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Defining Genocide: A Biological Perspective of Mass Burials in Srebrenica, Bosnia-Herzegovina

Tabitha Kukes
University of Wisconsin-Milwaukee

DEFINING GENOCIDE:

A BIOLOGICAL PERSPECTIVE OF MASS BURIALS IN SREBRENICA, BOSNIA-HERZEGOVINA

by

Tabitha A. Kukes

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ABSTRACT
DEFINING GENOCIDE:
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Tabitha A. Kukes

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Genocide has long been an instrument of warfare; augmenting domination by terrorizing targeted populations. The definition of genocide itself is broad and often varies among researchers, with context and specific circumstances continuously changing. The aim of this study is to apply a biological perspective to genocide, specifically to genocidal mass burials. Using data from an event already classified internationally as genocidal, the Bosnian wars of the early 1990s; I intend to look at skeletal features and burial characteristics found in the mass burials of Srebrenica, Bosnia. I will then catalogue reoccurring patterns, in an attempt to create an inventory of features that indicate genocide. Ideally, these indicators could then be applied to unclassified mass burials to aid in determining whether they are products of genocide.

To my parents, with love and gratitude.

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LIST OF ABBREVIATIONS

BB	body bag
BiH	Bosnia-Herzegovina
CB	complete body
COD	cause of death
GSW	gunshot wound
ICC	International Criminal Court
ICJ	International Court of Justice
ICMP	International Commission on Missing Persons
ICRC	International Committee of the Red Cross
ICTY	International Criminal Tribunal for the former Yugoslavia
MNI	minimum number of individuals
N/A	not available
OMPF	Office on Missing Persons and Forensics
Poss.	Possible
Prob.	Probable
UN	United Nations
UNKN	unknown
UNDET	undetermined
VRS	Vojska Republika Srpska (Bosnian Serb armed forces)

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Chapter 1: Introduction

Genocide has been an element of warfare for centuries. It has caused wars, fueled terror and been used as a technique of control and manipulation. Though its roots are unknown, its name is recent. Raphael Lemkin coined the term 'genocide' in 1943 when it became apparent specific vocabulary was necessary to "denote an old practice in its modern development" (Prevent Genocide International 2003). Formed by the ancient Greek word *genos* meaning race or tribe and the Latin *cide* meaning killing, *genocide* is distinctive from traditional warfare in how the attacked groups are selected.

While the practice of genocide is appalling to most and illegal in many countries, it remains a prevalent form of warfare. Sentiment towards the act of genocide appears to be similar to the notion of torture; while it may be unacceptable in everyday use, it is a traditional and acknowledged tool of war. Furthermore, the examination of genocide-related burials is a controversial topic that has been largely under-studied and under-utilized. While there are instances of mass graves resulting from catastrophic natural events or unprejudiced incidences producing mass casualties, such as hurricanes or aircraft disasters, it has been established that mass burials are often used as a means of concealing evidence of genocide (Haglund et al. 2001).

The most widely accepted legal definition of genocide is the "intent to destroy, in whole or in part, a national, ethnical, racial or religious group" (United

Nations 1948); regardless of whether such acts are committed during a time of peace or conflict. The Convention on the Prevention and Punishment of Crimes of Genocide further refines this as including any of the following: "(a) Killing members of the group; (b) Causing serious bodily or mental harm to members of the group; (c) Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part; (d) Imposing measures intended to prevent births within the group; or (e) Forcibly transferring children of the group to another group" (United Nations 1948: Article II).

Anthropology, on the other hand, is concerned more with motive and intent when considering acts of genocide, particularly in the agencies of 'self' and 'other' (Komar 2008). Case in point, Komar notes "violence motivated by differences in ideology, political party, social status, gender or age does not constitute [legally defined] genocide" (2008:125), though anthropologically they could be labeled as such since the self-group has inflicted violence on what they consider to be an other-group. Additionally, genocide has also been referred to as 'ethnic cleansing', 'reproductive competitive strategy', and as "indiscriminate mass killing, where the goal is to eliminate the existing 'Other'" (Hartley 2007:242). However, it should be noted that these assorted terms are not synonymous with each other, but are often interchanged to facilitate distinct views or specific perspectives.

Conventionally approached from a humanitarian or cultural angle, this thesis instead endeavors to examine the definitions and traits associated with genocide from a biological perspective. Difficult to define amid complex social, cultural, religious and political contexts, one recurring element of genocide is that of the

targeted or intended group for harm. Therefore, the ambition behind this study is to temporarily set aside the aforementioned complexities of the living and shift focus to the dead. Concentrating on the deceased, as opposed to the survivors, allows for innovative analysis and atypical insight into genocide. In exploring genocide though a skeletal analysis, this study draws from the perspective that defining characteristics are noticeable in the burials that distinguish them from any other type of grave. This study is not meant to replace sociocultural definitions of genocide, but rather to supplement evidence attained through other means with a biological perspective and focus on those deceased. Allowing for the dead to provide information that may deter future incidents and answer questions regarding their demise, makes a statement that the deceased still matter-not only to their loved ones, but also in breaking the silence genocide creates.

This analysis is executed by working backwards from an event already legally defined as genocidal, to determine if certain skeletal indicators, such as sex, age, perimortem trauma, and damage to the bones present repeatedly; thereby establishing biological identifiers of genocide. The first segment of this study is an overview of prior research on genocide, followed by a summary of the raw data utilized in this thesis. Chapter three turns to analyzing the data and recognizing emerging patterns, with theoretical explanations for how the patterns are linked to genocide. Subsequently, a brief application of identified patterns will be compared to a separate Bosnian burial for analysis with the conclusion and discussion to finish.

Literature Review

Sanford (2003) and Sheremata (1996) have noted several ways that violence manifests in the course of genocide; including but undoubtedly not limited to: mass killing, various forms of torture, kidnapping, rape, and the infliction of humiliation and terror on individuals and communities. The large death tolls often result in the formation of mass burial graves, usually as simplified means of disposal or an attempt to obscure victim identity.

There is no single, agreed upon definition of what constitutes as a 'mass' burial. The term itself conjures images of heaps of decomposing corpses or piles of rattled bones disarrayed in deep pits and covered with mounds of dirt, while overstated-this is not untrue. Jessee and Skinner (2005:56) believe the lack of terminological accord stems from two different emphases: one on the number of bodies needed to constitute a mass grave and the other on the motive or reasoning behind the grave. In an earlier work, Skinner (1987:268) stated that at least six bodies are needed for a grave to be classified as a mass burial, however Jessee and Skinner (2005) argue that since motive is more significant, as little as two or three commingled, or intermixed, bodies is enough to constitute a mass burial.

In addition, the law recognizes these cannot be persons who have died in combat or as a result of armed confrontations (United Nations 1991), therefore the victims of genocide are not soldiers or those in a position to defend against their attackers. Not all mass burials are a result of ill-intent as there are instances of mass graves resulting from catastrophic natural events or unprejudiced incidences which produce mass casualties, such as hurricanes or aircraft disasters (Haglund et al.

2001). These are not the variety of mass graves of concern in this study.

Regarding exhumation of these burials, many archaeological excavation techniques remain unchanged when encountering mass graves, however there are some distinctions that should be noted. Skinner and Sterenberg recognize "four fundamental conceptual facets in a mass grave: the individual victim, the criminal (forensic) event, the setting and the statistical" (2005:225). These spatial and temporal boundaries are essential to acknowledge and adequately manage different aspects of the complex and overwhelming entities mass graves quickly become. These divisions allow for both attention to detailed evidence (individual victim and criminal event) as well as the overarching or big-picture context (setting and statistical) that must be considered during these investigations (Skinner and Sterenberg 2005). Without due recognition of these elements specific to mass burials, evidence necessary for prosecution and individual identification is lost when exhuming genocidal graves.

Along with intent and context, mass graves are also characterized by their haphazard array of contents. Though mass burials are seen archaeologically, for example the Anasazi mass graves in the North American Southwest, contemporary mass burials linked to genocide are defined by a clear lack of respect and integrity for the remains; portrayed by the jumbled mess resulting from bodies merely tossed in, or in some cases falling in as they were killed, creating commingled remains with no indication of order or alignment (Komar 2008). This lack of respect is also what separates the mass graves discussed in this study from those produced by natural disasters or even traditional warfare.

Though a multitude of personal, ethical and legal incentives abound for excavating genocide-induced mass burials, Skinner summarizes three ethical functions that documentation of human rights abuses can provide: respect for the victims, promoting justice for past evils, and possibly activating feelings to prevent future abuse (1987:282). Haglund et al. expands beyond ethics to produce motives including: (1) the collection of narrative and physical evidence that assists in establishing accountability of those responsible and bring them to justice, (2) assemble information for the purpose of identifying the victims and returning the remains to surviving relatives, (3) creation of a historical record, and (4) exposure of atrocities to world opinion and international standard that may deter future cruelties (2001:57). This study attempts to assist in the aforementioned goals by aiding in identifying, and thereby legally defining, future and past unspecified graves as genocidal. This is to both support legal prosecution, as well as promote survival recovery through recognition of atrocities endured.

Due to the adversity a population endures in the face of genocide, international support is crucial to investigating acts of violence. There are a number of organizations that aid with the process of recovery, are involved in the forensic excavation of mass burials, or assist in the process of official justice, including:

- United Nations International Criminal Tribunal for the former Yugoslavia (ICTY)
- United Nations International Criminal Tribunal for Rwanda (ICTR)
- Physicians for Human Rights (PHR)
- International Criminal Court (ICC)
- Guatemalan Forensic Anthropology Foundation (FAFG)
- International Commission for Mission Persons (ICMP)
- U.S. Army Corps of Engineers
- Regime Crimes Liaison Office (RCLO)
- U.S. Agency for International Development

- International Forensic Centre of Excellence for the Investigation of Genocide (INFORCE)
- Commission for Historical Clarification (CEH)
- Truth and Reconciliation Commission (TRC)
- UN Office for the Coordination of Humanitarian Affairs (UN-OCHA)
- Argentine Forensic Anthropology Team (EAAF)
- Archaeologists for Human Rights
- International Committee of the Red Cross

These organizations, along with others, have provided assistance to multiple countries worldwide; some were even founded to specifically combat the effects of genocide in their own lands and later moved on to help other countries rebuild (Juhl and Olsen 2006, Sanford 2003). Such is the case with the creation of the International Commission for Missing Persons, originally founded to identify missing victims of the Bosnian War; still based in Sarajevo, Bosnia this organization is now renown for assisting in victim identity worldwide (ICMP).

There are a number of disciplines that contribute to the investigation of human rights abuse and the excavation of genocidal mass graves. Among these are anthropologists, archaeologists, odontologists, pathologists, criminal investigators, crime scene managers, human rights advocators and volunteers; all of which may come from abroad or reside locally. This illustrates that forensic science can be approached by any field; it is the collective term used to indicate a discipline putting its services and knowledge at the disposal of the medico-legal system (Juhl and Olsen 2006). Plainly put, the term 'forensic' refers to a court of law, and forensic science is scientific evidence meant to withstand the court system (Menez 2005:312). In the case of mass graves, adding the term 'forensic' to a professional title indicates the knowledge applied and the work done may be used for legal purposes. Forensic anthropology, forensic archaeology, and forensic pathology,

while interrelated, each contribute uniquely to the excavation of mass graves and the implications the evidence may indicate.

As Komar points out in her analysis of genocide, the "role of anthropologists and archaeologists in large-scale international human rights violation investigations has increased dramatically over the past decade" (2008:123). Though the field may have had a slow start in contrast to forensic pathology, it is quickly becoming a staple of human rights field investigations. The holistic approach of anthropology makes it ideal when encountering the complexity of suspected violations of human rights and the web of cultural, religious, and political intricacies frequently involved. With the demand for faster and more accurate results that must sustain the rigors of court, forensic anthropology is being increasingly requested and relied upon (Menez 2005). Utilizing forensic anthropological perspective in this study allows for a comprehensive view of the remains from genocidal mass burials, while still acknowledging the social and cultural contexts surrounding the specific case of Srebrenica, Bosnia.

It should also be noted that the specializations seen between archaeologists, anthropologists and pathologists are complementary and succeed best when all three are involved. This is perhaps most evident in mass graves where the "feather-edge effect" is present; that is where remains at the outskirt of a grave are partially to full skeletonized, while those at the center remain partially to fully fleshed due to large body masses and the heat they retain (Haglund et al. 2001, Juhl and Olsen 2006:420-421).

Though genocide is approached from many angles with differing

perspectives, there remains a common goal to exhuming mass graves: giving a voice to the deceased and being the medium for telling their story (Morris 2011). Specifically, Skinner describes four fundamental varieties of physical evidence examined from mass graves: (1) victim identity, (2) when death occurred, (3) pre-mortem suffering, and (4) cause, manner and mode of death (Skinner 1987).

Through international involvement and the work of Dr. Clyde Snow in Argentina and Guatemala, forensic anthropology is becoming more widely recognized as an integral component of mass grave exhumations (Guntzel 2004). While pathologists perhaps more commonly and more quickly come to mind in regards to the examination of human remains, their expertise resides in soft tissue analysis-that is of skin and muscle; while forensic anthropologists have their forte in the examination of hard tissues, namely the skeletal system and teeth (Skinner 1987). Though genocide is mainly defined and recognized through a socio-cultural lens with reliance on witness and survivor accounts, these invaluable depictions could be reinforced through skeletal analysis and recovery of the deceased victims. Particularly in instances where witness reports are scarce or disputed, forensic evidence from burials may provide information connecting testimonies or corroborating accounts being refuted.

Forensic anthropologists are trained to see injuries, and identify cause of death from skeletal remains. Additionally anthropologists could contribute to group identification by constructing a demographic profile of victims based on their biological characteristics, such as age and gender. Answering questions regarding biologic profiles are especially important when looking for indications of women

and children being killed in contrast to military aged men, a prominent indication of genocide (Julh and Olsen 2006). With the ability to accurately determine sex and approximate age of victims, identification becomes increasingly likely and patterns begin to arise (Baraybar and Gasior 2006). This is also the case with the need to determine cause of death, especially in regards to presence of torturing techniques or execution manner, in identifying genocidal intentions (Blau and Skinner 2005). If patterns could accurately be recognized and identified, perhaps more events would be defined as genocide in legal proceedings and there would be fewer denials in the occurrence of genocide.

