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Excavation Workshop for Forensic Practitioners

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Introduction

As part of the Australian and New Zealand Forensic Science Society's (ANZFSS) 23rd International Symposium on the Forensic Sciences held in September 2016, the University of Auckland's Anthropology department hosted a weekend workshop on the 'Excavation of Human Remains: A Best Practice Approach.' The workshop was organised by Ashleigh Fox, Biological Anthropology's Technical Officer, and brought together excavation expertise from University of Auckland bioarchaeologists and archaeologists (Judith Littleton, Beatrice Hudson, Rebecca Phillipps and Josh Emmitt), as well as from University of Otago (Angela Clark), to work alongside experts from the NZ Police (Andrea Scott) and the ESR Forensic Service Centre (Rian Morgan-Smith).

Note: All of the human bones illustrated in this paper are plastic replicas that are used for teaching.

Objectives

The goal of this workshop was to provide an opportunity for the forensic science community to discuss and practice a range of methods used for locating, recording and collecting surface and subsurface remains, drawing on archaeological and forensic expertise. Nineteen people from across Australia, Malaysia and New Zealand attended, including police officers, forensic scientists, forensic pathologists and forensic odontologists. We used a combination of theory delivered by the organisers, and hands-on practical work to reinforce the ideas discussed. The format was kept flexible, with the expectation that the diversity of the group would lead to lively debates. The goal was to identify principles of good practice rather than provide a 'recipe book.' The feeling at the end was that we had all learned from each other.

Theory

We use the term 'bioarchaeologist' in this context to encompass experts who are involved in both excavation and study of human remains (Ashby & Hudson 2015). Over the two-day workshop, we presented a brief overview of the principles of

excavation from an archaeological perspective, including some of the techniques used in the field. Rebecca, Judith and Angela put together a brief guidance document to use as a reference, and Beatrice explained some of the key principles behind the process of excavation. This was then expanded on by both Andrea and Rian, who extrapolated to include forensic considerations for police searching strategies and crime scene investigation.

Practical Work

Our hands-on excavations were set up in the University of Auckland Anthropology Simulated Excavation Site (ASETS). This area of unused land behind some campus buildings was allocated to Anthropology by the groundskeeper and the university's Facilities Management. We run demonstrations there for the annual University Courses and Careers Day, as well as providing practice in excavation of human remains for undergraduate Anthropology students. With only a few modifications, we were able to turn the ASETS into mini-crime scenes for the weekend workshop.

The participants were randomly divided into five groups, to ensure a range of different scenarios and techniques could be covered in a short time. Despite the inclement weather, everyone was enthusiastically involved, getting wet and muddy while excavating their mock crime scenes. Each group had an excavation kit, tools and the 'inforce' recording forms were used (Inforce Foundation, 2001). The 'remains' were either animal bone or plastic human skeletons from the Anthropology Teaching Laboratory. The different tasks covered:

- ***Searching***

As the first exercise, all participants were encouraged to think about where and how they would bury a body, and then work back to look for discrepancies in vegetation and ground cover. The concept of 'winthroping' was discussed, identifying possible landmarks in the ASETS that might be appropriate for further investigation.

- ***Half-sectioning technique***

Two areas (one for each of two groups) were already deturfed and the grave outline identified by differences in soil characteristics. These groups used half-sectioning as a means to more quickly ascertain the grave contents, and to practice drawing the sectioned area. (Figures 1 and 2)



Figure 1. Setting up for half-sectioning.



Figure 2. Completed half section.

- ***Sequence of multiple events***

A back story was provided for this group. In preparation, a buried plastic human skeleton was partially exposed, a bone removed, and some pieces of evidence planted before re-covering with clay, apart from one circular area which was covered up with bark (Figure 3). The purpose was to demonstrate steps taken to ensure the context of the two different events is not lost during excavation, and how to use the characteristics of the fill to find the boundaries of the events and aid in interpretation later on (Figure 4).

- ***Recovery of exposed remains***

A buried plastic human hemi-skeleton (with a few pieces of extraneous evidence) was pre-excavated so that the grave edges and the remains were exposed. Most of the fill was coarse sand. The emphasis in this group was on the recording, documentation and collection of remains in a forensic excavation. (Figures 5 and 6)

- ***Surface-scattered remains***

The sloping corner of the site was dedicated to a surface scatter scenario (Figure 7). Animal bone fragments were laid out to mimic the natural distribution of exposed remains over time. The group had to consider factors such as environment, erosion, predators, etc. to establish the extent of the ‘scene’, and then laid a grid to record their finds in situ. Some of the group recorded finds manually, using hand-drawn plans on paper, and some used the total station, supervised by Josh, who routinely uses this device in the field. The efficiency and effectiveness of both methods could be compared by the participants.



Figure 3. Scene of multiple events.

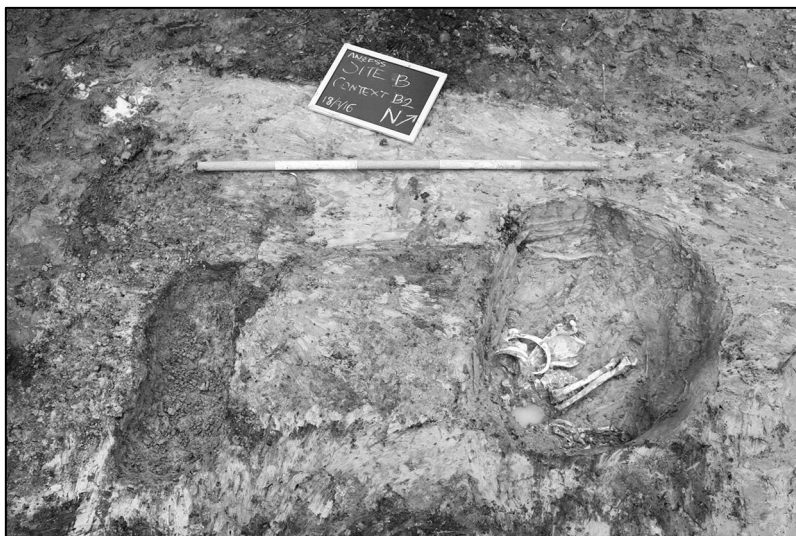


Figure 4. Excavation of sequential events.



