33 Evaluating the Role of Forensic Anthropologists in Human Rights Investigations of Missing Persons

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33.1 Introduction

The violation of human rights perpetrated by the State against their respective civilian populations occurred principally at the turn of the twentieth century, commencing with the Armenian genocide in 1915, which claimed over a million victims at the hands of the Ottoman Empire. This display of violence towards non-armed civilians was followed by the Holocaust during which the Third Reich directed mass killings against the Jews and other targeted groups within Europe in the 1930s and 1940s, claiming millions of lives. Subsequent to these two dominant events in the history of humanity, the violence did not subside, and for the next five decades, genocides[1], war crimes[2] and crimes against humanity[3] accompanied by acts such as torture, rape, forced disappearances through illegal detention and extrajudicial killings have taken place against religious, racial, ethnic or national groups. Most often these have been associated with civil wars and international conflicts.

Such brutal actions have elevated the death toll to unprecedented levels, making the twentieth century the most violent period in recent human history. Furthermore, towards the closure of the twentieth century, other factors were brought into play that affected the human rights of civilians. The steady process of globalisation has brought with it radical changes with respect to governmental policies, a shift which has affected in particular disadvantaged socio-economic sectors among nations across the board. Consequentially, circumstances concerning modern human slavery, human trafficking, the drug trade and femicide have been more predominant in certain parts of the world; these circumstances are often interrelated and occur

[1]Genocide means the destruction in whole or in part of a national, ethnic, racial or religious group through a series of actions that do not necessarily include death, such as the transfer of children from their original group to another, or causing serious mental harm to the targeted group, and which does not necessarily have to take place in times of armed conflict.

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[2]War crimes are those that go against international law and can include unarmed civilians.

[3]Crimes against humanity are those committed as part of a widespread or systematic attack directed against unarmed civilians, with clear knowledge of the attack. Like genocide it does not need to occur in times of armed conflict.

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simultaneously within a given national territory, or across international borders.

This current state of affairs has left in its wake mass graves and other contexts whereby bodies have been disposed of without any identity assigned. Under such circumstances, a multidisciplinary forensic intervention is ideal, not only to identify the bodies when possible, but also to process the scenes in an appropriate manner in order to reconstruct the respective scenarios. This provides the opportunity to more accurately comprehend the events that took place and obtain evidence that might ensure justice with respect to the abuse sustained by the victims. Yet, not all circumstances permit such results to be achieved successfully, as will be discussed further in this chapter.

Of particular interest here are the victims whose bodies require identification due to the condition in which they are discovered: decomposed, mutilated, burnt, skeletonised or, in certain circumstances, a combination of these. Under such conditions, special steps are required in order to achieve positive identifications through the efforts of a multidisciplinary team. In this regard, forensic anthropology plays a vital role, as the discipline deals specifically with the identification of human remains based on bone analysis, enabling identifications being made based upon the sex, age, stature, biological affinity (ancestry), and individualising traits of the victims found on key bone structures (Buikstra & Ubelaker, 1994; Byers, 2008). This permits a presumptive identification to be made, which may later become positively confirmed through various methods.

In the field, the forensic anthropologist is often required to assist when human remains are discovered commingled (Fig. 33.1) or dismembered, and where sorting out each individual body for the purposes of proper lifting and bagging presents a notable degree of difficulty. How many bodies are present? What is the proper mode of lifting and bagging for transport according to the condition of each body? In addition, there are circumstances in which the identification of human versus animal bones is required (Ferllini & Croft, 2009) before any proceeding can be made with respect to the rescue process.

Fig. 33.1 Commingled and incomplete human remains within a mass grave; a product of the Armenian genocide, Ras Al-Ain, Syria (Copyright: authors own image)

During the last 30 years, forensic anthropology has consolidated itself as an indispensable discipline in the investigation of human rights abuses and the identification of victims in order that they might be repatriated in many instances, and returned to their respective families.

In this chapter, the importance of a proper rescue of the victims, the use of population-specific standards and the crossmatching of information obtained via ante-mortem records and databases (in relation to the work conducted in mortuary), in order to arrive at a proper identification, is highlighted. Furthermore, emphasis is given to the adult body, as subadults require a more detailed process in order to accurately identify the individuals, a process which cannot be covered in the content of this chapter. Additionally, the geographical areas addressed specifically here do reflect the author's experience in Rwanda, Syria, Spain, Kosovo and Central America.

33.2 Background

Forensic anthropology as a discipline has been aiding law enforcement agencies since the 1940s, and gained a progressively stronger foothold through the years, especially after its intervention

in identifying the dead from the Korean War (1950–1953) and the Vietnam War (1965–1975), where the discipline fine-tuned many techniques, thereby developing new standards for human identification (Ferllini, 2014a; Stewart, 1979). By the 1990s, in the United States, forensic anthropology had become recognised within medico-legal investigations as a discipline that could offer indispensable value at crime scenes and at the mortuary.

