeology to be driven by scientific questions and not by tourism (Patterson, 1995:80). The idea of doing archaeology for tourism was also critiqued by Eduardo Matos Moctezuma, who began excavations at the Templo Mayor in Mexico City in 1978 (Patterson, 1995:80). Now one of the most important sites in Mexico, the (re-)discovery of the Templo Mayor increased state-funded archaeology (Patterson, 1995:80); at the beginning, the site and its artefacts were used both for international publicity and for promoting that same syncretic past and national history that had been established with the Revolution (Fowler, 1987:234).

Another change in the 1970s was a broadening of who became archaeologists, which affected interpretation of the past. Between the Revolution and the 1970s, most *indigenista* anthropologists were state intellectuals. Because of this, cultural-evolutionary ideas, and the focus of most archaeological work on monumental architecture, cultural and social change in the past were viewed as being elite- and state-driven, and studies of the past focussed on elites and state institutions (Gomez Goyzueta, 2007:220-230; Patterson, 1995:84). In part this trend of who became archaeologists was affected by the continuing poverty of the indigenous, despite the new *indigenismo* integration movement (Patterson, 1995:84).

Increasingly in the 1970s, efforts were being made to situate Mexican archaeology within larger theoretical frameworks (Matos Moctezuma, 1979:19-25). Matos Moctezuma (1979) and Gomez Goyzueta (2007) both argue that though the excavation and survey techniques of Mexico prioritized mathematical and statistical data in the same way we do today from as early as the 1950s, by the 1970s these methods were still not accompanied by enough theory or reflexivity. Gomez Goyzueta (2007:229) notes that Mexican archaeology was missing the problematization of Schiffer and Harris' processual ideas, and Gándara (1981) argues that the indiscriminate and uncritical adoption of concepts from Marxism, ecology, and cultural and processual archaeology led Mexican

archaeology to a "dogmatic falsificationism", which made contradicting culture historical ideas, and reflexive research, impossible. This dogmatic falsificationism further led Mexican archaeology to a "paradigmatic delay" ("retraso paradigmático") that Gándara argues is still setting back the discipline in Mexico today (Gándara, 1981; Gándara, 1987; Gomez Goyzueta, 2007). As an example of this delay, Matos Moctezuma (1979:21) points to the adoption of Childe's and Althusser's concepts by Mexican archaeologists in the late 1970s without them really understanding their ideas or who Childe and Althusser were responding to.

By the 1990s, León (1996) argued that Mexican archaeologists had coalesced into two groups: the "official" and the "academic". "Official" archaeologists included researchers like Eduardo Matos Moctezuma who were concerned with the "how", "when" and "why" of elites and state institutions (usually working on important Mesoamerican cultures), whereas the "academic" archaeologists, including researchers like Linda Manzanilla, were more interested in the everyday lives of commoners. This divide has, to a degree, existed in Mexican archaeology since the Porfiriato—then it was between museum archaeologists and site excavators and restorers like Batres. Batres' work and marked ability to secure funding, as well as laws passed during the Porfiriato around archaeological sites and excavations, gave power that has never been lost to the National Institute of Anthropology and History (INAH), when it became INAH's archaeological projects versus the university's (UNAM) (Bueno, 2016:79).

Today, INAH still gives preference to "official" projects that invoke popular interest, while underfunding has led to many of the biggest "academic" projects in Mexico being sponsored and codirected by foreign archaeologists (Gomez Goyzueta, 2007; Trigger, 2006:277-278). This can be seen in the 100+ archaeological sites that have been partially restored and open to the public in Mexico as of the last decade (Trigger, 2006:277-278), alongside the abandonment and/or destruction of less showy sites, like the archaeological zone in La Mezquiterain, a district of Tlaltizapán, Morelos (Giles, 2015). This "tourist archaeology" and preference for showy monumental sites has inspired the criticism and frustration of many academics (Gomez Goyzueta, 2007; López Aguilar, 2010; Sanders, 2000:30).

Tourist archaeology is an understandable legacy given the nationalist motivations behind the growth and development of archaeology in Mexico for centuries, including the construction of Mexico's *mestizo* identity and singular national history. The glorification of the past that initially encouraged the growth of archaeology has been argued by many to now be hindering Mexican archaeology—favouring the finding, restoration and conservation of monuments in the place of scientific research, a broadening of archaeological projects to include those that do not directly improve Mexico's international image, and theoretical and methodological advancements (Gándara, 1981; Gándara, 1987; Gomez Goyzueta, 2007; López Aguilar, 2010).

Change has, however, slowly been coming for living indigenous people in Mexico. After decades of indigenous rights movements, Mexico reformed its Constitution in 1992 to acknowledge the rights (and existence) of indigenous peoples. A paragraph was added that stated that indigenous people in Mexico have cultural rights and the right to practice

their own customs; it also said that the law should take into account indigenous methods of self-government in indigenous cases (Ortiz Elizondo and Hernández Castillo, 1996:59). Activist movements fighting for indigenous autonomy within Mexico are ongoing to this day, amongst a lingering racism toward indigenous people and the country's ongoing anti-multicultural national identity (Hernandez Castillo, 2002:93-95).

Mexico's identity continues to be proudly rooted in the achievements of the Aztec empire. Mexicans are “a *mestizo* people”, and Aztec symbols like the eagle on the flag and the Calendar Stone are used as symbols of the country (Caballero López, 2008:335; Fowler, 1987:234; Trigger, 2006:227). The connections between Mexico and the Aztec Empire are made explicit in modern-day Mexico, but as illustrated in this essay, just like the silencing and social reforms of the official *indigenismo* movement, the increasing favouring of the Aztecs over other indigenous groups, and the development of archaeology as a discipline, this view of history is a development of the 20th century (Caballero López, 2008:329).

In 1964, a plaque was dedicated to President López Mateos in Mexico City in the place where the Aztecs made their last stand. It reads: “On 13 August 1521, Tlatelolco, heroically defended by Cuauhtemoc, fell into the power of Hernán Cortés. It was neither a triumph nor a defeat, but the painful birth of the *mestizo* people that is Mexico today” (Fowler, 1987:234). These words show the appropriation of both a Spanish and Aztec history, and the transformation of the concept of *mestizo* from the second-class mixed-racial minority of colonial Mexico to the revered cultural and national idea that includes all Mexicans today. The “heroics” of the emperor Cuauhtemoc reflect the idealization of the Aztec people and the importance that that indigenous blood has in the *mestizo* mixture to this day, despite the issues still faced by the modern indigenous from the colonial legacy and the ongoing silencing of non-Aztec, non-“advanced”, and non-Mesoamerican indigenous peoples of Mexico and their role in its history.

The transitions from the silenced or subjugated “Indian” to indigenous people with cultural rights, the savagery and naivety of the pre-Hispanic past to its glorification and romanticization, and the colony of New Spain to the country of Mexico, are changes that accompanied and still affect the development of archaeology in Mexico. The case of Milpa Alta shows how fundamentally history can be changed with changing politics and national values, and from that one can glean the effect that both the initial destruction and forgetting of natives in the 1500s and the current glorification of the Aztec can have on archaeological interpretation. Though the *indigenismo* wave of tourist archaeology built up the discipline from the pre-Revolution days of self-taught descriptive work, it also favoured the cities and temples, the states and performances, the Aztec who shared the same capital and the large beautiful buildings of the Maya and Teotihuacanos. In Mexico, the view of the native and the view of his past are what inspired the development of archaeological study out of the first cultural studies of the 1500s, to the antiquarian and archaeological work of Sigüenza and Gama respectively, to the rise of a rigorous discipline with Gamio and the glorification of the past, and to the continuing growth of research-driven, scientific and theoretically informed “academic” archaeology in Mexico. To this day the place of the native and the pre-Hispanic past continues to affect the culture of Mexico and those who work there, and continues to influence licensing and

funding for archaeological work, as well as the national and international presentation of Mexico itself.

**Palabras Clave:** México, Arqueología mexicana, colonialismo, nacionalismo, racismo, indigenismo, Indio, indígena, asimilación, mestizo, turismo arqueológico

*La mayoría de los trabajos publicados sobre la historia de la arqueología mexicana están en español, y la mayoría de los artículos científicos se han centrado en el su desarrollo desde el siglo XX en adelante. Esta publicación presenta un resumen conciso en inglés sobre los orígenes y desarrollo de la práctica arqueológica, en relación al contexto político cambiante de México, desde el siglo XVI hasta nuestros días. En particular, nos centramos en los siguientes temas: la conceptualización colonial de los ‘indios’ y la conversión al Cristianismo; el nacimiento del colecciónismo anticuario en el siglo XVIII y de la Arqueología en el siglo XIX; el rol de Manuel Gamio en la concepción de la arqueología como práctica científica; la Revolución durante la primera década del siglo XX y el movimiento indigenista. Concluimos con reflexiones sobre el turismo arqueológico, el estatus de las poblaciones indígenas mexicanas, y la relación entre la arqueología y el estado mexicano. La ‘arqueología’ se define aquí como el estudio del pasado (de la humanidad) a través de restos materiales, un ‘arqueólogo’ como un practicante de esta disciplina, una ‘práctica’ como la aplicación de ciertas ideas y metodologías, y por último, una ‘disciplina’ como una rama de conocimiento enseñada en un sistema de escolarización. Consideramos que la práctica y la disciplina arqueológica en México central, se desarrolló de manera paralela al nacionalismo mexicano, en períodos durante los cuales el pasado precolombino, particularmente el Imperio Azteca o Mexica era visto de manera positiva, coincidiendo con la consolidación de la corriente indigenista y la concepción de México como una nación ‘mestiza’.*

*Resumen*

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## Quantification of Interpersonal Violence in Skeletal Remains from Medieval and Post-Medieval London

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**Keywords:** violence, trauma, medieval, post-medieval, London, gender and biological sex

*With little published work on the subject of gender targeting in violence from archaeological skeletal remains, this paper explores the knowledge vacuum by analysing data from interpersonal violence markings, resultant of purposeful violence between two or more people, on skeletal remains to determine how rates of skeletal trauma differ over time between the sexes. This quantitative study utilises data from the Museum of London Archaeology's (MOLA) osteological WORD database from the medieval period, dating AD 1050-1540, and post-medieval period, 16th to 19th centuries (WORD Database 2016). Despite well-established trends through numerous studies outlining the decline in violence from the medieval period to modern society, the data reveals the rate of interpersonal violence increased against males by 35 % from the medieval period to the post-medieval period, whilst the rate declined against females by 13.30 %. The rise in male violence is suggested to be a consequence of war injuries, continued post-war raids on London, economic stress, or sample size limitations. Furthermore the data indicates that violence was rarely received peri-mortem for either sex, suggesting trauma was seldom fatal despite its predominate location on the crania. Finally, the findings suggest violence was predominantly perpetrated through blunt and sharp force mechanisms and that violence became less widespread and accepted by the post-medieval period in London, as the number of sites within which individuals with interpersonal violence were found decreased across the periods. This conclusion is supported by historic evidence from courts of laws outlining public disapproval of violence perpetrated against females and outlawing lethal violence (Gurr 1981).*

\* Dannielle is an Exeter University graduate, with a first class honours degree in Bsc Archaeology and Forensic Science. Dannielle graduated from Exeter with the Lady Aileen Fox award for the leading dissertation in the department, from which this publication is based. She went on to present this work in oral presentations at Oxford University's graduate conference (GAO) and UCL's Society of Archaeological Masters conference (SAMS), alongside poster presentations at the UK Archaeological Science conference (UKAS) and the Forensic Archaeology, Anthropology and Ecology Symposium (FAAE) across 2016 and 2017. At the time of publication, Dannielle was completing an Msc in Bioarchaeology and Forensic Anthropology at University College London, which she is predicted to finish in September 2017 with a distinction. After September, Dannielle aims to work as a research assistant before commencing a PhD in osteology, researching gender bias and body mass within forensic and archaeological contexts.

