Mass Graves and the Collection of Forensic Evidence: Genocide, War Crimes, and Crimes against Humanity

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Introduction

Individual responsibility is one of the cornerstones of international criminal law. Genocide, war crimes, or crimes against humanity, are all crimes for which an individual can be prosecuted. Legally, the concepts of war crimes and crimes against humanity had been established by the time the Nuremberg International Military Tribunal took up its work prosecuting Nazi war criminals in 1945 (Neier, 1998). The crime of genocide was first adopted by the United Nations General Assembly on December 9, 1948, in its Resolution 260 (III) (U.N.T.S., 1951). Articles II and III of the Convention on the Prevention and Punishment of the Crime of Genocide present a definition for genocide and which acts are punishable under this definition.

Since this time, war crimes and crimes against humanity have been further elaborated in the Geneva Conventions of 1949, which were expanded in 1977, adding among other things the phenomena of internal armed conflicts. These conventions are today generally accepted as customary international law (Neier, 1998).

Crimes against humanity encompass a broader spectrum than war crimes, which are restricted to crimes against combatants or nationals of a hostile power or an occupied territory. As Neier (1998:17) describes:

In contrast, the concept of crimes against humanity applies only to crimes committed on a large scale. A defendant charged with crimes against humanity may be convicted only if the prosecution establishes the connection between the particular crime and a broad pattern and practice of the commission of such crimes for reasons of political, ethnic, or religious persecution. Accordingly the evidentiary burden on prosecutors is far greater when they prosecute a defendant for crimes against humanity than when they must demonstrate to a court the commission of a war crime.

These factors also apply to the crime of genocide, where the “intent to destroy, in whole or in part, a national, ethnic, racial or religious group…” (U.N.T.S., 1951) has to be demonstrated in order to support the accusation of genocide. Such an accusation implies organization on a higher level, such as would be provided by a government.

The concept of a “broad pattern and practice of the commission of such crimes for reasons of political, ethnic, or religious persecution” (Neier, 1998:17) also applies to the documentation and collection of evidence of what is generally termed as human rights violations. To prove the violation of human rights, which generally are committed by a government against its citizens, a pattern of such practices has to be documented. Since civilians are often the ones who commit such crimes, establishing a direct link to a government order might be difficult.

Defining “Mass Graves”

Before discussing how mass graves can provide evidence for war crimes and/or genocide, the term should be defined (also see Haglund, this volume). Some authors define it by the number of individuals; for example, Skinner (1987) suggests that a mass grave must contain at least six individuals. Mant (1987) limits the term to sites where two or more bodies physically touch each other. These definitions depend on the technical and physical characteristics of the grave itself. A more holistic definition is needed, however, which includes
the anthropological context. It is this context that focuses and defines what evidence should be collected and which methods should be used to excavate. From this perspective, a mass grave can be defined as one that contains the remains of more than one victim who share some common trait connected with the cause and manner of death.

Using this definition emphasizes the importance of social context along with the forensic determination of manner of death. Some mass graves are the result of homicide; others, including many mass disasters, for example, are the result of an accident. Deaths from either may be examined forensically. In homicide-related mass graves the forensic investigation involves criminal wrongdoing. In some accident-related mass graves the forensic investigation may involve civil litigation, such as issues with insurance. Both are medicolegal, forensic types of scene investigation. In other, non-forensic, accident-related mass graves, the investigation may be purely archaeological; for example, the excavation of the volcano victims from Pompeii or the australopithecine “first family” group from the African Pliocene who may have been flash flood victims.

The putative manner of death and its social determinants form the core of the investigation and drive choices about the techniques and approaches to the excavation, including the types of evidence sought and methods for finding it. The forensic anthropologist, trained in linking cultural behavior, human biology, and archaeology, brings a holistic perspective to mass grave examination and analysis.

This chapter treats mass graves concerned with criminal or homicide-related mass murders due to war crimes or genocide. In these situations the victims share, or are perceived to share, some kind of common trait which justifies the homicides in the minds of the assassins. Therefore, a mass grave of this type is not so much defined by the number of individuals buried, but rather by the sharing of a common trait that led to their deaths.