The number of cases in which forensic anthropologists were involved increased through the years, embracing a wide variety of circumstances where identifications were required within ever more complex situations (Reichs, 1992). Although in the 1990s the application of DNA fingerprinting for positive identification was already in practice, its application was not as prevalent as a matter of course as it is today (Alexander, 2014).

In particular, the incursion of forensic anthropology into human rights investigations came about formally during the mid-1980s, after nearly 30,000 politically persecuted Argentineans had succumbed to forced disappearances, were tortured in the hundreds of detention centres that were set up by the military junta, and suffered extrajudicial executions during a period known as the *Dirty War*, after a military coup in 1976, and which lasted until 1983. The body disposal varied, including clandestine burials in town and city cemeteries (Joyce & Stover, 1991). When democracy was established once again, an investigation into the disappearances ensued; yet the process was not conducted within a proper scientific context. Resultantly, the National Commission on the Disappearance of Persons (CONADEP) was created, and assistance from the American Association for the Advancement of Science (AAAS) was requested. The task required the search and location of the disappeared, also referred to as NN (no name). In 1984, American forensic scientists, including renowned forensic anthropologist Clyde Snow (1928–2014), became involved; in due course, Argentinean archaeologists, anthropologists and medical students were trained in the search, rescue and identification process, resulting in the creation of the Argentine Forensic Anthropology Team (EAAF) (Booth Walling & Waltz, 2010; Joyce & Stover, 1991; Stover & Ryan, 2001). A contributing factor which supported the successful results during the work in Argentina was the utilisation of mitochondrial DNA (mtDNA) in order to identify the victims, since it has a better chance of being recovered from small or degraded bone, dental or other tissue samples than from nuclear DNA; furthermore, mtDNA is inherited only from the mother, meaning that any maternal relative can be used as potential reference to verify or reject a positive identification.

After the successful intervention in Argentina, the discipline took a strong hold in human rights investigations, through interventions into the disappearances from civil wars, dictatorships and genocides, as in Guatemala, El Salvador, Honduras, Colombia, Peru, the Former Yugoslavia, Spain, Cyprus, Sudan, Rwanda, Sierra Leone, East Timor, Iraq and Afghanistan, among many other countries (Ferllini, 2007; Juhl & Olsen, 2006; Mikellide, 2014). The results obtained, in most instances, helped to heal societies, and more specifically, family members, by enabling the receipt of the bodies of their loved ones for proper burial, a process which can permit a degree of empowerment. Furthermore, truth commissions benefit from such investigations, and tribunals can access the evidence gathered for the prosecution of the alleged perpetrators, and with certain circumstances, the affected survivors can enjoy transitional justice.

33.3 Contexts, Interventions and Challenges

There are various situations in which the investigation of deaths caused as a result of human rights violations is required and in which forensic anthropologists can play a key role within multidisciplinary teams. Within the scope of this chapter, a series of chosen contexts are presented along with the challenges faced.

Although the incursion of the discipline in this area of investigation has existed for 30 years, as Rosenblatt (2010) points out, there remains the

argument of whether the dead have human rights, what these rights might be, and how the concept operates within the context of forensic investigations. The nature of this publication does not permit the rationalisation of different postures taken with respect to this subject; however, the focus here (as addressed in part by Rosenblatt's article, and the author's personal experience and position) is towards the dignity of the bodies to be rescued, for them to be afforded a dignified burial, and through these steps, the families' rights are met by knowing where their loved ones are.

In many circumstances, particularly within the context of violations brought about by governmental forces, including branches of the military, families can gain retribution via the process of transitional justice (Parent, 2010). However, this is not always possible due to barriers being raised by governments that do not wish to dig into the past. One such example is the case of Spain and the violations that occurred there during the 40 years of the Franco regime (1936–1939), which claimed hundreds of thousands of victims through torture and extrajudicial executions (Association for the Recuperation of Historical Memory, 2014; Ferllini, 2014b).

33.3.1 Genocides, War Crimes and Crimes Against Humanity

The identification process in human rights investigations—where the number of victims can run into the thousands, not to mention potential millions as a consequence of genocides, war crimes and crimes against humanity—must be specifically designed to manage the magnitude of the events' consequences in the way of human lives.

Within these contexts, the required investigations can be conducted by multinational teams put together by the United Nations (UN), through international non-governmental organizations (NGOs), or conducted by national organised forensic teams such as the Argentine Forensic Anthropology Team (EAAF), the Guatemalan Forensic Anthropology Foundation (FAFG) or the Peruvian Forensic Anthropology Team (Equipo Argentino de Antropología Forense, 2014; Equipo Peruano de Antropología Forense, 2014; Fundación de Antropología Forense de Guatemala, 2014).