This research was conducted to elucidate how interpersonal violence trauma trends changed between males and females through the quantification of the numeracy of violent markings present on the skeletal remains of individuals from medieval and post-medieval London. The research explores how violence levels are connected to social climate and how it differs between the sexes, through the quantification of 'normative violence rates', defined as violent interactions occurring due to social and cultural cues, excluding external causes such as war (Brownstein, 2000; Meyerson, M and Falk, 2004). The number of injuries sustained from each violent encounter and the injury mechanism, understood by the type of trauma sustained, were noted and compared, allowing for a comparison between the number of fractures, projectile injuries and blunt and sharp force traumas between the time periods. Location of trauma was also analysed, alongside comparing the numbers of anti- and peri-mortem traumas.

### Research Aims

The significance of violence can be understood when viewed in modern context; it is a leading cause of death for 15-44 year olds and 1.4 million people in the U.S. received medical treatment for interpersonal violence in 1994 alone (Rand, 1997; Redfern, 2013; Organization, 2002). Violence is explained as a universal condition by McCall and Shields (2008), occurring in different forms across the world: verbally, passively and physically, with no civilisation void of its incidence (Baker et al., 1992; Lovell, 1997). Physical interpersonal violence, defined as injury between two individuals caused intentionally through extrinsic force, can be explored archaeologically through the direct evidence of violence preserved on skeletal remains, confirming the occurrence of aggression (Lovell, 1997; Klein, 2000; Gardiner, 2001; Walker, 2001).

### Research Context

Equally present across society is the concept of 'gender'. Anthropologically and biologically, the concepts of gender and biological sex are clearly defined; the former being a social and cultural construct and the latter a biological absolute (Unger, 1979; Deaux, 1985, .) Moreover, the well-defined social definitions of gender undeniably dictate treatment of males and females, with violence following these sculpted concepts (Gurr, 1981; Belknap, 2001; McCall and Shields, 2008). Whilst skeletal remains are analysed to determine biological sex, sex does not necessarily conform to modern gender ideas, with gender equating to different psychological definitions across different time periods, locations and cultures, and because within each society "being [male or] female varies according to culture and social experience" (Redfern, 2013). Subsequently, modern ideals of violence may not conform to historical actualities. Preconceived ideas of the transitional role of males and females from the medieval to the post-medieval period often suggest females to progressively develop a more domestic and less physical role within society, whilst males maintained an active role (Robb, 1997). The association of lower levels of violence with higher domestication would suggest females to have consequently experienced lower levels of aggressive interactions in the post-medieval period. It has equally been proposed that violence levels decreased uniformly with time as both males and females became increasingly civilised with progressing social and economic advancements, however these analyses failed to use skeletal evidence to quantify trauma (Beattie, 1974).

The intertwining of gender and violence can be demonstrated through the analysis of violence within modern society (Hendricks and K. Anderson, 2007). Statistical analyses of homicide, strangulation, stabbing, firearm injuries and beatings suggest both perpetrators and victims of modern violence to be predominantly young males (Baker et al., 1992). Analyses further indicate a 10:1 male to female perpetration ratio in modern America (C. Anderson and Bushman, 2002) and stated 65.20 % of homicides to be male-male in 2004, U.S. (U.S. Bureau of Statistics 2006). Equally, males accounted for three-fifths of victims treated for violence in hospital emergency departments in a study of American hospitals (1990).

Female perpetration of interpersonal violence, however, has been poorly researched, a consequence of low data availability as only 10-29% of homicides in the US are perpetrated by females (DeWees and Parker, 2003). However, research shows females are at higher risk of becoming victims of domestic, community and state violence (Organization, 2002). This knowledge vacuum is mirrored historically as past sources predominantly depict violence as male dominated, typically including warfare, knighthood and gladiator practises (Pohl, 1998; McCullough, 2008). The ‘gender’ bias has fuelled research into the role of biological sex in violence within cultures, enlightening complexities within gender margins across time and societies (Moore and Scott, 1997). Social research has formed theorems ranging from the Marxist approach, analysing limitations of biological physique differences between the sexes, to contrasting gender-dominated theories in patriarchal and feminist schools of thought (MacKinnon, 1982; Lorber, 1994; Udry, 1994; Burda, Hamermesh, and Weil, 2007). ‘Gender’ however, has not been extensively archaeologically explored through skeletal trauma analysis to determine the role of both sexes within violence in pre-modern societies (Krahn and Gartrell, 1986; Martin and Frayer, 1998; Belknap, 2001).

Within archaeology skeletal remains are the “only independent and direct evidence of violence and aggression” (Redfern, 2013:1). Consequently, analysis of preserved violent markings on skeletal remains facilitates understanding of pre-modern violence victimisation without bias (Robb, 1997). Sociobiological evolutionary theories exploring the history of violence predict that ancestral violence patterns reflect modern aggression levels. Models suggest violence to have maintained a high prevalence as females were more likely to mate with males who violently out-competed other males, leading to stronger, more aggressive offspring, attempting to explain the exclusion of females within violence (Wrangham and Peterson, 1996; McCall and Shields, 2008).

Pre-historically, interpersonal violence can be seen on hominid skeletons from Africa, Asia and Europe dating to the Middle Pleistocene (Klein, 2000). The Berger and Trinkaus (1995) study of 200 Neanderthals from Europe and the Near East indicated a high prevalence of cranial, neck, and torso trauma in comparison to hospital populations from New York and London. Five of the Neanderthal skeletons exhibiting cranial and neck trauma were male, with only one possible female present. Contrastingly, the earliest evidence of mass murder effecting 38 Middle Paleolithic Mesolithic skulls from Ofnet, Bavaria, shows a predominance of violence against females (Frayer, 1997; Richards et al., 2000; Gardiner, 2001; Walker, 2001). Across the Neolithic, Bronze and Iron Ages, violence is seen to be most directional to the crania, and by the Iron Age, trauma is

dominant on male remains, with theories suggesting this to be a consequence of the development of gender roles (Robb, 1997). Consequently, prehistoric violence is defined as institutionalised, caused by inter-group territorial conflict and social ranking (McCall and Shields, 2008).

Due to the widespread presence of violence geographically and temporally, analyses of archaeological remains commonly display osteological signs of violence, and analyses of its manifestation within assemblages illuminate the role and abundance of aggression within different societies and cultures. Interpersonal violence on skeletal remains fails, however, to illuminate information on the perpetrator of the violence, preserving only the trauma itself. The effects of violence are preserved only as a defect on the skeletal remains and research can be completed to reveal its location, stage of healing and potentially the weapon used and trauma severity, limiting our ability to reconstruct the scene of the traumatic event. The skeleton can however reveal the biological sex, age and ancestral background of the individual, forming an understanding of the type of violence and its prevalence within different social groups.

This research quantified the number of biological male and female skeletal remains exhibiting interpersonal violence using data from the Museum of London's online WORD osteological database from excavations of cemeteries in London (London Centre for Bioarchaeology, 2016a; London Centre for Bioarchaeology, 2016b). Information on each individual's sex, age and their trauma classification, explanation and trauma location was detailed on the WORD document. Details of the location of the cemeteries, period of use and socio-economic status was further available, allowing contextual information to be known, however the sites contain no documentation on the individuals, limiting understanding of the lifestyles of those analysed. Adult individuals with purposefully caused interpersonal trauma were included within this study, and their biological sex and age were predetermined and detailed on the WORD document. Due to difficulties in assigning biological sex of sub-adults, only definitively defined adult remains were included in this research, and no individuals of indeterminate biological sex were used (London Centre for Bioarchaeology, 2016a; London Centre for Bioarchaeology, 2016b). The use of only interpersonal violence, excluding accidental trauma, allowed quantification of social violence within society. The inclusion of multiple sites across London with varying socio-economic status facilitated the prevalence of social violence to be determined across all tiers of society throughout London, ensuring individuals representing diverse lifestyles and ages were included. The MOLA data classified trauma caused by interpersonal violence into; 'Projectile Injuries', 'Fractures', 'Sharp Force Traumas' and 'Blunt Force Traumas', allowing a cross-comparative analysis into trauma type (London Centre for Bioarchaeology, 2016a; London Centre for Bioarchaeology, 2016b). Trauma was further classified as 'Healed' or 'Unhealed', and location of trauma was detailed as 'Cranial', 'Post-cranial' or 'NA', allowing a comparison of ante- and peri-mortem violence to determine the severity of trauma and differences in anatomical targeting across the periods and sexes.

To determine differences in the number of males and females exhibiting interpersonal violence, sites were separated by time period and the total number of males and females exhumed from each excavation were summed. All individuals exhibiting interpersonal

Research Methods

Methods

Number of Traumas

violence were summed, and this group was split into male and female categories. Males exhibiting interpersonal violence were calculated as a percentage of the total number of males exhumed, which was repeated for females, calculating the prevalence of violence markings on both genders from the total number of males and females excavated from each time period respectively. The percentages were calculated in relation to the total number of traumas per biological sex per period to account for cases of multiple injuries exhibited by individuals and cases where details of trauma were stated as 'NA'.

#### Mechanism of Injury

Direct trauma fractures, defined as a complete or partial break in the continuity of a bone, are transverse, oblique, spiral, or crushed in form. These have been associated with fighting and falling (Lovell, 1997:141; Roberts and Cox, 2003:110). Direct projectile traumas, rare in the archaeological record, create an indentation or hollow within a bone. Projectile injuries signify the use of fire-arms or projectile weapons from a further distance and can lead to indirect radiating fractures from the point of impact (Roberts and Cox, 2003:110). Blunt force trauma causes osteological depressed fractures and signifies the use of blunt weapons at a relatively close proximity, for example a hammer. Differently, sharp force trauma, sharp indentations and cutting across a bone, signifies use of sharp edged weapons also at relatively close proximity, for example a dagger or knife (Roberts and Cox, 2003:110). Changing trends in these harming mechanisms could suggest different social fighting style and acceptance (Lovell, 1997:142). These trauma types were included in the research to determine use trends in injury mechanisms between the sexes across the medieval and post-medieval period.

