

## Archaeology and Policing

Gregory O. Olson

*Since the beginning of time, ways have been invented to disguise crime. The role of police agencies around the world is to investigate this crime, firstly by deduction and, now secondly with the aid of science. Badly mismanaged crime scenes have placed pressure on law enforcement agencies to develop special expertise in locating, identifying, and recovering human remains. In response to this need, the York Regional Police has formed the first Archaeological Forensic Recovery Team in Canada, a team comprised entirely of police officers. In addition to their police training, these individuals are schooled in archaeology, osteology, entomology, and forensic anthropology. This particular blend of investigative skills coupled with forensic science and archaeological techniques create a unique "hybrid" criminal investigator. The Archaeological Forensic Recovery Team has successfully applied archaeological methodologies to scenes of homicides, robberies, sexual assaults, and other crimes. Some examples of this application are described here.*

---

### Introduction

When included in the early stages of a forensic investigation, a police officer trained in archaeological methodologies can make a significant impact in terms of locating and defining the scene; ensuring the recovery of maximum evidence; and addressing more thoroughly the issues of personal identity and the events surrounding and subsequent to death, including the post mortem interval. Advanced preparation in the recovery of evidence, the associated medico-legal issues and detailing the evidentiary chain to be followed are vital to assist in a successful prosecution.

Two incidents illustrate the value of this philosophy. One was a badly mismanaged case that led to a wrongful conviction. The other, in a neighboring jurisdiction, proved successful when a university team of forensic anthropologists and archaeologists were asked by the Ontario Provincial Police to assist in the recovery of skeletal remains of a young female, missing for five years. As a member of the York Regional Police, I was included in this as I had been schooled in archaeological methodology. Aware that this application to crime scenes would improve the quality of law enforcement, I approached members of the police hierarchy in August of 1996 with a proposal to have officers trained in archae-

ological recovery. Far too often, important evidence was being contaminated or even missed by improper searches conducted by inexperienced officers and civilians.

Employing such a unit would be cost efficient, labour saving, and would achieve valuable results. In order to determine the viability of such a team to assist other agencies, not only to recover human remains, but also to attend crime scenes where a methodological system of search was required, a number of police services in the province were surveyed. These included the Ontario Provincial Police, the Hamilton-Wentworth Regional Police, the Niagara Regional Police, the London City Police Service, the Ottawa-Carleton Regional Police Service, the Peel Regional Police Service, the Toronto Police Service, the Halton Regional Police Service, and the Waterloo Regional Police. None of these agencies had a specific recovery team. Four had some staff trained in some aspect of human remains recovery, four utilized the forensic services of nearby universities, and four enlisted the services of independent forensic anthropologists.

### Results

The proposal was accepted in its final submission in August 1999, and the Archaeological Forensic Recovery Team, the first of its kind in Canada,

was formalized. In the interim, the team was called upon on more than two dozen occasions to identify and recover human remains within the jurisdiction of York Region. Over that period, the officer in charge was called to various scenes on eleven different occasions to determine whether the involvement of the entire team was required. This proved a time saving measure. In addition, on over a dozen occasions thus far, selected team members have been requested to assist the Toronto Police Service, the Durham Regional Police Service, and the Ontario Provincial Police in the recovery of the remains of murder victims.

While the York Regional Police Archaeological Forensic Recovery Team does have the training and expertise to assist in the recovery and identification of human remains, it also has the mentorship of Dr. Dean Knight, an archaeology professor at Wilfrid Laurier University. Because the services of the York Regional Police Archaeological Forensic Recovery Team are readily available, a survey also was undertaken of York Regional Police officers in charge of internal units such as the Homicide and Missing Persons Bureau, Forensic Identification Bureau, Criminal Investigation Bureau, Sexual Assault Bureau, and the Robbery Unit to ascertain whether the methodology of the recovery team could be employed elsewhere. All concurred that, in any situation where evidence is being sought to identify a suspect and to provide facts for criminal cases, the horizontal coordinate grid system routinely used by archaeologists to lay out excavation units and to provenience their finds, is both effective and recommended.