Independent of who conducts the investigations, the magnitude of the work required will dictate the number of personnel needed on the ground, although in some instances, due to a variety of circumstances, such as poor organisation or the lack of an adequate budget, the number might be reduced. This can result in the quality and speediness of the work being negatively affected. The work itself normally revolves around the location and retrieval of the victims, followed by post-mortem examinations and identification of each individual, through the involvement of social anthropologists, and forensic archaeologists, anthropologists, pathologists, radiologists, odontologists and DNA specialists, among others.

The initial steps, when possible, should include an investigation based on archival records, or oral accounts coming from survivors and other witnesses, the latter often obtained by social anthropologists. These can provide pertinent information as to who was detained or executed, where the mass killings took place, and where the bodies were disposed of, for example (Sandford, 2003). In circumstances where a considerable amount of time has passed, many of those who provide information do so based on oral accounts that have been transmitted from generation to generation (Ferllini, 2014b). Based on the author's experience, these type of testimonies can still be of enormous help.

Because the disposal of the bodies is accomplished through a variety of different means such as within mass graves, wells, caves, other structures, or simply dumped on the surface where the victims perished (Juhl & Olsen, 2006; Pećina, 2006; Simmons, 2002, 2007; Skinner, 2007), as stated earlier, it is ideal to have the forensic anthropologist in the field. This will aid in discerning individual bodies under difficult circumstances, especially when they are skeletonised and commingled. Additionally, it may be required, as a matter of control, to conduct a brief description of each skeletonised body by

determining sex, age and any observable individualising traits that might be present, based on the bones available for each individual, which can be cross-checked later at mortuary against the case number and mortuary results (Ferllini, 1999). In some instances, when the perpetrators actually bury their victims in public cemeteries, they sometimes retain records of the burials, as was the case in Argentina (Snow & Bihurriet, 1992), an example of the arrogance held by those who think of their actions as their prerogative. Nonetheless this record keeping aids in the identification process.

Within the context of genocide, the identification of each and every individual, although ideal, is not always possible[4]. In the case of the Armenian genocide, a forensic intervention was conducted in 2007 at a mass grave in what is now Syrian soil, 92 years after the events in question. This considerable time span, along with the mass deportation of the Ottoman Armenians into the desert areas by order of the Ottoman Empire, made it impossible to determine who the victims could be or their community of origin, in order to begin a research and identification process (Ferllini & Croft, 2009). On the other hand, when the attacks against the Rwandan Tutsis ensued in 1994 there was total mayhem, which caused family members to become separated; many attempted to cross the borders in order to save their lives, whilst others hid in forested areas, and within structures trying to escape the attacks, which placed the victims within contexts that hindered the identification process. When the genocide ended after 100 days of killing, approximately 800,000 victims had perished (Ferllini, 1999), and many communities throughout the country, as a whole, were totally destroyed and entire families killed. Although the forensic intervention was implemented nearly a year and a half afterwards through the UN and NGO Physicians for Human Rights (PHR), not all areas of the country could be examined, and as such, a mass grave and areas surrounding Kibuye Prefecture were chosen as representative of the events, since it had been an area heavily populated by Tutsis, and the scenes had not been heavily disturbed. Even though the recovered bodies were profiled, it was nearly impossible to locate family members for purposes of identification, whether via DNA analysis or through the identification of personal items found in context with the victim.

The Rwandan exercise meant that the work on the ground was directed at gathering information at the scenes and information obtained through oral accounts, in addition to providing statistical data on the victims for the International Criminal Tribunal for Rwanda (ICTR). Under these circumstances, the analysis of the remains turned into a demographic exercise via identifying the number of victims recovered by sex and age, and the detection of the cause of death (Fig. 33.2) (Ferllini, 1999; Ferllini & Croft, 2009).

In the Rwandan case, the victims were reburied in one single site; in the case of the Armenian genocide, the victims were stored collectively. With reference to the victims of the Spanish Civil War, when discovered within a severely commingled context, whereby individual bodies cannot feasibly be separated, these are buried collectively, with the families' consent as is the present practice (Fig. 33.3).

Fig. 33.2 Three patellae identified from comingled human remains within an Armenian genocide mass grave at Ras Al-Ain, Syria, to serve as a demographic example but not for identification purposes (Copyright: authors own image)

[4]In forensic settings there are two types of scenes referred to as open and closed. Open scenes are those where there is no record of who the victims might be, as in genocides and the 9/11 attacks; while close scenes are those where there are records that attest who the victims are, as in the case of airline rosters when there is an air disaster.