Injuries classified as 'Projectile', 'Fracture', 'Blunt Force', 'Sharp Force' traumas and 'NA' in the database were summed and split by biological sex for both the medieval and post-medieval periods. These frequencies were calculated as a percentage of the total number of traumas exhibited by males and females to determine the prevalence of each type of trauma. In the cases of multiple injuries, each were counted individually to represent the total number of injuries present, however if an exit and entrance wound were present, these were counted as one. The percentages were plotted against each other to highlight trends in trauma frequency between the sexes for each time period independently, then combined in the analysis to identify these trends in relation to time period. Cases with multiple traumatic defects were discussed and compared separately.

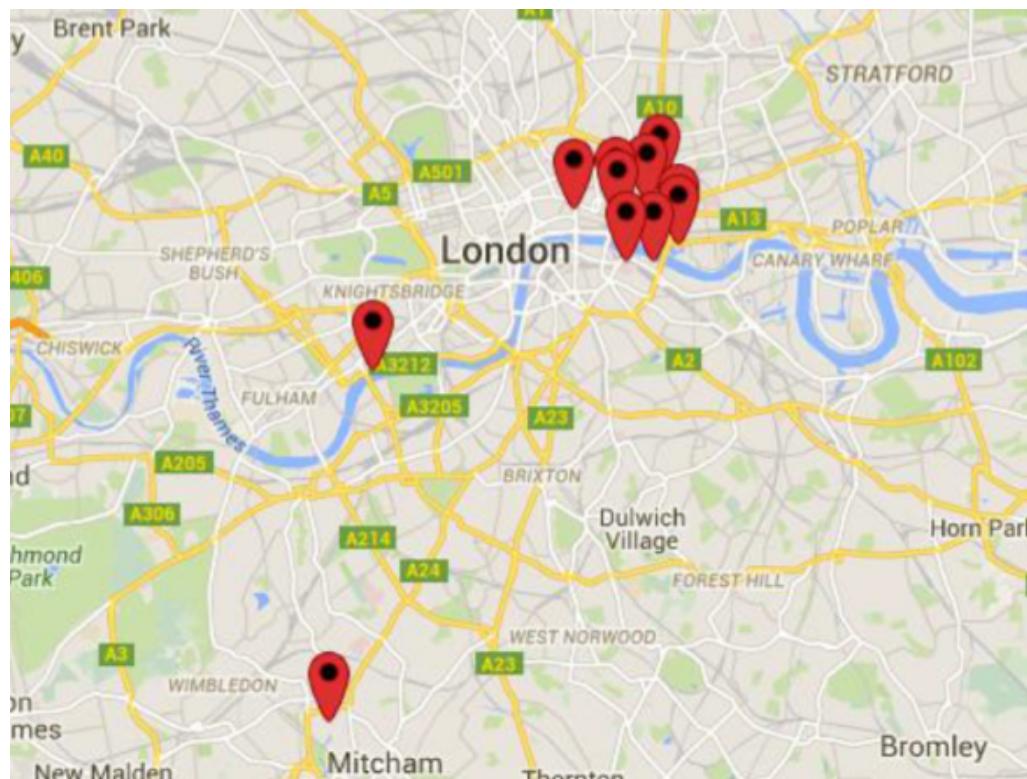
#### Location of Trauma

The location of trauma was classified as 'Cranial', including trauma to the cranial elements, 'Postcranial', including traumas to all other elements, or 'NA', when it could not be determined in the WORD database. The number of cranial, post-cranial and NA traumas were split by biological sex for both the medieval and post-medieval and summed. To determine the prevalence of traumas within each location, these were calculated as a total percentage of the total number of traumas exhibited by males and females. In the cases of multiple injuries, each were counted individually. The percentages of cranial, post-cranial and NA traumas were plotted against each other to highlight trends in their prevalence between the sexes for each time period independently, then combined in the analysis to identify these trends in relation to time period.

#### Healing of Trauma

To determine if the trauma was sustained ante- or peri-mortem to infer if the violent encounter was associated with the death of the individual, the phase of healing of each trauma was quantified. The phases of healing were classified into 'Healed', 'Unhealed' and 'NA' categories in the WORD document and these were split by biological sex for both the medieval and post-medieval and then summed. These were calculated as a percentage of the total number of traumas exhibited by males and females to determine the prevalence of each phase of healing. In the cases of multiple injuries, each were counted individually. The number of healed, unhealed and NA traumas were plotted against each other to highlight trends in their prevalence between the sexes for each time period independently, then combined in the analysis to identify these trends in relation to time period.

Six medieval and five post-medieval sites contained individuals with interpersonal violence trauma. These are plotted in fig. 1. Nine of the sites are located close together within, or in proximity to, the City of London. One post-medieval sites, Chelsea Old Church, is located in Chelsea, west London, and one medieval site, the Augustinian Priory of St. Mary Merton's cemetery, is in Merton, 10 miles away in south-west London. 30 medieval individuals were included from the medieval sample, and 19 individuals were included from the post-medieval sample.



**Figure 1:** Map of the location of the medieval and post-medieval cemeteries analysed.

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Period Context

Site Context

Medieval Sites

The medieval sites used in this research date from the middle- and late-medieval periods, ranging from use between AD 1050-1540, with the middle ages ending with the 1500's Protestant Reformation. Of the eight medieval cemeteries excavated and published by the Museum of London, six contained individuals exhibiting interpersonal violence and were included in the study, summing 30 individuals from Merton Priory, Spital Square, East Smithfield Black Death, Guildhall Yard, Bermondsey Abbey and St. Mary Grace cemeteries. These sites included 26 males exhibiting 29 traumas and four females exhibiting four traumas, and are all located in London within a 5 miles radius. After the Norman invasion of England in 1066, numerous power struggles for kingship occurred, including the Wars of the Roses and the 100 Years Wars between England and France. Consequently violence is often deemed a social norm in medieval life, with state war lasting from months to years at a time and waging in recurrent years (Allmand, 1988; Goodman, 1990; Turvey, 2010).

The medieval civilisation lacked institutional condemnation of violence in the lower classes, whilst the ruling class of Barons and Earls, utilising large numbers of knights, maintained, gained and annexed land and power through violence. All layers of society maintained a forced connection to war to prove loyalty to those above them in the 'Great Chain of Being' and due to the feudal society, tying land owners to landlords and necessitating their supply of men for battle at any needed time (Turvey, 2010:8). Thus, aggression has been defined as a reality of medieval lifestyle, used openly across society, and has been likened to modern verbal insults: an unpleasant but socially acceptable normality (Meyerson. M and Falk, 2004).

Despite the City of London typically remaining loyal to The Crown at the Tower of London, men were still exploited as soldiers in times of need. With 90 % of the population relying on agriculture in the 15th century, harvest failure was a further trigger of unrest effecting urban and rural areas alike, alongside the plague of the middle 1300's, 1420's, 1430's and other epidemics throughout the 15th century (Turvey, 2010). Finally, whilst Meyerson. M and Falk (2004) state most organised violence to have been male orientated, its casual nature is believed to have allowed females to openly participate in violence, and females were often targets of violence in raids and attack. This suggests violence could be prevalent at a high level in both sexes in the medieval sample.

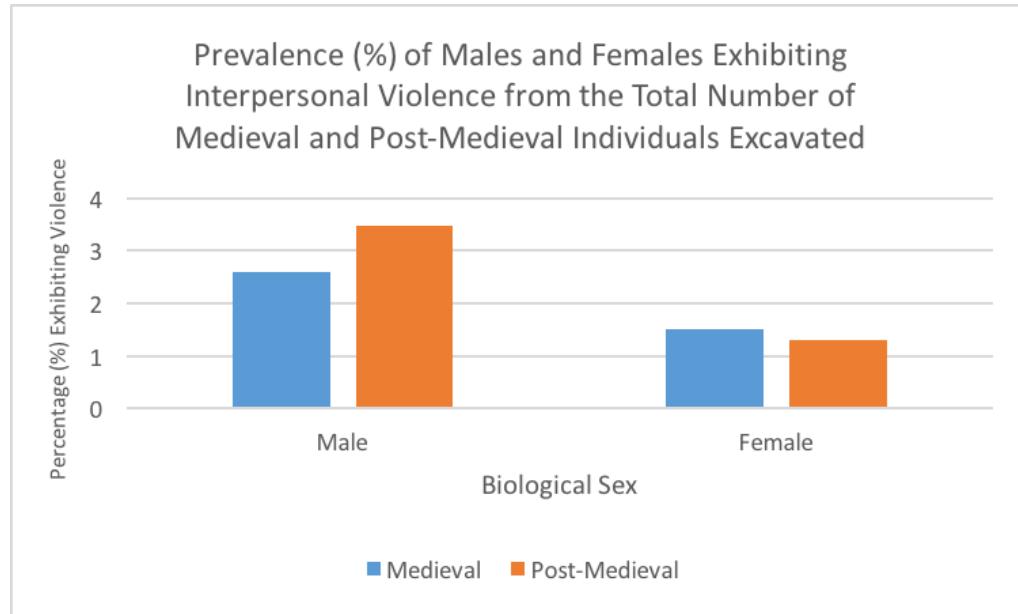
#### Post-medieval

The post-medieval sites used in this research date from the 16th to the 19th centuries. Of the 12 post-medieval cemeteries excavated and published by the Museum of London, five sites included individuals with interpersonal violence and were included in this study, summing 19 individuals from St. Benet Sherehog, St. Brides Lower Cemetery Farringdon, Chelsea Old Church, Broadgate and St. Thomas Hospital cemeteries. These sites included 15 males exhibiting 21 traumas, and four females exhibiting five traumas, and are all located in London within an 11 miles radius.

Historical studies have indicated a decline in violence and homicide rates in the post-medieval period, with analysis possible due to the Elizabethan Assize Courts and improved documentation (Gurr, 1981). Declining violence correlates with increased jurisdiction and stabilised court policies as time advanced (Samaha, 1974; Stone, 1983; Sharpe, 1985; Cockburn, 1977). Periodic increases in violence are frequently cited, however,

consequence of population booms, the spread of epidemics, including the 1665 Great Plague of London and 1666 Fire of London, and due to the periodic influx of soldiers and seamen from the six wars between 1690 and 1802. The 18th and 19th centuries saw assaults being increasingly reported, resulting in a greater number of violent incidents in the written record, however this increase in documentation may not correlate to an increase in violence, with it more likely just better illuminating violence levels (Gurr, 1981).

