THESIS

THE GALLINA OF NEW MEXICO: A CULTURE OF VIOLENCE?

Submitted by

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ABSTRACT

THE GALLINA OF NEW MEXICO: A CULTURE OF VIOLENCE?

This thesis research examines the interpersonal violence occurring within the Gallina cultural group of the Ancestral Pueblo tradition in north-central New Mexico (A.D. 1050-1250/1300). In order to understand actual events of violence, the skeletal material of the Gallina was examined. In-depth analysis of all the remains associated with the Gallina allowed for the creation of a comprehensive view of the age-at-death and sex distribution. Additionally, the use of standard osteological procedures was used to identify and describe traumatic injuries found on the skeletal material attributed to interpersonal violence. These traumas, along with the age-at-death and sex distribution made it possible to compare the Gallina to other samples to determine how prevalent Gallina violence was within the greater Ancestral Pueblo tradition and hypothesize explanations for the violence that are most plausible.

The Gallina sample consists of 142 individuals; there are slightly more males than females. There are 86 adults and 36 sub-adults, with a majority of the individuals between the ages of 20 and 40. Of a minimum of 142 individuals, 52 exhibit traumatic injury, though only 17 individuals show clear evidence of interpersonal violence. Twenty-five have been burned, which may or may not have been due to violent events. This is a conservative number as the completeness of the individuals varies and several individuals are fragmented or are missing parts of the skeleton such that if trauma was there it was not observable. This sample demonstrates at least one instance of each of five main types of trauma (blunt force, sharp force, sharp-blunt force, projectile, and

cremation), with blunt force trauma and cremation showing the highest frequencies. The violence observed among the Gallina, when compared to that in the La Plata River Valley and the Southwest Basin and Range Region show that the Gallina experienced slightly more violent events, though not overwhelmingly so. As for hypotheses to explain the Gallina violence, domestic violence against women, witchcraft execution, and cannibalism were ruled out as the Gallina did not exhibit all the characteristics of such events. The most logical explanation for the interpersonal violence observed among the Gallina was warfare/conflict, though whether this is intergroup or intragroup violence remains to be explored more carefully.

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CHAPTER 1 - INTRODUCTION

An understanding of violence as an integral part of a culture is crucial to understanding a culture as a whole. This has been true for the Ancestral Pueblo of the Southwest as the previous notion of the 'peaceful pueblos' has begun to change with the investigation and subsequent analysis of material found in the archaeological record (LeBlanc 1999). Varying degrees of violence have become apparent in the smaller cultural groups that make up the greater Ancestral Pueblo tradition. This is also true for the Gallina.

The Gallina of north-central New Mexico was a small prehistoric cultural group affiliated with the larger Ancestral Pueblo tradition during Pueblo II and Pueblo III, roughly A.D. 1050-1250/1300. This group was located in the Gallina region with a majority of the area currently located within the Santa Fe National Forest. This is an area extending from the Jicarilla Apache Reservation to La Ventana in the Jemez Mountains, north to south and the Chama River to the Largo-Tapecitoes drainage confluence, east to west in north-central New Mexico. Research in this region pertaining to the Gallina has been going on for decades. A majority of this research has been directed toward describing the excavation of sites found in the region and detailing the material found at these sites. This research has resulted in detailed descriptions of the structures and cultural material excavated leading to a general consensus of a connection to the Ancestral Pueblo tradition, and hypotheses of their direct lineage from the Rosa Phase, northwest of the Gallina region (Bahti 1949; Green et al. 1958; Hall 1944b). However, there has been some debate about whether the Gallina were instead an intrusive group from the east (Hibben 1938; 1949; Mera 1938). Unfortunately, the early research in the

area was conducted on a site by site basis and it is difficult to create a general, overarching view of the cultural group as a whole.

However, like other cultural groups in the area, there has been some discussion on the topic of violence among the Gallina (Chase 1978; Gallenkamp 1953; 1954; Mackey and Green 1979; Turner and Turner 1999). It has been suggested by various archaeologists that the Gallina were an extremely violent group and one prone to warfare (Gallenkamp 1953; 1954; Hibben 1951). This characterization was suggested by some because of the discovery of what were believed to be defensive structures (Green 1956; Hibben 1944; Mackey and Green 1979; Mohr and Sample 1975; Seaman 1976; Stuart and Gauthier 1981) and evidence of fire at many sites (Green 1956; Green et al. 1958; Hibben 1938; Mackey and Green 1979) , as well as evidence of interpersonal violence left on the skeletal remains (Bahti 1949; Chase 1976; Mackey and Green 1979; Stodder 1989; Turner and Turner 1999; Weaver 1976;). Unfortunately, this idea of violence, like questions of who the Gallina were, has been based on the use of limited data, effectively framing hypotheses with only a few sites included in such analyses.