Fig. 33.3 Collective inhumation of 10 victims killed by Franco's followers, Spain (Copyright: photograph courtesy of the Association for the Recuperation of Historical Memory, Spain)

Depending on the context and needs of each case, the post-mortem work is done under a variety of settings. The area of work can be a makeshift mortuary near the site where the bodies are found, as was accomplished at the Kibuye mass grave in Rwanda (Fig. 33.4) (Ferllini, 1999); in addition, these provisional mortuaries are sometimes mobile units which can be transported from one area to another as required, with basic but adequate equipment (Sprogøe-Jakobsen et al., 2001). On the other hand, local mortuaries can be utilised when present, and made available by local authorities; these would be fitted with extra infrastructure if need (author's experience in Kosovo).

33.3.2 Migration, Drug Trafficking and Feminicide

Forensic anthropologists are typically associated with enquiries relating to human rights abuses within the context of the aftermath of genocides, war crimes and crimes against humanity; however, at present, such professionals are becoming more frequently associated with investigations relating to the deaths of civilians within the context of migration, drug and human trafficking, and feminicide; the latter contexts may, in some instances, be interrelated within a regional context.

Human migration across the world occurs for a wide variety of reasons, including such factors as severe socio-economic and political situations, where populations often live under serious deprivation, normally accompanied with brutal violations of human rights (Globalization 101, 2014; International Organization for Migration, 2014). In the current century, this problem has continued worldwide with serious consequences, as seen in migrating populations from Latin American, Africa, Middle East and Asia.

Within Latin America, population sectors from Central American countries are prime examples, as they are influenced by pull factors that drive them to the United States, in the belief of attaining a better quality of life. In order to reach the aimed destination, the main ways to cross the borders include on foot, or crossing difficult waters in crowded and unsafe vessels; other options are crowded trucks, vans or trains (Anderson, 2008; COFAMIDE, 2014a; Hinkes, 2008). As such, foreign nationals are willing to take serious risks that can cost them their lives; in particular, due to major moves taken at border controls, other routes must be chosen, which are not safe due to difficult terrain exposed to environmental hazards or which are rife with encounters with criminal elements and drug-trafficking activity. Such scenarios exist, for example, between the Mexican and United States border (among the 13 most dangerous border crossings in the world), and in the jungles along the Guatemalan and Mexican border (González, 2012; Hinkes, 2008).

According to The Economist (2014), organised crime groups dedicated to drug trafficking abound in Mexico and are extending their influence to other regions of Latin America. The impact that these groups have over the missing in Mexico cannot be underestimated; the number of individual victims of forced abduction and who are believed to have been killed has been reported at 21,000 as of 2012–2014; however the exact sources, how the figure has been tallied and who

Fig. 33.4 The temporary mortuary set up by Physicians for Human Rights in Kibuye, Rwanda (Copyright: photograph courtesy of Physicians for Human Rights, USA)

are exactly responsible for these crimes remain open to speculation, as Mexican authorities have not been transparent on this matter. Such criminal groups also extend their impact to migrants, many of whom are killed en route, or abducted.

Feminicide is a crime defined as gender-based violence and it is a form of human rights abuse that retains a worldwide occurrence; yet, patterns are emerging in this century which relate this type of crime to drug and organised crime activities. A study conducted by Small Arms Survey (2012) indicated that the Americas have the highest incident of feminicide per capita, putting Central America in third place within the region, with El Salvador and Guatemala in the lead; such areas are often plagued with drug trafficking under the hands of organised crime, and the involvement of international criminal gangs.

However, when statistical data is taken from regional areas within a given country, the number per capita can increase dramatically. A prime example is the hundreds of women that have been found murdered within and on the outskirts of the city of Juarez in Mexico, where the rate was 19.1 per 100,000 women during 2009; the women's bodies have presented evidence of rape, torture and dismemberment (Meyer, 2009; Prieto-Carrón, Thomson, & Macdonald, 2007). The investigation of these cases has required the assistance of forensic anthropology, including the participation of the EAAF, with the aim of identifying the victims; however, less than half were identified. The process has been and continues to be rather difficult, as the State and local agencies do not cooperate in the investigations. Instead, the cases are muddled, in some instances producing misidentifications, and many of those involved in such enquiries are killed (Koutsoyannis, 2011).

If the region of northern Central America and Mexico is considered from the taphonomic point of view, the number of environmental factors can be problematic, especially when many of the victims are not buried but left resting on the ground surface. Examples include migrants who are abandoned, as a result of not being able to continue with the group.