## Results

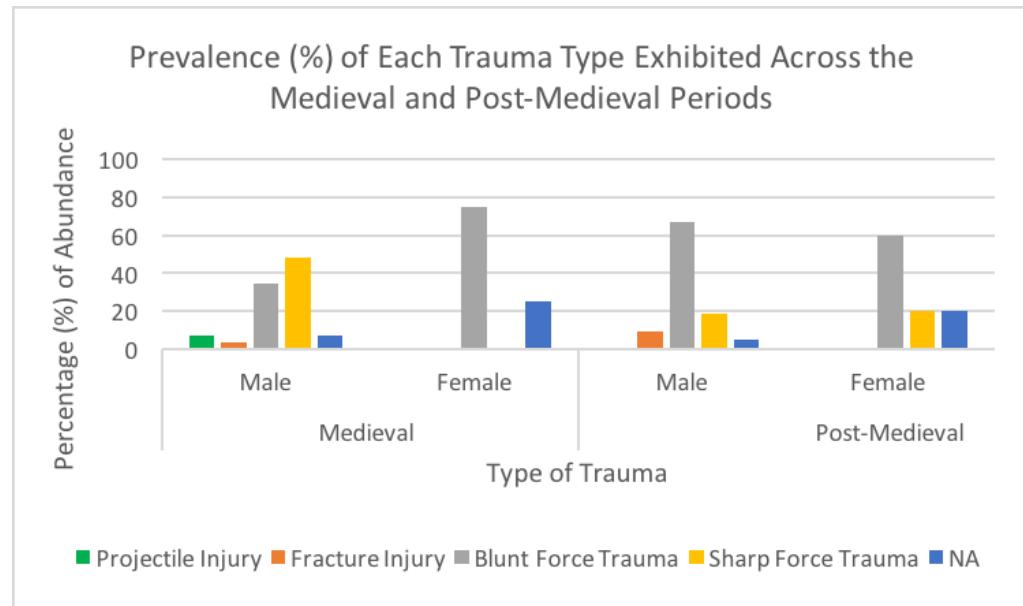


**Figure 2:** *Prevalence of violence within the total number of medieval and post medieval individual excavated in the sites used.*

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The number of males excavated from all of the cemeteries analysed in the post-medieval period was 58% less than in the medieval period, as there was a smaller number of cemeteries with individuals exhibiting interpersonal violence in the post-medieval period. By using prevalence, the 58% decrease in the number of males exhumed is accounted for. Figure 2 shows the prevalence of violence is low in both males and females in the cemeteries excavated, effecting less than 4% of males and females in both time periods. The rate of violence against males increased from the medieval to the post-medieval period by 35%, whilst the rate of violence against females declined by 13.3%, accounting for the 16% increase of females exhumed in the post-medieval sample. It was determined that males exhibited 42.3% more interpersonal violence than females in the medieval period and 62.9% more than females in the post-medieval period.

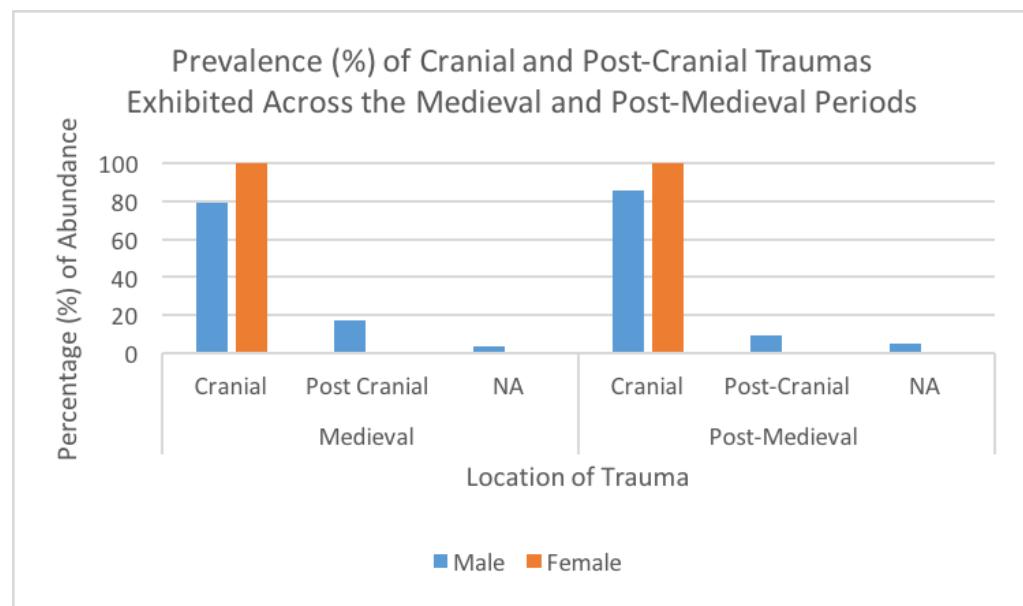
Results showed a decline in the range of trauma types from the medieval to the post medieval periods, with the absence of projectile injuries in the post-medieval period (fig. 3). Blunt force trauma remained the dominant trauma type against females across the periods, however the rate dropped in the post-medieval period by 20%. Female sharp force trauma occurred only in the post-medieval period. Male sharp force trauma



**Figure 3:** Prevalence of each trauma type exhibited for each biological sex across the medieval and post-medieval periods.

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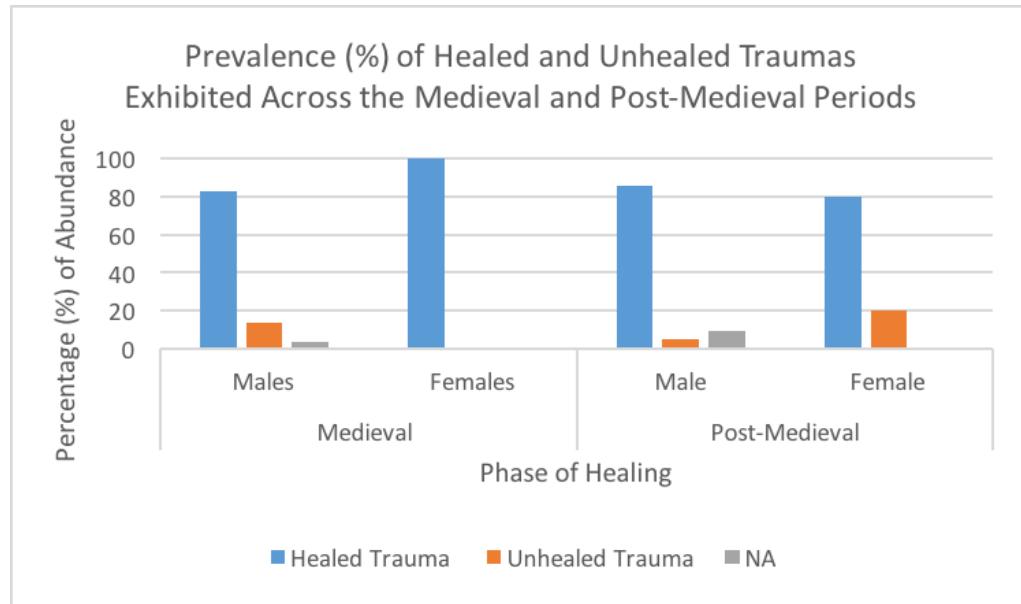
declined by 60.6% in the post-medieval period, whilst blunt force trauma levels increased by 93% and fracture injuries increased by 179%.



**Figure 4:** Prevalence of cranial and post cranial traumas for each biological sex across the medieval and post-medieval periods.

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The crania remained the dominant location for trauma in both the medieval and post-medieval period for both sexes and females exhibit no post-cranial trauma in either period. The rate of male cranial trauma increased in the post-medieval period by 12%, whilst post-cranial trauma decreased by 44.8% (fig. 4). Post-cranial trauma is present in only the male samples, meaning female victims sustained injuries to the face and head only. Post-cranial trauma summed only 14% of the total number of male injuries across both periods, signifying the body to be an uncommon target in both sexes.



**Figure 5:** Prevalence of healed and unhealed traumas exhibited, divided by biological sex across the medieval and post-medieval periods.

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Healed traumas were the most common trauma types in the sample (fig. 5). Healed trauma increased in the male sample by 3.6%, however declined in the female sample by 20%. Unhealed trauma decreased in the male sample by 64.5%, and was seen in the female samples only in the post-medieval period. Over both periods, the female sample contained only 11.1% of unhealed trauma, whilst the males contained 10%.

The larger quantity of violence on male remains across both periods supports prior research, with theories attributing greater male involvement in violence to their more physical lifestyle due to their participation in war and heavy work (Roberts and Cox, 2003).

The medieval period has been defined as the peak of violent behaviour in England due to the casual use of violence in lifestyle and the presence of the knightly warrior society, which has been shown to decline uniformly with the rate of violence (Beattie, 1974; Samaha, 1974; Hanawalt, 1976; Given, 1977; Cockburn, 1977). Theories explaining this decline have included ‘the civilisation process’ and the rise of the ‘courteous society’ between the 17th to 19th centuries (Beattie, 1974; Samaha, 1974; Hanawalt, 1976; Given, 1977; Cockburn, 1977). These models suggest personalities were altered, declining

## Discussion

### Trends of Violence Quantity

impulsivity, lowering levels of violence and decreasing tolerance towards violence due to the centralisation of authority in the 16th and 17th centuries and the stabilisation of the monarchy (Elias, 1976; Eisner, 2001; Eisner, 2003). No causative correlation, however, can be seen between the rise of the bourgeois society and the fall of violence (Gurr, 1981; Stone, 1983:22; Sharpe, 1985). The decline in violence against females from the medieval period to the post-medieval period correlates to this trend of lower involvement within violence, however the male results contradict previous research.

The rise in violence against males can be suggested as a consequence of alterations in economic, social, political, demographic, and personal pressures, leading to heightened emotions and desperation (Gurr, 1981; Krahn and Gartrell, 1986). Past peaks of violence include financial crises, war, mass disasters and the spread of epidemics (Stone, 1983). The decline of English economic stability in the second half of the 1400's may be accountable for some high levels of violence, resulting in higher levels of aggression and uprisings in the late medieval and early post-medieval periods due to instability pressures. However, economic improvements, beginning in the early 15th century, continued into the post-medieval period, removing some financial stress (Saltmarsh, 1941). The discovered high rate of violence in the London post-medieval sample in this paper could however be consequence of maintained violence levels in the urban environment of London or the growing population's resulting competitive pressures. The close proximity of the sites and their location in London and close to the River Thames suggests issues of hygiene and the spread of epidemics, including the final Plague of London and the Fire of London, would have majorly impacted the areas (Freestone, 2012). With stress from a changing environment and resource instability resulting in desperation, the result may have been the observed peak in violence. Furthermore, with numerous religious wars, wars against countries on the continent and civil war, the increase in male violence but decrease in females could be accountable to the different roles of the genders at war time (Gurr, 1981; Krahn and Gartrell, 1986).