In addition, while forensic investigators, anthropologists included, may be called as expert witnesses to testify in court proceedings, they have little say in how the evidence they collect is used or who is held responsible for the crimes they help to investigate. Unfortunately, rarely do their findings related to international terrorism and torture lead to convictions or punishment (Snow 1995). Nonetheless, the forensic evidence provided by anthropologists makes re-writing history from a perspective skewed by denial much more difficult, and at the very least it contributes to creating a candid historical account (Juhl and Olsen 2006). Permitting survivors the opportunity to rebuild begins with acknowledging the past, lest the future repeat itself.

The field of forensic archaeology is relatively new to the arena of crime investigation, with archaeology being the general study of past peoples through the use of material remains, its potential with contemporary crime scenes and investigations continues to grow. Defined as “the use of forensic science to examine

and interpret archaeological finds – and vice versa- the use of archaeological methods to investigate a current crime" (Menez 2005:312). The later part of this definition is particularly useful for the location and proper exhumation of mass burials, especially in regards to standardized documentation of the excavation. While most physical anthropologists have some training or knowledge of the recovery of human remains, there are instances where mass burials are being excavated decades after the fact, as in the case of Guatemalan burials being examined well after their thirty-five years of conflict (Giles 2004).

This is particularly useful in terms of locating clandestine burials. Though at the time of conflict the terror was publically displayed to instill cooperation from civilians, genocidal killings were often masked as "disappearances" and the burials remain in undisclosed areas. In other cases there are survivors alive who remember the terror well, but memories are faded or vague as to the exact whereabouts of the victims burial place (Snow 1995). With an archaeologist's traditional training in site location, including reading maps and aerial photos, distinguishing differences in terrain and vegetation, and predicting likely locations based on previous experience, the likelihood of locating a missing or secretive burial spot is enhanced. Additionally through the use of comparative soil and pollen analysis, seemingly separate burials can be linked to each other providing further details in how the burials were created.

The training archaeologists have in soil analysis and terrain-knowledge is crucial when determining how to best approach the matter of recovering remains and associated artifacts. Often it is the personal recognition of belongings that

solidifies for surviving family members the death of a loved one, especially in cases where they are rumored to be "missing" or "relocated" (Juhl and Olsen 2006). There may be times when the anthropologist is focused on the body, while the archaeologist considers the site itself-particularly in relation to present conditions and natural elements, trench formations, and overall size and depth. Furthermore while the forensic anthropologist is better seasoned to identify the victim, usually it is the archaeologist who is better equipped to expose and remove delicate skeletal remains more efficiently (Haglund et al. 2001).

While any professional may be forced to take on various roles, the exhumation of mass graves requires a multi-discipline approach that is enhanced by the consultation of various specialists, however a few personnel practicing as many fields of specialty as possible is more often the case; making the creation of a baseline for identifying genocidal mass graves necessary. This is particularly critical in order to recognize genocide before the burial is fully exhumed and evidence is lost through the excavation process.

The patterns exposed in this study will assist in creating such a baseline for the Bosnian War mass burials, with the goal that the establishment of patterns in this particular context will highlight the value in assessing genocidal patterns elsewhere. Due to the complexity and interrelations, it is not plausible to assume that genocide will present the identical patterns cross-culturally. However, Benjamin Lieberman anticipates that as "genocide research has vastly increased our knowledge of mass violence, researchers can also examine the assumption that a common outcome proves that cases of genocide share other key features"

(2012:14). It follows that these key features would present themselves amongst the victims and internments.

Bosnia and Herzegovina

In 2001 the International Criminal Tribunal for the former Yugoslavia (ICTY) determined the Srebrenica Massacre of 1995 an act of genocide, where it is estimated that up to 8,000 people, including children, infants, elderly, men and women, were killed (Bardgett 2007, Brkic 2007). Many of the mass burials linked to the massacre, including several secondary reburials, have been exhumed, allowing for the identification and proper burial of multiple victims.

The former Yugoslavia was composed of six republics: Bosnia and Herzegovina, Serbia, Croatia, Macedonia, Montenegro, and Slovenia, and two providences, Kosovo, and Vojvodina; which underwent a four-year war in the early 1990s (Brkic 2007, Koff 2004). Koff explains that later the United Nations International Criminal Tribunal for the former Yugoslavia was formed and sent a team of forensic scientists to exhume mass graves resulting from the crimes partaken in by multiple sides, though much of the forensic work has been done in Bosnia and Herzegovina (2004). One of the most extensive exhumations in the area is that of the Srebrenica Massacre.

Srebrenica was designated a United Nations refuge town, offering protection for the Bosnian Muslims, or Bosniks, being targeted as part of a large 'cultural cleansing' effort. When the Army of Republika Srpska, the Bosnian Serb Army, under the command of General Ratko Mladic attacked on July 11, 1995 Srebrenica fell

(Brkic 2007). United Nations and Dutch forces took in close to 5,000 people, but as they were required to act with neutrality-there was little more they could do; estimates of up to 8,000 people disappeared in the Srebrenica massacre, just a fraction of the 100,000-200,000 casualties of the Bosnia-Herzegovina war (Bates 2007, Brkic 2007). Just over a year later forensic teams were sent to determine exactly what happened to the missing Srebrenica Bosniks, in what is described as the worst massacre in Europe since the Second World War (Bardgett 2007, Koff 2004, Tenove 2005).

Canadian forensic anthropologist Cheryl Katzmarzyk was one of many who worked on exhuming graves resulting from the Srebrenica killings, many of which were secondary mass graves the perpetrators created in follow-up attempts to hide evidence; with her particular role being to "re-associate" the bodies found (Tenove 2005). Recognizing that the remains discovered were often incomplete from the transfer, often with clumsy industrial equipment resulting in further damage, Katzmarzyk worked with technicians to piece together the skeletons of individual men, women and children (Tenove 2005). Assisting pathologists with examinations of remains, acting as a translator and working with what little personal belongings were found, forensic archaeologist Courtney Angela Brkic performed several duties in her work with Bosnian mass graves (Brkic 2007).

Operating in similar conditions, forensic anthropologist Clea Koff worked in a number of countries exhuming genocidal mass graves, including Bosnia. Koff notes the level of interaction between archaeologists, forensic anthropologists and management working together on the same section of a grave: photographing the

area, mapping points where projectiles were left, clearing the earth, exposing remains, disengaging limbs, transferring remains to body bags, and examining the dead (Koff 2004). Koff's pragmatic memoir-ish account of her work in Bosnia, notes the inconsistent communication between management and workers, sidestepping dangerous remnants of active minefields with poor safety training, military escorts, concerns with unreliable or lacking site security, and navigating through the complexity of human rights abuse related mass burials (2004).

The concept of genocide is as difficult to study as it is to define, not least of all due to its controversy in practice as a crime against humanity. Additionally, genocide customarily occurs in areas rich in complex disputes: Bosnia is no exception. Tone Bringa explains in her ethnography, that with their cultural identity weaving within religious membership, "through the generations religious affiliation has also become an ethnic identification" (1995:20). Bringa further elucidates the intricate relations between Bosnian Muslims, Bosnian Croats and Bosnian Serbs through her personal experience living in Bosnia prior to the war; in doing so she personifies the delicate circumstances and offers an insider's perspective on a widely complicated and often misunderstood conflict (1995).

Though forensic anthropologists have little power over which burials can be exhumed and when, as they still need permission from the host country or government, their expertise and knowledge is becoming greatly recognized in their ability to identify individual victims and create reliable demographical analysis (Baraybar and Gasior 2006). In the case of Srebrenica, residents and the new government recognize that genocide occurred, and the goal was to identify and

return remains to their surviving family members for a proper burial and for the closure or consolation that may provide (Bates 2007). With the use of classic markers of identity provided by forensic anthropologists, such as age, sex, stature, trauma and personal effects, combined with the aid of blood samples and DNA collection; individual identification has been augmented (Djuric et al. 2007).

Other sites of mass graves in Bosnia and Herzegovina have had similar positive results with the use of forensic anthropologists, such as in the case of Jakarina Kosa, an open cast mine where at least 298 people were disposed, resulting in partially or fully skeletonized, disarticulated and mostly incomplete remains (Baraybar and Gasior 2006). This produced three sizeable problems: (1) the sheer number of individuals represented in the makeshift grave, (2) the classification of injuries and distinguishing between antemortem, perimortem and postmortem trauma, especially with damage occurring to the bodies when they were exhumed from their primary burial site, then damage from being tossed into the mine, and again damage from the intentional blast used to bury the mine, and (3) assessing the cause of death given the extensive fragmentation and disarticulated limbs (Baraybar and Gasior 2006).

Interestingly, in this example the primary focus was on determining if this was indeed a violation against International Humanitarian Law, an accident, or a result of combative context. Using skeletal analysis provided primarily by forensic anthropologists, it was determined that with the high percentage of gun shot wounds being the cause of death (38.9%), with the majority of these (53.1%) being projected from posterior to anterior, strongly suggested the killing of a defenseless

population (Baraybar and Gasior 2006). This particular site with be revisited in Chapter five, with comparative analysis being applied from the patterns which emerge from examining Srebrenica, Bosnia to determine whether this burial displays similar results to that of the Srebrenica Massacre mass burials.

Perhaps the most blurred and dense aspect of exhuming genocide-related mass burials is the legal and political implications involved. Not only are individuals identified, but with this comes the identification of groups and towns; which can further lead to linking military orders back to higher officials and in some cases build a case for prosecution, a primary aspect of excavation addressed by Zoglin in a 2005 article about war crimes and justice. Though the professionals involved in exhuming and examining the burial remains have little say in how the information they determine is handled, one potential aspect is its use in the international court system, usually in an attempt to prosecute those deemed responsible for initiating unacceptable practices (Snow 1995, Zoglin 2005). This information is further expanded in Juhl and Olsen's 2006 article discussing the organizations involved in the investigation of contemporary mass graves. The authors navigate the reader through the systems involved, but also draw attention to lesser-known organizations that play a part in genocide recovery, taking some of the burden away from the United Nations (Juhl and Olsen 2006).

Past research on alleged genocide-related war crimes, and the effect they have on the surrounding communities, suggests that acknowledging the crimes that occurred and dissolving the secrecy surrounding the mistreatment of societies based solely on ethnic or religious prejudice are the initial and essential steps

necessary for surviving victims to move forward with dignity. Studies support the idea that properly exhumed mass burials can reveal data useful in proving when genocide crimes occurred and against whom. However, while skeletal analyses have been done to identify individuals, it does not appear that anyone has directly looked at using skeletal evidence on a larger scale to identify the act of genocide. This study aims to utilize skeletal data to construct a template for how genocide appears at a biological level.

Thus far the articles reviewed have mainly addressed genocide in general, its effect on surviving peoples, and in particular Srebrenica, Bosnia as an example. Perhaps most important is a discussion of how the exhumation of mass graves can benefit genocidal research. As Rosenblatt (2010) concisely explains, the exhumation of mass graves, particularly with the use of forensic knowledge, can produce three things: identity, location and care. This means that by uncovering these remains, the bodies have the potential to be identified, returned to their families for proper burial, and their graves cared for in a way that promotes healthy mourning and recovery (Rosenblatt 2010, Skinner 1987). While this may not always be the case, it is certainly a realistic possibility and at least one way in which victims of war crimes can be respectfully treated.

Djuric, Dunjic and Skinner (2007) take identity analysis a step further by introducing DNA into the equation, however they still remark on the heavy reliance on skeletal markers for individual identification. Though the use of DNA is costly and less readily available as an identification tool; the fact that crowds of the local population came forward to offer personal DNA samples for comparisons to be

made shows community support for the recovery of these mass burials. This point is further supported by Blau and Skinner (2005) in their article addressing the positive outcomes of exhuming mass burials, such as victim identification, as well as practical advice on locating burials, estimating the number of victims present and specific excavation techniques.

In a survey done on post-traumatic stress disorder on Bosnian refugees, Hasanovic (2012) takes a further look into the specific trauma experienced by victims of genocide. By analyzing questionnaires from 217 students forced into relocation due to the surrounding war violence and immediate threat of genocide, Hasonovic was able to establish the different levels of post-traumatic stress disorder that continue to plague survivors years later; suggesting there is more recovery work to be done. Exhuming burials suspected of being a direct result of genocide is one way to aid in the recovery and rebuilding communities face.

The practices of war is a commonly studied topic, with various war crimes attracting much curiosity and attention; however this does not seem to be the case with recent cases of genocide. Perhaps its frequent denial or cloudy circumstances account for this, but nonetheless- if an attempt is to be made to understand the affects of genocide on a community, genocide must first be acknowledged to exist. Srebrenica holds a unique stance in that not only is genocide being recognized as one of the unacceptable realities of a recent war, but in addition, efforts are being made to avoid the recurrence of similar mistakes through memorials and frequent reminders. Encouraging points made by Baraybar and Gasior (2006) in an article focusing on humanitarian law, as well as by Brkic (2007) in discussion of the

emotional spectrum that continues in Bosnia today showcase how the Bosnian people have gone to great lengths to rebuild and repair their society.

Diving deeper into the character of Srebrencia, Pollack (2003) interviews multiple survivors of the genocidal attacks, particularly where they wanted to see their loved ones buried after being removed from the mass graves. Pollack illustrates the intertwined emotions experienced by the community when expressing their desire to have the remains respectfully reburied at the site of the massacre, noting that reasons included the desire to mark where the tragedy occurred, rights of land ownership, and the need for realistic accessibility to mourn at the site (2003). The sentiments expressed suggest that the recovery of remains for proper burial is an important element in the grief and recovery process, on personal and religious levels. This seems then an apt time to briefly discuss the essential need for a strong sense of ethics involved with such emotionally-charged research. Turning to Clark (2012) for guidance, the author provides insight on how to approach a sensitive topic ethically. Drawing from personal experience, Clark discusses interview techniques, communication concerns and cultural barriers relevant to exploring areas of genocide.

On a final note regarding previous research on genocide, The International Commission on Missing Persons (ICMP) "has assisted in making 16,945 identifications of different individuals since the DNA labs went online in November 2001. Of that number 14,063 are relevant to persons missing from the BiH [Bosnia-Herzegovina] conflicts and 2,433 relevant to Kosovo and 449 persons through a joint project with Croatia…ICMP has also received and analyzed 53,328 bone

samples from mortal remains of persons recovered from mass graves in the region" (ICMP 2013). An organization formed to conduct analysis on those missing from the wars in the former Yugoslav, the International Commission on Missing Persons has expanded their perimeters to assist in conflicts globally.

