

The Use of Forensic Archaeology to Investigate Genocide

Karla Peterson

May, 2008

**A SENIOR PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF
BACHELOR OF SCIENCE IN ARCHAEOLOGICAL STUDIES
UNIVERSITY OF WISCONSIN-LA CROSSE**

ABSTRACT

The discipline of forensic archaeology is an essential component in the investigation of genocide. A forensic archaeologist is trained in grave recognition, excavation, and the identification of human remains. They are also able to assist in the lab with the investigation of skeletal remains and the recovered artifacts. Forensic archaeologists have been utilized in many genocide investigations, including in Rwanda, Argentina, and Bosnia. Along with other specialists, a forensic archaeologist is able to provide documentation of the genocide that took place and to quantify the number of deaths. They are able to assist both international courts and victims families in understanding exactly what took place to the victims. This paper is going to look at the background of the discipline of forensic archaeology. It will also investigate how forensic archaeology was used to investigate the genocide that took place in Rwanda in 1994.

INTRODUCTION

The twentieth century was marked by many instances of genocide, including those in Rwanda, Bosnia, Kosovo, and Cambodia. With the United Nation's approval of the Convention on Genocide on December 9, 1948, along with other human rights treaties, it was made easier to prosecute those who were responsible for the genocides. The Convention on Genocide defined genocide as an act committed to destroying a national, ethnic, religious, or racial group of people. This includes killing members of a group, causing physical or mental harm to a group, deliberately causing conditions that would harm members of a group, and forcefully transferring children of one group to another (Glazer 2004:689).

Anyone charged with genocide would be put on trial by either a national court or an international court (Jost 1998:989). To do this, an investigation of the genocide must be performed so sufficient evidence can be uncovered. The majority of material evidence of genocide is found in the graves of the victims. Typically the bodies have been interred for some time, so the remains are skeletalized (Steadman and Haglund 2005:23). Because of this, members of an investigation team must have knowledge of burials, which a forensic archaeologist would. The study of forensic archaeology is important because as the discipline evolves and becomes more advanced, the results it yields will also increase in quality. When bringing the perpetrators of genocide to trial, the evidence that is put forth is of the utmost importance, as it shows the violence that took place. It is also important to identify the victims, so that their families may know what happened.

The questions I address are how forensic archaeology was first used and how it was utilized in the 1994 genocide of Rwanda.

BACKGROUND

Forensic archaeologists and anthropologists were first utilized in the investigation of human rights violations in 1984. The American Association for the Advancement of Sciences (AAAS) sent an international delegation of forensic scientists to Argentina to assist with the exhumation and identification of the thousands of people who had “disappeared” under the junta military rule (Steadman and Haglund 2005:23). Between the years of 1976 and 1983 thousands of people were abducted by the military and taken to military detention camps. Here they were tortured and usually murdered. The bodies of these victims were often covertly disposed of, leaving their families with no idea as to where they were. Mothers and grandmothers of some of the disappeared formed a community activist group, the Grandmothers of the Plaza de Mayo, who aggressively pushed for the finding of those who were missing. In 1983, after a new government was established, a priority was set for locating those who had been ‘disappeared’ (Ferllini 2007:12). Excavations were performed, but without any forensic or archaeological help, and often the graves were destroyed and evidence was not secured. There was also typically no one to identify the dead and provide evidence in court (Schofield et al. 2002:119). It was because of all of this that outside help was called for, and the Argentine Forensic Anthropology Team was born.

The Argentine Forensic Anthropology Team (EAAF) was one legacy of this work. Under the guidance of Dr. Clyde Snow, the success of EAAF in the investigation of human rights violations sparked the development of a number of other anthropological teams that used the EAAF as their model (Steadman and Haglund 2005:23). Other forensic investigation teams have been sent to many areas around the world, including; Argentina, Bolivia, Brazil, Chile, Colombia, Czechoslovakia, El Salvador, Guatemala, Kenya, Iraq, Mexico, Panama, and South Korea, among many others (Kirschner and Hannibal 1994: 456).