When looking at the number of sites across the medieval and post-medieval period, six of the eight medieval cemeteries analysed by the Museum of London contained individuals exhibiting interpersonal violence, 75% of the sites, whilst 5 of the 12 post-medieval sites examined included individuals exhibiting violence, 41.7%. The decline in sites containing individuals exhibiting interpersonal violence can be used to suggest an overall decline in the number of violence cases, or the localisation of violence to specific areas in London.

#### Weapon Type and Social Impacts

The absence of projectile injuries in the post-medieval period suggests violence was conducted at this time through close combat fighting using sharp and blunt weaponry, whilst medieval combat included long-distance incidents, seen through the presence of projectile trauma. However, with only two cases, violent methods producing projectile trauma can be deemed uncommon even in the male medieval sample. The results can be used to suggest that specific trauma types were used against the sexes, suggesting social targeting in violence perpetration and boundaries in weapon use, with blunt force trauma the foremost trauma type used against females across both periods and against males in the post-medieval period. The post-medieval period saw blunt force trauma overtaking sharp force trauma as the leading violence cause against males; suggesting

fewer stabblings and slicing through the use of blades, sharp tools and glass occurred (Roberts and Cox, 2003). However, the use of specific weapons cannot be conclusively stated as sharp force weaponry can produce blunt force trauma when it is delivered to the skeleton at low velocity, defined as blunt sharp force trauma, potentially overstating the prevalence of blunt force weapons used.

Documentary evidence suggests medieval weaponry to have predominantly been knives, axes, cudgels and agricultural instruments (Gurr, 1981), supporting the results in this dissertation due to the predominance of medieval sharp and blunt force traumas. Likewise, documentation from the Elizabethan Assize Courts supports the dominance of blunt and sharp force trauma from the 16th century onwards, stating a dominance of killings through sudden and spontaneous attacks with blunt instruments and knives (Cockburn, 1977). The court records later stated firearms to account for just 7% of murders, representing an equally low value of projectile injuries. Indeed, weapon and trauma location can be deemed to be influenced by culture and society, exemplified by the increase of hitting and kicking in the British homicide coroner records coinciding with the rise and broadcasting of modern boxing (Walker, 1997). Similarly, U.S. gun trauma outweighs all other harming mechanisms due to the legality and popularity of firearms.

The dominance of cranial trauma in the medieval and post-medieval London samples complement wider archaeological violence location research, suggesting the head to be the main target for trauma. The dominance of frontal, parietal and occipital trauma in the sample suggests many of these acts of violence occurred through face-to-face fighting across both time periods (Roberts and Cox, 2003). Cranial injuries are further seen to be dominant in prehistoric research, with high quantities present in Neolithic, Bronze and Iron Age skeletal remains (Berger and Trinkaus, 1995). Equally, the high quantity of cranial and neck traumas exhibited by the 200 Neanderthals analysed from Europe and the Near East suggests violence has consistently centralised around the head and face throughout the past, potentially due to the psychological association of the face and identity (Berger and Trinkaus, 1995).

Postcranially, the medieval period contained five post-cranial traumas. Of these, two cases affected the hands, suggesting a defensive stance from the victim, with one case affecting the left hamulus and the second case affecting the right phalanx on the lateral proximal shaft, suggesting the finger was clipped during a defence attempt. The third case was a 'parry' fracture to the left radius, suggesting the arms were raised in defence. Indeed, Roberts and Cox (2003) state the ribs, scapulae, hands, and forearms to be common areas for defensive wounds, typically to the left hand side due to the dominance of right-handedness. The final two cases cannot be labelled as defensive, with both being projectile injuries affecting the left side of the vertebrae. Differently, in the post-medieval period only two post-cranial traumas were apparent. One of these, a wound on the distal right fibular, was not deemed defensive, whilst the second, a fracture to the left first metacarpophalangeal joint, is potentially the consequence of fist-fighting (Roberts and Cox, 2003). The decline in both multiple injuries and signs of defence could suggest differing styles of fighting, including surprise or organised attacks, however conclusions on fighting styles would require larger data for analysis.

#### Trauma location

In relation to sex, the medieval sample contained three males with two injuries, whilst the post-medieval period saw one male and one female with two injuries and one male with six traumas. With only one female exhibiting multiple traumas, extreme violence against females appears uncommon. The medieval and post-medieval cases of multiple traumas were all cranial, suggesting repeated attacks to the body was uncommon in both periods. One case, however, contained six traumas, including five blunt force injuries to the head, affecting the frontal bone and the right side of the crania, with a further injury present on the distal right fibula. This case of multiple trauma is an isolated case within the sample, suggesting extreme and numerous violence was uncommon across both periods.

Modern trauma provides further comparative data. Of 294 victims of assault from hospital records in the UK in 1986, 43 were females aged 15–46 years, summing 14.6% of the total number admitted, with males forming 85.4% (Magennis et al., 1998). Within this sample Magennis et al. (1998) found facial injuries were the most common location for interpersonal violence trauma, with 88% of females and 84% of men exhibiting facial bruising (Magennis et al., 1998:223). This study suggests facial, qualifying as cranial, trauma remains a dominant trauma form in modern populations across both sexes, complementing the results from the medieval and post-medieval samples.

#### Phase of healing of the trauma

The dominance of healed trauma suggests most interpersonal violence related traumas were not the cause, linked to, or received at the same time as death (Lovell, 1997; Roberts and Cox, 2003). The dominance of ante-mortem injuries across both periods proposes society did not advocate lethal violence, however smaller brawls and fights were common.

The decrease in peri-mortem trauma in males across the periods could suggest that as violence against males increased in quantity it became less lethal, with casual violence becoming a social norm and potentially resulting in a decline in lethal intent due to its unpremeditated form. The opposite is seen in the female sample, with peri-mortem trauma increasing in correlation with lowering levels of female violence. This can be used to suggest that as social acceptability of casual violence against females decreased, arguments concerning females became less violently-orientated, as fewer healed traumas were observed. However, the increase in unhealed traumas could suggest that when violence occurred it was more likely to result in lethal violence, explaining the decrease in normative ante-mortem traumas and rise in peri-mortem injuries.

#### Conclusions

Considering multiple aspects within the cause and manifestation of the traumas analysed in this study, the research has confirmed the medieval and post-medieval London sample followed normative violence trends in relation to ‘gender’, with males consistently receiving a higher rate of violence than females. The evaluation of the phase of healing of traumas has outlined the rarity of homicide in relation to everyday ‘social’ violence, and highlighted non-lethal violence to be more common. Despite the lack of conclusive reasoning, the rise in violence against males has been suggested to be due to increased social pressures, war and medical desperation, whilst the decrease in female victimisation correlates to wider research on declining violence rates. Further research is necessary to establish why the rate of violence against males increased in the post-medieval period.

Finally, the dominance of blunt and sharp force and cranial trauma underpins external research, with head and facial trauma visible in high quantities in studies across all time periods, and as blunt and sharp weaponry is widely stated as the most frequently used weapons in the medieval and post-medieval periods.

\* \* \*

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## Gendering the Traces

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**Keywords:** Gender Archeology, Cahokia, Mound 72, Birdman, Sophia Schliemann, La Doncella, Lalita Tati, human sacrifice

**A**bout thirty years ago, archeologists began examining the archeological record through the lens of modern gender theory. Evolving symbiotically with feminism, the emerging discipline went on to generate innovative analysis. At the same time, gender archeology was playfully derided as “a new racket for the girls” and ridiculed for “the empresses’ lack of clothes” (Bahn, 1992:321). The silence of the grave had never been more contentious.

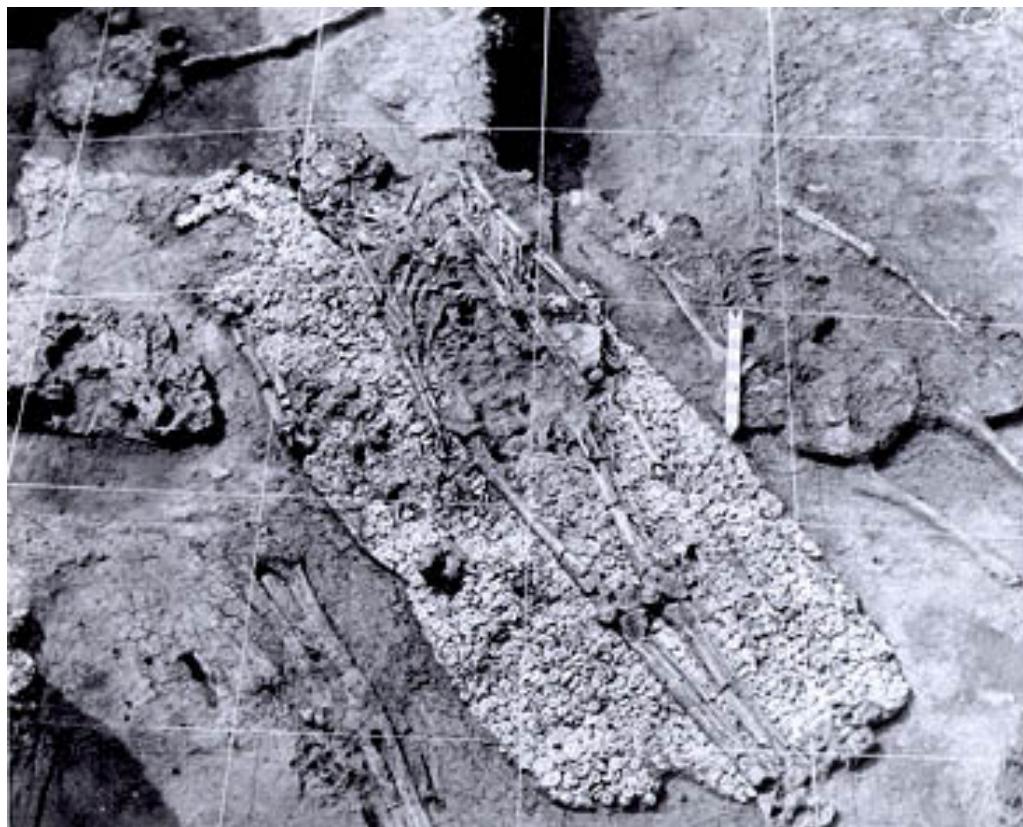
Behind the bombast lurked a valid question: Could we even recognize a prehistoric gender issue if we saw one? At the heart of the problem throbbed fears of theoretical incompatibility. Just as an organ transplanted from one body to another bears the risk of rejection, so too in bodies of knowledge. An interpretative framework conceived in one time may fail or dysfunction in another. Yet situated as we are in time, what’s the alternative? Human thought is as perishable as the people producing it and the societies preserving it. Much is lost as the past is filtered through the distortions of a modern mind. A gendered methodology derived from present thought, while never risk-free, is a necessary transplant.