For this thesis, in examining the skeletal data available for the Srebrenica, Bosnia mass graves, the first goal will be to establish basic victim group identifiers such as age and sex. Most paramount, will be determining whether patterns in skeletal trauma indicating cause of death, treatment surrounding the victim's time of death and non-fatal injuries are present. This study will also look at post-mortem skeletal damage that may indicate disrespectful burial, secondary burials, or multiple use of a single grave. Determining these patterns aims to create biological criteria, or in a sense a 'definition', of genocide that may be applied to additional mass burials from the Bosnian area, thus allowing for unidentified burials to be designated as genocidal for the purpose of proper exhumation and legal proceedings.

After establishing specific patterns associated with the massacre of Srebrenica, Bosnia, the next step demonstrated are tables of indicators, with pattern frequency, generated to concisely outline the biological indicators of genocide observed in each mass grave. This study then asks the following questions:

1) Are there particular skeletal or burial patterns associated with mass burials classified as acts of genocide?
2) Could these patterns be used to indicate genocide in unidentified mass burials?

3) Would an analysis of skeletal patterns allow for a biological definition or classification of genocide?

Chapter 2: Summary of Data

In 2000, Dean Manning submitted an extensive, summative report including seventeen mass burials exhumed as part of the Srebrenica Investigation, conducted from 1996 to 1999. The mass graves had various directors from diverse backgrounds leading the exhumations, different attending pathologists, and seemingly varied techniques and perspectives in excavation technique. Manning combines these reports in order to "provide a summary of the evidence obtained from the forensic examination of mass execution points and mass graves associated with the fall of Srebrenica in July 1995" (2000:1).

Though Manning's 137-page report offers a wealth of raw data, it gives a bare-boned glimpse of the happenings surrounding the attack of Srebrenica; providing no interpretations or comparative analysis of the mass graves. As such, this study utilizes part of Manning's report to construct a list of significant characteristics seen in the seventeen burials in order to create a baseline for what a mass genocidal grave from this area looks like; particularly from a biological angle by focusing on data specifically related to the bodies discovered. Much of the current literature on genocide centers on those *missing* from Srebrenica, while this study concentrates on the attributes of the deceased, and the snapshot burials provide in verifying what happened in Srebrenica.

Each of the exhumed graves will be examined individually so as to showcase reoccurring patterns seen amongst the sites, with the aim of combining this data in order to facilitate interpretation of the fall of Srebrenica and the resulting mass genocidal graves as a whole. To do this, the following ten variables were selected for analysis: type of burial, minimum number of individuals (MNI), body disarticulation, sex, age, cause of death (COD), presence of ligatures, presence of blindfolds, bullet to body ratio, and shell casing to body ratio. Though Manning lists additional variables and supplemental information, the ten selected for this study emerged with the most frequency amongst the gravesites. Additionally, Manning discusses individual identifications made for victims within each grave along with personal effects at great lengths.

While individual identity is not a focus of this study, the data provided by the Srebrenica Report permits for pattern analysis and victim demographics to be discussed. Since the exhumations did not have the same director or lead investigator, there is variation in the characteristics listed and amount of detail given for each site. However, the variables selected allow for assessing both the victim demography, as well as the act of genocide, allowing for patterns to emerge on both levels leading to optimal interpretation.

Cerska

The first mass gravesite examined is that of Cerska, a primary grave exhumed in 1996. Manning defines two types of graves, "'Primary,' in which the individuals killed were placed soon after their deaths, and 'Secondary' graves into which the same individuals were later reburied" (2000:1). Essentially, primary graves

constitute original burials; most traditional forms of burials would be considered primary graves as the individual is interred into their final resting place at the onset. In the case of secondary graves being employed, primary graves are the initial burials; where secondary graves are where the individuals are reburied after being transferred.

Of the 150 individuals recovered, all were male and 149 (99.33%) died as a result of gunshot wounds. The age of the individuals ranged from eleven years old to over age forty-five; specifically two people were determined to be between eleven and fifteen years old (1.33%), thirty people were between the ages of sixteen and twenty-five (20%), fifty-nine people between the ages of twenty-six and thirty-five (39.33%), thirty-nine people between the ages of thirty-six to forty-five (26%), and the remaining twenty people determined to be over the age of forty-five (13.33%). These percentages were calculated using the minimum number of individuals so as to show the distribution of age seen within the grave, essentially all percentage statistics created throughout this study uses this method, unless otherwise noted such as in the case of extreme disarticulation where body bags were necessary to combine remains.

There were no blindfolds found in this grave, but there were forty-eight ligatures recovered from thirty-eight individuals, indicating that while not everyone was bound, some were bound more than once. Of these thirty-eight bound individuals, twenty-four were bound by the wrists (63.2%), one was bound by the ankles (2.08%), twenty-two bodies were found within association of a ligature (45.83%), and two ligatures were found loose in the grave (4.17%). These

percentages were created by dividing the number of specific ligatures by the number of individuals bound (thirty-eight), not the minimum number of individuals; however by looking at the total number of individuals bound compare to the minimum number of individuals for the grave, it can be seen that 25.33% of the grave population was bound prior to burial and likely at the time of execution.

Furthermore, 249 shell casings were found on the site surface or nearby, and another sixty-seven were discovered during either the exhumation or autopsy process; two of which were shotgun shells. This gives a total casing to body ratio of 2.06:1, since each body has a cause of death attributed to gunshot wounds this means it is probable each person was shot more than once, some even multiple times. This particular grave gives no mention of the recovery of any bullets, or lack thereof.

Since the scope of this study is not to examine all aspects of each grave, but rather hone in on emerging patterns, the variables of interest are summarized in Table 1, where the abbreviation 'N/A' is used to designate when data was unavailable.

Table 1. Summary of Cerska Mass Gravesite

Type of Grave	Primary
MNI	150
Complete Bodies	100%
Sex	Male: 100%
Age	11-15 1.33% 16-25 20% 26-35 39.33% 36-45 26% 46+ 13.33%
Cause of Death	GSW: 99.33% Undetermined: 0.67%
Bodies Bound	25.33%

Bodies Blindfolded	0%
Bullet to Body Ratio	N/A
Shell Casing to Body Ratio	2.06:1

Nova Kasaba- Part 1

First exhumed in 1996, Nova Kasaba is a primary gravesite consisting of four separate burials denoted by Manning as NKS1, NKS2, NKS3 and NKS4 (2000). For the purpose of this study the data was combined from these four graves in order to better standardize the data for comparison by treating this site as a collective, as seen in Table 2. Though it should be highlighted that two of these graves (NKS1 and NKS2) contain specific evidence to suggest the victims were shot while in the grave. In total, this site contains thirty-three victims, all male; thirty-two of which died as a result of gunshot wounds (96.97%). The remaining victim died as a result of massive head trauma (3.03%). Of these individuals, twenty-seven were bound with their hands behind their back (81.81%); twenty-five of the ligatures were made of wire (92.6%), one was rope (3.7%), and one was a shoelace (3.7%). There were no blindfolds found in this grave. During the exhumation and autopsy process, twenty-three shell cases were recovered and twelve bullets; this gives a casing to body ratio of 1:1.4; and bullet to body ratio of 1:2.75.

Table 2. Summary of Nova Kasaba Part 1 Mass Gravesite

Type of Grave	Primary
MNI	33
Complete Bodies	100%
Sex	Male: 100%
Age	0-15 0.00% 16-25 30.30% 26-46 66.67% 46+ 3.03%

Cause of Death	GSW: 96.97% Massive Head Trauma: 3.03%
Bodies Bound	81.81%
Bodies Blindfolded	0%
Bullet to Body Ratio	1:2.75
Shell Casing to Body Ratio	1:1.4

Nova Kasaba- Part 2

This site is the continuation of the previously mentioned Nova Kasaba site that was first investigated in 1996. In 1999, an additional four separate, primary graves were exhumed and denoted as: NK4, NK6, NK7, NK8. Though the site name remains the same, it was graves NKS1, NKS2, NKS3 and NKS4 that were exhumed in 1996. For the purpose of this study, these four graves exhumed in 1999 will be considered as one unit, or site, for simplicity, as was done with the 1996 exhumation of Nova Kasaba. Additionally, NK5 was originally thought to be another mass grave, but upon excavation it was discovered it was not a burial.

In total, NK4, NK6, NK7 and NK8 had a combined minimum number of fifty-seven individuals, or more accurately fifty-five complete bodies (96.49%) and two additional body parts. There were no blindfolds or ligatures located in any of the sections. Of the bodies, forty-three died of multiple gunshot wounds (74.44%) and twelve bodies as well as the two additional body parts had an undetermined cause of death (24.56%). Little age information was provided for these graves, only that the ages ranged from thirteen to eighty-five years, with the majority over the age of twenty-five years. As such, Table 3 denotes age as unavailable (N/A).

Additionally, fifty-three shell cases, sixty-two live rounds of ammunition, fifty-eight fired bullets, thirty bullet fragments, three speed loader magazines, and

an innumerable amount of shotgun pellets were removed. This results in a casing to body ratio of 1:1.08, and a bullet to body ratio of 1.02:1. As a reminder, only complete, fired bullets are used for the bullet to body ratios in this study. Live rounds are not included in the ratios, but are interesting to note for speculation.

Table 3. Summary of Nova Kasaba Part 2 Mass Grave Site

Type of Grave	Primary
MNI	57
Complete Bodies	96.49%
Sex	Male: 94.74% UNKN: 5.26%
Age	N/A
Cause of Death	GSW 75.44% UNKN 24.56%
Bodies Bound	0%
Bodies Blindfolded	0%
Bullet to Body Ratio	1.02:1
Shell Casing to Body Ratio	1:1.08

Branjevo Military Farm

A primary grave exhumed in 1996, Branajevo Military Farm has a minimum number of individuals of 132, all of which are male. Of these, 130 (98.48%) were given a cause of death from gunshot wounds, with the remaining 1.52% undetermined. The age range given for this grave is vast, with 125 individuals between the ages of fifteen and sixty-one (94.7%), the remaining 5.3% have an unknown age. Two blindfolds were found around the necks of victims (1.5%), and eighty-three ligatures were discovered; seventy-six of which were used to bind the wrists (91.56%), and seven were found in association with a body (8.43%), giving a total percentage for victims bound to be 62.88%. During exhumation and autopsy ninety-eight bullets were collected, giving a bullet to body ratio of 1:1.35; while

sixty-one shell cases were found on the grave surface or nearby and twenty during exhumation or autopsy for a total casing to body ratio of 1:1.63. Table 4 outlines these results, with the use of the abbreviation UNKN to denote 'unknown' in the table.

Table 4. Summary of Branjevo Military Farm Mass Gravesite

Type of Grave	Primary
MNI	132
Complete Bodies	100%
Sex	Male: 100%
Age	15-61 94.70% UNKN 1.52%
Cause of Death	GSW: 98.48% UNKN 3.03%
Bodies Bound	62.88%
Bodies Blindfolded	1.50%
Bullet to Body Ratio	1:1.35
Shell Casing to Body Ratio	1:1.63

Orahovac/ Lazete 2

A primary mass grave exhumed in 1996, Orahovac/Lazete 2 is found to be associated with the secondary graves of Hodzici Road 3, 4, and 5. Containing two major collections designated as LZ2a and LZ2b. The first collection was found undisturbed, while the latter was a disturbed grave containing disarticulated and transected bodies. It is unclear as to the reason this gravesite is referenced by two names; it may have originally been considered two separate sites that were later combined, or was possibly named twice by two separate organizations. Nonetheless, for the purpose of this study the data from the two collections was combined in order to treat this as a single site. In total, Orahova/Lazete 2 contained at least 165 individuals, including a partial skeleton recovered from the surface of the grave. All victims were determined to be male, with 158 (95.76%) of them having a cause of

death attributed to gunshot wounds. Cause of death was undetermined for the remaining seven individuals.

The victims ranged in age from thirteen to seventy years old, with the following distribution: 4.84% were between the ages of eleven and fifteen, 20% were between the ages of sixteen and twenty-five, 26.7% were twenty-six years of age to thirty-five years, 30.3% were found to be between thirty-six and forty-five years of age, and 16.96% were over the age of forty-five years. There was one individual put into a vague category of less than twenty-five years of age, and another individual whose age could not be ascertained, combined these two individuals were put into the undetermined category totaling 1.21% of the burial population.

One ligature was found binding an individual, in the form of a sack restraining his legs, however a remarkable 107 blindfolds were recovered indicating 64.85% of the burial population were blindfolded. Of these, ninety-eight (91.59%) were found still on the head or face, while eight (4.85%) were found located loosely in the grave, and one (0.60%) was simply associated with a body. Interestingly, Manning notes that a nearby "rubbish" site contained an additional 102 strips of cloth which were "indistinguishable from the blindfolds" found in the grave, which may indicate more were blindfolded than the aforementioned statistic represents (2000:24).

Additionally, 215 bullets were recovered from the exhumation and autopsy process, and 324 shell cases were discovered either during the exhumation, the autopsy process, or found on the grave surface. These findings give a bullet to body

ratio of 1.3:1, and a casing to body ratio of 1.96:1. Therefore, even though the majority of these men were blindfolded, on average they were each shot more than once, some likely multiple times. Table 5 further demonstrates this. Note the abbreviation 'UNDET' for undetermined, used to denote instances where specific data was inconclusive. This is distinct from the use of 'UNKN', which indicates that the data was not available in the report.

Table 5. Summary of Orahovac/Lazete 2 Mass Gravesite

Type of Grave	Primary
MNI	165
Complete Bodies	100%
Sex	Male: 100%
Age	11-15 4.84% 16-25 20.00% 26-35 26.70% 36-45 30.30% UNDET 1.21%
Cause of Death	GSW 95.76% UNDET 4.24%
Bodies Bound	0.60%
Bodies Blindfolded	64.85%
Bullet to Body Ratio	1.30:1
Shell Casing to Body Ratio	1.96:1

Dam near Petkovci

Exhumed in 1998, this primary grave is associated with the secondary grave of Liplje 2. Considered a 'robbed' grave, Dam near Petkovci showed traces of a ramp on the eastern end, indicating machinery was used to crudely remove its contents. As Manning describes, the site contained "grossly disarticulated body parts throughout the filling of the grave, which appeared to have been caused by the mechanical removal of the bodies during the robbing process that trapped bodies amongst the boulders" (2000:36). This being said, there were no bodies found

intact; the remains of possibly forty-three people were collected in ninety-one body bags. In examining the remains, fifteen (34.88%) were thought to be male, with the remaining 65.11% too heavily fragmented to allow for a determination of sex.