FIELD PROCEDURES

A forensic archaeologist is helpful in the field. They can assist in both locating a grave and in the excavation of it. An archaeologist's attention to detail will ensure that little evidence is missed. There are a couple types of grave sites that are associated with genocides, including subsurface and surface ones. The surface sites are represented by a scattering of bones. This type of grave site can be seen in Rwanda and in Cambodia, as a result of the genocides there. In many cases the graves that are associated with genocides are mass graves. A mass grave is defined as having at least six individuals in it. The bodies are often indiscriminately tossed in the grave, so careful excavation techniques should be taken (Skinner 1987:268).

Grave Location

The first step is finding the grave. This can be done in a number of ways. One way is to interview people, as there may be witnesses to the execution, such as people who got away, or perpetrators that will tell where the grave site is located. This method may not provide a clear location of the grave though, as the witnesses may have blanked out certain aspects because of the stress of the day the bodies were buried. The witness may be taken to the alleged site so that investigators can be certain of his or her memory (Connor 2007:107-108). Once a general area has been given for possible graves, probes can be used. A tile probe, one of 1.5 meters long, with a blunt end and “t” shaped head, is the most effective probe to use. If the probe is inserted into the ground and a change in soil density is detected, this may indicate a burial. Also if the buried remains are decaying, the end of the probe may smell like decomposition (Connor 2007:114).

Another way to locate the grave is to use remote aerial sensing, which is done by means of heat sensitive infra-red camera equipment. This method can be utilized for the fact that a mass of bodies will give off heat for several days. Within a day or two of death, the bodies will start to heat up again slightly with the start of putrefaction. The number of days that this method can be utilized varies depending on the grave. Another method to locate the grave is by using equipment that can sense the methane gas that buried bodies emit (Skinner 1987:277). One other way is to look for mounds, or sunken earth, or altered vegetation, or altered soil, all which can indicated a grave site. When a grave is dug and refilled, a depression is often left. This results because it is difficult to completely refill the hole as it had been before, and as the body decays it takes up less space, and the soil sinks down. The vegetation above a grave is also altered in the

digging process. After the soil is disturbed, the first plants to grow back are weeds. An area that is covered in only weeds would be a good indication that it was recently dug. As a body decays, elements from it leech into the surrounding soils, so soil samples can also point to a grave site. Calcium, phosphorus, sodium, and zinc will leech into the soils, so higher concentrations of these elements could point to a grave (Connor 2007:109-111).

After a site is located, it needs to be clearly marked, such as with a global position system(GPS) (Connor 2007:108). Steps need to be made to evaluate the site. The grave edges need to be identified by clearing around the perimeter. A control trench should also be dug well away from the grave so that the natural soils can be identified and the stratigraphy can be looked at. After the perimeters of the grave are determined, the ground should be probed by using a steel probe to detect whether or not there are bodies, and where they concentrate (Cox and Hunter 2005:147). The site area should also be mapped and photographed. The map should show any buildings, roads, scale, topography, and vegetation (Haglund et al. 2001:64).

Spatial control of the site also has to be established. The forensic archaeologist should ensure that there is security at the site in the evening so that there is an unchallengeable chain of custody and so that evidence and remains are not contaminated (Menez 2005:313). This is especially important when the hope is to go to trial and bring the killers to justice. Contaminated evidence might mean the killers are not imprisoned for their part in the murders (Connor 2007:7).

Excavation

Once a grave site has been located and secured, excavation can take place. One of the first steps is to determine whether the burial is a primary or secondary burial. A primary burial would be the grave that the remains were first deposited in, while a secondary burial is where the remains were reburied after being dug up from the primary burial (Connor 2007:143).

As the excavation is taking place, all aspects need to be carefully recorded. This includes the logging of each item, logging the features, photographing the items, and note taking. These are things that an archaeologist would have experience with, seeing as these are also very important in all archaeological excavations, not just those of graves. In dealing with grave sites many aspects have to be recorded, including: the position of the body, the description of the burial pit, description of grave accessories, and the orientation of the body (Spennemann and Franke1995:8).

Samples have to be taken from the site, both soil and human remain samples. The removal of the skeletal remains may be difficult. Before the body can be removed from the grave steps have to be taken. First the distribution of the limbs of the body should be worked out for they may be contorted if thrown into the grave or bulldozed. The body should also be freed as much as possible from the soil and other bodies, which may prove difficult if bodies are intertwined. The body should be cleaned for a photograph and to reveal clothing and suspected injury. A recording sheet has to be filled out with information regarding the body and associated artifacts. After all of this the body can be removed (Cox and Hunter 2005:152).