In laying out this grid, the search area of a crime scene is sectioned off into smaller, searchable units. This process begins with the selection of a permanent datum point, carefully chosen so that it can be easily relocated in the future. If possible, it is advisable to use an existing surveyor's marker or other permanent topographical feature. From this datum point, north-south and east-west baselines, the main horizontal grid system to be used in the search, can be measured and recorded with conventional surveying equipment. In remote areas, three 50 or 100 metre tapes and the triangulation method taken from the datum point are employed commonly to set

the grid. A good workable search unit has proven to be the two metre square, as it affords room for each member to work independently and in relative comfort. Nonetheless, the size of individual units is governed to some extent by the size of the overall search area.

The precise location and orientation of all the physical evidence visible on the surface relative to the physical setting can be mapped into the grid system over the site. Each successive grid square and the evidence contained therein can be mapped relative to the datum point using conventional archaeological methods or more sophisticated mapping technology such as an infrared theodolite. The positive attributes from the grid search include a more workable section of the search area, "pride of ownership" attached to each square, and the ability to return to the scene at any future point and locate the exact area where a particular piece of evidence was originally found.

It is essential that all members of the Archaeological Forensic Recovery Team be trained by qualified instructors. The team members' work at the crime scene invariably leads to the laying of criminal charges on the part of the homicide investigators. Their involvement in the judicial process is unavoidable and therefore impeccable credentials are fundamental. Moreover, the majority of team members, by virtue of their advanced education, are the only members of area policing services who are qualified to carry out the proper identification of human remains. To gain these skills, the members of the Archaeological Forensic Recovery Team completed the following seven courses:

*Anthropological Short Course*—a seven day "hands-on" course conducted at Mercyhurst College in Erie, Pennsylvania, which includes anthropology, archaeology, entomology, DNA sampling, locating and excavating shallow graves, and the examination and removal of human remains.

*Archaeology/Anthropology*—a basic one-week introduction to field methods employed in the science of archaeology, designed specifically for members of the York Regional Police by Dr. Dean Knight

of Wilfrid Laurier University. It is formulated for police officers with little or no background in the field and addresses methods applicable to crime scenes.

*Osteology*—initially a post-graduate accredited course at Wilfrid Laurier University, this program was offered to police officers in 2002 as an introduction to osteology and included the identification, recognition and siding of human remains.

*Bone Trauma and Pathology*—a one-week short course offered in partnership with the Southern Institute of Forensic Sciences and the University of New Orleans. This intensive course developed skills for recognizing and understanding of the nature of trauma to bone, bone pathology involving diseases, and their effects on bone in both modern and archaeological contexts.

*Location, Identification and Removal of Human Remains*—a one week short course offered in partnership with the Southern Institute of Forensic Sciences and the University of New Orleans. This intensive course involved discussion of the methods of locating, identifying and recovering human remains in both modern and archaeological contexts. The instructors included Dr. William Bass, Dr. Hugh Berryman, Dr. Steve Symes, Dr. Ted Rathbun and Dr. Ed Waldrip.

*Fragmentary Osteology*—a one week short course on the identification of fragmentary human bone offered in partnership with the Southern Institute of Forensic Sciences and the University of New Orleans. The instructors included Dr. William Bass, Dr. Hugh Berryman, Dr. Steve Symes, and Dr. Ed Waldrip.

*The Location, Identification and Removal of Human Remains*—a one week short course hosted in conjunction with the

Royal Canadian Mounted Police and Carleton University in Ottawa. This was an intensive course that delved into the excavation of shallow graves, the collection of entomological samples, and the understanding of clandestine graves and crime scenes.

The Archaeological Forensic Recovery Team is now part of the organizational structure of the York Regional Police Department with its own budget and which reports directly to the Detective Superintendent in charge of Investigative Services. Approval was granted in 2000 for three alternate member positions within the team, with a pre-requisite of five year's police experience, a minimal rank of constable first class and a commitment to further education. This brought the total number of "on call" officers to seven.

While there is still the need to complete a policy and procedure manual, it has become the practice within the Department to call in the Archaeological Forensic Recovery Team first to the various crime scenes where its expertise is needed. Each occurrence is followed by a debriefing session and re-evaluation of techniques and methodology. Changes are made as necessary to improve performance and results.