The ages listed for this site state that one person was thought to be between the ages of thirteen and eighteen (2.33%), three between the ages of nineteen and twenty-four (6.98%), and the remaining 90.69% were over the age of twenty-five. According to Manning's report, there were forty-two people placed into the last category, however using this number with the other age groups reported would give a minimum number of individuals of forty-six, instead of forty-three as previously stated. This discrepancy is likely due to the high level of disarticulation present, requiring ages to be done solely through the use of body parts. It is reasonable to assume the separated remains of three individuals were aged twice from different regions of the body giving inconsistent age indicators; as such the original determination of forty-three for the minimum number of individuals is likely a more reliable figure. This is also a valuable reminder of why it is necessary to use 'minimum numbers' instead of fixed numbers in cases of extreme disarticulation.

Though 464 bone fragments were recovered, the pieces were not sufficient to determine cause of death. The report noted that examination of the remains revealed six definite gunshot wounds, two probable gunshot wounds, fifteen possible gunshot wounds, one perimortem traumatic injury to the right frontal temporal and parietal bones, six apparent cases of perimortem skull fractures, and one perimortem rib fracture. It is unclear how many victims these injuries represent and whether they were fatal; without further information it is best to consider the

cause of deaths for these sites to be unavailable so as to avoid unnecessary assumptions. Table 6 denotes this as 'N/A' in the cause of death field.

In addition, one ligature was located on the surface of the grave, indicating 2.33% of the victims may have been bound; there was also one possible blindfold found loose in the grave. With the excessive damage, both to the victims as well as to the grave itself, these figures are almost certainly low estimates. Combining the shell cases found in the grave, on the site surface, and during autopsy; an immense total of 776 casings were located, giving a casing to body ratio of 18.04:1. There was also one bullet and approximately eleven bullet or metal fragments located as well, giving a bullet to body ratio of 1:43.

Table 6. Summary of Dam near Petkovci Mass Gravesite

Type of Grave	Primary
MNI	43
Complete Bodies	0%
Sex	Male: 34.88% UNKN: 65.11%
Age	13-18 2.33% 19-24 6.98% 25+ 90.69%
Cause of Death	N/A
Bodies Bound	2.33%
Bodies Blindfolded	2.33%
Bullet to Body Ratio	1:43
Shell Casing to Body Ratio	18.04:1

Kozluk

Excavated in 1999, soil analysis determined the primary grave of Kozluk associated with the secondary grave of Cancari Road 3. Containing large amounts of green glass bottles, green glass fragments and bottle labels; Manning infers the site was also used as a dumping ground for the nearby Vitinka soft drink bottling

factory, as well as for gravel extraction (2000:42). Consisting of three distinct sections, each appears to have been utilized for a different purpose and are designated as:

KK01: an area composed of dumped soil, where three relatively complete bodies were found

KK02: a robbed grave where individuals were executed prior to burial

KK03: primarily an execution point, but also a partially robbed grave.

For the purpose of this study, the three sections are treated as one unit in order to refine statistics.

Of the 340 minimum number of individuals present, 292 were discovered as either whole or almost whole bodies (85.55%). The report claims that in each case where sex could be established, they were determined male. However, since no specific numbers were given, sex was designated unavailable for this gravesite. The same unavailable determination was made for age, as the data simply mentions that all victims were between the ages of eight and eight-five. Table 7 denotes these findings as 'N/A' for both sex and age.

Cause of death for 237 individuals was due to gunshot wounds, accounting for 69.7% of the population. Additionally, location of these fatal wounds was identified for each individual; eighty0-three died of gunshot wounds to the head (35.03%), seventy-six died of gunshot wounds to the torso (32.07%), seventy-two died of multiple gunshot wounds (30.38%), five died of gunshot wounds to the legs (2.11%), and one person died of gunshot wounds to the arms (0.42%).

Examination of the grave revealed 168 ligatures made of cloth strips or white nylon twine, indicating as much as 49.4% of the population may have been bound. There were fifty-five blindfolds found, of which forty-nine of them were found around the head (89.1%), one associated with a body (1.81%), and five found loose in the grave (9.09%). In total, at least 16.18% of the population was blindfolded. There were thirteen shell cases found on the surface of the grave a year prior to excavation, and another sixteen found on the site surface just preceding exhumation. The grave itself contained 532 additional shell cases, the majority of which (86.31%) were located within section KK03, which is believed to be an execution point. Combining this data gives a casing to body ratio of 1.65:1. There were also 368 bullets and eighty bullet fragments located during the exhumation and autopsy process, giving a bullet to body ratio of 1.08:1.

Although the report lacks specific data on age and sex, it does mention that numerous victims of this grave displayed evidence of having a disability or chronic disease. The disabilities noted include: arthritis, spine rigidity, healed limb amputations, a claw hand, a fixed elbow, legs fixed straight, and an individual with a glass eye.

Table 7. Summary of Kozluk Mass Gravesite

Type of Grave	Primary
MNI	340
Complete Bodies	85.88%
Sex	N/A
Age	N/A
Cause of Death	GSW 69.7% UNKN 30.3%
Bodies Bound	49.4%
Bodies Blindfolded	16.18%
Bullet to Body Ratio	1.08:1

Shell Casing to Body Ratio	1.65:1

Glogova 2

A heavily disturbed primary grave, Glogova 2 was exhumed in 1999, and consisted of five sections or sub-graves denoted as: GLO2, GL03, GL04, GL05, GL06. Three of these areas were robbed prior to exhumation, but for the purpose of this study all five areas will be combined and treated as one site. Glogova 2 is associated with the secondary grave of Zeleni Jadar 5 and the execution site of Kravica Warehouse. Combined, the minimum number of individuals was 139, ninety of which were complete bodies (64.75%). Of these, 109 were determined to be male (78.42%), while the rest were undetermined (21.58%).

Overall, evidence varies among sections of this site and include: marks of a mechanical digger and front-end loader, two makeshift stretchers found made of branches and blankets, shallow grave areas, a vehicle access ramp, and charred or burned bodies. Of the ninety complete bodies, sixty-four died of gunshot wounds (71.11%). Distribution of gunshot wounds indicated that thirty-eight were to the trunk (59.38%) and twelve were to the head (18.75%). Additionally, fourteen victims had evidence of multiple gunshot wounds (21.88%). There was also one individual who had a cause of death attributed to a penetrating head injury (1.11%), and the remaining twenty-five were of unknown cause of death (27.78%).

Ages ranged from twelve to seventy-one years of age, with no specifics given other than a note that one particular section, GL05, was distinguishable by the high percentage of bodies found under the age of twenty-four (46%). There were no

ligatures or blindfolds found in any of the grave sections. In total, there was one loaded gun with six rounds of ammunition, one shell case, forty-one bullets and thirteen bullet fragments discovered. This gives a casing to body ratio of 1:139, and a bullet to body ratio of 1:3.4. Table 8 shows this evidence, with cause of death broken down for complete bodies (CB) and minimum number of individuals (MNI).

Table 8. Summary of Glogova 2 Mass Gravesite

Type of Grave	Primary
MNI	139
Complete Bodies	64.75%
Sex	Male: 78.42% UNDET 21.58%
Age	N/A
Cause of Death	CB: GSW 71.11% Head Injury 1.11% UNKN 27.78% MNI: GSW 46.04% Head Injury 3.39% UNKN 53.24%
Bodies Bound	0%
Bodies Blindfolded	0%
Bullet to Body Ratio	1:1.34
Shell Casing to Body Ratio	1:139

Konjevic Polje 1

An undisturbed, primary grave exhumed in 1999, Konjevic Polje 1 is described as "a shallow grave with an entrance ramp and characteristics suggesting it had been dug by a front-end loader" (Manning, 2000: 60). There were nine individuals located in two clusters within the grave, eight of which were male (88.89%), and one was female (11.11%); making Konjevic Polje 1 the only grave in this seventeen-site investigation with a confirmed female body.

All bodies were relatively complete, and there were no ligatures or blindfolds discovered. Cause of death for the nine individuals suggests seven died of multiple gunshot wounds (77.78%), one probably died as a result of gunshot wounds (11.11%), and one had an undetermined cause of death (11.11%). Interestingly, it was the female whose cause of death was undetermined, though it was noted that she was shot twice in the left leg, once in the hip area and once below the knee.

The ages for these victims were reported separately for the males and female, and since different age ranges were used creating statistics for the site as a whole was problematic. One of the males was reported as between the ages of sixteen and twenty-four (12.5%), while the other seven were between twenty-five and sixty-five years (87.5%). The female was reported as between sixteen and thirty years of age. In sum, there were five bullets, six bullet or metal fragments, one live bullet and one shell case discovered; giving a casing to body ratio of 1:9, and a bullet to body ratio of 1:1.8. Additionally an improvised stretcher made from tree branches and a blanket, a bag of clothes, and white powder thought to be lime was also found in the grave (see Table 9).

Table 9. Summary of Konjevic Polje 1 Mass Grave Site

Type of Grave	Primary
MNI	9
Complete Bodies	100%
Sex	Male: 88.89% Female: 11.11%
Age	Male 16-24 12.5% 25-65 87.5% Female 16-30 100%
Cause of Death	GSW 77.78% Prob. GWS 11.11% UNKN 11.11%

Bodies Bound	0%
Bodies Blindfolded	0%
Bullet to Body Ratio	1:1.8
Shell Casing to Body Ratio	1:9

Konjevic Polje 2

The final primary gravesite to be described is also the smallest. Having a minimum number of three individuals, Konjevic Polje 2 was excavated in 1999. It should be noted that Konjevic Polje 2 is not a continuation of Konjevic Ploje 1, as was the case with the two Nova Kasaba sites. Rather, Konjevic Ploje 1 and 2 are separate burials, their names similar likely as a result of geographical location.

Konjevic Ploje 2 consisted of two graves, where "both graves were shallow and appeared to have been dug by hand" (Manning 2000:63), though for this study the evidence from the two graves will be combined so as to simplify treating this as one site. However, it is interesting to note that the grave containing only one victim described the body being on a "turf pedestal" made of miscellaneous branches and flowers, which "suggests the individual was scooped mechanically from a different location and placed in the grave" (Manning 2000:62).

All three victims were male, died of gunshot wounds, and were found intact. Two of the victims were between the ages of fifteen and twenty-one years (66.67%), while the third was between the ages of thirty-one and seventy-one years of age (33.33%). There were two rifle shell cases found, giving a casing to body ratio of 1:1.5. Six bullets were found underneath two of the bodies matching the injuries discovered, suggesting the victims were shot while in the grave. This gives a bullet

to body ratio of 2:1, and indicates that each body was shot at least twice. Table 10 demonstrates this evidence.

Table 10. Summary of Konjevic Polje 2 Mass Grave Site

Type of Grave	Primary
MNI	3
Complete Bodies	100%
Sex	Male: 100%
Age	15-21 66.67% 31-71 33.33%
Cause of Death	GSW 100%
Bodies Bound	0%
Bodies Blindfolded	0%
Bullet to Body Ratio	2:1
Shell Casing to Body Ratio	1:1.15

Cancari Road 3

Transitioning to secondary graves, Cancari Road 3 was exhumed in 1998. Associated with the primary grave of Kozluk, this site also contained broken green glass, broken bottles and unused bottle labels. Traces of wheel tracks and grooves from a toothed bucket were described at the base of the grave, as well as an entrance ramp located at the southern end. Having a minimum number of 158 individuals, most were disarticulated and only thirty-five bodies were found almost complete (22.15%). Sex was determined as male for 126 individuals (79.75%), with the remaining 32 left undetermined (20.25%).

Age was largely identified as adult, or over the age of twenty-five for this grave (94.94%). However it was indicated that one individual was between the ages of eight and thirteen (0.63%), five were between the ages of thirteen and eighteen (3.16%), and two between the ages of eighteen and twenty-five (1.27%). There were eight blindfolds recovered from this site, indicating 5.06% of the population

was blindfolded. Specifically, four of the blindfolds were found around the face (50%), three were located with a body (37.5%) and the last one was loose in the grave (12.5%). In addition, thirty-seven ligatures were discovered, suggesting 23.42% of the victims were bound. Five of the ligatures were found associated with bodies (13.51%), six were found loose in the grave (16.21%), and the majority were found associated with the hands or arms of a specific individuals (70.27%).

Cause of death, as with the previous sites involving extreme disarticulation, was determined separately for complete bodies and body bags. Of the thirty-five mostly complete bodies, twenty-nine had sufficient gunshot wounds to cause death (82.86%), while the other six bodies were undetermined (17.14%). Of the 383 body bags used to collect the remains, 103 had sufficient gunshot wound injury to cause death (26.9%), thirteen had enough gunshot wound injury to probably cause death (3.39%), fifteen had gunshot wounds listed as possible cause of death, two were stated as having injuries consist with gunshot wounds that would cause death, and the remaining 254 body bags were labeled with an undetermined cause of death (66.32%).

There were 126 shell cases, eighty-eight complete bullets, fifty-seven bullet jacket fragments, thirty-five bullet core fragments, 155 metal fragments, and innumerable shotgun pellets were recovered from this site. A casing to body ratio of 1:1.25 was calculated, as well as a bullet to body ratio of 1:1.80. It was noted in Manning's report that the shell cases found at this site were matched to those found at the Kozluk grave by the U.S. Bureau of Alcohol, Tobacco and Firearms (2000:47). Table 11 shows the figures for this gravesite.