Loci of human sacrifice are productive sites to examine the tension. One is down an unassuming country road in Illinois. A thousand years ago, the spot witnessed an astonishing amount of bloodshed. Now the Cahokia Mounds make a peaceful picnic spot. Rising above the American Bottom, some offer vistas of downtown St. Louis and just the right incline to tumble down the ramparts as human cannonballs. Frisbees sail over Mound 72, a gentle ripple on the lawn, leveled by successive excavations. Mound 72 is a trace, the memory of a mound, but it towers over the field of gender

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archeology. Inside, 53 women were found, stacked like matchsticks. All were young, probably teenagers. Isotopes in their tooth enamel don't match those of the Cahokians, so they may have been captives (Thompson, 2013). Each appears to have been strangled, though not by hand. Manual strangulation fractures a U-shaped bone called hyoid, which anchors the tongue in place, and theirs appear intact. The skeletons present few osteological fractures, no bashed skulls. Someone evidently strangled the girls with a rope or strip of cloth, leaving no trace in bone (Benson and Cook, 2001:168).

Their burial is peripheral to a central grave belonging to an elite man in his 40s. Known as 'Birdman', he rests on a falcon-shaped blanket of 20,000 shell beads (fig. 2). Five sacrificial retainers crouch beside him and a woman lies beneath him. The 53 matchstick girls share his wider mound but little else. Their remains recall a time, not far removed, when life was cheap and women's lives were cheapest. Birdman died of natural causes; they did not. His life radiates invincibility, proclaiming itself in ways theirs cannot. Beneath Mound 72, Birdman is undiminished. In command of a lost world, he asserts ownership over the semi-precious objects around him: mica, sheet copper, pottery vessels, projectile arrowheads, conch shell beads, and people (Fowler et al., 1999:3–8). Birdman's clutter is a social declaration, aimed at securing his identity through time.



**Figure 1:** Burial of 'Birdman'.

© by University of Wisconsin-Milwaukee Archaeological Research Laboratory, used with permission.  
Cahokia Collection Image 1967.2.31. From Fowler (1991).

In this, he triumphs. His honored life and well-provisioned afterlife practically caw hegemonic exploitation. In Birdman's presence, the pull towards naturalistic fallacy is almost disarticulating. We are told,

[t]he practice of universalizing, a priori, of merely asserting/assuming the widespread validity/relevance of some position is now widely recognized as, at best, a methodological mistake  
—Lawson, 1999:25

yet this is a mistake we desperately wish to make. Distilling right from wrong, life from death, power from protest feels reassuring. Still, we are told, when radical feminist values are inferred from trace evidence and left unexamined, methodology breaks down. Our project is to understand as the subjects would have understood without the distraction of moral crisis. As Max Weber cautions, the descent into value-laden science comes at a cost:

Whenever the person of science introduces his personal value judgment, a full understanding of the facts ceases.  
—Weber, 1946:146

Gender archeology might thus be reduced to live women saving dead women from dead men.<sup>1</sup> Besides, it's too late for them. Inside Mound 72, lived experience is dead and gone. Who can be saved now?

If not them, then us. Sites like Mound 72 are politically charged forums in part because they echo present-day concerns about gender violence. Indeed, there is widespread interest in ancient atrocity, suggesting gender violence is safer to confront when it is long passed and demands nothing by way of intervention. In such cases, we are free to empathize without the burden of action or the guilt of inaction. These archeological discoveries have a license to thrill, titillate and make headlines:

[S]kulls of 80 women who were used as human sacrifices... used to build the city walls  
—Osborne, 2013

blasts the International Business Times. Four thousand years on, their deaths are our business. "Drugged with Beer and Cocaine and Left to Freeze to Death" runs a Daily Mail exposé of a 13 to 15-year-old Incan girl whom archeologists christened "La Doncella" (Macrae, 2013). Sacrificed some 500 years ago on an icy volcano, she is now the star of National Geographic's Child Mummy Sacrifice DVD Exclusive, which is often sold out. This forensic drama spans the last year of her life as hair proteins reveal a switch from maize to meat and she is plumped for the kill.

<sup>1</sup> Recalling Spivak's evocative phrase about the dysfunctions of salvationist feminism: "White men are saving brown women from brown men." (Spivak, 2010 [1983]:48).

La Doncella's ordeal is infamous. Another is more obscure. In 2012, Lalita Tati, a 7-year-old girl from Jailwara, India, was abducted by two farmers. The men slit her throat, removed her heart and liver, and offered them to the Hindu goddess Durga (Richards, 2012). Rainfall had been scarce, and Lalita's organs, the killers later confessed, were needed to bless the harvest. Strategically, the men reframed their butchery as a sacrifice for the benefit of the community. Murder, thus reimagined, became an act of regeneration. But their sacrificial intent was suspect. Neither man's livelihood depended on the land's productivity. In fact, before the murder they were feuding with Lalita's father. What is extraordinary about this killing is neither its cruelty nor its perversity, but how human sacrifice is still used reflexively to conceal motive. It is a defense strategy with ancient roots and contemporary relevance. In power grabs large and small, the female body is exposed, marked and, in Lalita's case, gutted. So long as girls like Lalita Tati are being murdered as a form of masculine assertion, Mound 72 can never be ancient history.

Gender violence is uniquely demonstrative. Even as the concept of gender resists essentializing over time, violence offers no such resistance. Even as our diverse choreographies of violence evolve, killing proceeds as it always has. Could the intersection between the constancy of violence and fluidity of gender elucidate both categories? In Mound 72, power relations are marked in fractured vertebrae. Social control is deduced from the absence of breaks in the radii and ulnae, bones of the lower arm that deflect blows. An absence of defensive injuries indicates bodies well under control at time of death. These girls didn't fight back. The temptation is to do it for them. Indeed, a gendered methodology must fight back in certain ways. Archaeology cut its teeth in cultural theft and once produced arbitrary analysis, reflecting the motley agendas of its investigators. When Heinrich Schliemann unearthed golden diadems at Hissarlik, the putative site of Troy, he considered the find dazzling enough to grace 'the face that launched a thousand ships'. No matter the surrounding sediment was deposited a millennium before the Trojan War. Schliemann wanted the diadems to be the Jewels of Helen. So they were, even if they weren't. When he draped the glittering chains and tassels over his 21-year-old wife, Sophia, a version of Helen revived. His error was spectacularly photogenic. To illustrate the fallacy of wishful thinking, one need only turn to the epic snapshot. Sophia Schliemann's face, captured in tintype, launches a thousand questions. Beneath the gold fringe, her gaze is fixed as though she too sees her husband's claims are absurd, a gendered methodology gone wrong.

How, then, to avoid Schliemann's mistake of misrepresenting the gendered subject? Gender, rife with codes and inconsistencies, is elusive enough in the present, let alone



**Figure 2:** *Sophia Schliemann*.

Image is in the public domain. Accessed from  
[https://en.wikipedia.org/wiki/File:  
 Sophia\\_schliemann\\_treasure.jpg](https://en.wikipedia.org/wiki/File:Sophia_schliemann_treasure.jpg).

the past. At least Schliemann had Homer to confuse him. Prehistory leaves no surviving texts and only whispers of an oral tradition. Instead, the contours of gender must be traced in the visual and material culture. How a body is adorned, positioned, bound and broken animates the gendered subject. In practice, however, a gendered methodology often makes assumptions about the female body that undermine Weber's mission for a 'full understanding of the facts' (Weber, 1946:146). By way of illustration, 'gender violence' is the term most archeologists use in place of 'violence against women' because many skeletons cannot be sexed with certainty. In the skeletal analysis of Mound 72, for example,

sex classes are: -2 hyperfeminine, -1 feminine, 0 indifferent, +1 masculine,  
+2 hypermasculine.

—Fowler et al., 1999:63

To populate the negative range, archeologists seek "the gracile features characteristic of females" (Fowler et al., 1999:54). Although sex is uncertain, the perceived gender for these fifty-three skeletons becomes inexorably feminine or hyperfeminine.

An all-female hypothesis for the 53 skeletons prevailed for decades and not for strictly scientific reasons. This perception is changing. In 2015, a new study reanalyzed the skeletal material from Mound 72 and challenged long-held assumptions about these women (Slater, Hedman, and T. Emerson, 2014). For one thing, some may not be women at all. Based on dental metrics, a few deceptively gracile men slipped into the mix (Thompson, 2013). A methodology sensitive to the nuances of gender might have detected this sooner. To avoid the normative pitfalls of sex and gender differentiation,

it is more productive to consider sexual/gender categories as gradational.

—Rautman, 2000:3

A presumption of gender ambiguity and fluidity is the better methodology in a mortuary context.

Organization, too, can be deceptive. Inside Mound 72, the placement is meticulous, recalling Julia Kristeva's observation that,

the body must bear no trace of its debt to nature: it must be clean and proper to be fully symbolic.

—Kristeva, 1982:102

Perhaps this is why Lalita Tati failed to capture the popular imagination. Organs displaced, Lalita embodies disorganization. She is messy in a way bare bones can never be. In contrast, time and decomposition transfigure the girls of Mound 72, elevating their remains to a concept. Whatever their experience with violent death, now they're too clean for comparison. No trace remains of their struggle to survive. They rest in quiet symmetry, shelves of compliant girls, banded by woven reeds. An explanation should be as neat as they are. But it isn't, because they are human, and so are we. We know their hearts once beat, their minds circled, their breath ceased as the garrote winched. Even as we are told,

Research outcomes, at best, represent only a version of the truth [and] cannot be said to describe the lived experience of another

—Hewitt, 2007:1153

we struggle alongside them. We struggle with a method that denies us a visceral response.

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Part III

CONFERENCE REVIEWS



## Australian Archaeological Association 2016 Conference Review

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**Keywords:** Conference review, Australian Archaeology, Australian Archaeological Association, student input

*The Australian Archaeological Association (AAA) conference is an annual conference aiming to encourage the advancement of archaeology in Australia. The 39th AAA conference was held in the coastal town of Terrigal, New South Wales and for the first time in its history it was hosted by an Indigenous organisation; the Darkinjung Local Aboriginal Land Council (LALC). This defining moment in the history of AAA conferences and along with the theme “Interwoven:*

\* Rebekah Hawkins is currently undertaking honours in archaeology at the University of Sydney after recently graduating with a combined Bachelor of Arts (Archaeology) and Bachelor of Science (Anatomy and Geology). Her honours project is a lithic assemblage from Lake George in NSW, Australia with a focus on raw material quality and its influence on the size and shape of artefacts as well as changes in raw material quality throughout time. She is a Student Representative for the Australian Archaeological Association, on the Advisory board for the National Archaeology Student Conference after having chaired the conference in 2015 and is on the committee for National Archaeology Week Australia. While completing honours she is also working for archaeological consultancies in Sydney, Australia.