The purpose of this research is to carefully examine this hypothesis of the Gallina being an excessively violent culture by utilizing the complete collection of Gallina skeletal remains. By making use of the entire skeletal collection I will be able to ascertain with greater certainty the frequency of violence among the Gallina and confirm or refute previous proposals of violence. I will then be able to compare these data with other studies done on violence in order to illustrate the prevalence of Gallina interpersonal violence as it pertains to the greater Ancestral Pueblo tradition. Furthermore, it will be possible to look at some of the major hypotheses regarding the

origins of violence used in the archaeological record to identify what may be the reasoning behind the violence observed among the Gallina skeletal material.

In this thesis, Chapter 2 outlines the archaeology of the Gallina, including architecture, cultural material and skeletal material. Included here are the geographic and temporal distribution of the cultural groups, as well as their potential origins and disappearance. Chapter 3 includes an overview of the literature on violence and the way it appears in the archaeological record. The lines of evidence that have previously been used when looking at the Gallina are also evaluated. Chapter 4 is a description of the methods used in this study and the collections used to generate my data. Chapter 5 details the results of this skeletal investigation, showing the general demographics of the sample and the frequency of trauma exhibited on the skeletal remains. The general demographics include the age-at-death and sex frequencies and the trauma data include type and frequency of trauma present and trauma by element. Also included is the combination of trauma, sex of the individuals and age-at-death. The next chapter, Chapter 6, compares the Gallina trauma prevalence to two other case studies published involving interpersonal violence in the prehistoric southwest; the La Plata River Valley and the Southwest Basin and Range. These comparisons show that the Gallina have experienced slightly more interpersonal violent events. In the last section of this chapter the Gallina skeletal material is evaluated in terms of explanations of violence, including witchcraft execution, domestic violence against women, cannibalism and warfare in order to identify the most likely cause of violence in this group.

Analysis of skeletal remains and the traumatic injuries that are apparent on the material is the best approach to examine actual violent events. Identifying traumatic

injuries allows for recognizing the type of violence that occurs, as well as its prevalence. Additionally, to make assessments about the culture as a whole, a comprehensive analysis of the skeletal material needs to be undertaken. Such analysis is the core of this thesis research.

CHAPTER 2 - HISTORICAL BACKGROUND

INTRODUCTION

The Gallina is a small pre-contact cultural group associated with the larger Ancestral Pueblo tradition. This group existed in north central New Mexico around A.D. 1050-1250/1300. It has been difficult to answer definitively who the Gallina were as most of the literature focuses on detailing and describing the material found at sites. However, there are some researchers who consider this group to be marginal or backwards (Green 1962). This is based on their seeming lack of progression in terms of settlement structure and patterns, as compared to the Southwest, and their lack of trade wares, implying a lack of communication with their neighbors. This information is specifically based on the group's ceramic and other archaeological material, settlement structures and patterns, as well as skeletal material, which is detailed in this chapter. A description and understanding of who the Gallina were based on their material culture is important for this study of interpersonal violence, as such events are integrally linked to the culture as a whole. Events of conflict facilitate researchers understanding of how the Gallina were living their lives. Therefore, a summary of Gallina archaeology creates the foundation for this analysis of violence.

MODERN DISCOVERY OF THE GALLINA

The Gallina have been the subject of research in the American Southwest for decades in response to the identification and excavation of many Gallina sites that occurred in the early 20th century. Early researchers and archaeologists, such as Frank Hibben and Florence Hawley Ellis, devoted a majority of their careers to expanding the knowledge of the Gallina. This intensive research covered a range of topics from general

descriptions of Gallina archaeological material (Hibben 1938; Mera 1935; 1938), site structure (Hibben 1948; Mackey and Green 1979), and hypotheses pertaining to their appearance/disappearance (Bahti 1949; Hall 1944a). These papers provided the first glimpse into who the Gallina were, how they lived, and speculation on the end of their culture.

