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Archaeology and Forensic Death Investigations

ABSTRACT

Historically, the role of the archaeology in forensic death investigation has focused on excavation techniques and documentation of context. Additional skills of the archaeologist relate to familiarity with stratigraphy and soils, collection and conservation of artifacts, and special areas of interest, such as taphonomy. The following discussion surveys the processes by which the methods and personnel of archaeology have been incorporated into forensic recovery of skeletal and buried remains. The current status of the archaeologist's involvement in forensic investigations is explored. As well, distinctions between the work of medical legal death investigators and crime scene investigators are contrasted to archaeologists working conventional archaeological sites. Finally, the utility of archaeological methods and archaeologists is illustrated using examples ranging from a serial murder investigation in the U.S. to international investigations involving human rights abuses in Honduras and war crimes in Rwanda and the former Yugoslavia. The contributions of the archaeologist's skills range from methodologies of excavation and documentation of context to expertise in areas involving soil features, conservation of grave goods, and the uses of taphonomic knowledge to resolve post-mortem issues.

Introduction

Recognition of Archaeology and the Archaeologist in Forensic Death Investigations

Recognition of the contribution of archaeological methods in the excavation and recovery of buried remains has been long standing on the part of enlightened forensic anthropologists (Bass and Birkby 1978; Boyd 1979; Snow 1982; Morse et al. 1983, 1984; Skinner and Lazenby 1983; Brooks and Brooks 1984; Krogman and İşcan 1986; Wolf 1986; Ubelaker 1989; Killum 1990; France et al. 1992; 1997; Hunter et al. 1994; Hunter 1996; Dirkmaat and Adovasio 1997). Morse's et al. (1983:1) definition of forensic archaeology as "the application of simple archaeological recovery techniques in death scenes involving a buried body or skeletal remains" underscores this focus.

Other contributions of archaeology to forensic investigations are less extolled. Fundamental is the documentation and exposition of context (Dirkmaat 1997; Snow 1995). Inferences drawn from context and association can prove crucial in understanding of depositional relationships (Siegler-Eisenberg 1985; Dirkmaat 1997; Melbye and Jimenez 1997) and may contribute to reliable assumptions of human behavior at scenes, such as that between the killer(s) and victim(s) (Physicians for Human Rights 1993; Scott and Connor 1997). Other skills of the field archaeologist that enhance forensic investigations include familiarity with stratigraphy and soil science, and faunal analysis, especially in distinguishing fragmented human from non-human bone. Conservation of grave contents, along with experience in tracking artifact history through their manufacture and design can also prove invaluable. The subdiscipline of taphonomy, in which archaeologists and paleontologists have pioneered, is receiving increased attention especially by forensic anthropologists (Macozzi 1991; Buikstra and Ubelaker 1994; Nawrocki 1995; Haglund and Sorg 1997a, 1997b; Sledzik 1998). Finally, their approach to organization, planning, documentation, and logistics has much to recommend the archaeologist to the forensic investigations, especially those involving large-scale international investigations.

Evolution of the Involvement of Archaeological Methods and Archaeologists in Forensic Investigations

In the United States, the application of archaeological expertise to the forensic arena has been achieved more by borrowing methodologies and techniques, than by utilizing archaeologists themselves. Forensic anthropologists have been the primary conduits because of their expanding role, from that of the laboratory physical anthropologist recognized mainly for expertise in identification of human skeletal remains, to that of their presence that commonly includes recovery of remains, especially from scenes resulting from fires or when buried or skeletal remains are involved. This has been an increasing trend for forensic anthropologists in

Historical Archaeology, 2001, 35(1):26—34.

the U.S. over the past two and a half decades (Haglund 1998). In the not too distant past, absence of forensic anthropologists from scenes of recovery, especially those involving skeletal remains, often resulted in destruction of the crime scene context by inexperienced investigators (Singer-Eisenberg 1985; Wolf 1986; Howard et al. 1988). This often hampered opinions of the anthropologist, who found himself or herself limited due to information lost or not properly documented at the time the remains were recovered (Melbye and Jimenez 1997). The practice of delivering skeletons to the laboratory after having been inexpertly exhumed by law enforcement prompted Snow's quip that, ". . . having a policeman excavate a skeleton . . . was a bit like having a chimpanzee perform a heart transplant" (Snow 1995:17). Although extreme, the statement had a ring of truth based on notorious examples of ineptly processed scenes involving human remains (Morse et al. 1976).