Such criminal mass graves are frequently not secret. In Guatemala, for instance, mass graves of the 1980s military’s anti-insurgency campaign are referred to as clandestine graves, implying that their locations are secret or unknown. The secrecy, however, lies not in their locations but in the repression of any acts that might commemorate the event that led to the mass fatality. That is, survivors often know very well where their loved ones lie; they are just not allowed to acknowledge the event that led to the death by performing religious ceremonies or decorating the grave site. The trauma caused by this proscription enhances the terror under which survivors live. They are constantly reminded of their subjugation by the fact that they cannot mourn their dead and openly acknowledge the injustice done to them.

Because of ongoing repression, perpetrators initially do not need to cover up their deed by burying the evidence. In fact, mass graves are often created by others, non-perpetrators, doing the clean-up work, rather than trying to hide the evidence of a crime. The reasoning behind this lies in the justification the perpetrators feel they have in killing the victims: in other words, “Why hide what is right?” As time passes and circumstances change, efforts may then be made to hide evidence, but generally not at the time the crime is committed.

To summarize then, criminal mass graves contain the remains of a group of individuals who share some common trait that justified their assassinations in the eyes of the perpetrators. Additionally, mass graves often are not secret in the sense that knowledge about them exists, even though the exact geographical location might still need to be determined scientifically. This two-point definition has methodological consequences when investigating what is assumed to be such a grave.
From a taphonomic standpoint it introduces the human as an agent of perimortem and postmortem changes. That is, the process from the selection of the victims to their killings and interments becomes evident taphonomically when exhuming such a mass grave with a holistic anthropological approach. Forensic anthropology then has to go beyond the mere investigation of the grave itself and also has to include the context in which the grave was produced. The following discussion and presentation of case examples elaborate this point.

Witness Testimony — Cornerstone of Mass Grave Forensic Analysis

The cornerstone of mass grave forensic investigation is witness testimony. As described above, a mass grave is seldom a secret. All of the mass graves in the present study were located with witness information. The witnesses were generally survivors of the massacres themselves who had managed to get away, or people who had helped bury the remains.

An example of the importance of witnesses is the mass grave discovered by forensic anthropologist Clyde Snow at the Ovcara farm which contained the victims from the Vukovar Hospital. He found the grave after listening to the story of one of the intended victims who managed to jump off the truck that was taking him and others from a farm equipment building, where they had been taken after being removed from the Vukovar Hospital to what was later confirmed to be a mass gravesite. The grave was exhumed by a forensic team from Physicians for Human Rights who were under contract to the United Nations International Tribunal for the former Yugoslavia in 1996 (Stover and Peres, 1998).

Witness testimony frequently leads investigators to the grave location, and may provide collaborative evidence about the circumstances that led to the fatality incident. Witness testimony also may provide the basis for the accusation that the massacre was part of an organized effort to eradicate, in whole or in part, such a group of people. The corroboration (and speaking in the objective language of science, the negation) of such testimony becomes the goal of the exhumation.

Approaches to Mass Grave Location and Evidence Collection

The exhumation of human remains from a mass grave uses archaeological techniques to test witness testimony. Such efforts occur in 5 phases: (1) the grave location and survey; (2) excavation; (3) collection and documentation of evidence; (4) analysis; and (5) reporting. This chapter focuses particularly on phases 1 and 3, including approaches to grave location, locating circumstantial evidence, labeling, estimating minimum numbers, and associating artifacts.

Location of Mass Graves by Trenching

The first step lies in determining if a mass grave actually exists at the suggested location. Eyewitnesses very rarely remember the exact location of a grave. In the best case, the grave may have been marked by people who buried the victims, but often this has not happened. Trenching can be used to find a grave, define its boundaries, and confirm that it contains human remains. Use of a probe is another method utilized to confirm the presence of decomposing tissue. All other methods, such as ground penetrating radar or cadaver dogs
(trained to alert to the scent of buried, decomposing material) may indicate the presence of human remains, but they cannot rule out their absence. That is, one might use them, not get positive results, but still not be able to clear the site with a measurable degree of certainty.

Trenching is the most reliable method of locating a mass grave because it allows confirmation of the presence or absence of human remains in a specific area without a complete excavation. Trenches can be dug using either human or mechanical power, such as a backhoe in some cases. Traditional archaeologists may be reluctant to utilize untrained human power or a backhoe because of the risk of damaging evidence. However, due to limited resources and time, which are often extreme, this possibility has to be balanced against the risk of not undertaking or completing the excavation. The remedy is to document damage if it occurs. Postmortem trauma is usually distinguishable from perimortem trauma, particularly if the excavator notes that it occurred. The responsibility then lies with the forensic investigator to make sure that every step of the process of discovery is documented meticulously.