In the case of foreign nationals found on the surface along the Mexican-United States border, in desert regions where the temperatures can soar up to 43 °C (Anderson, 2008; Fenton, Heard, & Sauer, 2008; Galloway, 1996), it can speed up the decomposition process, and the solar radiation can affect the bones once the body is skeletonised, making them brittle (Damman & Carter, 2014; Fenton et al., 2008). It can also alter the scene context and degrade personal items that the individuals might have been carrying, evidence which could potentially aid in the identification process. Depending on the post-mortem interval (PMI), if the body was skeletonised, the recovery of 100 % of the body would not be possible

(Hinkes, 2008; Pokines, Symes, & Ropper, 2014) as there would have been an element of exposure to both scavengers and flash floods. In cases when the victims have been mutilated, burnt and then buried in mass graves, as has been witnessed in Mexico, the bodies may be discovered with little soft tissue present, comingled and incomplete (Animal Politico.com, 2012; Vulliamy, 2010).

Within such scenarios, the participation of forensic anthropologists would not only be necessary in order to determine the number of individuals present *in situ*, but also, when feasible, to aid in the bagging and transport of the remains as discrete bodies; once at the mortuary, a proper postmortem examinations can ensue (Ferllini, 2007).

In these circumstances, the discipline of forensic anthropology is a valuable aid in the process of identification and eventual repatriation. Depending upon the regional legislation, the forensic anthropologist might work within the medico-legal office, as an academic offering consultations, or possibly an independent consultant.

In spite of the efforts applied by forensic personnel, and the help that relatives of missing individuals provide when possible, investigating the deaths and providing an identification for an eventual repatriation can be quite challenging. This is because forensic staff often have to deal with the lack of interest and the level of impunity which exists among police forces, and many governmental agencies in investigating such crimes; in many instances individuals have been bought and infiltrated by organised crime. As such, both the public and family members alike frequently chose not to come forth due to fear of reprisals from local authorities, or being uncertain as to who they can trust.

33.4 Forensic Anthropology and Identification

The identification process has many functions; principally, the deceased gains their identity back, thus permitting the repatriation/returning process. Finally, the authorities are able to proceed with a judicial procedure when applicable, and/or bring in more evidence on an ongoing investigation. For these purposes, the intervention of the forensic anthropologist during the identification process is conducted within a forensic multidisciplinary scientific intervention including radiology, pathology, DNA specialists and odontology (Rosenblatt, 2010), along with information gathered from various sources concerning the missing, with the expectation of accomplishing a successful cross-check.

When the identification process commences, various steps are taken simultaneously: clothing and personal effects are noted, with the expectation that relatives and those who knew the victim might positively identify them. If there is soft tissue, the recognition of scars, moles and tattoos are assessed normally by a forensic pathologist. In the case of tattoos, if decomposition or mummification has set in where the details are barely seen, the use of hydrogen peroxide in a 3 % concentration can make them visible (Haglund & Sperry, 1993). By analysing skeletal and dental remains through morphological methods (based on characteristics), metric or both, the aim of the forensic anthropologist is to arrive at a biological profile which comprises the determination of sex, age, ancestry (when needed), stature, and identifying individual traits (see Chap. 27 within this volume for an in-depth approach to the subject) (White & Folkens, 2005); such findings lead to a presumptive identification.

The standards to be chosen should, when possible, be compatible with the population to which the victim belongs, or better still, a standard that is population specific. However, on the whole, this is not the case with most instances, as victims who are usually in need of biological profiling belong to a population which has not been formally studied in such a context. This situation can cause skewed results (Djurić, Djonić, Nikolić, Popović, & Marinković, 2007; Ross & Manneschi, 2011; Ubelaker, 2008), frequently experienced by forensic anthropologists.

It should be highlighted that when the deaths are associated with State-sponsored killings

directed against a known group, the determination of ancestry is not normally required as the population is documented. However, in certain instances, situations may arise where a distinction must be made between individuals belonging to closely related genetic populations, and based upon bone structure a division between ancestries would not be feasible (Spradley, 2014); it is here where material culture (typical ethnic wear, religious artefacts, items in certain language, and currency) associated with each of the bodies can be of aid in making a separation between ethnic groups (Ellis, 2007; Komar & Lathrop, 2008). This is of help when human remains are discovered along international borders, or within a country where a large geographical region encompasses a variety of ethnic groups; furthermore, it can also aid in distinguishing migrants from remains found in similar areas, but who are nationals who happen to be victims of foul play.

33.4.1 Sex

Determining the sex of an individual is accomplished via the sexual dimorphism[5] present upon the bones relating to both size and morphology; yet because forensic anthropologists working in human rights investigations face working with remains belonging to a variety of populations, it is of the utmost importance to keep in mind that the differences between the sexes varies from one population to another, in order to avoid serious mistakes (Ferllini, 1999).