The first several reports that describe the Gallina were not the ones to designate them as a distinct cultural entity. E.D. Cope, credited with the very first report in 1879, described a ridge site, later identified as Porcupine Ridge, between the towns of Gallina and Costilla in north central New Mexico (Chase 1978: 1; Dick 1976: 10; Kleindienst 1956: introduction; Sleeter 1987: 22). Later, William Boone Douglass (1917) and Grace Hilton (1918) described the "Castles of Chama" near the Gallina River, though these two researchers also did not use the term Gallina.

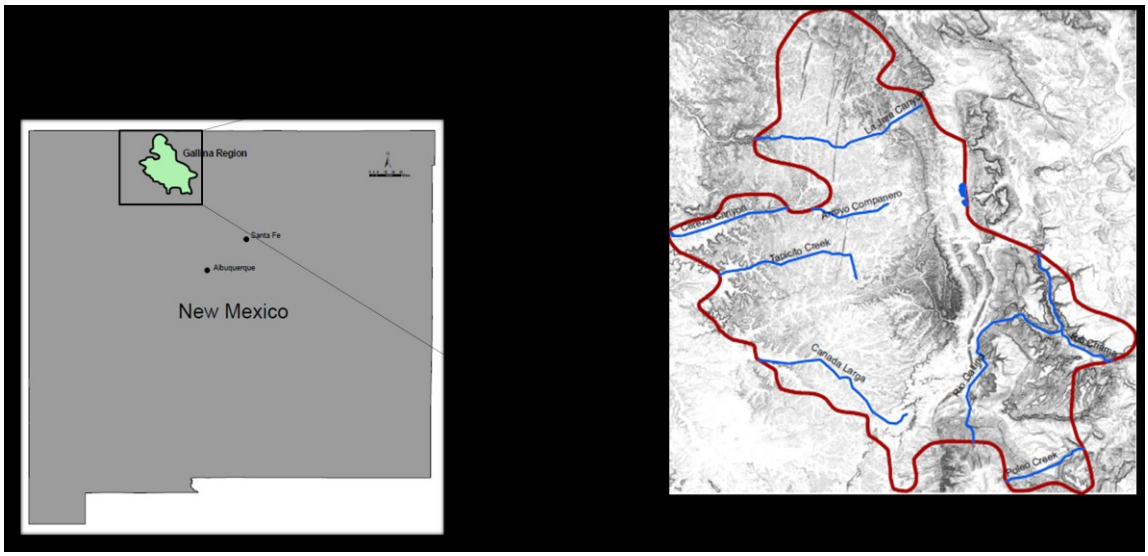

Figure 1 - New Mexico with Gallina Region

It was not until 1938 when Harry Mera and Frank Hibben each conducted research in adjacent areas in north central New Mexico that these archaeological sites

were first given the designation of Gallina. Mera worked west of the Continental Divide, where he examined several structures and discovered several dissimilarities between the archaeology of the sites and those in the surrounding area (Mera 1938). Hibben on the other hand, conducted his excavations of three sites to the east of the Continental Divide, where he also noticed several distinct traits. As a result, each researcher initially employed a different label for the culture group based on their own excavations in different areas (Hibben 1938). Each designation was determined based on the river that dominated each area: the Largo River and the Gallina River.

These two phases would not be united until six years after Hibben and Mera's original reports, as Hibben believed that "although undoubtedly connected with the Gallina problem, the Largo is on the other side of the Continental Divide from and peripheral to the Gallina country" (Hibben 1938: 131). Mera never addressed this issue of separate nomenclature. It was Edward Hall's work in the 1940s that resulted in the unification of the two phases. Hall determined that the Largo and Gallina material could not be separated temporally and thus employed the Largo-Gallina Phase name (Hall 1944b: 4). This union is currently accepted by the academic community.

There also have been fluctuations in the Gallina "borders" as new sites were discovered and descriptions and analyses of the material remains occurred. Excavated sites are found in north central New Mexico, roughly centered around the Gallina River, a tributary of the Rio Grande. The early boundaries excluded the Largo area (Mera 1938). Kleindienst (1956) and Sleeter (1987) expanded the boundaries as new excavations occurred. Today, the delineation of the Gallina district has been defined as "extend[ing] east of the San Juan basin, north of the geographic barrier of the Jemez Mountains, and

northwest of the northern middle Rio Grande Region" (Anschuetz 2006: 235). The details of these boundaries are found in Anschuetz (2006: 235).