Example of Trenching: El Maguelar, Honduras

A good example of the use of trenching and untrained manual labor is the 1995 excavation at El Maguelar in Honduras. The investigation was carried out to determine whether two bodies found alongside the road leading to El Maguelar on April 18, 1988, were union leader Rolando Vindel and former vice president of the National Lottery, Gustavo Morales. Both reportedly had been kidnapped by the military on March 18, 1988 (Anon., 1995).

The discovery of the bodies in 1988 led to a semi-judicial inquiry with a minimal postmortem examination taking place beside the road where they were found. The judge decided to re-bury the bodies in the same location, a rather common practice in Honduras at the time.

Witness testimony pointed to the presence of this grave in an area of approximately $25 \times 50$ m (Figure 14.1). Since this constitutes an area of approximately half a football field, the task of trenching and clearing it of underbrush was considerable (Figures 14.2, 14.3, and 14.4). For this purpose the Special Human Rights Attorney of Honduras, Sonia
Figure 14.2 Beginning excavation utilizing trenching methods at El Maguelar, Honduras.

Figure 14.3 Completed excavation showing trenches at El Maguelar, Honduras.

Figure 14.4 Overview of banana grove including area 'e' trenches (covered with tarpulin).
Dubón was asked to hire 30 people. They were hired from the surrounding area; most of them were farmers and thus used to hard, physical labor.

Reliable eyewitnesses did not become available for 3 days, during which excavation had commenced. It was decided to trench across the entire area pointed out by several villagers who claimed to have witnessed the burial of the bodies under supervision of the then Justice of the Peace. Each trench was separated by no more than 1.5 m, assuming this would not likely exceed the length of the disturbed area of the grave. The trenches were parallel and dug to a depth of 1.2 m where water was encountered and digging was impossible. Over the next 3 days, 5 major trenches were dug 30 m long, with 1.5 m separation between them (Figure 14.1, Area A) along with four minor trenches 9 m long with 1.0 m separation (Figure 14.1, Area B).

Before taking the next step of perpendicular trenches, dug in a checkerboard fashion, and thus definitely ruling out or finding the grave in the berms between the original trenches, early in the morning of the fourth day one of the workers uncovered one of two crania in one of the trenches of Area C (Figure 14.1). This area had been pointed out by the man who had actually buried the remains, a witness that appeared on the third day the dig was in progress. The crania were located at a depth of 2.20 m. As it turned out, an access road had been built and approximately 1 m of fill had been placed over the gravesite. The grave was located, outlined, and the skeletal remains of two individuals were exhumed (E.A.F.G./P.H.R., 1995).

**Location of Mass Grave by Sniff Probe Method**

Metal probes that are equipped with a T-bar on one end, measuring approximately 0.6 cm in diameter and 1 m in length, can be inserted into the ground in an area where one suspects the presence of a grave. The differences in subsurface resistance (i.e., the probe can be inserted easier in one area than in another, indicating disturbed soil) or the presence of the odor of decomposing flesh on the end of the probe when it is withdrawn might indicate the presence of buried human remains (Killam, 1990). Trenches are still necessary in order to confirm or rule out burials.

**Example of Sniff Probe Burial Location Method: Pakracka Poljana, Croatia**

Probes were used during the forensic exhumation in 1993 of several bodies near the town of Pakracka Poljana, Croatia. The area to be investigated consisted of several hundred meters of grassy field along a road. A backhoe was utilized to dig several trenches at intervals along the road. Probing was an additional technique utilized in locating the graves.

The bodies were suspected to have been buried in this area between August, 1991 and March, 1992. Considering they had been buried for a little over a year, one could assume that soft tissue was still likely to be present. The probe proved very successful in this case. A total of 19 individuals (16 males and 3 females) were exhumed from 9 separate graves, which were located this way (Report, Physicians for Human Rights, 1994).

**Surface Evidence**

Although the perpetrators may have left the scene of the crime quite some time ago, the grave is probably the best snapshot of what happened. That moment in time is in some way preserved, because the bodies have been isolated from further human manipulation by burial.
Some evidence may be located outside of the grave. This evidence is circumstantial, i.e., not directly associated with that evidence encountered in the grave; however, its location and the pattern it presents in conjunction with supporting witness testimony might indicate its relationship to the contents of the grave, and be critical to the reconstruction of events.

