FORENSIC ARCHAEOLOGY

SEARCH AND RECOVERY BEST PRACTICES

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Forensic Archaeology involves the application of archaeological survey, excavation, and recovery techniques to death scene investigations, particularly those scenes of medico-legal interest (homicides, suicides, accidental deaths). In this chapter, best practices for utilizing forensic archaeology in death scene investigations are outlined. Basic definitions of relevant terms are also discussed as well as protocols for conducting investigations at various phases of archaeological field investigations.

Objectives of Forensic Archaeology:
- Locate and record the context (provenience) of the forensic scene;
- Determine if the remains are human or non-human;
- Enumerate the number of individuals (MNI) interred;
- Discern whether the human remains are prehistoric, historic, or forensic in nature
- Recover clues regarding the manner of death;
- Recover clues regarding what has happened to the body and scene after death;
- Recover clues regarding the identity of the perpetrator(s)

Important Terms:

1. Stratigraphy – refers to the layers of the earth. The Law of Superposition states that, given no disturbance, the soil layers and strata that are deepest are temporally earlier than those layers that are closer to the ground surface.

2. Datum - the principal reference point from which all horizontal and vertical measurements are taken. The datum may be triangulated to permanent features or may be documented by GPS (Global Positioning System).

3. Context - the three dimensional location of objects in space and time. Context is the most important concept in forensic archaeology. Accurately recording the precise location of objects in a forensic setting is the basic reason for the application of forensic archaeology. This is vital in documenting evidence for legal purposes.

4. Plan - a horizontal depiction of objects and their relationships.

5. Profile – a vertical depiction of objects and their relationships at different depths.

6. Taphonomy – the study of the laws of burial; the science concerned with postmortem processes which affect the preservation and recovery of dead organisms.

The Three Phases of Forensic Archaeological Field Investigations:

Phase I: Systematic and comprehensive search/investigation (reconnaissance)

1. Searching for human remains often proceeds with prior knowledge about a site, but even then, environmental clues in a region are very important. The most

appropriate search technique is dependent upon local environmental conditions (such as degree of visibility, terrain, etc.). Changes in existing vegetation, soils, rocks, and insects may be indicators of ground disturbance and burial. Evidence of animal scavenging, tracks or feces may also indicate a burial.

2. Visual or Pedestrian Search: conduct a detailed walkover search of an area and flag all significant objects (without removing or disturbing them).

3. Technological aids may be useful in the search—GPS, aerial photography, thermal (infrared) imagery, and geophysical methods (e.g., GPR—Ground Penetrating Radar, Electrical Resistivity, Metal Detectors).

4. Decomposition (cadaver) dogs may aid in the identification of burials, given appropriate climatic conditions.

Phase II: Determination of Forensic significance

1. Confirm that the remains are indeed human (and not animal);
     Human vs. Animal Bone

2. Assess the age of the remains (Assessing Time Since Death or Postmortem Interval):

Remains may not be modern and forensic in nature; historic and prehistoric remains may be confused with modern remains. Clues regarding the age of the remains include the state of preservation of the remains (although this is very dependent on local environmental conditions), presence or absence of modern dental (e.g., amalgams) or medical (e.g., surgical pins, plates, or screws) care, and nature of associated artifacts (e.g. funerary items).

If the remains are assessed as prehistoric or historic, then the appropriate state historic preservation officer should be immediately consulted before proceeding (in Virginia = Department of Historic Resources). If the remains are on federal land or governed by federal funds, then NAGPRA (Native American Graves Protection and Repatriation Act) applies (if the remains are Native American). If the remains are assessed as forensically significant, appropriate law enforcement agencies and medical examiners or coroners should be notified before proceeding.

In some cases, Step 1 of Phase II may be accomplished before Phase I is necessary. If law enforcement officers encounter or obtain bone fragments they cannot identify, they can send digital photographs to a trained forensic anthropologist, who can determine if the bones are human or not. If the bones can visually be determined to be non-human, then further investigation is obviated.

Phase III: Recovery; Excavation

General Comments:

1. Document site topography, climate, etc. through field sketches, notes, and photographs. Keep a photographic log;

2. After identification of surface remains or a possible grave site, photograph the site as it initially appears, then carefully remove vegetation WITHOUT disturbing potentially significant objects;

3. Establish datum and grid over investigation site;

4. Begin field map of site and map in place the locations of all surface objects, again photographing all exposed objects or remains using a scale and north arrow.

For Surface Remains:

1. Determine if the remains are *in situ*, disturbed, or scattered. If scattered, search the area carefully for additional remains. Mark with surveyor flags and map each location. Screen all soil in association with the remains through ¼ inch mesh screen. Establish original location of remains and estimate trajectory of scattering (based on topography and slope, for example).

2. If not scattered, a smaller grid can be established to encompass and map an individual body. Carefully search the body location for teeth, as they can be crucial in individual identification. Screening of the soil around and beneath the cranium is necessary.

For Buried Remains (e.g. Clandestine Burials):

1. Define boundaries of the grave and map these in;

2. Describe the characteristics of the soil (color, texture) of the grave as opposed to the surrounding soils;

3. Divide grave in half and carefully scrape away (with a trowel) the soil horizontally (NOT vertically), maintaining a flat surface and screening all excavated soil. For deeply buried remains, excavation of the soil in arbitrary levels may be necessary. Once remains are exposed, brushes and small (bone or wooden) tools are preferable;

4. When bones or other significant objects are encountered, leave these in place by pedestalling;

5. Expose all remains to the base of the grave and take soil samples in different areas; collect any evidence of insect remains;

6. Document exposed remains by mapping and photography, recording the characteristics of the photograph in the log book. Mapping includes both the production of a two-dimensional plan view of the site as well as recording the vertical (depth) dimension of objects and remains in relation to the grid datum. Produce a profile drawing of the exposed vertical half of the grave;

7. Excavate the remaining half of the burial in a similar manner;

8. Measure the final depths of bones/remains and the base of the grave from the datum and record these in the log book;

9. Identify individual artifacts, bones, or body sections numerically on field drawings and bag these separately, placing the corresponding numbers on the bags;

10. Backfill the excavated grave with the screened soil.

Documentation of all Phases with field notes, sketches, and photographs is vital for reconstructing the scene. Use of technologically sophisticated equipment (Total Stations, LiDAR) is highly recommended if it is available—especially for complex scenes with multiple objects to map and record. This will permit the acquisition of multiple sources of data to enhance the interpretation of the scene and the events involved in its creation.

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