As pointed out by Siegler-Eisenberg (1985:651), the archaeologically trained police specialist, and many anthropologists, simply do not have the skills or perspective that comes with an archaeological education and extensive field experience. Similarly, just as all physical anthropologists are not forensic anthropologists, all forensic anthropologists cannot be assumed to have skills requisite to meet challenges of documentation, recovery of surface or buried remains, or resolution of taphonomic issues. Some forensic physical anthropologists may be well grounded in basic archaeological field techniques, while others may be totally lacking in their application. This is due to the fact that training, education, and experience of forensic anthropologists is uneven, especially in dealing with decomposed and fleshed remains and scene investigations determined (Galloway and Simmons 1997). It must also be recognized that the abilities of individual forensic anthropologists depend upon their field experience, and their particular interests.

In some respects, involvement of the forensic anthropologist in scene recovery may be viewed as having confounded the entrance of the archaeologists into the forensic arena. Recent debates in the physical anthropology section of the American Academy of Forensic Sciences have resulted in spirited discourse when disciplinary dichotomies between the physical anthropology and archaeology have been broached or when it has been suggested that the physical anthropology section include archaeologists. This debate has less to do with acknowledging the utility of skills requisite in an archaeological education and extensive field experience, than it has to do with physical anthropology being the keystone to the definition of what a forensic anthropologist is, and how they envision their expanding role, as enhancement of existing skills or the acquiring of new ones. On the part of those forensic anthropologists whose training has included archaeological field techniques, there may also be reluctance to acknowledge a separate and special role to the archaeologist.

Adding to further confusion, it is not uncommon, that the forensic anthropologist at the scene, from the viewpoint of police investigators, is the only scientific person at hand. Non-specialists may have a tendency to lump scientists such as archaeologists and physical anthropologists together. This tends to foster the perception that utilization of an anthropologist will suffice to meet the challenges of outdoor scenes and buried remains and that there is no need for the archaeologist's sub-specialty. Another take on non-inclusion of the archaeologist at the scene is that, for law enforcement, expertise in osteology is clearly outside their skill set. Skills of the archaeologist, on the other hand, might be viewed as overlapping or competing with evidence recovery skills of the crime scene police specialist.

There are other reasons for the lack of presence of the archaeologists, and for that matter, forensic anthropologists, in death investigations. First is the low incidence of buried and skeletal remains encountered in death investigation. Rhine (1998: 37) points to the low incidence of anthropology cases and involvement in scene recoveries in New Mexico. From 1981 through 1995 the State of Washington had 3,515 documented homicides (Washington State Attorney Generals Office Homicide Information Tracking System [HITS] database, courtesy of Robert D. Keppel, Ph.D.). Forty-four involved buried remains (1.25%), 27 were completely buried (0.8%) and 17 partially buried (0.5%). This infrequent need for exhumation translates into lack of awareness for the unique skills the archaeologist has to offer and a lack of estab-

lished relationships between them and the agencies of law enforcement and death investigation.

Hunter, in his 1996 volume *Forensic Archaeology*, commented on rationales for the non-inclusion of the archaeologist at British crime scenes. Some of his comments are specific to the United Kingdom. For example he contends there is a lack of organized integration of such scientists as the anthropologist/archaeologist into legal medicine. Other comments are germane to the situation the United States. Hunter points out that, "although in the last 30 years, particularly in the last decade, there has been a remarkable broadening of archaeology as a discipline and development as a field science, the yet lingers a gap between public perception of these advances and Victorian vestiges of archaeology as a discipline resplendent with musty museum images dispersed with seasonal bouts of excavations" (Hunter 1996). A further confounding factor may also be that in the U.S., archaeology is taught in departments of anthropology whereas in Great Britain anthropology is taught in departments of Archaeology.

The Archaeological and Legal Context: Similarities and Differences

Parallel concerns shared by the crime scene investigator at a scene and the archaeologist at a site are readily apparent. In a nutshell, both seek to protect the physical and spatial integrity of potential evidence and remains. Specific challenges to the death investigator are: (1) locating the remains; (2) maximizing their recovery; (3) assessing special and temporal relationships relative to their death, burial, or dispersal; (4) differentiating ante-, peri-, and postmortem movement and modification sequences; and (5) interpreting information from the scene context. Success in meeting these challenges depends upon the ability to: (1) develop successful search strategies; (2) use techniques that maximize recovery and documentation of remains and evidence; (3) utilize taphonomic data to unravel postmortem events that may move, modify, or destroy human remains; and (4) make supportable inferences, based on the context of the scene, that will stand up in court.