Table 11. Summary of Cancari Road 3 Mass Gravesite

Type of Grave	Secondary
MNI	158
Complete Bodies	22.1%
Sex	Male: 79.75% UNDET 20.25%
Age	8-13 0.63% 14-18 3.16% 19-25 1.272% 25+ 94.94%
Cause of Death	CB: GSW 82.86% UNKN 17.14% BB: GSW 26.9% Prob. GSW 3.39% Poss. GSW 3.92% UNKN 65.79%
Bodies Bound	23.42%
Bodies Blindfolded	5.06%
Bullet to Body Ratio	1:1.80
Shell Casing to Body Ratio	1:1.25

Cancari Road 12

A secondary mass grave, Cancari Road 12 was exhumed in 1998, and is associated with the Branjevo Military Farm site. This association is indicated by matching soil and pollen samples. Upon exhumation, wheel tracks and groove marks from machinery with a toothed bucket was observed, as well as the original entrance ramp built for a loader, likely used to assist in moving the bodies from their original location as quickly as possible. The remains of Cancari Road 12 show high disarticulation, a prime indicator of secondary burials, with the parts of almost 174 people found. Though this figure is used as the minimum number of individuals, with only forty-three almost-complete bodies representing a mere 24.71% of the grave population; the statistics start to get a bit muddled. This study will continue to

use the minimum number of individuals in all percentages with the exception of cause of death, for which will be calculated using the minimum number of individuals as well as the number of complete bodies. Since Manning's report often divided cause of death into two categories in cases of extreme disarticulation: cause of death for complete bodies and cause of death for body bags will be determined when possible. The data outlined in Table 11 should help to clarify this, though note 'CB' is used in the table to indicate complete bodies and 'BB' used to indicate body bags.

Of the 174 minimum number of individuals, 144 were determined to be male (82.76%), with the remaining (17.24%) undetermined, most likely due to the high disarticulation. The age distribution for these remains states that five people were between the ages of eight and thirteen (2.87%), twenty-three people between the ages of eighteen and twenty-five (13.22%), the majority (79.3%) of this population was between the ages of twenty-six and fifty-five, five people between fifty-six and sixty-four years (2.87%), and the last individual over sixty-five years old (0.57%).

Of the forty-three complete bodies examined, thirty-nine died of gunshot wounds (90.7%), with the remaining (9.3%) undetermined. These values this could be compared to the population as a whole using the minimum number of individuals, however using complete bodies eliminates the overlap created when cause of death for body bags is determined. In collecting the remains, 313 body bags were utilized, of which 145 had enough gunshot wound evidence to determine it as a cause of death, resulting in 46.33%. As Manning notes, it is probable the remains of individuals are placed in more than one body bag thus skewing the results

(2000). Since this is unavoidable with remains separated beyond recognition, the statistics derived from the body bags offers for at least primitive analysis.

In total, eight (4.5%) of the victims had blindfolds, of which half were found still around the head and the other half found in close association with a body. One of the blindfolds found still on the head had a bullet hole in the cloth with a corresponding bullet entrance wound on the individual. Additionally, sixteen ligatures were found indicating 9.2% of the victims were bound, twelve (75%) of those were found in association with their arms. Furthermore, fourteen shell casings were found in the grave, six in the surrounding area and three discovered during autopsy for a total of twenty-three casings. This gives a casing to body ratio of 1:7.57. Of higher consequence, 185 complete bullets, 107 bullet jackets and fragments and 153 other metal fragments were located during autopsy. Ignoring the fragments, this gives a bullet to body ratio of 1.06:1. Most interestingly, bandages were found in association with six bodies and a sling found on another, indicating that at least seven people had injuries attended to shortly before death.

Table 12. Summary of Cancari Road 12 Mass Gravesite

Type of Grave	Secondary
MNI	174
Complete Bodies	24.71%
Sex	Male: 82.76% UNDET: 17.24%
Age	8-13 2.87% 18-25 13.22% 26-54 79.30% 55-64 2.87% 65+ 0.57%
Cause of Death	CB: GSW 90.70% UNKN 9.30% BB: GSW 46.33%

	UNKN 53.67%
Bodies Bound	9.20%
Bodies Blindfolded	4.50%
Bullet to Body Ratio	1.06:1
Shell Casing to Body Ratio	1:7.57

Hodzici Road 3

A secondary grave, Hodzici Road 3 was exhumed in 1998, and as mentioned previously is associated with the primary grave of Lazete 2 through the matching of shell casings found at both locations. The grave itself showed evidence of a vehicle entrance ramp on the eastern end, as well as another ramp with tooth marks indicating a loader with a toothed bucket may have been used to dig the grave and empty the remains into two distinct deposits within the burial. Combined, the two deposits contained a minimum number of forty-five individuals, of which 86.67% were classified as male, while the remaining 13.33% were undetermined. As frequently seen amongst secondary burials, multiple remains were disarticulated beyond reassembly, resulting in no more than 55.56% of the remains being complete bodies.

The age range for this burial varies from thirteen years old to the broad category of over of twenty-five years and older. There were three (6.67%) people in the sub-adult category of ages thirteen to seventeen years old, ten people (22.22%) deemed eighteen to twenty-four years of age, and twenty-seven (60%) were labeled as over the age of twenty-five years. This leaves five (11.11%) individuals unaccounted for, this study classified as having an unknown age, presumably due to extreme disarticulation or damage to the remains. There were no ligatures found at

this gravesite, however sixteen blindfolds were recovered, five of which were still on the head or face (31.25%), eight were found in association of a body (50%), and the last three were discovered loose in the grave (18.75%). In total 35.56% of the burial population was presumably blindfolded.

In listing cause of death, Manning mentions only the complete bodies, as body bags were not used for this grave, and cause of death was not noted for the disarticulated remains. Of the twenty-five complete bodies, twenty (80%) had a cause of death due to gunshot wounds, two (8.0%) had a possible cause of death from gunshot wounds, and the remaining three (12%) were undetermined. Comparing these figures to the overall minimum number of individuals of forty-five, this converts to 44.44% of the population having died as a result of gunshot wounds, 4.44% possibly dying of gunshot wounds, and the remaining 51.11% of the population had an undetermined cause of death. Cause of death for both complete bodies and the minimum number of individuals are listed in Table 12.

Lastly, there were thirty-nine complete bullets, ten bullet jacket and core fragments, fourteen shell cases and thirty-five miscellaneous metal fragments recovered during the exhumation and autopsy processes; translating into a bullet to body ratio of 1:1.15, and a casing to body ratio of 1:3.21. It should be noted that only complete and fired bullets, and complete casings are used to establish these ratios. While it is important to note the live rounds, fragmented bullets and additional metal pieces collected during these excavations, this information is not included in the ratio data for the sake of standardization and clarity.

Table 13. Summary of Hodzici Road 3 Mass Gravesite

Type of Grave	Secondary
MNI	45
Complete Bodies	55.56%
Sex	Male: 86.67% UNDET 13.33%
Age	13-17 6.67% 18-24 22.22% 25+ 60.00% UNKN 11.11%
Cause of Death	CB: GSW 80.00% Poss. GSW 8.00% UNKN 12.00% MNI: GSW 44.44% Poss. GSW 4.44% UNKN 51.11%
Bodies Bound	0.00%
Bodies Blindfolded	35.56%
Bullet to Body Ratio	1:1.15
Shell Casing to Body Ratio	1:3.21

Hodzici Road 4

This secondary mass grave site, also associated with primary grave Lazete 2 was excavated in 1998, and showed evidence of machine-generated wheel tracks and teeth marks on the grave base. Hodzici Road 4 also had a vehicle entrance ramp at the northwestern end. It was determined sixty-six, or 80.49%, of the victims were male, and having a minimum number of eighty-two individuals, almost forty-nine (59.76%) of which were complete bodies. Nearly half of the victims were blindfolded (48.78%), with fourteen of the forty blindfolds recovered being found around the face (35%), five associated with a body (12.50%), and another twenty-one found loose in the grave (52.50%).

The majority of the ages given are broad, with one individual determined to be between the ages of eight and thirteen (1.22%), three between the ages of fourteen and eighteen (3.66%), eleven between the ages of nineteen and twenty-five years old (13.41%), and the greater part of the population ambiguously established to be over the age of twenty-five (80.49%).

Due to the disarticulation, the causes of death were reported only for complete bodies; as a result calculated percentages for both the complete bodies as well as for the minimum number of individuals in the grave were established. First, of the forty-nine mostly complete bodies, thirty-seven (75.51%) had a cause of death attributed to gunshot wounds. One individual (2.04%) had a cause of death classified as probable gunshot wounds, and another (2.04%) as possible gunshot wounds. The last nine (18.37%) were undetermined, however it was noted that, of those nine, five had bullets or bullet fragments present, four had gunshot wounds in non-lethal areas, and four had extensive skull fractures.

Eighty-one shell cases were located during the exhumation and autopsy process, giving a casing to body ratio of 1:1.01, essentially a one-to-one proportion. There were also ninety-five complete bullets, eighty-four bullet fragments, and nineteen bullet jacket or core fragments discovered, as well as what was thought to be shotgun pellets. Using the complete bullets only, this gives a bullet to body ratio of 1.16:1. Additionally, there was one possible ligature found (1.22%), but no elaboration or further description was provided regarding its location in the grave. Table 13 summarizes these findings.

Table 14. Summary of Hodzici Road 4 Mass Gravesite

Type of Grave	Secondary
MNI	82
Complete Bodies	59.76%
Sex	Male: 80.49% UNDET 19.51%
Age	8-13 1.22% 14-18 3.66% 18-24 13.41% 25+ 80.49% UNKN 1.22%
Cause of Death	CB: GSW 75.51% Prob. GSW 2.04% Poss. GSW 2.04% UNKN 18.37% MNI: GSW 45.12% Prob. GSW 1.22% Poss. GSW 1.22% UNKN 52.44%
Bodies Bound	1.22%
Bodies Blindfolded	48.78%
Bullet to Body Ratio	1.16:1
Shell Casing to Body Ratio	1:1.01

Hodzici Road 5

The fourteenth burial site to be discussed is that of Hodzici Road 5, the last of the Hodzici Road trilogy. Also a secondary grave, associated with Lazete 2, it showed traces of machinery teeth marks at its base and a vehicle entrance ramp on the southern end. Additionally, testing indicated the presence of foreign soil, confirming its classification as a secondary burial. With a minimum of fifty-seven individuals present, fifty-four (94.74%) were identified as male, and fifty-one (89.47%) were intact. The ages given for this burial are limited. There was no one under the age of twenty-five, seven (12.28%) deemed to be within fifty-five and sixty-five years of

age, and one (1.75%) individual over the age of sixty-five. Unfortunately, this means the remaining forty-nine bodies (85.96%) may either be between the ages of twenty-five and fifty-five, or more likely were simply beyond determination. This study will consider the ages of these individuals unknown.

Cause of death given for the fifty-one intact bodies stated that the majority (88.24%) died from gunshot wounds, two (3.92%) probably died from gunshot wounds, three (5.88%) were undetermined, and one (1.96%) possibly from suffocation. Using the minimum number of fifty-seven instead gives 78.95% dying as a result of gunshot wounds, 3.51% probably as a result of gunshot wounds, 1.75% from possible suffocation, and 15.79% with an undetermined cause of death.

Of note, there was one ligature found binding an individual's hands behind his back, and this person also had gunshot wounds in his pelvis and bullet fragments in both thighs and knees. Thirty-four blindfolds were found, indicating 59.65% of the population was blindfolded; of these twenty-one (36.84%) were found around the head, four (7.02%) were associated with bodies, and nine (15.79%) were discovered loose in the grave. Lastly, ninety-four complete bullets, fifteen shell cases, twenty-one bullet jacket fragments, ten bullet core fragments and seventy-two other metal fragments were recovered. This data gives a casing to body ratio of 1:3:8, and a bullet to body ratio of 1.65:1. The following table (Table 14) shows these figures.

Table 15. Summary of Hodzici Road 5 Mass Gravesite

Type of Grave	Secondary
MNI	57
Complete Bodies	89.47%
Sex	Male: 94.74%

	UNDET 5.26%
Age	<25 0.00% 55-65 12.28% 65+ 1.75% UNKN 85.96%
Cause of Death	CB: GSW 88.24% Prob. GSW 3.92% Poss. Suffocation 1.96% UNKN 5.88% MNI: GSW 78.95% Prob. GSW 3.51% Poss. Suffocation 1.75 % UNKN 15.79%
Bodies Bound	1.96%
Bodies Blindfolded	59.65%
Bullet to Body Ratio	1.65:1
Shell Casing to Body Ratio	1:3.8

Liplje 2

Excavated in 1998, Liplje 2 is a secondary grave associated with the primary grave of the Dam near Petkovci. Showing traces of machinery groove marks and front loader tracks at the base of the grave, there was also a vehicle entrance ramp found at the eastern end. This grave contained severely dismembered bodies, with a minimum number of individuals estimated at 191, only four (2.1%) of which were relatively intact. Of the remains, 122 (63.87%) were determined to be male, leaving sixty-nine (36.13%) undetermined. The known ages for these remains include one between the ages of eight and thirteen (0.52%), fourteen between the ages of fourteen and eighteen (7.33%), and twenty-two between the ages of eighteen and twenty-five years of age (11.52%); this leaves 154 ages unaccounted for and assumed to be unknown (80.63%).

For this gravesite the cause of death was given in relation to complete bodies, as well as body bags. Of the four mostly intact bodies, one died of gunshot wounds (25.00%), one of possible gunshot wounds (25.00%), and the other two remain undetermined (50.00%). In looking at the 807 body bags used to collect the remains, thirty-four of them had an injury to a body part sufficient to cause death from gunshot wounds (5.57%), five had an injury to a body part that would probably cause death from gunshot wounds (0.82%), twenty-six body bags contained an injury to a body part that could possibly attribute death to gunshot wounds (4.26%), and two body bags showed evidence of injuries consistent with homicidal evidence. Unfortunately, the report does not describe what type of evidence is considered homicidal. The remaining 543 body bags contained mostly small body parts, making cause of death difficult to determine with a lack of recognizable vital areas, and thus were given an undetermined cause of death (89.00%).

Liplje 2 revealed twenty-three ligatures, suggesting 12.04% of the population may have been bound; of these fourteen were found associated with a hand or forearm (60.87%) and nine were directly associated with a body (39.13%). There was one possible blindfold found, which would suggest only 0.52% of the population was blindfolded, though more may have existed prior to the grave destruction. In terms of projectiles, twenty-seven shell cases, twenty-three complete bullets, thirteen bullet jacket fragments, six bullet core fragments and twenty-nine unspecified metal fragments were found. This gives a bullet to body ratio of 1:8.30; and a casing to body ratio of 1:7.07. Table 14 summarizes these details.