The innovation and expertise of the Team has gained recognition beyond York Region through various media. These include: publication of articles in a national police journal and a university alumni journal; engagement as guest lecturers at Canadian and American venues; appearances on television programs on Court T.V. and the Discovery Channel; and a presentation at the British Columbia Institute of Technology.

As a result of this publicity, a number of provincial, regional and municipal police authorities have made inquiries concerning the methodical, organizational, procedural and financial requirements necessary to set up such a team.

In September 2000, the York Regional Police hosted its own anthropological short course, the first of its kind ever offered to police officers in the province by a police service. Designed especially for forensics, it was an intensive, forty-hour course providing "hands-on" experience and

instruction by experts from as far away as Tennessee, British Columbia, Pennsylvania and Ohio. There were fourteen pre-authorized "in-house" positions for plainclothes investigators and ten positions reserved for outside agencies. Due to an overwhelming response, the class size was increased to thirty. This is the first annual course of its kind and to date it has had candidates from Kansas, Winnipeg, Vancouver and England, and has had representatives from various police agencies, the Fire Marshal's office, and the Law Society of Upper Canada, in addition to various universities, colleges and schools.

### Case Presentations

#### *Case 1*

In the early spring of 1996, the body of a known crime figure was found in the trunk of his vehicle in a wooded area in York Region. Testing of soils found in his clothing by members of the Center for Forensic Sciences matched samples taken from a farm that was owned and operated by an individual who is prominent in a local criminal organization. The farm was subsequently raided and the members of the Archaeological Forensic Recovery Team were assigned to conduct a detailed and systematic search of the barn.

The interior of the barn was sectioned off into a number of stalls and corridors. Each section was treated as an individual search area and a systematic grid search was conducted for each section. The deceased was murdered with a .22 caliber firearm and the search involved looking for the weapon and ammunition. After four days, and nearing the end of the search, team members located three live .22 caliber rounds and two spent casings. Currently, there is one individual charged with the homicide, which is presently before the courts.

#### *Case 2*

In the spring of 1999, the body of a 27-year-old male was found in a wooded area in York Region. This individual had been reported as missing approximately one week beforehand. He had suffered two gunshots to the head. The first bullet had entered the right side of the face and the second entered the back of the head, on the right

side just above the hairline. The immediate theory is that the deceased had been murdered elsewhere and his body discarded a distance from the actual scene. The team members constructed a grid measuring 12 meters east/west and forty meters north to south. This was examined using a series of two metre square units.

After two days of processing the squares leading up to where the body had been located, two spent .45 caliber rounds or casings were located less than eight feet from where the body had been located. This confirmed that the find spot of the body was probably the actual scene of the murder. This result then freed members of the homicide unit to assist in the investigation and not look for another scene. The lead investigator from the Homicide Unit was not altogether convinced and continued to believe that the individual had been murdered elsewhere. The team members began to apply an archaeological style of search to the main nine squares surrounding the location where the body had been left. After troweling and screening the soil from these squares, a pristine .45 caliber round was located just over five inches below where the body had been located. The casings and the round were matched to a weapon and an arrest was made.

### Conclusions

The York Regional Police are proud of the work of the Archaeological Forensic Team and are pleased to be able to promote the effective use of police resources, training and expertise. The need to use modern technology and share resources is paramount. It is our hope that there will be an increase in the employment of archaeological techniques in the processing of crime scenes on the part of police agencies throughout Ontario and in the rest of Canada. Increasingly rigorous crime scene management and proper search methodologies will inevitably improve our ability to collect sound evidence that will lead to convictions. It also is important to note that the York Regional Police enjoys a close working relationship with members of the Office of the Chief Coroner, who are contacted in each case involving human remains. The forensic anthropologist

employed by the Coroner's Office has an important role in fighting crime and is relied upon heavily at the scenes of human remains recovery.

*Acknowledgments.* The York Regional Police acknowledges the tremendous support and co-

operation of Dr. Dean Knight, who assisted in the training and organization of the Archaeological Forensic Team and who has become a good friend to us over the years. We also gratefully thank Dr. and Mrs. Murray Nicolson for their ongoing friendship and support.

Staff Sergeant Gregory O. Olson  
York Regional Police  
Archaeological/Forensic Recovery Team  
17250 Yonge Street,  
Newmarket, Ontario, Canada L3Y 4W5  
179@police.york.on.ca