† Jacqueline recently graduated with a Master of Philosophy from the University of Western Australia where her research explored the intersections of relational ontology, social learning, and Australian Aboriginal lithic technology. She also holds a Bachelor of Arts with Honours from the University of Queensland. Her research interests include postcolonial, Indigenous and theoretical archaeologies focused on practical and collaborative applications in the Australian context. She was made a Life Member of the Australian Archaeological Association in 2016 and is an Associate Member of the Australian Association of Consulting Archaeologists having worked in cultural heritage management for five years.

‡ Francesca McMaster recently graduated from the University of Sydney with first class honours in archaeology and a Bachelor of Arts in archaeology and art history. Her thesis research focused on the application of ethnography in Indigenous Australian archaeological interpretation. Her general research interests include the role of archaeology in the formation of concepts of nationalism and identity, including but not limited to, the use of analogy within archaeological interpretation and the continuing influence of colonisation in archaeology. Francesca currently works for museums and archaeological consultancies in Sydney, Australia.

*Indigenous and Western Knowledge in Archaeology and Heritage” promoted collaboration and understanding of different ways to explore Australian archaeology.*

The Australian Archaeological Association (AAA) is the largest archaeological organisation in Australia and its members include professionals, students and anyone else with an interest in archaeology. The foremost objective of the AAA is to promote the advancement of archaeology and its annual conference is one way it seeks to achieve this goal. AAA has held a national conference annually since 1978 and in 2016 the 39th AAA conference was hosted in the coastal town of Terrigal in New South Wales (NSW), which is on the traditional lands of the Guringai people (aka Kuring-gai).

### Introduction to AAA and the 2016 conference

While annual conferences are commonplace for organisations such as AAA, the 2016 AAA conference was different for one important reason. This conference was the first in the history of this Association to be hosted by an Indigenous organisation; the Darkinjung Local Aboriginal Land Council (LALC). LALCs are autonomous bodies that exist to represent, strengthen and empower the local Aboriginal community, including advocating for Aboriginal cultural heritage. Previously, AAA conferences had been hosted by university departments, and occasionally in collaboration with a museum. For the Association and its members, the partnership with Darkinjung in 2016 was representative of the genuine growth in collaboration between Aboriginal communities and archaeologists in research and heritage management across Australia.

The difference of this conference was felt clearly from the welcome event, held the night before the conference began, which traditionally has been an informal event and opportunity for conference attendees to catch up over food and drinks. However, in Terrigal a special smoking ceremony and performance of local Aboriginal song and dance was organised by our hosts to open the event in a culturally appropriate manner. As delegates at this conference this unique welcome drove home the historical significance of the event and was a highlight before the main conference proceedings had even started!

Furthermore, the theme of the conference, “Interwoven: Indigenous and Western Knowledge in Archaeology and Heritage”, encouraged sessions and presentations that reflected the growing trends of collaboration and incorporation of different ways of knowing the past in Australian archaeology. The conference organisers provided a sizable number of subsidies for both Aboriginal and student delegates to encourage and facilitate their attendance at the conference (AAA has funded such subsidies with the assistance of sponsors since 2011). This direct support contributed to the impressive number of Aboriginal archaeologists, heritage practitioners and community members who presented at the conference; another key difference compared to previous AAA conferences.

### Overview of sessions

The conference proceedings were opened with a Keynote Address by Leonie Coghill, a Dandrubin-Gorenpu woman who is the Manager of Repatriation and Community Engagement, Cultures and Histories Program at the Queensland Museum. Leonie’s presentation was entitled “Repatriating the Past, Reinstating the Present: Using Culturally Appropriate Western and Indigenous Science to Send Aboriginal Human Remains Home”. Leonie shared insights both professional and personal, including her experience

organising the repatriation of her ancestors' remains, as she discussed the current state of repatriation in Australia. Leonie's personal reflections and conversational style of presenting was particularly powerful given the sensitive nature of the subject she was speaking on. One important aspect Leonie discussed in her keynote was the use of invasive scientific techniques to identify the origin of individual remains. In many cases, the remains of Aboriginal people were removed illegally from their original burials with little contextual information recorded, which makes the work of now repatriating these individuals to their descendant community difficult. Leonie emphasised that from an Indigenous perspective invasive techniques such as DNA analysis are not always considered culturally appropriate and in some cases, create more trauma given the strong ongoing spiritual connection that many Indigenous people feel toward their ancestors' remains. In this field, the importance of working in a way that is mutually acceptable and culturally appropriate cannot be understated.

Looking to the future, Leonie emphasised the importance of collaboration between Indigenous and non-Indigenous Australians in the repatriation process. As an example of such collaboration, Leonie described a repatriation ceremony that had seen an entire rural Queensland town, both Indigenous and non-Indigenous residents, attend and participate in the ceremony celebrating the return of these remains. Leonie described this as being a tremendous step forward in terms of non-Indigenous Australians recognising the importance of repatriation and respecting Indigenous peoples' spirituality. For students and graduates entering the field, Leonie's keynote provided a valuable foundation from which to understand issues of repatriation and how a new generation of archaeologists and heritage professionals might collaborate better with Indigenous communities on such a complex topic.

After the keynote, the conference sessions officially began. Sessions ran over three days with three blocks each day, broken up by amply catered for meal breaks. There were sixteen sessions in total, organised by academics, heritage professionals and students.. As could be expected from the conference theme , many sessions focused on collaboration between Indigenous communities and heritage professionals with presentations outlining the success of community-led projects and the importance of integrating Indigenous knowledge with archaeological research to interpret the past. There was also a heavy focus on preservation and conservation of heritage sites in Australia, with threats such as climate change or overuse by tourists emphasised.

Presenters included honours and postgraduate students, consulting archaeologists, academics, delegates from relevant government bodies, and Indigenous organisations and groups. A particularly notable aspect facilitated by the conference theme was the increased participation of Indigenous archaeologists, rangers and community members presenting on their work and leading discussions on critical topics of heritage management across Australia. It is also important to note the calibre of the student presenters at the conference. Student presenters at AAA are treated like any other delegate and present alongside seasoned academics and heritage professionals. Those students who presented showed themselves to be highly capable and knowledgeable; a real credit to their academic skill.

Although it was difficult to choose which session to go to (because they were all so interesting!), the relatively small number of sessions in comparison to large international conferences made it an easy to navigate conference. Three rooms, all very close together, were used for the sessions allowing people to easily session-hop. In addition, the constant presence of a small group of student volunteers also assisted in helping ensure that the correct room or session could be found quickly!

A session highlight to note for students or graduates looking to work within professional archaeology in Australia was an entire session dedicated to Australian heritage legislation. There are currently plans to change the heritage legislation in Australia and this session was invaluable in considering the complexities of this process. Time was also provided for a forum following this particular session to allow the audience to respond to presenters and further discuss this critical topic.

In addition to the formal conference proceedings, there were also several extra events; two short films were screened, "Babe in the Reeds: A Story of Massacres and Resilience" and "Places in Peril: Cultural Heritage Enters the Anthropocene". Both of these short films had been made, or contributed to, by attendees to the conference and tied in with the major themes discussed above. There was also a local Aboriginal Artist's market held for a day with several local artisans coming in to sell their wares. This market was a great inclusion and was very popular amongst attendees, especially since the conference was held three weeks before Christmas!

A great regular event at AAA conferences that focuses specifically on students is the Meet the Graduates evening. The event is hosted by the AAA and the Australian Association of Consulting Archaeologists (AACAI) to facilitate informal networking between current or recently graduated students, consulting archaeologists (i.e. those working in the private sector) and representatives from university departments to discuss job opportunities and potential future study options. Student attendees were particularly encouraged to bring along a copy of their current CV to hand out to potential employers, who were available to discuss their business and give general advice on opportunities for those interested in making a professional career out of archaeology. This event is always a great way for students to learn more about consulting archaeology in Australia and to get advice on their career options from experienced professionals. The event also gave students an opportunity to network amongst themselves.

Each year at AAA conferences many prizes are handed out to celebrate and highlight people who have made outstanding contributions to archaeology in Australia. Three specific prizes focus on students; best student paper on archaeological science, best student paper on social archaeology and cultural heritage management, and the best student poster. These prizes seek to highlight the high quality of work undertaken by student researchers and also provide the winners with monetary prizes. The winning presentations ranged from geoarchaeology in Mongolia, to collaborative Aboriginal archaeology and high-school student perspectives of archaeology, showcasing the impressive diversity of research undertaken by Australian archaeology students. The 2016 student prize winners were:

#### Meet the Graduates

#### Prizes and AGM



**Figure 1:** View from the AAA2016 conference location, overlooking Terrigal beach.

Photo by Jacqueline Matthews 2016

**Best Student Paper in Archaeological Science:**

Anthea Vella (Flinders University) with Ian Moffat (Flinders University), Julia Clark (National Museum of Mongolia), David Putnam (University of Maine at Pesque Isle), Bayandelger Chinbold, (National Museum of Mongolia), Stefani Crabtree (Washington State University and Université de Franche-Comté) and Camilla Sturm (University of Pittsburgh) “Digital Geoarchaeological Investigations at the Soyo Archaeological Site, Northern Mongolia”

**Best Student Paper in Social Archaeology/Cultural Heritage Management:**

Joanne Thredgold (Flinders University) with Angus Giles, Kane Johnson and George Tripp (all River Murray and Mallee Aboriginal Corporation) “Stone Artefacts and Earth Oven Mounds at Calperum Station, the Riverland, South Australia”

**Best Student Poster:**

Brittany George (University of Western Australia) “Western Australian high school students’ perceptions of archaeology”

The AAA Annual General Meeting (AGM) was held during the conference to discuss matters regarding the Association. Within the AAA there are two Student Representatives (one from the East coast and one from the West) who aim to support student members of the Association as well as the wider body of archaeology students across

Australia. At the 2016 AGM, the Student Representatives discussed the successful running of the Student Research Grant Scheme in 2016, which is run annually by AAA and provides funding for student led research, and the importance of the National Archaeology Student Conference (NASC), which is not directly affiliated with AAA but aims to create a supportive platform for all archaeology students in Australia to present their research.



**Figure 2:** *The Meet the Graduates event was well attended by university departments, the private sector and students at AAA2016.*

Photo by Jacqueline Matthews 2016

Students are encouraged to be directly involved with the conference and, as mentioned above, the AAA provides travel grants for students who are presenting to help facilitate their attendance. Furthermore, volunteer opportunities are available at AAA conferences and for those who volunteer at the conference their registration fee is waived. At the 2016 conference, there were 7 volunteers; 4 students from the University of Sydney and 3 from the Darkinjung LALC. There were reasonable numbers of student presenters at the conference; out of the 110 paper presenters 33 were identified as students, 8 of the 20 posters were presented by students, and 6 of the 16 sessions were co-convened by postgraduate students.