33.4.2 Age

The estimation of age with respect to foetuses and juveniles is rather precise, as the developmental stages present in bone and teeth occur at specific times associated with age (Baker, Dupras, & Tocheri, 2005; Fazekas & Kósa, 1978), whilst in adults, the developmental process has ceased, creating difficulties with respect to pinpointing an age within a narrow range; furthermore, the older the individual is, the age estimation falls within a wider range, hence the process becomes progressively more challenging. Because of such difficulties, it is advised to retain an overall approach which examines the entire body, and applies all the indicators feasible as a matter of standard practice (Baccino, Ubelaker, Hayek, & Zerilli, 1999; Gupta, Rai, Kalsey, & Gargi, 2007; Merritt, 2013). Once the results are at hand, an age range can be obtained. If there is a wide age discrepancy between the result obtained from one technique or another, a closer look must be taken to see if human error was at issue, or if there was another reason, including the involvement of a pathology (Faria, Andrade, & Cardoso, 2010).

However, there are some areas in the skeleton that continue to modify as the body ages, which can be described as a metamorphosis, where the changes are divided into age phases for an easier way to determine the age at the time of death. Amongst such bones is the pelvic girdle with the pubic symphysis, auricular surface and sacrum; the sternal end of the clavicle; and the sternal end of the fourth right rib (İşcan, Loth, & Wright, 1984a, 1984b; Katz & Suchey, 1986; Lovejoy, Meindl, Pryzbeck, & Mensforth, 1985; Passalacqua, 2009; Webb & Suchey, 1985).

The use of dental remains can be used to age adults when applying the Lamendin's dental ageing technique, which has been reported to be useful on different populations (Ubelaker & Parra, 2008). This method consists of assessing the translucency of tooth root, root height and the degree of periodontosis (recession of the gum line) in single rooted teeth (incisors, canines and premolars) to obtain an age estimation; however, poor oral hygiene, dental decay and odontological intervention can affect the analysis (Lamendin et al., 1992).

[5] Sexual dimorphism is caused by the hormonal differences between males and females. This causes males to be bigger and more robust, although there are always exceptions to the rule (Mays, 2010).

33.4.3 Stature

On stature estimation, here too it is important to discern which formula is to be used, as such formulae have been created based on population-specific samples, and are sex and ancestry based. Furthermore, it must be kept in mind that populations can go through a series of changes in maturation rate and height due to the effects brought on by secular, environmental and genetic factors (Jordan, Lim, Seubsman, Bain, & Sleigh, 2010; Klepinger, 2001); therefore, formulae that are based on contemporary samples are desired. On the other hand, not all populations have been studied, and therefore, when choosing a formula, one needs to know what has and has not worked in the past. Yet, there are circumstances, such as the case of the Rwandan genocide, where the population had never been subjected to an anthropological analysis, and as such, the decision as to which formulae were selected had to be taken with care (Ferllini, 1999), with experience in such circumstances being of utmost importance. Moreover, a multitude of Middle Eastern and African populations have not been adequately studied to date from the view point of developing specific databases; this constitutes a concern based upon the degree of violence present within these geographical regions, where future interventions on the part of forensic anthropologists are to be expected.

33.4.4 Individualising Traits

Within situations in which the bodies are similar with respect to profiling characteristics, the identification process has to rely on more detailed characteristics, in order to distinguish each individual (Fenton et al., 2008; Macaluso & Lucena, 2014). Not all individuals present distinctive characteristics, but when present, individualising traits can be a positive aid. These are expressed within the skeleton and so the forensic anthropologists can add such data to the biological profile, thereby augmenting the identification process, as these are unique to a particular individual.

Among such traits is evidence of ante-mortem fractures, and dental and bone variations which can be quite minute and subtle, as well as congenital or pathological markers (Stephan, Winburn, Christensen, & Tyrrell, 2011; Watamaniuk & Rogers, 2010). Of specific interest is the frontal sinus, which in some cases has been used for the purpose of positive identification, as it is unique in each individual, including among monozygotic twins. With experience and access to ante-mortem medical images, whether from traditional X-rays or more modern technologies such as computer tomography (CT scan), a comparison can be made and a match made possible, even on fragmentary remains (Deog-Im, U-Young, Sang-Ouk, Dae-Soon, & Seung-Ho, 2013; Owsley, 1993).

Another technique utilised is photo-skull superimposition, a technique created in 1937 in Scotland, with the aim of tracing the contours and particular bone and frontal dental characteristics through a 2D image, in order to arrive at an identification (Taylor, 2001). Today, with the aid of sophisticated camera and computer technology, the use of photographic superimposition with craniofacial remains is possible by mixing both images in a 3D format; furthermore, computer technology allows the addition of flesh to the craniofacial image, in order to accurately recreate the dead person's face (Fenton et al., 2008; Guyomarc et al., 2014; Ubelaker & Scammell, 1992); such techniques can be conducted by forensic anthropologists who have specialised in these fields. Further information about facial reconstruction can be found in Chap. 28 in this volume.