Table 16. Summary of Liplje 2 Mass Gravesite

Type of Grave	Secondary
MNI	191
Complete Bodies	2.1%
Sex	Male: 63.87% UNDET 36.13%
Age	8-13 0.52% 14-18 7.33% 19-25 11.52% UNKN 80.63%
Cause of Death	CB: GSW 25% Poss. GSW 25% UNKN 50% MNI: GSW 5.57% Prob. GSW 0.82% Poss. GSW 4.26 % Poss. Homicide 0.34% UNKN 89.0%
Bodies Bound	12.04%
Bodies Blindfolded	0.52%
Bullet to Body Ratio	1:8.3
Shell Casing to Body Ratio	1:7.07

Zelini Jadar 5

One of seven known graves along the Zelini Jadar Road, this secondary burial was excavated in 1998, and is associated with the primary grave of Glogova 2 on the basis of examined soil and pollen samples. Additionally, the U.S. Bureau of Alcohol, Tobacco and Firearms matched the ejector marks on shell cases found at Zelini Jadar 5 with two collected from the Kravica Warehouse execution site.

Though the minimum number of individuals was 145, only forty-seven bodies were discovered almost complete (32.41%), and 367 body bags were used to collect the rest of the remains. There were no blindfolds found at Zelini Jadar 5, and only two bodies had ligatures located on them (1.38%); one around the hands and

the other around the left leg. A total of 120 victims were determined to be male (82.76%) and twenty-five were undetermined; possibly due to disarticulation, damage to the remains, or young age causing sexing to be difficult.

Examination reveled eleven individuals between the ages of thirteen and eighteen (7.59%), 27 between the ages of nineteen and twenty-four (18.62%0, and the remaining 73.79% over the age of twenty-five. Manning's report lists the latter category as having 112 individuals, however that would indicate the minimum number of individuals to be 150 instead of the previously stated figure of 145 (2000). As with the Dam near Petkovci site, this discrepancy is thought to be a result of five bodies being aged twice due to their disarticulation. Therefore, the original number of 145 is likely a more accurate representation of the minimum number of individuals present, and will be utilized for this study.

Cause of death at this site was determined separately for the complete bodies and for the body bags. Of the forty-seven almost intact bodies, thirty died of gunshot wounds (70.21%), two died of probable gunshot wounds (4.25%), three died of possible gunshot wounds (6.38%) and nine had an undetermined cause of death (19.15%). Additionally, evidence of shrapnel was present in seven of the nine victims with undetermined cause of death, as well as in two of the gunshot wound victims. Of the 367 body bags utilized at this site, there was large variation in the cause of death seen in these victims. As such, seventy-eight had evidence of fatal gunshot wounds (37.5%), eight had evidence of fatal gunshot and shrapnel wounds (3.85%), five had evidence solely of fatal shrapnel wounds (2.4%), two had fatal shotgun wounds (0.96%), eight had evidence of probably fatal gunshot wounds

(3.85%), nine of possibly fatal gunshot wounds (4.33%), one of possibly fatal gunshot and shrapnel wounds (0.48%), one of a possibly fatal perimortem skull fracture (0.48%), and ninety-seven did not have sufficient evidence to determine a cause of death (46.63%).

Interesting to note, three of the body bags showed evidence of postmortem burning on the remains (0.82%). Additionally, there were four shotgun or birdshot wounds evident amongst the remains; of these one was to the face, one to the back, one to the knees and one to the knee and ankle area. The following table (Table 17) further demonstrates this evidence.

Inorganic evidence included thirty complete bullets, nine shell cases, fifty-nine bullet jacket and core fragments, and ninety unspecified metal fragments. This gives a casing to body ratio of 1:16.11, and a bullet to body ratio of 1:4.83.

Table 17. Summary of Zeleni Jadar 5 Mass Gravesite

Type of Grave	Secondary
MNI	145
Complete Bodies	32.41%
Sex	Male: 82.76% UNDET 17.24%
Age	13-18 7.59% 19-24 18.62% 25+ 73.79%
Cause of Death	CB: GSW 70.21% Prob. GSW 4.25% Poss. GSW 19.15% UNKN 27.78% BB: GSW 37.5% GSW + Shrapnel 3.85% Shrapnel 2.40% Shotgun Wounds 0.96% Prob. GSW 3.85% Poss. GSW 4.33% Poss. Skull Fracture 0.48%

	UNKN 46.63%
Bodies Bound	1.38%
Bodies Blindfolded	0%
Bullet to Body Ratio	1:14.83
Shell Casing to Body Ratio	1:16.11

Chapter 3: Results

It is imperative for an exploratory such as this to look at the data from these seventeen mass gravesites as a collection in addition to as individual sites. It is necessary to examine each site separately in order to observe the repeated characteristics and evaluate patterns as they emerge. However, it is vital to combine the data available, where achievable, so as to analyze the frequency of the variables compared to the population as a whole. By concentrating on the human remains, this allows for biological patterns to arrive. These patterns, and others like them, could be applied to areas of conflict where genocide is being debated. Additionally, biological evidence of genocide aids in strengthening court testimony at international trials by supplementing existing evidence.

As a reminder, Manning's report summarizes multiple execution points, primary burials and secondary burials- of which this study has focused on seventeen primary and secondary burials. However, Manning identified thirty-nine burial related to the Srebrenica Massacre, many of which were not yet exhumed at the time of his report in 2000. More burials have been exhumed since then, however, due to labeling discrepancies and reporting variation in the literature, it is not feasible to determine which additional burials identified in Manning's report have since been evaluated. Further burials have since been identified and linked to

the Bosnian War by other scholars, some of which may be related to the Srebrenica Massacre.

Exhumations on genocidal mass graves from Bosnia continue today, and it is difficult to predict how many more will be discovered in upcoming years. As a result, this study will analyze these seventeen burials as a sample representation of the general Srebrenica Massacre population. The patterns they present provide a glimpse into what occurred, and allow for a baseline of common characteristics depicted in mass burials from this genocide. First, the data from the burials will be combined, followed by a summary of the patterns and frequencies seen on a larger level. In Chapter 4, each variable will be separately examined and theories will be introduced to explain the rate of recurrence for these characteristics and their significance in identifying and defining genocide from a biological perspective. After which, a Bosnian mass burial separate from the Srebrenica Massacre will be examined for indications of similar biological patterns.

Burials Combined

Of the seventeen burials examined, ten are primary graves (58.82%) while seven were typed as secondary (41.18%); which provides useful insight into both types of mass graves. In sum, the burials totaled 1,923 individuals, which was calculated by adding together the minimum number of individuals for each burial. However, Manning recalculates this total to 1,883 (2000:18). Though Manning does not elaborate on his process for identifying this specific number, it is reasonable to assume he estimated the incidence of the repeated recording of bodies due to

disarticulation and remains divided between separate burials. This study will use Manning's estimated number of individuals for the following calculations. While this skews the results a bit by not using the original number of 1,923 for the combination statistics, Manning's estimate is likely more accurate and the difference of forty individuals did not affect the results significantly.

The total number of complete, or more accurately- mostly complete, bodies for the burials came to 1,183; giving a percentage of 62.83%. This means that 36.17% of the remains found were discovered disarticulated beyond re-association. In terms of sex, there were 1,340 bodies identified as male (71.16%), and one body positively identified as female (0.05%), using Manning's estimated minimum number of individuals the adjusted unknown frequency is 28.79%.

There were 408 total ligatures and 271 blindfolds reported across burials, indicating as much as 21.67% of the population was bound, and up to 14.39% were blindfolded. Owing to the break down of the fabric material used for the blindfolds and ligatures discovered, countless more surely existed. Many of the blindfolds and ligatures would have decayed over time, and others may have not been noticed or were not reported; as such these percentages are low estimates for how many victims were bound or blindfolded. Unfortunately, due to the means in which these factors were reported, it is also no feasible to account for how many individuals were concurrently bound and blindfolded.

Combining the number of bullets recovered between all graves gives a bullet to body ratio of 1:1.39. The total number of shell cases summed 2426, giving a casing to body ratio of 1.29:1. Interestingly, when combined the shell casing to body

ratio is higher than that of the bullet to body ratio, though it is remarkably that so many bullets and cases were recovered in the first place. Due to the difficulty in accounting for such small artifacts, these ratios are likely underestimated.

Accounting for age was problematic in that the ranges used by each mass grave investigator were not standard. An attempt was made to create broad categories in order to combine the age ranges and provide statistics for comparison, but this could not be done without discounting some of the data due to overlaps in the ranges used for reporting age. As such, the largest categories possible were created while still maintaining meaning for comparison, and it is noted how many of the population were left out of these statistics. It is important to understand that those excluded from these age categories do not belong in the 'unknown' group, as their age was documented in some cases, but not in a standardized way to allow for merging the data.

The age categories (in years) used for summing the burials were: Under twenty-five, twenty-five and over, unknown, and overlap/other, the latter consisting of the data that could not be merged into the other three categories. The number of victims under the age of twenty-five totaled 230, indicating at least 12.21% of the population was of this age range. There were 820 victims age twenty-five and older, accounting for 43.53% of the population. There were 662 that were put into the catchall category of overlap/other due to reporting inconsistencies (35.16%), and the remaining 9.08% have an undetermined age.

In analyzing cause of death, focus was put on the information reported for complete bodies for the following statistics, and the figure 1,183, which was

determined for total complete bodies, was used to create statistics. This method allows for a clearer representation of cause of death overall, than an attempt to combine cause of death of bodies with cause of death of body bags. As such, 1,027 victims died as a result of gunshot wounds, accounting for the majority at 86.81%. Cause of death 'probably from gunshot wounds' and 'possibly from gunshot wounds' were equal, each accounting for six victims and 0.51% of the population. Head trauma was determined for two individuals, or 0.17%; and possible suffocation for one individual (0.08%) in total. The original sum of unknown deaths totaled 223 (18.85%), but this likely includes body parts of individuals from separate graves; therefore this figure was adjusted and the unknown cause of death percentage determined to be 11.92%, using the aforementioned percentages as a more reliable depiction of actual death causes than the number attained from adding the burials together. Table 18 presents these figures, which will be followed by discussion of each variable accordingly.

Table 18. Summary of All Mass Grave Sites Combined

Type of Grave	Primary 58.82% Secondary 41.18%
MNI	1883
Complete Bodies	62.83%
Sex	Male 71.16% Female 0.05% UNKN 28.79%
Age	<25 12.21% 25+ 40.2% UNKN 9.08% Overlap 35.16%
Cause of Death (CB)	GSW 86.81% Prob. GSW 0.51% Poss. GSW 0.51% Head Trauma 0.17% Poss. Suffocation 0.05%

	UNKN 11.92%
Bodies Bound	21.67%
Bodies Blindfolded	14.39%
Bullet to Body Ratio	1:1.39
Shell Casing to Body Ratio	1.29:1

Chapter 4: Analysis and Discussion

The report Dean Manning submitted to the United Nations in 2000 summarized numerous variables for primary and secondary graves from the Srebrenica, Bosnia Massacre. This study takes note of specific variables and creates frequency statistics of their occurrence. Biological variables, such as age, sex, and minimum number of individuals were catalogued to create a rough demographic of what constitutes a genocidal burial from the specific geographical context of Bosnia. Variables, such as cause of death, disarticulation, blindfolds, and ligatures, created recurring patterns atypical of traditional burials. Bullet to body and shell casing to body ratios were generated to expound upon theories often associated with genocide.

Additional data indicating genocide, such as specific injury patterns, are mentioned-but were not statistically analyzed due to inconsistent occurrence. Each of the ten variables previously mentioned will now be individually examined in relation to theories consistent with genocide and genocidal mass burials. After all, since "archaeologists have traditionally claimed that ethnicity can be recognized in archaeological assemblages," it is reasonable to assume the *destruction* of an ethnic group could also be recognized through burials (Arnold, 2002: 96).

Type of Grave

To begin, there are several classifications of burials. Jessee and Skinner (2005) classify genocidal mass graves into four basic types: (1) surface and grave execution sites: victims are killed within or adjacent to the previously dug grave; (2) permanent and temporary deposition sites: bodies are simply left and often later moved, though natural structures may hide the bodies they are not buried; (3) primary and secondary inhumation sites: the bodies are interred in the ground, but may be retrieved and moved at a later time, and (4) looted inhumation sites: refers not to grave goods, but the removal of remains in order for transport to a secondary inhumation. These types must be recognized in order to properly assess the site and the remains, the method and thoroughness of evidence collecting, and detection of additional graves or missing remains, as well as assisting to reveal the criminal, legal, political and social contexts (Jessee and Skinner 2005).

As indicated by the previous burial descriptions, the mass burials exhumed in connection to the Srebrenica Massacre mostly fall into the third category defined by Jessee and Skinner (2005), that of primary and secondary inhumations. Though the Manning report discusses a small number of execution points and looted inhumation sites, the mass burials were largely either primary or secondary burials. While mass burials in and of themselves merit suspicion, the very presence of secondary burials essentially declares a genocide has occurred. The act of removing large quantities of remains, with the apparent intent of relocating them amongst several separate burials and purposefully causing additional damage to further deter identification of the individuals, indicates that a hefty crime has transpired.

Though a mass burial could simply be a practical means of quick disposal, it

seems more likely the primary graves were an attempt to hide and destroy evidence by commingling the remains. Then, when it seemed the primary graves would be discovered, they were robbed of their contents by perpetrators hoping to obscure victim identity by deliberately separating individuals amongst several smaller burials. Additionally, Bosnia appears to be the first historical example for the existence of secondary burials, and as such studies on the intent and outcome behind them are relatively new (Wagner 2008:83-83). Evidence presented in the international trials against suspected perpetrators suggest the secondary burials were a forensic countermeasure against individual victim identity, with the mindset being that if individuals associated with Srebrenica could not be positively identified as deceased, then they were simply still 'missing' (ICTY). And if the people of Srebrenica were merely 'missing,' the defense argued they fled of their own accord and were thereby not victims of an atrocity.

Sarah E. Wagner (2008) further discusses the outcome of secondary burials and their implications, beyond those of a legal atmosphere. Touching on social, religious and political disruption the chaos associated with secondary burials entails, Wagner makes note that "secondary mass graves destroy the physical integrity of human remains, not through cremation but by commingling and separating of bodies to the point that they are indistinguishable as individual skeletal remains" (2008:84). Though inferences regarding social and cultural structures, destroyed though the disarray created by secondary burials, is still being speculated on by others; it is interesting to note the mention of secondary burials creating *indistinguishable as individual, skeletal remains*. While this is certainly true,

this study takes note that the very existence of secondary burials is an indicator of genocide. And, that while the remains may often be indistinguishable as an individual, they are not indistinguishable beyond use for demographics, and as indicators of genocide.