Within these boundaries of Gallina, the topography is highly varied with several drainage areas (Bannister 1951: 21; Sleeter 1987: 6). However, the Gallina area is not known as a source of accessible potable water (Hibben 1948: 33), as the region is very dry with an average rainfall of only 18 inches that occurs mostly on the mountain slopes and high mesas (Schulman 1950: 293). The terrain is also very rugged with highly variable altitude: 6000-10,000 feet (Sleeter 1987: 6). Canyons and high mesas with steep ridges, narrow valleys, badlands and scattered mountains consist of sporadic transitional zone pine and sage (Anschuetz 2006: 235; Dick 1976: 19; Hibben 1944: 14; Schulman 1950: 293; Turner, et. al. 1993: 84).

The Gallina occupation was short-lived, lasting only about two hundred years. Dendrochronological analysis has been used to determine dates for this culture. Sleeter (1987:114-118) provided a particularly inclusive record of excavated sites and dates for the Gallina; A.D. 1050-1250/1300. Several other researchers have supported these dates (Anschuetz 2006; Crown et al. 1996; Green 1962; Hibben 1948; Holbrook and Mackey 1976; Lange, Jr. 1956; Mackey and Holbrook 1978). However, Cordell (1989: 315; 2009: 367-368) dated the Gallina at A.D. 1200-1300 while Herbert Dick dated it at A.D. 800-1250 (1976: 2). Early dates postulated by Dick may be the result of several sites excavated by Hall that are debatable Gallina (Hall 1944b; Sleeter 1987). Most researchers agree that abandonment of the area occurred around A.D. 1270-1300 (Crown et al. 1996: 199).

The Gallina district and phase are part of a larger and somewhat integrated system of prehistoric culture groups and regions. The Gallina district is within the larger Ancestral Pueblo tradition. The Ancestral Pueblo are located in Northern Arizona and New Mexico and parts of southwestern Colorado and southeastern Utah (Cordell 2009: 23). In addition to the Gallina, Crown and colleagues (1996: 188) created other sub-regions within the Ancestral Pueblo; the Chama and Taos districts to the east and the Jemez, Pajarito and Santa Fe districts to the south (Cordell 2009; Crown et al. 1996).

In addition to geographic location, architectural structures, settlement patterns and ceramic material are used to define the Ancestral Pueblo. The early Ancestral Pueblo structures were pithouses later transitioning into contiguous rectangular roomed buildings or pueblos. These settlements consist of "compact, well-made, one- or two-story dwellings with open work-areas and special ceremonial rooms (kivas)" (Cordell 2009: 23). The ceramics attributed to the Ancestral Pueblo tradition are usually coiled with a scraped finish, which is fired to a gray or white. If painted, ceramics are often decorated with black designs on a white slip. The particular factors which distinguish the Gallina from the Ancestral Pueblo largely are architecture and ceramics.

ARCHITECTURE, CERAMICS AND SKELETAL REMAINS

In an effort to understand what the term 'Gallina' means, archaeologists have excavated and analyzed Gallina sites for decades. This included examinations of Gallina ceramic material and other artifacts, settlement patterns and architectural structures, and skeletal remains and their context. The resulting Gallina culture is a combination of Pueblo and other characteristics.

First, ceramics and other cultural material exhibit a number of characteristics that are both shown in other Ancestral Pueblo groups as well as not. Mera (1935:8) noticed stylistic and decorative similarities between the Gallina and neighboring Mesa Verde and Chaco, while Hibben (1938) noticed similarities with San Juan. However, there are some distinct differences too. For instance, the occurrence of pointed bottom vessels, the use of fillets for decoration, the absence of slipping on numerous Gallina ceramic vessels, the use of the paddle and anvil technique, the occurrence of elbow pipes with small projecting knobs, comb arrow-polishers, flint corn, sandals and baskets of different weaves and types, and broad bladed arrowheads of chert, obsidian and chalcedony are all examples of Gallina differences (Blumenthal 1940; Hibben 1944; 1949; Mera 1935; 1938). Additionally, the nearly complete absence of trade wares could also be considered a characteristic of the Gallina Phase (Lange, Jr. 1956: 81), which suggests that the Gallina did not interact with their neighbors on a regular basis.