At times, the process gets caught in a situation where a crossmatch between the biological profiling and the list of the missing is needed, in order to attempt to locate ante-mortem data, and to verify readily visible characteristics (see Chap. 27, this volume). Nonetheless, it should be stated here that within the human rights contexts herein addressed, there is a drawback with utilising ante-mortem information, as many do not possess ante-mortem medical or dental records. In the experience of the author, in developing countries, the process of obtaining ante-mortem

medical and dental records can be most problematic, either because such records were never produced, or because they may have been retained for a minimal period of time, and then discarded. Yet, when ante-mortem records are available, matches or exclusion processes can be achieved. Equally if dental work is found in a victim, odontologists[6] can make comparisons with ante-mortem records, which, if a match is made, is considered a positive identification (Senn & Weems, 2013).

One technique that can help investigate the area of origin of a given individual and locate possible relatives is the analysis of strontium, which contains a stable isotope that is geographically associated, and is absorbed in the body via the small intestine when consuming food and water; strontium is stored within the body's hard tissues, such as bone and tooth enamel. Because bone remodels itself every 10–15 years, strontium recovered from this tissue is viable for determining the individual's place of origin and mobility for periods of up to 15 years, albeit with a somewhat limiting time span. On the other hand, because dental enamel, once it is deposited during childhood, is retained permanently throughout the individual's life, determining a person's residence and geographical displacement can be achieved in the time which has elapsed since the individual's developmental years (Beard & Johnson, 2000; Juarez, 2008; O'Reilly, 2006).

An example of its application in a human rights context is found in the Balkans after the war in the 1990s. During the armed conflict, a great portion of the population in the region became displaced and later on killed; as part of the identification process, the use of stable isotopes have been used by the International Commission on Missing Persons (ICMP) on bodies recovered from various sites, in order to ascertain the geographical area from where each of the victims came from (National Policing Improvement Agency, 2011; Swift, 2004; Chap. 29, this volume).

33.5 Positive Identification

In today's climate, rarely an identification is accepted if it is not a positive identification through adequate testing, yet there are instances where a presumptive identification is accepted to determine the identity of an individual (Ferllini, 2014c) (Fig. 33.5); this type of decision depends on what is acceptable and customary within the legal parameters of the country where the post-mortem analysis is carried out, and the context of the particular case.

The cost of DNA analysis has made this technique more accessible through the years, yet, traditional techniques are normally sought before a test of DNA is conducted with the aim of obtaining a positive identification (Baraybar, 2008). Part of this decision is due to the fact that a biological profile compiled by a forensic anthropologist signifies less cost for law enforcement agencies, and aids in guiding the investigation, as it provides a description of the victim to be matched with descriptions of known missing persons; this obviously is rather important when DNA databases are non-existent.

Fig. 33.5 Personal items found within a closed scene and associated with a body, which can be used for a presumptive identification, Spain (Copyright: photograph courtesy of the Association for the Recuperation of Historical Memory, Spain)

[6]Forensic odontologists in many instances can be absent during the post-mortem examination. Those who are not professionals in this field should not attempt to do the cross check between ante and post-mortem evidence (Skinner, Alempijevic, & Stanojevic, 2010).

Within the framework of those who fall victim to organised crime, including the drug trade and gang activity, a platform that can aid the identification process of the missing is the creation of organisations which help relatives in the search for their loved ones, and those that set up databases to gather the required information describing the characteristics of the missing (Spradley, 2014), including the relative's DNA. Among the groups that have been created are the Committee of Relatives of Dead and Missing Migrants of El Salvador (COFAMIDE, 2014b) which gives moral and legal support to those who are searching for the missing, the "Freeing up Hope" Caravans organised by Jesuit Service for Migrants, and the Meso-American Migrant Movement by members of the Franciscan order, among others. Aided by such organisations, Central American women travel north in search of their children who have not been heard from for considerable periods of time, and when foul play is suspected or confirmed (González, 2012). Those individuals that are located alive are of immense aid in giving information relating to the events that lead to the death of those they knew along the way, where the bodies are located, and in recognising facial reconstructions.

DNA banks created to facilitate positive identification of the bodies, as the EAAF's Border Project was established to create a regional platform between missing migrants and unidentified remains from Central America, Mexico, and the United States; additionally, in partnership with governments and NGOs, DNA banks have been created for this goal (Godoy, 2011; Reineke, 2013), and many positive identifications have been achieved. In Mexico, since 2002, a national genetic bank was established to aid with the increasing number of migrants, kidnappings and drug-related crimes that have taken over the country, and which continue to worsen. However, the project has not been as successful as was expected; according to Rea and Martínez (2014) a total of 25,885 samples of DNA have been stored from Mexican families, in addition to those of other nations, yet only 542 hits have been made in the 12 years that it has been in operation, with some bodies having been returned to the wrong families. Such deficiencies are attributed to the lack of an efficient forensic service, including cases in which the chain of custody has been effectively overseen.