Not unlike the forensic physical anthropologist, the archaeologist becomes involved in death investigations at the invitation of those who have jurisdiction, the medical examiner/coroner or police. It is usually the medical examiner or coroner who has investigatory jurisdiction over the deceased and who investigates sudden, unexpected, traumatic deaths, or deaths which occur without medical attendance. Their responsibility is to determine the cause and manner of death. The cause of death is that disease or injury responsible for starting the chain of events, which produce death; manner of death is the circumstances under which the death occurred. There are five manners of death. If disease causes the death, and no trauma was involved, the death is natural. If trauma was involved in the cause of death, then the manner would be classified as homicide, suicide, accident, or undetermined. These traumatic deaths, as well as any sudden/unexpected death or death of undetermined means, fall under the scrutiny of the coroner or medical examiner. When criminal activity is suspected the police carry the burden of investigating the culpability of suspects.

There are aspects of the forensic context that are not often encountered by the archaeologist and that will require switching from an archaeological to a forensic, medico-legal investigative paradigm. The archaeologist is usually not accustomed to working within the medico-legal context. This context includes the rules of evidence, chain of custody, the potential that court testimony may be required, and the fact that the activities and work of the archaeologist may be subjected to legal scrutiny. Above all are concerns for confidentiality of the investigation and release of information that may jeopardize the case. Some information is known only to investigators and to the perpetrator of the crime. Failure to control such information can jeopardize not only the case or the rights of the accused, but may put potential victims at risk. It is important to know what the expert can say. It is also essential to keep police investigators appraised of any inquires experts may receive. With the medico-legal context comes the solemn responsibility that opinions expressed by experts can affect the lives of others.

In addition to the etiquette of crime scenes, it is important to understand the perspective of police investigators. Most investigators have heavy caseloads. The particular case in which the expert is involved is only one of many for the investigator. Often investigations are under

severe and pragmatic time and budget constraints. As a rule of thumb, there is a diminishing prospect for solvability of a homicide, the longer the time between its commission, its discovery, and the reality of catching the killer. The temporal exigencies of forensic investigations are often forced by investigative needs, degradable evidence, weather, and financial and staff support. For international investigations, security, politics, cultural and language differences, and material support enter into the list of limitations. Such strictures demand flexibility, teamwork, and pragmatic efficiency on the part of investigators (Webster 1998).

Mental preparations for forensic cases are different than for working on typical archaeological sites, where the presence of flesh and the immediacy for death are not factors. It is easier to psychologically distance oneself when working on prehistoric and historic sites where human remains are encountered as bones and materials associated with the remains are not those encountered in our everyday lives. In contrast, forensic cases often involve fleshed remains in varying degrees of decomposition accompanied by foul odors (Figure 1). The psychological burden of flesh is weighted by recognizable facial features and empathetic anatomical structures such as intact hands and feet. Additionally, contemporary clothing and artifacts, such as extremely personal documents and photographs, may accompany the remains. These circumstances increase the potential to closely identify with the victim.

Case Examples

The following investigations illustrate the application of archaeological knowledge and of archaeologists in cases ranging from serial murder investigation in the U.S. to international human rights abuses in Honduras, and war crimes in Rwanda and the Former Yugoslavia.

Green River Serial Murders

The Green River Serial Murder Investigation, in King County, Washington, may be the longest running serial murder investigation in U.S. history. The first attributed victim was discovered on 15 July 1982 by two youths bicycling across a bridge at the outskirts of Kent Washington, who spotted the body of a woman beneath the river surface. This was the first discovery of what would be 41 victims attributed to the killer. All were believed killed between July 1982 and March 1984. All were females, most had connection with prostitution, and all remains were recovered from outdoor areas.

Although the first four victims were recovered from the waters of the Green River, the majority was discovered on the land surface as bodies or partial skeletons. Most were scattered and heavily scavenged by the time they were discovered. Post-mortem intervals from date of death to discovery ranged from days to eight years. At the time of this writing, the last recovery of a known Green River victim was made in February 1990. At least eight additional victims are thought to be dead, their remains yet to be found.

The King County Police and Medical Examiner's Office were not strangers to serial murder, previously having recovered victims attributed to Ted Bundy in the late 1970s. Thus, they had been sensitized to the unique challenges of rural outdoor scenes and the need for close cooperation between the two agencies. Investigators were familiar with Morse, Duncan, and Stoutamire's Handbook *of Forensic Anthropology and Archaeology* (1983) and some had read further in the field of forensic anthropology. Immediately recognized at the outset of the investigation were the confounding features of outdoor scenes: (1) ambiguous perimeters, (2) contamination of scenes by artifacts of unknown association to the death investigation, and (3) potential for commingling with other individuals and with animal remains, as well as (4) the need to recognize bone fragments and subadult elements of the human skeleton. This foreknowledge combined with the close working relationship between the Medical Examiner's Office and police insured that a pathologist and anthropologist would be intimately involved with the investigation from the onset and would be on site when scenes were processed.