Second, Gallina architecture, as well as the settlement layout, is recognized by some to have a distinctive pattern (Roney 1996: 153). In the early Gallina Phase, pithouses with stockades are commonly found, while surface structures and towers do not appear until the later part of this phase (Stuart and Gauthier 1981: 93). These structures are most commonly single-room dwellings (Dick 1976: 1) and usually appear in small communities. Rarely do more than five or six habitation structures appear per village (Mackey and Holbrook 1978: 40). More often than not, sites show individual pithouse and surface structures, sometimes accompanied by towers (Crown, et al. 1996: 193). Descriptions of these structures typical floor plans appear in Stuart and Gauthier (1981),

Cordell (1989), Crown and colleagues (1996), Blumenthal (1940), Hibben (1948), and Mackey and Green (1979).

Overall, Gallina architectural features appear as an amalgamation of Ancestral Pueblo and Gallina Phase traits. The characteristics that the Gallina share with other Ancestral Pueblo localities include the structural material used and the layout of the structures. Conversely, the appearance of pithouses and surface houses simultaneously, the common occurrence of single-room dwellings instead of multi-room pueblos, and the general absence of separate religious or ceremonial structures, such as Puebloan kivas markedly deviate from their contemporaneous neighbors (Dick 1976; Sleeter 1987).

Skeletal remains are the last major type of material that researchers have used during archaeological investigation of the Gallina. Charles Lange (1940) was the first to produce a summary of the physical anthropology of the Gallina area using the cranial series of four sites, yielding 38 burials. This work, as well as his later work (1956), demonstrated similarities between the Ancestral Pueblo and the Gallina. These included such characteristics as lambdoidal flattening. Susan Miller's (1986) analysis of 11 individuals recovered from site Bg-20-5, led her to agree with Lange's results. The similarities between the Gallina and other Ancestral Pueblo skeletal remains strengthen the certainty that the Gallina are not in fact an intrusive culture to the Southwest.

Analysis of the context in which skeletal remains have been found can also provide vital information about how the Gallina are connected to the rest of the Ancestral Pueblo. Of particular importance here is evidence for interpersonal violence. Chase (1976) and Green and colleagues (1958) describe the "typical" aspects of Gallina interment. Most burials are oriented to the north and south with the face pointing west.

Also, intentional burials within dwellings are often located in bins against the walls, attached storage cists or sub-floor pits. If outside, burials are located within 30 feet of the structure and never south of the line drawn east-west of the dwelling. It is also not uncommon to find instances of skeletal remains in midden deposits (Sullivan and Katzenberg 1982; Weaver 1976). The burials tend to be flexed and placed on their side or dorsally (Chase 1975). These characteristics fall in line with Southwest mortuary trends.

Despite the occurrence of burials at Gallina sites, there is a dearth of analyses of the skeletal remains themselves. This study is the first comprehensive examination of the human remains. In particular, I will describe the age-at-death and sex of the individuals as well as to describe and quantify the occurrence of interpersonal violence in the series. These data can then be compared to other contemporaneous Puebloan sites.

ORIGIN AND DISAPPEARANCE

The excavation and analysis of numerous Gallina sites has allowed us to gain a clearer image of the Gallina, as well as their origins and the reason for their disappearance. However, there are debates about where they came from and the relationship to people in adjacent areas. The arguments are based on similarities and differences in material culture and the dating and geographic locations of sites. There are those who believe the Gallina to be an intrusive culture from the east (Hibben 1938; 1949; Mera 1938). This suggestion is based on several non-Pueblo characteristics found in the Gallina region, like the pointed-bottom vessels and certain pottery styles that may indicate a Woodland, Plains, Nebraska, Mississippi Valley, or Missouri Valley affiliation (Blumenthal 1940; Green 1962; Hibben 1938; 1944; 1949). On the other hand, most

would regard the Gallina origins as ultimately, if not directly, derived from the southwestern Rosa Phase during early Pueblo I (roughly A.D. 700-850/950), located in the Navajo Reservoir area, and the Gobernador district (Anschuetz 2006: 239; Bahti 1949; Ellis 1988: 14, 18; Green 1964: 39; Hall 1944b; Stuart and Gauthier 1981: 93). The connection to the Rosa Phase stems from the occurrence of several Rosa Phase traits in the Gallina district, as described by Edward Hall (1944b), Thomas Bahti (1949) and Green and colleagues (1958).