Minimum Number of Individuals (MNI)

The need to describe the contents of a recent burial through the use of a minimal reference number, instead of a fixed number is alarming. At the very least, a range would seem less than ideal, but to scarcely be able to determine more than a starting point warrants unease at best. Steven Byers explicitly defines the minimum number of individuals as the "count obtained when conditions prevent the positive identification of all persons recovered from a mass grave and/or where individual bodies cannot be identified as with commingled body parts" (2011:91).

This is "accomplished by sorting bones by side and type, then counting that bone fragment that occurs most often"; and though this may be a "poor representation of the people who were recovered" it also may be the only viable option with heavily disarticulated and merged remains (Byers 2011:128). Since the very use of a minimum number of individuals is rudimentary, it begs the investigator to question why and how the remains became so chaotically disoriented in the first place. If the only usable count for a grave population is a crude, low range estimate, surely an explanation beyond natural factors, such as genocide, must be entertained.

Body Completion

This variable ties in with minimum number of individuals, as the amount of or lack thereof in regards to body completion was the prime reason for the need to utilize minimum number of individual counts. Logically, the secondary burials revealed a much lower percentage of body completion, as the remains were most definitely damaged during both their retrieval from the primary graves as well as during transport, and again damage would have occurred whilst the bodies were unloaded into the secondary graves. Observed tire tracks, vehicle entrance ramps, and groove marks left by toothed loader buckets indicate the crude use of machinery, increasing damage by crushing and tearing the remains further.

It is not surprising that body completion was often seen at 100% in many of the primary graves, including Cerska, Nova Kasaba, Branjevo Military Farm, Orahovac/Lazete 2, and Konjevic Polje 2. However, though body completion was comprehensive in these cases, as the number of whole bodies equaled the minimum number of individuals, it should be noted that this often required the reconstruction of said bodies by the professionals exhuming the remains. Natural decomposition and the break down of connective tissue plays a role in the disarticulation seen in all graves, however it should be noted that the individuals of these burials were not placed neatly in the graves as is seen in traditional burials. Rather it appears they were thrown or piled into the grave pits. The piling of the bodies, added with natural decomposition of flesh, muscle, and ligaments, mingled the remains. This indicates a lack of respect shown towards the deceased. Adam Rosenblatt illustrates the dual impact of burial disrespect, as “the violence against bodies in mass graves

reaches across the boundaries of life; it is committed first against living human beings and then against their dead bodies" (2010:948). Rosenblatt further defines these trans-boundary violations as occurring on three levels, the second of which is that "after they are killed, they are heaped together in piles or in mass graves, their resting places and bodies undifferentiated" (2010:948). Suggesting that not only are the victim's identities obscured in life, but also in death; haunting surviving family members and degrading their religious beliefs.

Furthermore, it is interesting to note the primary graves that did not contain total body completeness, especially those of Glogova 2 at a mere 64.75% and that of the Dam near Petkovci with 0% body completion. This indicates the remains of these victims were likely separated amongst several burials initially, or at the least were disfigured beyond reassembly prior to their first burial. Beyond intentional disrespect, this was probably a forensic countermeasure employed to mask the events that occurred and hide the guilty; this in and of itself implies the perpetrators knew their actions were fundamentally wrong, a theme which reoccurs later in the evidence.

Sex

Two striking outcomes of examining the sex of the grave victims emerged. First, there were almost no females present, and secondly, the unexpected percentage of victims whose sex was undetermined. With only one female positively verified amongst the seventeen graves, it appears that males were exclusively targeted. This corroborates victim testimony that ascertains the men were

separated from the women and children during their captivity at Srebrenica (Hartley 2007, ICTY). In targeting one sex for elimination, a concept referred to as "gendercide"; Hartley argues that "indiscriminate mass killing, where the goal is to eliminate the existing "Other" and therefore their potential to reproduce, constitutes genocidal behavior" (Hartley 2007:242).

By implementing a "reproductive competitive strategy" the perpetrators attempt to destroy an entire population by eliminating one of its reproductive halves. This can be done by targeting women for death or rape, thus forcefully giving the dominating group a reproductive advantage, or by targeting the men as seen in Bosnia (Hartley 2007:242). According to Paula Drumond, "though it is not the only significant variable, gender helps to define how men and women are targeted during genocidal violence. Gender-based violence, such as sex-selective massacres and sexual violence, is frequently deployed as a weapon during genocides (2012:97). Targeting men could also be seen as a method to removing them as a defensive or protective source for their population, though this seems unlikely when compounded with the evidence of non-military aged men and use of ligatures. Regardless of the acute reasoning, killing half of an entire population, particularly of one sex, seems a productive method for destroying the entire group.

The second prominent outcome of examining the sex calculations for the Srebrenica Massacre burials, is exposing the number of individuals with an undetermined sex (28.79%). There are two explanations at the forefront for this finding, the first being that the remains were too badly damaged to conclude sex, and the second, that the remains were of adolescents whose skeletal markers were

too ambiguous for sex to be determined. Though we already know the remains were badly damaged in many of the graves, it should be considered a possibility that some of the remains were too young to sex with accuracy. In his renowned manual, *Human Osteology*, William M. Bass states: "the question still arises as to whether subadult skeletal material can be accurately sexed, but the consensus is that any determination is little better than a guess" (2005:19). The primary method of sexing individuals skeletally utilizes examination of the innominates, or pelvic bones, which consists of three distinct portions prior to adolescence and may not be completely fused until seventeen years of age (Bass, 2005). Furthermore, since children grow at different rates, subsequently their bones do as well and without prior x-rays showing an individual's rate of fusion it is unreliable at best to presume sex of an adolescent or subadult until the individual has finished growing. Overall, adolescents of males and females are remarkably similar skeletally, and other bones often used for sexing individuals, such as the skull, also remain indiscreet until adulthood. Consequently, the potential presence of children further suggests the attack of a group with the intention of destruction.

Age

Unfortunately, age was a difficult variable to calculate and analyze with this set of data, particularly since each investigator used different age ranges. Even after constructing broader ranges, it was not possible to combine all of the data into discrete categories. While the data was merged as much as possible in an attempt to calculate frequency percentages for the entire collection, sites such as Branjevo

Military Farm, Kozluk, and Glogova 2 gave large ranges (ages fifteen to sixty-one, eight to eighty-five and twelve to seventy-one years old, respectively). Often these age ranges were not accompanied by elaboration as to how many victims were even able be aged, it was therefore unfeasible and ineffective to add their age data to the collection.

On the other hand, this showcases how varied the age results were, suggesting the population attacked and killed was comprised of more than military-aged men. Much of the defense for those accused of committing war crimes and crimes against humanity during the Yugoslav Wars of the 1990s centers on claims that all sides were fighting and actively participating in warfare (ICTY). However, the very fact that Srebrenica was attacked after it was designated as a safe-harbor for Bosnian Muslims to congregate under the (later failed) protection of the United Nations suggests otherwise (Honig 2007).

Not only was the Bosnian Muslim population specifically targeted at Srebrenica, it appears as though males of all ages were selected. While there was no indication of any children found under the age of eight in any of the seventeen burials, the evidence does suggest multiple children between the ages of eight and thirteen were discovered. Additionally, some burials note men over the age of sixty-five were verified; demonstrating that individuals outside of the norm for military-age was observed on both ends of the spectrum.

Hartley states that "in human societies young males are the most active, direct competitors, while older males are, for the most part, the resource holders" and that specifically "the thousands of males killed at Srebrenica and Ovcara

constitute combinations and the overlapping of young potential fighters, active fighters, and those well established socio-economically" (Hartley 2007:245). This suggests that the men killed at Srebrenica were not likely all seen as a military threat, but that the adolescent males may have been killed as a preemptive strategy to eliminate them as a potential future threat. Older males were likely eliminated before they could utilize any possible socio-political ties they may have had, financial reserves that could have aided the community, or any other resources perceived as a threat, such as aiding family members in escaping, funding activists or defense fighters, or communicating with outside nations and the media.

At the very least, the wide range of age seen in these mass gravesites pokes holes in any sort of defense or warfare justification for the Srebrenica Massacre, especially when combined with evidence of prior injuries, amputations, chronic disease, and various disabilities indicating that many victims were not physically fit to fight, escape or defend themselves. This range of data is further supported by David J. Simon's notion that, "in a non-genocidal civil war, soldiers kill one another, which is within the bounds of social expectations. Genocide is different because civilians are necessarily targeted" (2012:256).

Cause of Death

The most prominent cause of death amongst the seventeen burials was beyond a doubt gunshot wounds at 86.81% in regards to complete bodies. This is noteworthy, as Shay lists the prominent causes of death in traditional warfare as "heat, cold, dehydration, hunger, and above all, disease" (2011:180). Even as current

as 2008 Shay notes that the number of service personnel evacuated for disease was still roughly the same as those airlifted for physical injuries (2011). Through the advent of technology and increased medical access, soldiers and civilians alike survive wounds today that would have been unimaginable in the past. The distinctly high rate of gunshot wounds, potentially survivable with proper medical attention, further demonstrates how atypical the Bosnian War was in many respects.

Additionally, the terms 'probably' and 'possibly' used to describe cause of death by gunshot wounds is seen repeatedly throughout the burial descriptions in relation to cause of death, as well as recurrent indications of multiple gunshot wounds. This suggests overkill may have occurred, as well as wounds to non-lethal areas of the body, further pointing towards a personal motive beyond defense. While the 11.92% of unknown causes of death were likely difficult to determine due to the extreme damage and disarticulation recurring throughout the burials, the deaths attributed to head trauma may have occurred perimortem as the bodies were quickly disposed of in the mass graves. The possible suffocation death is most interesting, as it suggests the victim was buried alive in the grave, further supported by the bullet evidence that many were shot at the gravesite immediately prior to being buried.

Bound/Blindfolded

For this analysis the evidence of binding ligatures and blindfolds have been combined, since the explanations are remarkably similar. In discussing evidence recovery from mass graves, Mark Skinner mentions the importance of ascertaining

whether torture was implemented during or immediately prior to death, stating that "torture techniques commonly do not mark the body, however, persons dying under torture are less likely to have such evidence of torture (e.g., plugs up nose in "water treatment") removed from the body. Some torture techniques may mark the body sufficiently to be noticeable although the evidence will be subtle" (1987:270).

Skinner further lists several features indicative of torture, including: nails torn off, burn scars, stab wounds, fractured thyroid cartilage, ears removed, dismemberment cut marks, bed sore bone erosion, fractured hyoid, handcuff marks, bullets, blindfolds, saw marks, fractured skull, plugs up nose, front teeth knocked out, rope present, displacement due to mutilation, and crushed testicles, as well as others (1987:271). Within this extensive list are five characteristics critical to this analysis: fractured skull, rope present, handcuff marks, displacement due to mutilation, and blindfolds. While fractured skulls and head trauma have already been discussed, it is worth mentioning that those injuries may also point towards torture. Also, while it is unattainable to determine whether the bodies showed evidence of saw marks or intentional dismemberment due to mutilation, it should be considered as a possible explanation for the highly disarticulated and scattered remains.

Most significant, are Skinner's mention of blindfolds and binding ligatures as characteristic of torture (1987:271). The Srebrenica mass burials show 21.67% were bound, often with wire, nylon rope, cloth, or sacks; and 14.39% were blindfolded, with cloth strips being the prime method mentioned. While this not only indicates these victims may have been tortured prior to death, suggesting

heavy disdain and disrespect exuded by the perpetrators; but the bindings also support the notion that the victims were unable to fight back and the persons responsible for their deaths ought not to claim they were acting in defense, as declared in such trials as Ratko Mladic's ongoing case (ITCY).

Additionally, the blindfolds may have been used to manipulate the victims into being led closer to pre-dug graves, allowing for an easier execution and quicker body disposal if the victims were killed in or near the graves, with both witness accounts and forensic evidence supporting this hypothesis (ITCY, Manning 2000). It is vital to understand that the blindfolds and ligatures referenced are only those that were *recovered,* therefore these statistics are likely low representations of what occurred, since archaeologically only a fraction of material evidence is ever expected to be discovered. It is feasible to assume that more blindfolds and ligatures existed, and either decomposed alongside the bodies or were flung off prior to or while the bodies were tossed into the graves; as evidenced by the many blindfolds and ligatures found loose in the graves.

Bullet to Body/Shell Casing to Body Ratios

The projectile ratios have been combined for the summary analysis in order to simplify the summary and avoid unnecessary repetition in explanations. The bullets and shell casings recovered from these sites are reasonably only a fraction of the total amount used in these executions, as verified by the amount of bullet jacket and core pieces as well as additional metal fragments indicated in Manning's report (2000). The 1.29:1 ratio designating more shell cases were recovered than bodies

strengthens the arguments that many were shot multiple times, and either at or near the site in which they were buried. This evidence is particularly reinforced in cases where primary graves had very high casing to body ratios, such as Cerska (2.06:1), Orahova/Lazete 2 (1.96:1), Dam near Petkovci (18.04:1), and Kozluk (1.65:1). It is in the primary graves where we see the highest bullet to body ratios as well, this is to be expected since moving the bodies to a secondary location would disturb and destroy evidence as presumably intended, and small artifacts are difficult to locate in typical archaeological excavations, let alone those with ill-intent.

Additional Evidence

Analyzing the aforementioned variables for frequency in each grave, and in total, was completed since they presented themselves repeatedly, creating patterns for what could be used to establish a baseline for genocidal mass graves. The focus for this analysis was from a forensic anthropology perspective and relied on examining the evidence presented specifically from the bodies themselves. However, one very vital line of evidence not yet discussed was the overall lack of personal effects and individual identifiers. The investigators for each burial made note of the few personal effects discovered alongside the victims, including such items as: jewelry, prayer beads, verses from the Koran, cigarette and tobacco tins, religious medallions, personal photographs, and on occasion identification cards or papers.

Since the focus of most of these exhumations was on identifying individuals, and not creating a working demography, these items were used to assist

investigators in matching remains to those listed as missing; and as such there was no mention of how often personal effect or identification items were present. Though not possible to create a frequency percentage of the occurrence of these types of items in regards to the number of victims per grave, it is apparent that there was a deliberate lack of personal material items. Unclear is whether this was exclusively due to an obvious attempt to hide the victim identities, or whether it may have also been a form of dehumanizing the victims prior to death. Regardless, the obvious lack of personification of the victims warrants notice and additionally supports the act of genocide having occurred as cause for the victim's deaths and mass burials.