LABORATORY PROCEDURES

Once skeletal remains and their corresponding artifacts have been recovered, they can be examined in a laboratory. Once again a forensic archaeologist's skills can be utilized. Forensic archaeology merges the knowledge of osteology and archaeology, so a forensic archaeologist is able to assist in determining age, sex, race, cause of death and other information about the skeletal remains (Menez 2005:312). Skeletal remains that are a result of genocide can also show signs of torture, so a knowledge of what signs of torture to look for is also helpful.

There are four types of physical evidence that can be obtained from human remains. These include: evidence of identity, evidence of when death occurred, evidence of premortem suffering, and cause, manner, and mode of death (Skinner 1987:269). In many cases of genocide, it may be difficult to use some physical evidence, such as dentition, to identify individuals. The reason for this is that in many third world countries where the majority of the genocides and crimes against humanity take place many people do not see dentists, thus having no dental records to use in identification (Skinner 1987:269).

In some genocides the victims were tortured before they were murdered. Torture is defined as the infliction of mental and/or physical suffering for the benefit of the perpetrator or the authority for which he or she acts. While looking at a grave, mental torture or other methods of torture that leave little effect on the body will be very difficult to impossible to demonstrate (Skinner 1987:269). Torture can be seen on the soft tissue

of the victims prior to severe decomposition of the body. This torture may be slight or so severe that it directly caused the victim's death. Even after the victim has undergone severe decomposition, the effects of torture may still be seen on the hard tissue, such as cut marks or fractures, and there may be objects that are associated with the bodies that can strongly suggest torture took place. After torture is identified, it needs to be decided if the torture is premortem, torture that took place some time before death, or perimortem, trauma that is associated with death. Some trauma to the bodies might also have happened after death, by means of the machinery used to uncover the grave. It should also be investigated as to whether the trauma seen on the hard tissue is from one episode or from repeated abuse. There may not be overt signs of torture on the hard tissues of the victim. However, a person who died from the acts of torture may not have had the evidence of torture tactics removed from in or around their bodies. The objects that caused the death of the individual may be found in the grave in association with the body. These objects can include; blindfolds, ligatures, rope, bags, steel bars, and other objects used to tie up or kill the individual (Skinner 1987:270-1).

There are many types of typical evidence that may be found at the site of torture and murder victims. The typical evidence that can be found on the soft tissue of the victim includes: bullet holes, stab wounds, facial bruises, cut-off ears, handcuff marks, crushed or mutilated genitals, bloated splits, burn scars, nails torn off, and insect damage. The typical evidence that can be found on the hard tissue of a victim includes: saw marks, unnecessarily drilled teeth, fractured hyoid, bed sore bone erosion, dismemberment cut marks, thumb shattered defense wound, and displacement due to mutilation (Skinner 1987:271).

CASE STUDY: RWANDA

Background

Rwanda is located in east-central Africa. It is home to two main groups of people, the “Hutus” and the “Tutsis”. Both groups share the same language, territory and religion, so it is hard to describe them as distinct ethnic groups (Jones 2006:234).

On April 6, 1994 a plane carrying Rwandan President Habyalimana was shot down; killing the president. The genocide that followed left more than 800,000 people dead, 4 million people internally displaced, and 2.3 million refugees. Millions of more people were left maimed, orphaned, traumatized, abused, and with severed limbs (Cohen 2007:1). The majority of the dead were Tutsis, though any other person who sympathized with the Tutsis also ran the risk of death. The stories that came out of Rwanda depict a viciously brutal one hundred days, the machete, the weapon of choice, left millions mutilated. Other methods of killing included with guns, grenades, axes, knives, beating to death, buried alive, or drowned. Many Tutsis sought refuge in churches and other public buildings, and it was at churches that some of the worst massacres took place (Totten et al. 1997:416). Hutus were ordered to kill their Tutsis neighbors, and if they did not, they faced death. Women killed their families, classmates turned against each other, school workers killed their students, and doctors and nurses murdered their patients (Ferllini 2007:9).