Example of Surface Evidence Collection: Koreme, Iraq

A good example of the pattern of evidence located outside of the grave proving to substantiate witness testimony is the incident investigated by the forensic team organized by Physicians for Human Rights and Human Rights Watch in 1992 at the village of Koreme in Kurdistan, northern Iraq. It involved the exhumation of two mass graves containing the skeletal remains of 27 men executed by the Iraqi military on August 28, 1988. Careful documentation and analysis of the spatial distribution of cartridge cases collected near the alleged execution site as well as an analysis of the firing pin patterns on each cartridge brass allowed reconstruction of the minimum number of weapons used, minimum number of shots fired, and the spatial relationship between the shooters and the victims (Scott and Connor, 1997). These details could then be compared with witness testimony.

Approaches to Documentation

Each grave is unique, and flexibility is essential to approaching an exhumation. Unlike a historical archaeological excavation, time and resources are usually more limited, having direct consequences as to which techniques are selected. In this way forensic mass grave excavation bears a strong resemblance to survey archaeology.

Features of the grave itself influence the techniques utilized to exhume them, particularly the extent of decomposition. It is important to ascertain the progress of disarticulation, as well as the preservation of outside coverings or clothing that may hold skeletal elements together. Preservation of soft tissue translates into the state of articulation of the remains, and, in turn, how recovery units need to be defined; for example, soft tissue preservation limits commingling.

Labeling, Inventory, and Determining Minimum Number of Individuals

The archaeological identification of remains and artifacts, as well as their labeling and inventory, are the first steps in determining what a mass grave contains. They are essential in determining the minimum number of individuals (MNI) present, especially if they are anatomically disassociated or commingled.

What the excavation team recovers, labels, and inventories ends up being analyzed as a unit by the team that carries out the postmortem examinations. The postmortem examination team frequently must revise the initial findings once the autopsy has been completed. A numbering system is needed which is flexible enough to allow revisions to be made without major complications, i.e., without having to relabel remains, containers, documentary photographs, and evidence lists.

With this in mind, the following labeling system seems to be the most appropriate. Each item bears a label including (1) a short acronym for the site, such as RN for Río Negro; (2) a roman numeral for each mass grave at the site; and (3) an Arabic number for each anatomically articulated or associated set of remains.
Anatomically disassociated or partially associated remains present a problem. Although the emphasis at the excavation site is on keeping anatomic assemblages together, the set-of-remains number may not be correct in the final analysis. It is an arbitrary label based on the excavator’s decision of association in the field.

Anatomically disassociated remains are numbered individually, but in such a way as to convey associative information. If the site is divided into arbitrary levels and quadrants, the disassociated skeletal remains can be labeled according to the quadrant and level from which they were extracted. This is more efficient than numbering each bone and then trying to document associations through photography alone. Individual element numbering, if necessary, can be reinstated later under laboratory conditions. For example, see Figure 14.5. This photograph of Grave III located close to the village of Chichupac in Guatemala shows one of the disturbed graves. It is apparent from the long bone assemblages that some type of re-depositing has occurred, something corroborated by the owner of the cornfield in which the graves were located. Utilizing the principle of numbering crania first, the skeletal assemblages and artifacts were numbered according to the crania they were closest to or according to the sector in which they were found.

It is recommended that any artifacts encountered in association with labeled remains be kept with them until the postmortem examination. Labeling of artifacts and remains must be done in the grave, prior to the actual exhumation. This is documented thoroughly by photographs and, if time permits, sketching and mapping.

The labeling has to be backed by an inventory. An inventory form is created for each label given, and these are filled out as the remains are extracted from the grave, requiring a preliminary determination of what is present. The remains then should be individually packaged and the bag marked with the appropriate label. At the end of an exhumation, one then should have a set of inventory forms to match each individual bag.

The inventory forms can be revised by the team carrying out the postmortem examinations, initially serving to confirm that a labeled bag contains no less than what it says it does. This is important for the exhumation team to keep in mind. Analysis of what is
found is to be kept to a minimum by them, and items labeled only when reasonably sure of the finding. If a bag contains less than what it says it should, by virtue of a graveside identification error, it might suggest to the examination team or to the court that evidence was lost.