Basic crimes scene processing strategies were employed, as well as special considerations for

FIGURE 1. The recovery of partially decomposed remains is a situation rarely encountered in anthropological archaeology and presents a psychological burden archaeologists need to overcome in forensic work. Case No. 30, Grave 1, Kibuye Catholic Church, Rwanda.

outdoor and skeletal remains (Howard et al. 1988; Haglund et al. 1990). Generous security perimeters were established in order to retain control of the area and the confidentiality of the investigation. Paths of approach and egress from the scene were rigorously monitored, as were the number of people allowed into the scene. Investigators undertook hands-and-knees searches, minute inspection of vegetation, and screening of soil from underneath and around the remains.

Although archaeologists were not involved in these investigations *per se*, it was the archaeological and paleontological literature, which proved invaluable in resolving taphonomic issues. Forensic literature was lacking in its treatment of scavenging and post-mortem artifacts inflicted by scavengers (Toots 1965; Haynes 1980a, 1980b, 1982, 1983a, 1983b; Binford 1981), disarticulation sequences (Hill 1979) and weathering (Behrensymer 1978). Taphonomic models aided in search strategy, estimation of the cause and time since death.

Honduras

Honduras, along with other countries in Latin America, inherited the legacy of repressive regimes in the late 1970s and 1980s. Not only did the civil wars in each of Honduras' three bordering countries of El Salvador, Nicaragua, and Guatemala, spill across its borders, Honduras was used as a base for U.S. sponsored cold war activities. A report released in 1994, *The Facts Speak for Themselves*, reviewed the disappearance of 187 individuals in Honduras from 1979 to 1989 (Center for Justice and International Law 1994). The report chronicled the cold war legacy of the Honduran military and its Battalion 3-16, a CIA-supported and trained death squad, whose members participated in the disappearance and political murder of scores of leftist activists.

That same year, 1994, with the aid of expertise provided by Physicians for Human Rights (PHR), the political climate permitted the first exhumation of suspected victims of these disappearances. Involved survivors had waited 12 years for this breakthrough. Throughout 1994 and 1995, a total of three missions were conducted by PHR, all assisted by a cooperative working relationship with the Honduran Supreme Court, Prosecutors Office, and the Human Rights Organization, *Comite de Familiares de Detenidos Desaparecidos en Honduras* (Committee of Families for the Detained and Disappeared of Honduras, (COFADEH). Due to the excellent advance investigatory work of these agencies, success was achieved in locating and exhuming those human remains that were sought. In nearly half of the cases, individuals were identified. These exhumations and identifications were essential to the initiation and advancement of trials in the Honduran court system.

One case was the disappearances of four young people in early 1982. They had been detained from a bus returning from Nicaragua on 24 January 1982. Six months later, on 14 June 1982, a farmer discovered the remains of five decomposed bodies on a hillside off the main road between the Honduran Capital, Tegucigalpa, and Jacalaepa a town south and midway between the capital and the Nicaraguan border. During the investigation, a sixth body was found at the bottom of the hillside, near a small creek. According to custom, a cursory medical investigation was carried out at the scene where the corpses were discovered. Following, the remains were simply buried where they were found.

This grisly discovery combined with other information slipped to the family members of the missing young people, led to the assumption that the four missing youths were among those discovered. For 12 years survivors had venerated

the spot where a small wooden cross marked the grave. Throughout those years all their pleas to the government and attempts to have the grave exhumed in order to identify and reclaim the bodies of their children were rejected.

The situation was reversed in 1994, when the Physicians for Human Rights (PHR) organized an investigation team, a Boston-based human rights organization, at the behest of the Honduran human rights group COFADH. Members of the team consisted of a U.S. anthropologist (WDH) and two members of the *Guatemala-based Equipo Forense.* Assigned to the investigation by the Honduran Supreme Court were a forensic pathologist and a forensic dental consultant.