Kibuye Roman Catholic Church and Home Saint Jean in Kibuye, Rwanda, were located on one site of massacres from the genocide that was investigated using forensic

methods. They are located on a peninsula on Lake Kivu. Kibuye and Lake Kivu are located in the western portion of Rwanda, as can be noted in figure 1. Four gravesites were found here, of which only the biggest would be excavated. There were also human skeletons scattered across the ground.

According to witness testimony, somewhere between 4,000 and 6,000 people gathered at the Kibuye Catholic Church and the Home Saint Jean to try

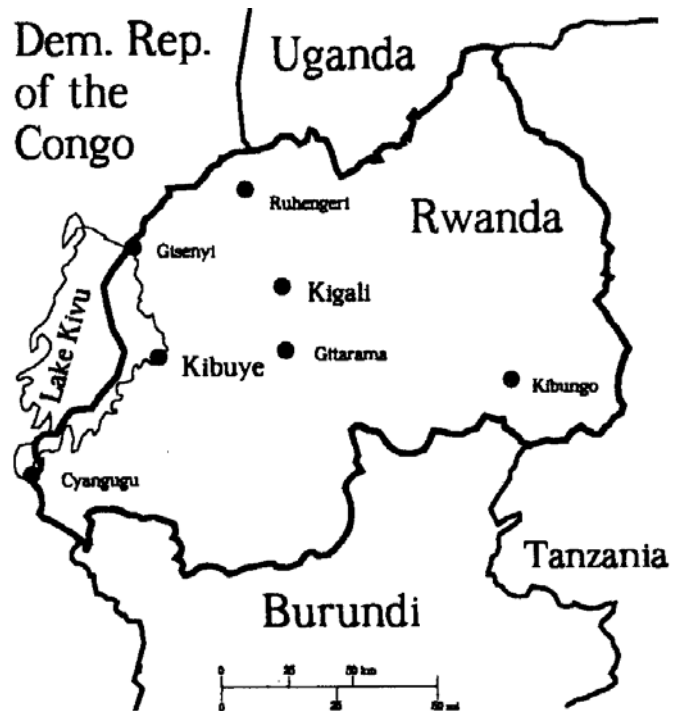


Figure 1: Map of Rwanda (Haglund et al. 2001)

and escape harm. On the 17th of April armed civilians, the police, and soldiers surrounded the buildings. They used grenades, guns, machetes, and various other weapons on those that had gathered inside. Anyone who survived the attack was sought out and killed in the following days (Haglund et al. 2001:60).