Obviously, a bag might very well contain more than what was initially inventoried by the exhumation team. This might simply happen due to breakage during transport, or because remains were not clearly visible at extraction.

An example of discrepancies between the exhumation team inventory and the examination team analysis is the many, partially decomposed and disassociated infant remains recovered by the forensic team for the International Criminal Tribunal for Rwanda at the mass grave in Kibuye, Rwanda, in 1996. They were so small, often enveloped in the mother’s clothing, and encased in adipocere that often they were packaged with the remains of an adult without being inventoried. It was not realized until the postmortem examination.

The inventory form should not only provide insurance that no mistakes were made during the exhumation process, but also allow the possibility of revision by the postmortem team. Revision presents two possibilities: (1) there is less content in the bag than documented on the inventory form, or (2) there is more content in the bag than documented on the inventory form. In the first case, an investigation has to be launched to determine what error occurred along the line and then rectify and document it according to what is found. The second possibility often requires a change in labeling in order to adjust the inventory. If an extra set of remains, undocumented in the initial inventory is found, this can simply be corrected by creating a second identifier, based on the original one, such as adding a letter to the end of the original one and adding another inventory form to the records.

**Minimum Number of Individuals: Examples from Plan de Sanchez, Guatemala, and Kibuye, Rwanda**

The case of several mass graves in the village of Plan de Sanchez, Guatemala, investigated by the Guatemalan Forensic Anthropology Team/Equipo de Antropología Forense de Guatemala (E.A.F.G.) in 1994 demonstrates the importance of inventory keeping. Testimonial accounts stated that on Sunday, June 18, 1982, the military came to the small village of Plan de Sanchez where they blocked off the road. All the people who were returning from the market in the town of Rabinal, some 9 km away, were detained in a house alongside the road. Later in the day the military opened fire on the house and several grenade detonations were heard. Shots were also heard from 5:00 to 9:00 p.m., at which point the house with the bodies in it was set on fire.

The next day surviving family members put the fire out. Permission was asked of the military to bury the bodies. The charred remains were buried in several shallow graves. Several women who had been raped and then shot, but had not been burned, were buried separately. Based on interviews with surviving family members who were willing to come forward, at least 99 people lost their lives during this incident (E.A.F.G., 1995a).

At the time of exhumation, the remains ranged from complete to partial skeletons, commingled, charred, and fragmented. In order to determine the minimum number of individuals, an inventory was kept of all long bones, maxillae, and mandibles. Once the remains reached the laboratory for analysis, it became clear that a simple counting of bones was not sufficient. Many bones encountered were fragmented. This meant that potentially one might count the distal fragment and proximal fragment of the same right femur as
two individuals. Hence, each long bone was divided into three units, each representing 33% of the bone. Over 50% of that third had to be present in order to be counted. A femoral head or a distal epiphysis of a long bone by itself was not counted, because most of the bone itself was missing and possibly could turn up somewhere else. The cranial vault, maxilla, and mandible were divided into the left and right halves, and the innominate was divided into its three components: left and right ilium, ischium, and pubis.

At Plan de Sanchez the element recorded with the highest frequency was the proximal third of the right femur, which appeared 84 times, suggesting a minimum of 84 people exhumed (E.A.F.G., 1995a).

This example demonstrates that an inventory starts out in the grave with the archaeological team and then is revised during the postmortem examination. The inventory depends very much on the condition of the remains. In the case of Plan de Sanchez, due to the burning, it was necessary to divide individual bones into separate analytical units in order to avoid duplication.

When recognition and identification of individual body parts or bones during exhumation are difficult due to commingling, partial decomposition, and presence of adipocere tissue, such as it was in the case in the mass grave in Kibuye, Rwanda, the inventory becomes even less precise. In this situation, we reverted to counting what appeared to be the most easily recognized feature (the cranium) to determine the minimum number exhumed.

Identification Issues: Examples from Chichupac, Guatemala, and Koreme, Iraq

Artifacts such as clothing, jewelry, and identification cards potentially shed light upon the identity of the human remains with which they are found. As indicated above, it is best to package these along with the associated human remains. At a later point their documentation can be completed through photography and inventory. They can be itemized separately from the remains by adding a distinguishing letter or number to the original identifier. For example, artifacts associated with remains XYZ-II-1, could be labeled as A-XYZ-II-1-a, b, c, etc. It must be underscored that just because an identifying artifact is found associated with a particular individual’s remains, it does not necessarily mean it belongs to that individual or confirms their identity.