Chapter 5: Application

Determining and analyzing recurring patterns observed in mass burials, with the intent to create biological patterns associated genocide, was the overarching aim of this study. By focusing on human remains and shifting focus to the deceased, instead of the missing or survivors, the goal was to ascertain criteria that could be applied to other mass burials and potentially define them as genocide. Aiding in defining genocide, this data could be used in international court hearings for prosecution against those suspected of partaking in acts of genocide.

Turning to a Bosnian mass burial that is not associated with the Srebrenica Massacre, application of the evaluated variables allows insight into how these patterns present themselves elsewhere. Using a report submitted to the Office of the Prosecutor of the International Criminal Tribunal for the former Yugoslavia, Jose

Pablo Baraybar and Marek Gasior evaluate data from a mass burial exhumed by the Bosniak Commission on Missing Persons (2005:103).

Excavated in 2001, Jakarina Kosa is an open cast mine containing the remains of victims "removed by a mechanical excavator from a primary burial site" (Baraybar and Gasior, 2005: 03). This secondary burial contained 139 bodies and 259 body parts, using the right femur it was determined the minimum number of individuals for this site was 298. Baraybar and Gasior state that the individuals were "predominately male" and between the ages of fifteen and seventy-five, unfortunately no other information is given regarding age distribution. Baraybar and Gasior determined 38.9% of the individuals died as a result of gunshot wounds, of which they note 53.1% had a posterior to anterior directory, indicating they were shot in the back. However, Baraybar and Gasior did not use the minimum number of individuals to determine this statistic, as doing so would have given 52.01%. Though no other statistics were given regarding cause of death, it was noted that blunt force and sharp force trauma were also observed in the remains.

Though a "large number of bullets and bullet fragments" were recovered, no specific numbers were given making a bullet to body ratio obsolete. There was also no mention of ligatures or blindfolds recovered at this site. The data from this site are summarized in Table 19.

Table 19. Summary of Jakarina Kosa

Type of Grave	Secondary
MNI	298
Complete Bodies	46.64%
Sex	"predominately male"
Age	15-75 100%

Cause of Death w/o MNI	GSW 38.9%
Cause of Death w/ MNI	GSW 52.01%
Bodies Bound	UNK
Bodies Blindfolded	UNK
Bullet to Body Ratio	UNK
Shell Casing to Body Ratio	UNK

By comparing the data collected at the Bosnia mass burial of Jakarina Kosa, with those from the Srebrenica Massacre, a number of similarities are apparent. First, the fact that Jakarina Kosa is a secondary burial containing victims transported with the use of heavy machinery matches the descriptions of the secondary burials of Srebrenica. This goes hand in hand with the rate of disarticulation seen at this site, as well as at the Srebrenica sites. Secondly, the majority of the victims at Jakarina Kosa were male, as would be expected if this is also a genocidal mass burial. Though Baraybar and Gasior did not provide specific assessments as to how many victims were male and how many were unknown, it was noted there were at least eight females discovered. Third, the prominent cause of death at this site was also gunshot wounds, just as it was with the Srebrenica sites. Interestingly, Baraybar and Gasior go into further detail describing the trajectory in the gunshot wound cases, noting that the majority came from a posterior direction.

There were, however, differences between the Srebrenica Massacre burials and the Jakarina Kosa site, though it is unattainable to determine how much of this is due to inconsistencies in site reports. For instance, it is unfortunate that specific age ranges were not provided at the Jakarina Kosa site, making comparisons with

Srebrenica unavailable. Also, since a numerical value for the amount of bullets recovered at Jakarina Kosa was not given, it was not possible to calculate bullet to body or casing to body ratios. Lastly, there was no mention of ligatures or blindfolds recovered at Jakarina Kosa, however given little site information on the open cast mine, it is difficult to determine whether material remains were looked for or if they would have survived the burial conditions.

A comparative analysis between Jakarina Kosa and the Srebrenica burials provides results that are twofold. On the one hand, there are sufficient similarities to indicate the burials are of a comparable nature; that is of genocide. On the other hand, inconsistencies in excavations and reports indicate standardization is needed in the study of genocide and genocidal burials. Since objectives in excavations range from indentifying individuals, as in Srebrenica, to "determination of the most probable cause of death…vital to the prosecution of war crimes," as was the goal at Jakarina Kosa. Differences in excavation priorities, as well as techniques used by site directors and the variables reported, generate inconsistencies that make creating demographics and criteria baselines problematic.

Despite these issues, there is sufficient similarity to propose these patterns ought to be evaluated further, and applied to additional mass burials for comparison. These variables should also be kept in mind while excavating newly discovered burials, so as to give guidance needed for the unique treatment of genocidal remains and avoid destroying evidence required for additional studies.

Chapter 6: Conclusion

The study of human rights abuse is a complex task with various degrees of

political, social, and cultural aspects resulting in an array of implications, both for the host country and internationally. While controversy continues as to the scale of appropriate international intervention balanced with tolerating inevitable warfare and changing governments; there has no doubt been an increase in the number of organizations equipped to handle large-scale investigations of violation of humanitarian law. With this has come an increased demand for forensic sciences with techniques specific to excavation of mass graves, identifying long-deceased remains-often skeletonized, mummified, or severely decomposed, and successful methods able to stand up in the international courts of justice; including tools to identify and accurately detail and preserve genocidal evidence.

However, a standard for exhumations and documentation does not yet exist. Areas where forensic science is not at the forefront of research, in particular, could benefit from examples of successful excavations as well as general criteria found association with genocide and genocidal mass burials. Though this study only relates specifically to the context of the Bosnian War, the theory that patterns do exist in burials has the potential to spur additional research in other areas. At the very least, it could raise potential red flags for investigators excavating unmarked mass burials.

Past research on alleged genocide-related war crimes and the affect it has on the surrounding community, suggest that acknowledging the crimes that occurred and dissolving the secrecy surrounding the mistreatment of societies based solely on ethnic or religious prejudice are the initial and essential steps necessary for surviving victims to move forward with dignity. Studies support the idea that the

exhumation of mass burials can, when properly conducted, reveal a large amount of information useful in proving when genocide crimes occur and against whom. The research shows that the information gleaned from the burials recovered has led to identification and return of remains, declaration and recognition of genocide occurring, and in some cases legal prosecution.

Excavating and analyzing the remains of genocidal burials has the potential to identify individual victims, allow for the reburial of remains, and may provide forensic evidence necessary to pursue prosecution trials (Blau and Skinner 2005, Djuric, Dunjic, Djonic, and Skinner 2007). These trials conducted by International Criminal Tribunals are what drive this study forward. Should the proposed baseline prove successful in application to other Bosnian mass burials, it has the potential to better outline definitions for genocide on a biological level. Particularly in cases where genocide is being debated or denied, this study could produce guidelines useful in defining targeted groups and mass burials produced in association with genocide. While the frequencies calculated are unique to the Srebrenica Massacre in Bosnia, the patterns themselves may not be; though details may change the concept of genocide as a whole remains the same. It is therefore reasonable to assume the patterns and concepts may prove applicable elsewhere.

Using a case already legally defined internationally as genocide, such as Srebrenica, Bosnia, as an illustration allows for comparative studies to be conducted in the future. These results could make for a guideline applicable to other cases on a general level, giving potential criteria for future investigators to be cautious of or providing inspiration for investigators and researchers to develop custom patterns

relevant to their specific context. Allowing for additional acts and burials to be marked as genocide, this study could assist in opening the doors for potential funding and aid to support survivors in rebuilding their lives, and may also assist in deterring future acts of genocide.

This is particularly promising when combining forensic evidence and burial analysis, such as this research, with witness testimonies and historical accounts. This single study is not intended to stand-alone or provide definitive conclusions; instead these interpretations should be utilized within the context they were established and must be supported by future forensic, social, and cultural studies.

REFERENCES

Arnold, Bettina
2002 Justifying Genocide: Archaeology and the Construction of Difference. *In* Annihilating Difference: The Anthropology of Genocide. Alexander Laban Hinton, ed. Pp. 95-116. Berkeley and Los Angeles: University of California Press.

Baraybar, Jose Pablo and Marek Gasior
2006 Forensic Anthropology and the Most Probably Cause of Death in Cases of Violations Against International Humanitarian Law: An Example from Bosnia and Herzegovina. Journal of Forensic Science 51(1): 103-108.

Bardgett, Suzanne
2007 Remembering Srebrenica. History Today 57(11): 52-53.

Bass, William M.
2005 Human Osteology: A Laboratory and Field Manual, 5th ed. Columbia: Missouri Archaeological Society, Inc.

Blau, Soren and Mark Skinner
2005 The Use of Forensic Archaeology in the Investigation of Human Rights Abuse: Unearthing the Past in East Timor. The International Journal of Human Rights 9(4): 449-463.

Bringa, Tone
1995 Being Muslim The Bosnian Way: Identity and Community in a Central Bosnian Village. Princeton: Princeton University Press.

Brkic, Courtney Angela
2007 Justice Denied in Bosnia. Dissent 54(3): 19-22.

Byers, Steven N.
2011 Introduction to Forensic Anthropology, 4th ed. Upper Saddle River: Pearson Education, Inc.

Clark, Janine Natalya
2012 Fieldwork and its ethical challenges: reflections from research in Bosnia. Human Rights Quarterly 34: 823-839.

Djuric, Marija, Dusan Dunjic, Danijela Djonic, and Mark Skinner
2007 Identification of victims from two mass-graves in Serbia: A critical evaluation of classical markers of identity. Forensic Science International 172: 125-129.

Drummond, Paula
2012 Invisible Males: a critical assessment of UN gender mainstreaming policies in the Congolese genocide. *In* New Directions in Genocide Research. Adam Jones, ed. Pp. 96-112. New York: Routledge.

Giles, Jim
2004 Guatemalan forensic work brings award and death threats. Nature 427: 664

Guntzel, Jeff
2004 'The bones don't lie': Forensic anthropologist Clyde Snow travels continents to bring the crimes of mass murderers to light. National Catholic Reporter 30 July: 13-16.

Haglund, William D., Melissa Connor and Douglas D. Scott
2001 The Archaeology of Contemporary Mass Graves. Historical Archaeology 35(1): 57-69.

Hartley, R.J.
2007 To Massacre: A Perspective on Demographic Competition. Anthropological Quarterly 80(1): 237-251.

Hasanovic, M.
2012 Posttraumatic Stress Disorder in Bosnian Internally Displaced and Refugee Adolescents from Three Different Regions After the 1992-1995 War in Bosnia and Herzegovina. Paediatrics Today 8(1): 22-31.

Honig, Jan Willem
2007 Strategy and Genocide: Srebrenica as an Analytical Challenge. Southeast European and Black Sea Studies 7(3): 399-416.

International Commission on Missing Persons
2013 http://www.ic-mp.org/icmp-worldwide/southeast-europe/.

International Criminal Tribunal for the former Yugoslavia
2014 www.icty.org/case/mladic/4

Jesse, Erin and Mark Skinner
2005 A typology of mass grave and mass grave-related sites. Forensic Science International 152: 55-59.

Juhl, Kirsten and Odd Einar Olsen
2006 Societal safety, archaeology and the investigation of contemporary mass graves. Journal of Genocide Research 8(4): 411-435.

Kloff, Clea

2004 The Bone Woman: A Forensic Anthropologist's Search for Truth in the Mass Graves of Rwanda, Bosnia, Croatia and Kosovo. New York: Random Publishing Group.

Komar, Debra
2008 Patterns of Mortuary Practice Associated with Genocide: Implications for Archaeological Research. Current Anthropology 49(1): 123-133.

Lieberman, Benjamin
2012 From Definition to Process: the effects and roots of genocide. *In* New Directions in Genocide Research. Adam Jones, ed. Pp. 3-17. New York: Routledge.

Manning, Dean
2000 Srebrenica Investigation, Summary of Forensic Evidence. ICTY Evidence Report, Unpublished document Property of the United Nations, International Criminal Tribunal of the Former Yugoslavia.

Menez, L.L.
2005 The place of a forensic archaeologist at a crime scene involving a buried body. Forensic Science International 152: 311-315.

Morris, Alan G.
2011 Missing and Murdered: A Personal Adventure in Forensic Anthropology. Cape Town: Zebra Press.

Pollack, Craig Evan
2003 Burial at Srebrenica: linking place and trauma. Social Science & Medicine 56*:* 793-801.

Prevent Genocide International
http://www.preventgenocide.org/lemkin/AxisRule1944-1.htm

Rosenblatt, Adam
2010 International forensic investigations and the human rights of the dead. Human Rights Quarterly 32: 921-950.

Sanford, Victoria
2003 The 'grey zone' of justice: NGOs and the rule of law in postwar Guatemala. Journal of Human Rights 2(3): 393-405.

Shay, Jonathan
2011 Casualties. Journal of the American Academy of Arts and Sciences 140(3): 179-188.

Simon, David J.

2012 The Challenge of Social Reconciliation in Rwanda: identity, justice, and transformation. *In* New Directions in Genocide Research. Adam Jones, ed. Pp. 255-269. New York: Routledge.

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

Skinner, Mark and Djordje Alempijevic and Marija Djuric-Srejic
2003 Guidelines for International Forensic Bio-archaeology Monitors of Mass Grave Exhumations. Forensic Science International 134: 81-92.

Skinner, Mark and Jon Sterenberg
2005 Turf wars: Authority and responsibility for the investigation of mass graves. Forensic Science International 151: 221-232.

Snow, Clyde
1995 Murder Most Foul: A forensic anthropologist masters all the resources of his science to finger those responsible for war crimes. The Sciences May/June: 16-20.

Tenove, C.
2005 Unquiet Graves. Maclean's 118(29): 30-31.

United Nations
1948 Convention on the Prevention and Punishment of the Crime of Genocide. Article II, Resolution 260(III)A of the United Nations General Assembly.

United Nations
1991 Manual on the Effective Prevention and Investigation of Extra-Legal, Arbitrary, and Summary Executions.

Wagner, Sarah E.
2008 To Know Where He Lies: DNA Technology and the Search for Srebrenica's Missing. Berkeley and Los Angeles: University of California Press.

Zoglin, Katie
2005 The future of war crimes, prosecutions in the former Yugoslavia: accountability or junk justice. Human Rights Quarterly 27: 41-77.