The origin of the Gallina Phase inhabitants may be debated, but also debated is the disappearance of the Gallina after about A.D. 1250-1300. There is a general agreement that the area was abandoned at this time (Crown et al. 1996: 199; Holbrook and Mackey 1976: 316; Mackey and Holbrook 1978: 48-49), and the area was infrequently and sporadically exploited later by nomadic bands, including the Navajo, that occurred primarily during the 18th century (Sleeter 1987: 39). However, the cause of the abandonment of the area by 1300 has yet to be ascertained; the change in the rainfall and temperature during the latter half of the 13th century was significant enough to likely have contributed to considerable out-migration. Mackey and Holbrook (1976; 1978) illustrate the type and severity of environmental change that occurred with their analysis of pollen, corn and mammalian microfauna. Though this evidence is restricted, spatially, to Gallina country, Crown and colleagues (1996: 199) mention that it coincides with the Great Drought that was occurring over the greater Southwest area around A.D. 1276-1299. The Great Drought has been deemed a major contributing factor for population movement of neighboring cultural groups in the Northern Rio Grande region.

CONCLUSION

The discovery of hundreds of Gallina sites and the subsequent excavation and analysis of dozens of them has allowed for our understanding of the Phase to be increased. Based on the literature, we know the Gallina to be a small cultural group, an idea supported by the size and pattern of the excavated settlements. This group appears mostly likely to have originated from the earlier Rosa Phase. The Gallina were known to have practiced some agriculture based on the evidence of corn, though hunting and gathering may have occurred as well. In the past this culture group has been described as backwards, aberrant or at the very least conservative (Green 1962). These interpretations stem from the lack of evidence of interregional exchange and the fact that the Gallina architecture never moved toward larger pueblo patterns and lacked aggregated populations. As for the end of the Gallina Phase, it is known that they disappeared rather quickly near the end of the 1200s, perhaps due to the changing environment. The fact that this culture group is regularly thought of as violent and prone to warfare is detailed in the next chapter on Gallina violence.

CHAPTER 3 – VIOLENCE IN THE ARCHAEOLOGICAL RECORD AND AMONG THE GALLINA

INTRODUCTION

Violence among the Gallina is a subject of interest to researchers. There are those who believe the Gallina to be overly prone to warfare, as the archaeological record shows violence or at the very least the threat of violence. This violence can be characterized in the archaeological record by various factors. In general, there are four main lines of evidence indicative of violence. These include settlement patterns, burned structures, cultural material (i.e., iconography or weapons), and skeletal material (Adams 1989; Carman and Harding 1999; LeBlanc 1999; Robb 1997; Schaafsma 2007; Wilcox and Haas 1994). These lines of evidence have been used during investigations made by many researchers into prehistoric cultural groups and are described in this chapter. Additionally, the literature pertaining to Gallina violence is described and summarized in the second half of the chapter.

VIOLENCE IN PREHISTORY

There are two basic ways in which evidence of violence is viewed: direct and indirect. Direct evidence involves things that have limited interpretations, in that the most logical conclusion in these cases is violence. Indirect evidence has the possibility of several different, but often equally valid, interpretations; because of this these lines of evidence often carry less weight. As such, each line of evidence is presented here with a description of what it may look like in the field. Any critiques of the evidence of violence are addressed after their descriptions. All of these lines of evidence for violence

can be used to recognize what type of conflict was occurring; from small scale conflicts to large scale warfare.

Settlement Patterns

Settlement patterns are one of the most frequently mentioned lines of evidence for Southwestern warfare and violence (LeBlanc 1999: 55). LeBlanc's (1999) review of the evidence separates settlement pattern evidence into four sub-divisions: site configuration, defensible locations, site distributions and line-of-sight communication between sites. Of these four, LeBlanc, views defensive community configuration and site location as the strongest and most apparent line of evidence even if they are more indirect than others. LeBlanc's work forms the basis of this review (LeBlanc 1999).

The first sub-division of settlement patterns is site configuration and includes defensive layouts of a site, increasing site size, abandonment of smaller sites with the subsequent replacement by larger sites and rapid construction of sites (LeBlanc 1999: 56-57). According to LeBlanc and Rice (2001: 15) site configuration is extremely visible archaeologically. Defensive layouts, or fortification, include several different architectural structures: palisades or stockades, freestanding stone or adobe walls, walls created by other structures, dry moats, towers and tunnels (Green, et al. 1958; LeBlanc 1999; Seaman 1976; Wilcox and Haas 1994). Also, included in site configuration is increasing site size and the abandonment of smaller sites with larger site replacement, where different community populations aggregated together into one large site or a cluster of multiple sites, leaving smaller, more separated sites unoccupied. The last component of site configuration is the rapid construction of sites, evidenced by the ladder-type rapid construction technique. The two forms of construction include single

ladder and double ladder techniques. These techniques involve long parallel walls (poles of the ladder) that have several perpendicular walls (rungs of the ladder) attached to each of them. The structural design allows for quick construction when there is the threat of violence (LeBlanc 1999: 54-65).