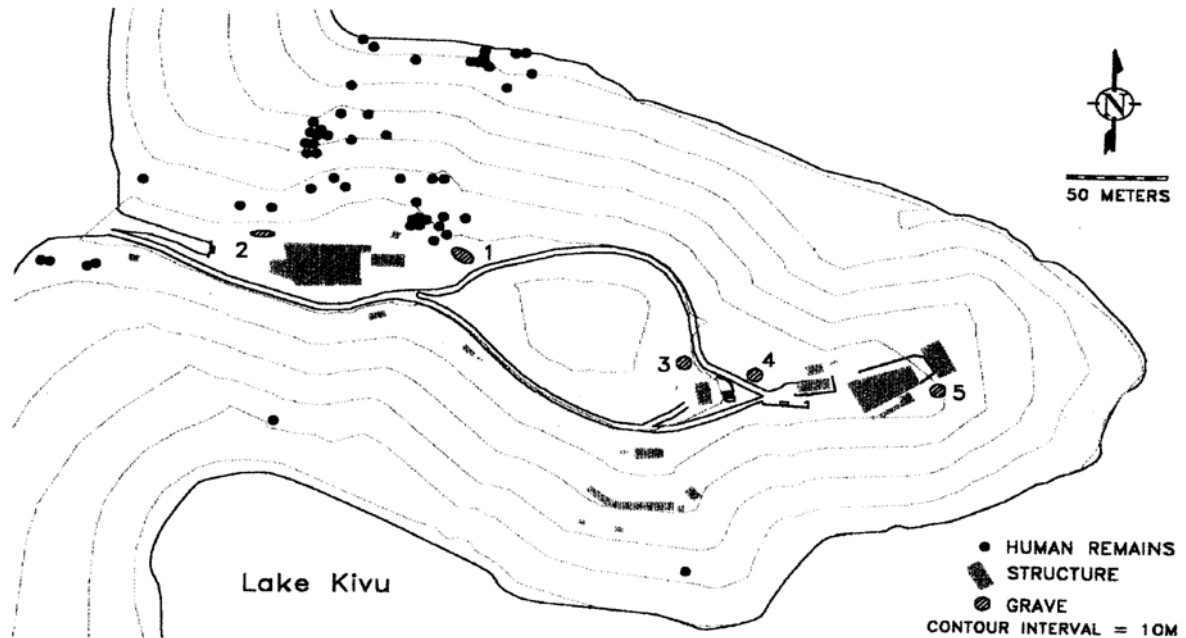


Figure 2: Map of the Kibuye Church site (Haglund et al. 2001)

Excavation

Investigators at the site were provided by the Physicians for Human Rights under the sponsorship of the International Criminal Tribunal for Rwanda (Haglund et al. 2001:57). A multidisciplinary team was used to investigate the Kibuye genocide site. Archaeologists were used for a number of tasks; including the preliminary site documentation, mapping, photographing, and excavation (Danieli 2002:261-2). Forensic physical anthropologists were brought in to excavate and analysis the remains. Forensic pathologists were also used to conduct autopsies on fleshed bodies (Koff 2004:42). Around fifteen to sixteen locals were also utilized as laborers. Their jobs included moving buckets of dirt and transporting the body bags to the church to be stored (Danieli 2002:262).

In September of 1995 Physicians for Human Rights conducted preliminary assessments of Grave 1. William Haglund oversaw this inquiry. Two trenches were

hand-excavated at right angles across the grave. The digging was stopped when remains were located. The exposed remains were documented, covered with plastic, and the trenches were refilled. The skeletal remains on the ground surface were also looked at to see what condition they were in. Any surface remains that were vulnerable were wrapped in plastic and then buried in a pit for storage (Haglund et al. 2001:59).

Figure 2 shows the Kibuye church site map. The excavation of the site was planned in three phases. The first phase took two weeks and consisted of documenting, mapping, and photographing the site. The second phase lasted two to three weeks and consisted of the recovery and investigation of the human remains scattered on the surface. The final phase included the excavation of one grave and the examination of the remains found (Haglund et al. 2001:59-60).

Security on the site was a big concern. To be valuable in court, it had to be shown that all remains and artifacts had been secure and not tampered with. To do this the site was protected by 24 hour security forces that the United Nations provided. Also, the site perimeter was established with wire. A visitor log was also used to record all visitors to the site (Haglund et al. 2001:61).

The first phase of the excavations began in December of 1995. Three archaeologists photographed and mapped the site (Danieli 2002:261-2). They began to document the site by walking transects over the area, placing flagging tape at human remains and possibly evidence scattered on the ground. A topographic map was then made, including on it the lake, the buildings, the roads, all surface remains and evidence, and the known grave sites. Photographs were taken of the site area, the outside and inside of the buildings, and the exposed human remains (Haglund et al. 2001:60).

The general location of the graves were known before going to the site, since it had been the people of Kibuye who had buried the dead after the massacre when they had returned to the site and found bodies littering the grounds (Danieli 2002:261). Locals had placed a roll of wire in a tree over Grave 2 to represent a memorial, and pointed this out to the archaeologists, who then dug test trenches to confirm this. The presence of human remains was verified by these trenches. Once the location of Grave 2 was known, the trenches were photographed, mapped, and backfilled, as the only objective had been to locate graves at this point, not excavate them (Haglund et al. 2001:61). Another location was also tested for a possible grave by use of hand trenching and a back hoe to remove the dirt. A water pipe was hit, and no remains were found under it, so the trenches were backfilled. Locals again told the archaeologists of a possible grave location, and a probe was used to test it. When the probe was brought up there was an odor that was consistent with decomposing human remains. Another area was probed where a priest had said a grave was located. Again the end of the probe carried the odor of decaying human remains. One last area was probed where it appeared remains were eroding out of the ground, but nothing was found (Haglund et al. 2001:61).