Figure 5. Uncovering the partially exposed remains.



Figure 6. Exposed remains ready for documentation and collection.



Figure 7. Sloping area of surface scatter.

Results

While emphasis was placed on recording and documentation during the practical exercises, we did not specify one single method for this. The proformas used were chosen purely for consistency and availability for the workshop, but participants would likely have different versions from their home institutes to use.

One of the key things we learned given the weather on this occasion was that flexibility in the approach is critical – weather, accessibility, resources and circumstances all vary from scene to scene, so it is more important to answer the right questions and maintain evidential integrity than to stick to one rigidly defined procedure. Investigators need to respond to the investigation appropriately, but remembering that once excavation starts, there is no going back to it later.

However, a systematic and well-defined process is essential in a surface scatter scenario. The application of the total station was well-received, and participants noted it made the recording process much faster and more accurate. Elevation and erosion are valuable aspects to consider in the field, and secure data storage is

needed later on. Collaboration with other professionals who frequently use a total station was suggested as a take-home message.

In other cases, the participants found that careful hand-drawing can give the investigator a good appreciation for the layers of soil and the positioning of remains, despite being very time consuming. Handling the fill helped participants feel the difference between two cuts in the multiple event scenario, and groups found it useful to divide the labour and give each member a role, in order to excavate efficiently.

Participants really valued the hands-on experience we provided. They enjoyed interacting with each other and sharing knowledge across so many different disciplines. For example, the pathologists present could indicate how best to package and transport remains to ensure evidence preservation for their purposes, the anthropologists could explain the reasons for slow drying and keeping unarticulated elements separate, while biologists could explain the need for breathable wrappings to preserve DNA for downstream analysis.

Discussion

While both archaeology and forensic science have similarities in their overarching principles and methodologies, each group has some considerations that differ, and need to be understood by the other.

Forensic science is the application of scientific expertise to answer legal questions. Bioarchaeologists are experts in searching for and excavating human remains, and have much to offer in criminal investigations involving clandestine burials. By the same token, forensic scientists adhere to a strong code of scientific method, quality control and chain of custody to ensure their evidence withstands legal scrutiny. Both disciplines constantly grapple with defining a line between evidence reporting and interpretation. Both groups can benefit from working together and sharing their knowledge and practices to expedite clandestine grave investigations. Indeed, because such cases are rare in NZ, it makes sense to call on experts for support as needed, rather than spending time and money to fully train all police and crime scene examiners, just in case.

Some NZ archaeologists have noted that in this country there is a need for more appreciation of the role of archaeology in excavation rather than exhumation in forensic investigations, and the use of this expertise in reconstructing events (Ashby & Hudson 2015). Participants in our workshop noted operational models that are already working in Australia could be adopted in NZ.

Fox – Excavation Workshop

This workshop was a step toward aiding this conversation in NZ, exposing forensic practitioners to the expertise available in the archaeology community, and supporting archaeologists in navigating the intricacies of forensic examination and presenting expert testimony. Some archaeologists already appear in court under varying legislative purposes, and would benefit from more opportunities to practice presenting their evidence (Ashby & Hudson 2015).

The discussions over the weekend highlighted some key questions to continue addressing beyond the provision of hands-on training opportunities. These include:

- Who could a police officer contact, how, and at what stage of the investigation, if they think they need bioarchaeology expertise? What information would the expert need from them, or would they need to attend the scene?
- If a bioarchaeologist does not attend the scene, what information and photographs would they need to be recorded in order to effectively interpret the scene?
- Could we develop an ‘experts’ register for forensic investigations? Who would decide which experts are on the list, and how often should it be reviewed?
- Should archaeologists be looking into ‘professionalising’ within the forensic community? How could they do this most effectively? What training or competencies would they require? Who would fund such training?
- Who would benefit from attending similar excavation workshops in the future? Is there enough demand in NZ or internationally?

In his summary of forensic archaeology in NZ, Ashby called for more standardised interaction between these experts, more training and development opportunities, and even a short, annual continuing education programme (Ashby 2012). Four years later, little progress has been made in this area, yet archaeologists still give evidence in court for varying reasons, and would benefit from more practice in presenting their testimony.

Forensic scene examiners still follow their own procedure for exhumation, and bioarchaeologists are rarely called upon for assistance in excavating during a forensic investigation. In his review Ashby pointed out that forensic archaeology

remains absent as a discipline in NZ (Ashby 2012). He suggested pursuing a more standardised approach to cases involving human remains, which makes use of archaeological expertise, as well as more training and development opportunities for bioarchaeology consultants, such as provision of a short, annual education program. We believe our ASETS could serve as a centralised location for the continued communication and cooperation of relevant professionals, to ensure that skills and knowledge are shared, and passed on to future generations of experts.

Conclusion

This workshop held at University of Auckland emphasised the need for more meaningful cooperation between archaeologists, Police and forensic scientists. We are encouraged by the extremely positive feedback we received after this event, and suggest that our site could offer a means to continue this conversation, provide a location for practice in forensic archaeology, and support the development of a working model for expert interactions in the future. We look forward to running similar workshops in the future, for a range of interested groups.

Acknowledgements

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