#### Student input

The focus of the conference theme on collaboration between archaeologists and Indigenous communities highlights a crucial aspect of current and future Australian archaeology. However, such a focus does potentially have unintended consequences for potential student presenters, as many students as junior researchers (and particularly

undergraduates) do not have the relevant experiences or relationships to contribute to such a theme. Given that funding constraints make it difficult to attend a conference without presenting, it is possible that students who had nothing to present that was linked to the conference theme did not attend and missed out on the valuable insights a theme of collaboration holds for all areas of archaeology. We would hope that this imbalance will be addressed at future conferences to ensure that the value of engaging with Indigenous archaeology and heritage, and collaboration with communities is encouraged amongst the entire archaeological community in Australia and particularly the next generations represented by students.

### Conclusion

Overall, we felt that the AAA2016 conference was the most collaborative and inclusive AAA conference to date. Between the hosts, the theme, the keynote address and the overall content of the sessions, deeper collaboration and understanding across different knowledge systems was at the forefront of discussions. In future, we hope that conference themes will facilitate similarly high numbers of Indigenous delegates and enthusiasm for collaboration throughout archaeology, enabling closer and more mutually beneficial relationships between archaeologists and the communities with which they work. The level of student input and participation was good for a smaller national conference and we hope to see a continued increase, facilitated by the work of the AAA Student Representatives. We hope that other conferences around the world take note of the AAA2016 conference and follow their example to ensure more genuine collaboration with Indigenous communities.



## The 3rd Neolithic and Early Bronze Age Research Student Symposium, University College London: Institute of Archaeology

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The 3rd annual Neolithic and Early Bronze Age Research Student Symposium (NEBARSS) took place on the 18th and 19th of November 2016 at the UCL Institute of Archaeology in London (fig. 2). The 2016 symposium followed previous NEBARSS events at Newcastle University (2015) and the University of Bradford (2014). Speakers at the 2016 symposium discussed a broad range of archaeological research into the Neolithic and Early Bronze Age periods and the event provided a platform for postgraduate, independent and early career researchers to present their work in an informal environment. The symposium was organised by PhD students Barney Harris and Robert Kaleta and was kindly sponsored by the Prehistoric Society and the UCL Joint Faculty Institute of Graduate Studies.

The theme of the 2016 symposium was '*anarchy in the UK?*', a playful concept designed to challenge speakers to consider how their work contributes to understanding social change in prehistory beyond linear, evolutionary narratives of increasing hierarchical control. The theme also highlighted the importance of revolutionary shifts within archaeological theory.

The conference commenced on the evening of Friday 18th, with a keynote lecture from University College London's Professor Mike Parker Pearson. His presentation, '*Back to the future: contemporary issues in British later prehistory*', highlighted an emerging new scientific era in archaeology based on Big Data, quantitative modelling, materiality

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**Figure 1:** Attendees at the 3rd annual Neolithic and Early Bronze Age Research Student Symposium (NEBARSS)

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studies, Actor Network Theory, ancient DNA and isotope analyses. His own research on the genetics of Neolithic Bell Beaker communities demonstrated the potential for new analytical technologies to contribute to research questions framed by post-processual archaeological theory. The lecture was followed by questions and a wine reception (fig. 2).

On Saturday the 19th the first session included new research on challenging the connotations of animal domesticity (Emily Banfield, University of Leicester), visualisation of Neolithic domestic dwellings in the Milfield Basin (Seren Griffiths, University of Central Lancashire) and domestication of Neolithic-Bronze Age mind (Alexander Aston, University of Oxford). The second session centred on monumental construction and labour, including papers on the origins of the sarsen stones at Stonehenge (Katy Whitaker, University of Reading), the construction of communities through long barrow building, reviewed through assemblage theory (Mareike Ahlers, Newcastle University) and a review of Renfrew's (in)famous chiefdom hypothesis in light of additional labour estimates for monumental construction in Wessex (Barney Harris, UCL Institute of Archaeology).

The third session included talks on the significance of categorising artefacts, using the Unstan Bowl as a case study (Michael Copper, University of Bradford), farming and ceramic production in Anatolia (Beatrijs De Groot, UCL Institute of Archaeology) and highlighting the alleged absence of cremations in the British Chalcolithic funerary record (Anna Bloxam, UCL Institute of Archaeology). The fourth and final session



**Figure 2:** Wine reception at the 3rd annual Neolithic and Early Bronze Age Research Student Symposium (NEBARSS)

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focused on emerging digital platforms for engaging the public in archaeological sites and centred around a current project at Çatalhöyük, Turkey (Tara Copplestone and Izzy Bartley, University of York and University of Aarhus), the reoccurring colours, red, black and white in the Neolithic megalithic monuments of Atlantic Europe (Penelope Foreman, Bournemouth University) and concluded with a second keynote lecture from Dr. Joanna Brück on mortuary practices and social evolution in Early and Middle Bronze Age Britain, with a critical reevaluation of the Amesbury Archer and the Boscombe Bowmen burials.

The symposium created a relaxed and safe environment for new researchers to gain experience in presentation, promote current research and gain valuable insights from other academics, as well as providing a highly captivating day of archaeological research for the audience. The environment was positive and encouraging from all guests, volunteers, speakers and professors, and we look forward to next year's symposium hosted at the University of Central Lancashire (UCLAN).

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## Part IV

## BOOK REVIEW



## Review of *Crowder, C. & Stout, S. D. (eds.) 2012. Bone Histology: An Anthropological Perspective. Boca Raton: CRC Press*

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Histological analysis of bone can be a useful tool in the physical anthropologist or archaeologist's arsenal. Analyses of bone microstructure using conventional light microscopy or scanning electron microscopy can be used for human versus non-human species identification (Hillier and Bell, 2007), analysis of osteogenesis, age-at-death estimation (Crowder, 2005), in-depth analysis of pathological conditions affecting bone (De Boer and Merwe, 2016), in addition to examining taphonomical bone alterations of bone, such as burning (Horocholyn, 2013; Hollund et al., 2012). This volume provides a useful introduction to bone histology for anthropologists, from bone biology and development to histomorphology (which can refer to the morphology itself but also includes qualitative analyses of said morphology), and histomorphometry (quantitative measurement of histomorphology). The volume also provides an overview on how to prepare histological sections of bone based on the experience of the contributing author. This volume complements other books on bone histology such as Handbook of Histology Methods for Bone and Cartilage (An and Martin, 2003), Bone Histomorphometry: Techniques and Interpretation (Recker, 1983) and Histology of Ancient Human Bone: Methods and Diagnosis (Grupe and Garland, 2012).

The volume is edited by Dr. Christian Crowder, a forensic anthropologist and the Director of Forensic Anthropology at Harris County Institute of Forensic Sciences, and Dr. Samuel Stout, a physical anthropologist and professor at Ohio State University. Both editors have an extensive publication history on bone biology, histology and histomorphometry. The volume consists of 15 chapters, and the various contributors to the volume include specialists in anthropology, biomechanics, cell biology, palaeopathology, and orthopaedics. Despite being comprehensive, the volume is relatively easy to read

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and even offers step by step instructions that can be followed by not only specialists but novices and students alike.

Chapter 1 is written by the editors and provides an introduction to bone remodelling, histomorphology, and histomorphometry. This chapter considers how the microstructure of bone can be considered in relation to how bone is remodelled, using the example of histomorphological features of bone, such as osteons. They provide a solid groundwork for how the relationship between histomorphology and bone remodelling provides the basis for age estimation and to infer bone remodelling activity using histomorphometry. Chapters 2 and 3 build on this framework and present an overview of longitudinal bone growth, regulatory systems, biomechanics, and the difference between bone modelling and bone remodelling. Diverting from bone, Chapter 4 discusses the utility of dental hard tissue in bone histology, with specific reference to the record of growth used in histological examination of the enamel and dentine.

Of particular relevance to archaeologists and anthropologists alike, Chapter 5 discusses the use of histology to differentiate human from non-human in fragmentary and otherwise non-diagnostic skeletal material. Chapter 6 discusses the most commonly used histomorphometrical methods for age estimation. Chapters 7 and 8 both discuss the biomechanics of bone. The former considers how histomorphology can be used to interpret signs of skeletal strain that may be associated with load history, such as through occupational use. The latter considers biomechanics in terms of fracture risk, the material composition of bone, and how bone fracture patterns can be used to predict the context surrounding the cause of the fracture.

Chapter 9 delves into the realms of taphonomy, providing a brief history of histotaphonomy, and demonstrates how post-mortem microstructural change can be used to examine taphonomy by giving examples of characteristic changes. Chapter 10 considers the use of histology for the classification of pathological conditions from a palaeopathological perspective. This chapter also provides some very interesting examples of histological analyses of pathophysiology of bony tissues. Chapter 11 presents a consideration of the histological study of archaeological bone, and explores the usefulness of histomorphometry to determine whether an element is human versus non-human, age-at-death, and skeletal health and disease. The authors of this chapter propose that bone histology should be included in osteological training. The next two chapters discuss two collections of bone samples with known demographic information, which are important resources for hard tissue research. Chapter 12 provides a history and description of the collections of the Anatomical Division of the National Museum of Health and Medicine at the Armed Forces Institute of Pathology; the collection includes more than 10,000 slides of stained bone and joint specimens. Chapter 13 describes the Melbourne Femur Collection at the University of Melbourne in collaboration with the Victorian Institute of Forensic Medicine. These chapters demonstrate the importance of developing and maintaining hard tissue collections for scientific study, which can be used for comparison with archaeological material. The final two chapters discuss practical aspects of hard tissue histology. Chapter 14 outlines the practical considerations of a bone histology laboratory, with instructions on preparing samples for histological analysis, including embedding, cutting sections, grinding and polishing sections, mounting on

slides and staining. This chapter is a useful practical resource for those considering performing histological analyses, and also outlines the principles of light microscopy for the uninitiated. Chapter 15 builds on this and considers the usefulness of 3D imaging and micro-computed tomography (micro-CT) in anthropological contexts, such as on the field of palaeopathology, where it has potential to assess bone porosity.

Histological analyses can provide a great deal of information about an individual; whether through osteobiographical considerations such as species identification, age, occupational strain indicators, and pathology. In addition, histology can be used to consider post-mortem taphonomical effects such as burning and microbial activity. All of these elements can be of interest to archaeologists studying skeletal material; species identification of bone fragments may aid in subsistence studies, while age, strain indicators, and pathology can provide important information regarding composition, disease events, and behaviours of past populations. This volume provides a solid background on histology, histomorphology, and histomorphometry and is an essential resource for anthropologists and archaeologists who are interested in the histological examination of skeletal material – be it contemporary forensic material, or archaeological.

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