33.6 Discussion

As can be appreciated from the contexts highlighted within previous sections, investigations relating to human rights violations normally work within a context normally which is referred to as an open scene, that is, a number of victims who lack confirmed identity. Furthermore, some scenes may contain bodies which may have been deposited at different times, hence resulting from different events. Such situations potentially compound the difficulty of affecting accurate identification, even where a multidisciplinary approach has been applied.

Because of such circumstances, the input of social anthropologists constitutes a vital element of the investigative and identification process (see Sect. 33.3.1). They are able to gather data concerning the victims, e.g. events prior to them going missing, physical characteristics, clothing that they were wearing, contextual details relating to their disappearance, if others were accompanying the victim at the time of their vanishing, and if there are any ante-mortem medical and/or dental records available. Yet, it must be kept firmly in mind to carefully weigh the informant(s) point of view if no formal records are available; what is the age of the missing person perceived as being? How closely is the stature estimated? When differences in language arise, the communication process must be done carefully in order to avoid difficulties in interpretation due to the relative nuances of cultural linguistics (author's experience). Realistically, situations will always be encountered in which the information sought is not available, or not enough to aid in a lead of who the victim or victims might be. DNA databases can be of help, but as illustrated in Sect. 33.5 it may not always constitute a successful approach, but in reality, might appear as a limited exercise.

Profiling human remains during human rights investigations can be a challenge to the forensic

anthropologist, as the victims which are typically associated with such situations normally hail from populations covering wide geographical areas which are typically not comprehensively studied; therefore, properly developed standards do not typically exist which could be effectively utilised in order to determine biological parameters as relates to sex, age and stature (Kimmerle, Jantz, Konigsberg, & Baraybar, 2008). In other words, the reference sample in the standards available for use during a post-mortem analysis might not accurately reflect the population to which the victims belong. Within the context of such situations, the results obtained may be skewed; as a consequence, when attempting to eventually cross reference the accumulated traits obtained with the list of missing individuals, negative results are frequently encountered.

Because best practice must be exercised by forensic anthropologists when choosing the biological standards which most accurately represent the population from which the unidentified individual might belong, the positive side to this quandary is that a growing number of professionals in the field are conducting research in countries where local standards were not previously available. This promotes new standards in morphological and metric analysis as seen in Bosnia, Spain, India and Guatemala (Gupta et al., 2007; Ríos, 2005; Sarajlić & Cihlarž, 2007), among others. Part of this progress is due to advances in modern technology, such as CT scans, where contemporary populations can be analysed (Bulut, Sipahioglu, & Hekimoglu, 2014; Ferrant et al., 2014) without having to rely on human remains, access to which may be highly restricted in some countries. The extent by which research is relatively conducted depends upon the individual country's legal premises. Within the context of the United States, research is widely used in the field of forensic anthropology, as legislation permits the use of human remains for the purpose of such work; conversely, in the legal framework of the United Kingdom, legislation is far more restrictive relating to such matters, and resultantly, research in these areas is not on par.

33.7 Conclusion

Human rights abuses continue to occur openly in various regions of the world; within the region of Central America and Mexico, increasing numbers of individuals are going missing due to the escalation of a variety of criminal activities (Godoy, 2011). As such, the need for forensic interventions will be felt with even more urgency as such situations inevitably worsen, due to the massive levels of criminal and State impunity to be openly witnessed in countries such as Mexico, elements which continue to hinder the identification process (Trejos, 2014).

Due to the osteological knowledge that forensic anthropologists possess, in addition to training and experience in relation to taphonomic factors that can affect a scene and bodies alike, these individuals comprise an important element of field investigations, particularly when remains are discovered skeletonised and commingled. Furthermore, the retrieval of human remains from difficult settings can also be aided by such professionals.

Every effort must be made to improve the standards applied in forensic anthropology, and to assist organisational groups and genetic databanks in improving their results in a positive and timely manner. In the 30 years since the first human rights interventions in Argentina, forensic anthropology has solidified its position and broadened its participation as exercised by organised investigative teams, aiding not only in the identification process, but also in the field, during the exhumation and lifting of human remains.

Furthermore, forensic anthropological work can be key in facilitating transitional justice to members of societies which are moving toward stability, democracy and a fair justice system. During investigations in which the victims' bodies have been recovered, but the exiting judicial system has not dispensed transitional justice in the process, one of the positive ending elements which is provided is the simple result of having their loved ones returned, and permitted the dignity afforded by a proper burial.

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