An example that points this out occurred in the case of the three mass graves exhumed in the small town of Chichupac in Guatemala by the Guatemalan Forensic Anthropology Team in 1993. During exhumations in Guatemala, it is customary for family members to watch the work in progress. Sometimes a family member might recognize a piece of clothing or other identifying artifact that is believed to belong to the loved one. In Chichupac this happened on several occasions. On one of these, the remains of CH-II-5 were identified by a family member as Francisco de Paz on the basis of clothing. As it turned out, Francisco was reported to be left-handed and a nonsmoker. Skeleton CH-II-5, however, appeared to be a right-handed individual with sufficient stains on his teeth to assume that he was a smoker. The identification based on the artifact was thus incorrect (E.A.F.G., 1993). There are several possible reasons for this mistake. One is that the family member’s memory failed her as to the identification of clothing articles that had spent 11 years in the ground. Another might be that the clothing at some point was switched from one victim to another. This illustrates that associated artifacts are only circumstantial evidence.
For identification in a population lacking dental records, radiographs, and capacity for DNA testing, it is necessary that a pattern be found which elevates circumstantial evidence to the level of compelling circumstantial evidence.

Group patterns may also offer compelling evidence useful for forensic identification. The clothing worn by all 27 victims exhumed from the mass graves at Koreme were the traditional shirt and pants worn by Kurdish men (Middle East Watch and Physicians for Human Rights, 1993), distinguishing them as a distinct ethnic, religious, and in this case possibly even distinct political group from their executioners. This pattern can be considered compelling circumstantial evidence, even if no identifications of the remains themselves were made.

Mass Graves and Taphonomic Evidence: Illustration from Chichupac, Guatemala

Taphonomic evidence documented in the excavation and analysis of mass graves can be critical in the corroboration of witness testimony. This can be particularly useful in cases with a complex taphonomic history, including a sequence of events.

The massacre at Chichupac, Guatemala is an excellent example. On January 8, 1982, 32 men were pointed out to the military as subversives by 15 men of a neighboring village. They were then detained and taken to the small town hall where they were tortured. Later on they were led up a hill, executed, and buried in two shallow graves (E.A.F.G., 1993). Witness testimony reported that severed fingers, noses, and ears were found later by the villagers in the town hall.

One of the surviving widows reported that she and several other women went to the graves a week to 10 days later. Due to their shallow burial, many of the bodies were exposed and the smell was described as being unbearable. They decided to dig another pit into which they dragged several bodies with the help of their hoes.

Eleven years later, in May of 1993, the E.A.F.G. was asked to exhume the remains. At the time of the incident the area was forested. During the intervening years the hill had been deforested by slash and burn agriculture; the land had been under cultivation for 5 years. This traditional practice disturbs the top layer to a depth of about 1 m.

Trenching revealed the location of three graves on the sloping hillside. These were designated Sites I, II, and III (see Table 14.1). Numerous fragments of clothing were recovered from the surface throughout the cultivated area, suggesting that farming had disturbed the graves.

Excavation of the top 90 cm revealed that all three sites contained some partial skeletal remains in approximate anatomical order, some disassociated but arbitrarily grouped elements, and clothing. Between 90 and 125 cm in Site II 10 skeletons in anatomical order were also found, although in unnatural positions, with scavenger damage and one arm missing postmortem. Also found at this level were artifacts and personal effects such as machetes, carrying bags, wallets, and documents. Sites I and III had no remains below about 90 cm.

The three sites were arranged on a hillside, with Sites I and III about 1.5 m above Site II. Site I was disturbed by the cultivation in progress, which in Guatemala is done using large hoes with which the soil is aired and made to form mounds in which the corn is
Table 14.1 Comparison of three sites at Chichupac, Guatemala