The second phase began in January of 1996 when six physical anthropologists joined the archaeologists at the site. The human remains on the ground surface were removed and examined. To do this, the vegetation had to be first removed, so that the extent of the surface scatter could be determined. After this, each set of remains was given a case number, mapped, and photographed. Any artifacts that were found with the remains were also analyzed. The remains were then collected and placed either in a body bag or a paper bag. The bags were then brought back to the laboratory area so that the

remains could be closely examined. If the anthropologist were able suggest the most probable cause of death, they would note that in their notes, and then it would later be confirmed by the pathologists (Haglund et al. 2001:60). In the second phase fifty-three skeletal assemblages were collected; which ranged from complete skeletons to single bones. Generally the remains were in approximate anatomical position, but some were scattered over the ground. The scattering of the remains was attributed to; scavenging animals, agricultural activity, local foot traffic, rain and gravity, and the incomplete burial by local residents (Haglund et al. 2001:60-1).

The third phase was the excavation of Grave 1. The first task of this phase was the assembly of a morgue on site. To do this electricity and fresh water had to be set up on site. A morgue located on site would ensure that the remains would not need to be transported. If the remains would have to be transported this would require extra security. Also an x-ray machine and other equipment had to be brought in. The church was set up for an examination area, while inflatable tents were erected for autopsies (Haglund et al. 2001:61).

The test trench that had been dug in September was opened up. At first it was believed that the remains in the trench represented the depth of the whole grave, along with the horizontal extent. It was later determined that the trench was in an area that had been created when a bulldozer was filling the grave after burial. The remains found had been redeposited in the fill on the top of the main grave. More attempts were made to locate the south and east edges of the grave, which was eventually found (Haglund et al. 2001:61-62).

A backhoe was used to clear away the surface layers above the grave, and then work began with shovels, picks, and trowels (Koff 2004:42). In the grave each worker worked in their own area independently. Once a body was unearthed, a body number was assigned. This was done by giving the skull the number, so that minimum number of individuals could be assessed. Next the body was photographed. Included in the photograph were a ruler, a north arrow, and a number label. Then the body and its position in the grave are electronically mapped. After all this is done, the body is placed in a body bag and taken up to the church (Koff 2004:48-9).

The first human remains found towards the top of the grave were skeletonized and mummified. Clothing and jewelry were found in association with some of the bodies (Koff 2004:44). As more of the grave is uncovered, the bodies began to be in a state of decomposition that the bodies were mostly intact. Also as the grave progressed downwards, the bodies began to become more and more compacted. Some bodies were also entangled, making it difficult to discern individual ones quickly (Koff 2004:51). Based on cranial bones uncovered, the minimum number of bodies buried in Grave 1 was 493 individuals (Haglund et al. 2001:62).

Identification of the bodies was difficult. Eleven surviving family members were able to identify their loved ones by jewelry or clothing found with the bodies. Six of the bodies had identification cards. The use of identification by DNA was difficult, as to do so samples would need to be taken from family members and only two families could be found. All together, only 17 bodies were identified (Danieli 2002:263).

The group of investigators had been contracted by the International Criminal Tribunal for Rwanda to find and examine evidence of genocide to be used in the trial of

Clément Kayishem (Barayabr et al. 2007:268). With the evidence, and witness testimony, he was found guilty of genocide, and sentenced to life in prison (International Criminal Tribunal for Rwanda 1999).

METHODOLOGY

My paper is based entirely on literature review. I received my books and articles from various libraries and online databases. I focused my research first on the discipline of forensic archaeology, then on how it is used specifically to investigate genocide. I also looked at the 1994 genocide in Rwanda as a case study to how forensic archaeology was used. The first step was reading through all the literature I had collected. I took notes while doing this. I then compiled all my notes into the relevant sections of the paper.