The Guatemalan members of the team had considerable experience in excavation of commingled graves, having worked not only in their home country, but also on missions in Argentina and Iraqi Kurdistan. They were adept at basic archaeological techniques, especially exhumation of mass graves with commingled remains. Upon the team's arrival at the site, a large area surrounding the cross marking the assumed location of the grave had been cleared of vegetation with a perimeter around it marked off with crime scene tape. A large crowd of concerned survivors and members of the family group COFADH, along with curious media, government representatives, and passers by watched over the efforts. Trenching continued throughout the first day without encountering the grave until stopping time. The actual location of the grave was outside the established perimeter, where onlookers had been standing. The subsequent five days were spent exhuming one grave containing five commingled individuals (Figures 2, 3), and one grave with a single individual. Use of archaeological techniques enabled exacting exposure and delineation of the individuals, complete recovery and attribution of skeletal elements of individuals, recovery and documentation of associations of bullets and bullet fragments, sequence of entry of victims into the grave, and information about the circumstances of burial.

Unfortunately for the expectant relatives, at the conclusion of the examinations, none of the exhumed skeletons were those of the missing young people. Their search for them continues.

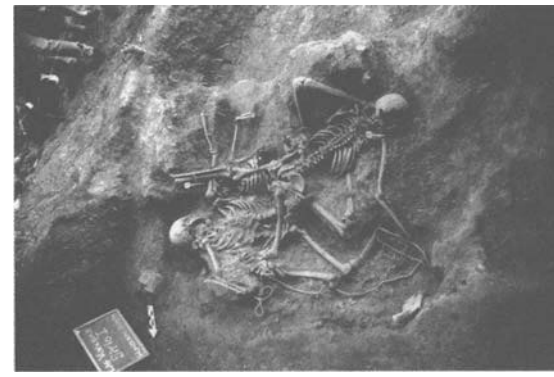

FIGURE 2. A grave in Honduras excavated by the author and two members of the Guatemalan based *Equipo Forense*. The recovery of co-mingled skeletal remains can be challenging and the use of archaeological techniques enabled the complete recovery and attribution of skeletal elements and associated evidence. This figure shows the top layer of skeletons in this grave.

FIGURE 3. The bottom two skeletons in the same grave as Figure 2. The ribs of the individual on the right are seen in Figure 2 under the right femur of the individual with the crania to the west.

International Criminal Tribunal Experience in Rwanda and the Former Yugoslavia

Excavations conducted in 1996 by PHR under the auspices of the International Tribunals for both Rwanda and the former Yugoslavia were unprecedented in terms of the size of the excavations and complexity of logistics. The nearly 1200 exhumations were conducted at multiple graves containing from 1 to over 450 individuals (Haglund et al. this volume; Stover and Ryan this volume). Investigations were conducted on two continents and within four separate political entities. Among the experts utilized were forensic pathologists, radiologists, forensic dentists, physical anthropologists, archaeologists, logisticians, evidence technicians, photographers, and data entry and autopsy support staff. Three professional archaeologists were utilized and many of the physical anthropologists had varying archaeological skills.

The professional archaeologists' organized approach to their work and documentation proved immensely beneficial. Their input into logistics, supply needs, and specifications for equipment required to facilitate their work was invaluable. In particular, their efficiency at mapping and documenting large amounts of data and producing maps also carried benefits into the laboratory. For example, using the positions of crania from grave maps, it was possible to rectify commingling issues involving fragmented crania that were superimposed upon each other. This was combined with adaptability in digging different locales and their ancillary skills involved in locating grave boundaries through skimming and trenching, planning for drainage, and providing adequate working space.

Conclusions: Lessons Learned and the Future

The application of archaeological techniques is a must when dealing with the recovery of buried and skeletal remains. The foregoing case examples demonstrate experiences where the application of archaeological methods and theory, as well as the actual participation of an archaeologist was utilized. For some investigations the actual presence of an archaeologist may not be necessary, in others they provide a valuable and sometimes necessary contribution. Regardless, with the forensic expectation of the forensic anthropologist's participation in scene processing, archaeological methods must be included in their battery of skills. If not, they should seek the assistance of qualified archaeologists.

ACKNOWLEDGMENTS

Special acknowledgment to archaeologists who participated in the 1996 exhumations for Physicians for Human Rights under the auspices of the United Nations International Criminal Tribunals for both the former Yugoslavia and for Rwanda. Credit to the King County Police and King County Medical Examiner's Office for their vision in incorporating archaeological techniques in their Investigations. Acknowledgments to the Guatemalan forensic team *Equipo de Anthropologia Forense de Guatemala*, particularly to team members Stefan Smidt and Fredrico Reyes. Acknowledgments to the courage of Honduran citizens, the Honduran Supreme Court, and the member of COFADH, especially Bertha Nativ Oliva. Opinions expressed here are my own, and do not necessarily reflect those of organizations with which I have been or am associated.

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