<table>
<thead>
<tr>
<th>Site</th>
<th>Site II (Secondary)</th>
<th>Site III</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface</td>
<td>Clothing fragments</td>
<td>Clothing fragments</td>
</tr>
<tr>
<td>Upper excavated layer</td>
<td>1. Partial skeletal remains of three individuals in approx. anatomical order</td>
<td>1. Partial skeletal remains in approx. anatomical order</td>
</tr>
<tr>
<td></td>
<td>2. Disassociated remains but belonging to the anatomically arranged individuals found in arbitrary groups, including few small bones</td>
<td>2. Disassociated remains found in arbitrary groups</td>
</tr>
<tr>
<td></td>
<td>3. Clothing</td>
<td>3. Clothing</td>
</tr>
<tr>
<td></td>
<td>4. Condition: some burned, most unburned</td>
<td></td>
</tr>
<tr>
<td>Below 90 cm</td>
<td>1. Ten skeletons in anatomical position, but some flexions not possible in life; one missing left arm postmortem; several with scavenger damage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Artifacts and personal effects</td>
<td></td>
</tr>
<tr>
<td>Burial pit</td>
<td>2.70 x 1.35 cm</td>
<td>Approx. 1.30 x 1.80 m</td>
</tr>
<tr>
<td>Disturbance by cultivation in progress</td>
<td>Yes</td>
<td>No</td>
</tr>
</tbody>
</table>

planted. The mounds are occasionally reformed and secured to provide the necessary support for the corn to grow.

The condition of the remains suggested many bodies must have been interred superficially, i.e., within the top 90 cm, susceptible to damage by the agricultural processes. Even after the reburial and grave reinforcement by the widows, cultivation of the land had caused the fragmentation and disassociation of the remains and clothing found in all three sites. Several of the skeletal elements were found to have been burned, leading to the conclusion that they were on the surface when the land was made agriculturally useable by the slash and burn method used by Guatemalan peasants. In addition, the arbitrary groupings of mainly larger bones suggested they had been exposed during agriculture, recollected by the peasants (who may have easily missed or ignored the smaller bones), and reburied in the general area known to contain the original graves.

The condition of the remains in the deeper layer of Site II suggests they had minimal disturbance, but that burial had taken place after decomposition had loosened the articulations. The remains were in anatomical association, but in positions impossible prior to
decomposition. Evidence of scavenger damage, including a missing left arm, supports the interpretation that this burial took place following a period of decomposition and exposure, especially in view of the fact that the body with the missing arm also was the one lowest in the grave, i.e., it must have been one of the first ones to be redeposited into Site II. It, therefore, must have come from a top layer of either Site I or Site III and, thus, was the one most exposed to any scavenging.

All of these factors combine to corroborate the witness testimony of initial shallow burial, exposure, and reburial of some of the partially decomposing remains 7 to 10 days later. This was followed by agricultural disturbance and reburial of the (by then) skeletonized remains. Site III presented the highest number of long bones grouped in arbitrary assemblages, along with a total of 14 crania found concentrated in two areas. It is probable that the peasants used this site more often than the one in which they would rebury remains they found on the surface while tilling the soil.

Another detail reported in a witness statement was the aftermath of torture in the town hall. Evidence of amputation of fingers was observed in skeletons CH-II-4 and CH-II-9, including perimortem fractures of several metacarpals and absence of phalanges. In the latter skeleton, several cut marks were observed on the fourth right metacarpal (E.A.F.G., 1993).

The taphonomic processes documented at Chichupac were essential in providing compelling circumstantial evidence to corroborate witness testimony. It also suggested that the farmer using the field did not attempt to erase the evidence, but made an effort to consolidate it.

Conclusions

The objective of exhuming mass graves is to provide evidence of war crimes, crimes against humanity, and genocide. The intent to destroy a particular group has to be demonstrated in order to prosecute these cases. Forensic investigation focuses on collecting data to reconstruct events in question.

The examples presented here show that archaeological techniques and taphonomic interpretation can provide evidence of such patterns. Witness testimony often provides critical information for grave location, identification of victims, and interpretation of perimortem trauma and postmortem sequences. Likewise, the forensic taphonomy analysis can corroborate witness reports. Data about time since death, scavenger modification of remains, disarticulation, and postmortem sequences can play a critical role in building a case.

Forensic anthropology and taphonomy of mass graves in this context are more than technical and isolated approaches to evidence collection and remains recovery. Anthropology in all of its facets, including law, cultural patterns, biological diversity, and archaeological interpretation of cultural patterns can and should be brought to bear in the investigation of genocide, war crimes, crimes against humanity, and human rights violations. The combination of taphonomic and anthropological expertise in the recovery and examination of forensic evidence provides the most effective approach.
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