RESULTS

In the case of the Kibuye excavations, the role of a forensic archaeologist was not what I originally suspected. They assisted with the grave location, mapping, and excavation. With forensic pathologists on site, they did not assist as much in the identification and investigation of cause of death. The archaeologists and anthropologists only helped in the autopsy tent and with the bones when the pathologists had to leave. The identification of the human remains was difficult, which created a problem for families who wanted to bury their loved ones. The Kibuye excavations show that there are times that the identification of human remains will prove too difficult, owing to the

fact that a country after genocide may still be in upheaval; it may be difficult to find family members to assist in the identification. Also if it is a poorer country, there may be no dental records to compare to the human remains. Since the objective of the excavation had been to bring Clément Kayishem to justice in the international courts, the excavations were successful, as he was found guilty.

CONCLUSIONS

The use of forensic archaeology to help with the investigation of genocides can yield results above those results when it is not used. The systematic excavation of human remains with the attention to detail an archaeologist commands can ensure that it is easier to identify remains. Also, if the genocide is going to trial, it can ensure that the evidence brought forth is useable, and can put those who are responsible for the deaths in jail. The knowledge that an archaeologist brings of field and lab procedures can help the general public and international courts better understand what happened. Archaeologists are also able to work well as part of a multidisciplinary team; where everyone has their own tasks to perform. Forensic archaeology can contribute greatly in the investigations of genocides.

ACKNOWLEDGMENTS

I would like to thank Professor James Theler and Professor Christine Hippert for their valuable input.

REFERENCES CITED

- Baraybar, Jose Pablo, Valerie Brasey, and Andrew Zadel
2007 The Need for a Centralised and Humanitarian-based Approach to Missing Persons in Iraq: An Example from Kosovo. *The International Journal of Human Rights*. 11:265-274.
- Cohen, Jared
2007 *One Hundred Days of Silence*. Rowman and Littlefield Publishers Inc., Lanham, Maryland.
- Conner, Melisa A
2007 *Forensic Methods: Excavation for the Archaeologist and Investigator*. AltaMira Press, Lanham, Maryland.
- Cox, Margaret, John Hunter
2005 *Forensic Archaeology: Advances in Theory and Practice*. Routledge, London.
- Danieli, Yael (editor)
2002 *Sharing the Front Lines and the Back Hills*. Baywood Publishing Company, Amityville.
- Ferllini, Roxana (editor)
2007 *Forensic Archaeology and Human Rights Violations*. Charles C. Thomas Publisher, LTD., Springfield, Illinois.
- Glazer, Sarah
2004 Stopping Genocide. *CQ Researcher* 14:685-707.
- Haglund, William D., Melissa Connor and Douglas D. Scott
2001 The Archaeology of Contemporary Mass Graves. *Historical Archaeology*. 35(1): 57-69.
- International Criminal Tribunal for Rwanda
1999 Clément Kayishema Trial ICTR-95-1 Judgment and Sentence. Electronic document, <http://69.94.11.53/default.htm>, accessed April 19, 2008.
- Jones, Adam
2006 *Genocide: A Comprehensive Introduction*. Routledge, London.
- Jost, Kenneth
1998 Human Rights. *CQ Researcher* 8:977-999.

Kirschner, Robert and Kari Hannibal

1994 The Application of the Forensic Sciences to Human Rights Investigations. *Medicine and Law*. 13:451-460

Koff, Clea

2004 *The Bone Woman*. Random House, New York.

Menez, L.L

2005 The Place of a Forensic Archaeologist at a Crime Scene Involving a Buried Body. *Forensic Science International*. 152:311-315.

Schofield, John, William Gray Johnson, and Colleen M. Beck (editors)

2002 *Materiel Culture: The Archaeology of Twentieth Century Conflict*. Routledge, London.

Skinner, Mark

1987 Planning the Archaeological Recovery of Evidence from Recent Mass Graves. *Forensic Science International*. 34:267-287.

Spennemann, Dirk H.R. and Bernd Franke

1995 Archaeological Techniques for Exhumations: A Unique Data Source for Crime Scene Investigations. *Forensic Science International*. 74:5-15.

Steadman, Dawn W. and William D. Haglund

2005 The Scope of Anthropological Contributions to Human Rights Investigations. *Journal of Forensic Sciences*. 50: 23-30.

Totten, Samuel, William S. Parsons, and Israel W. Charny (editors)

1997 *Century of Genocide: Eyewitness Accounts and Critical Views*. Garland Publishing, Inc., New York.