The second sub-division of settlement pattern that can indicate violence is site location, the outlook from these sites, and the occurrence of areas that lack habitation. First, the landforms on which these sites are located can factor into the analysis of violence in regions (LeBlanc 1999: 66). Predominant locations include the top of a hill, a narrow mesa, the edge of a mesa or the top of a butte. These locations allow for a clear and far view of the surrounding area that allows for the detection of approaching groups or individuals (Rohn 1989: 148). Also, high locations are easier to defend and can be difficult to reach, particularly mesas and buttes. The other major landform in which we find sites in times of threats of violence are in cliff dwellings. Cliff houses are situated in caves within cliffs, making them more hidden and difficult to access (LeBlanc 1999: 66).

Line-of-site communication is the third sub-division of settlement patterns (LeBlanc 1999: 72); however, this sub-division is often ignored and therefore information is rarely collected even though the data are available in the field (LeBlanc and Rice 2001: 15). Line-of-site evidence is related to hilltop defensive locations, the architectural towers and site clustering previously mentioned. The purpose of site intervisibilty has been hypothesized as the signaling of allied groups in times of conflict, which in the past would have been the fastest method of communication (LeBlanc 1999: 72; Wilcox and Haas 1994: 217). Another possible purpose of such site location may have been the surveillance of enemies; however, this idea has been largely abandoned as the distance

between sites and clusters of sites are too great to be of any use in observing the behavior of the people at the neighboring sites (LeBlanc 1999: 72-73).

The last sub-division involving settlement patterns is site distribution. As populations become aggregated into one large site or a cluster of sites there are areas between clusters that become empty. These areas have been referred to as 'no man's lands' or 'buffer zones.' This creates more distance between potential enemies than there would be otherwise. The advantage here is more time for groups to get any necessary defenses ready and, depending on the distance, may be a deterrent for any would-be attackers (LeBlanc 1999: 69-70; Wilcox and Haas 1994: 230-232).

Burned Structures

The second line of evidence for violence that can be shown in the archaeological record is the occurrence of burned structures (Wilcox and Haas 1994: 224-225). This is often the result of raids and assaults, according to Rohn (1989: 150). Detecting burned structures in the record is fairly straightforward. The occurrence of charred timbers, lumps of baked earth and discoloration in the soil and on stones indicate that the structure was burned in the past (Rohn 1989: 150). LeBlanc (1999: 81) stated that burning related to warfare should be in the form of entire sites, or at least suites of rooms, being burned, with assemblages in place. The occurrence of material left in buildings, like food and valuables, is rare except during violent events (LeBlanc 1997: 239).

Cultural Material

The third line of evidence demonstrated in the archaeological record is cultural material, specifically iconography (i.e., rock and kiva art) and weaponry. Iconographic representations are found as pictographs and petroglyphs on cliffs and rockshelter walls

with themes associated with weapons, general violence, and warfare (Robb 1997: 112; Schaafsma 2007: 116). Additionally, ceramic material, including clay figurines, has been known to depict images of conflict and warfare (Anders 1989; Emerson 2007; Healy and Prikker 1989). The images depicted in such graphics include fetish heads and scalps, shields, shield-bearing warriors with various weapons, such as bows and arrows, war clubs and spears or warriors explicitly engaged in combat (LeBlanc 1999: 116-117; LeBlanc and Rice 2001: 15; Schaafsma 2007: 116, 118).

Weapons are the second aspect of material cultural that indicate some type of violence. Researchers have created two categories of weapons, as some objects used in combat may have had more than one use; those that are specifically made for fighting such as swords, war clubs and shields, or weapons that on any other day are simply work tools such as axes and knives (Ferguson 1997: 325; Rohn 1989: 149; Vencl 1999: 65). These tools that have a dual use can make it hard to establish that they were ever used in combat unless other evidence is found in conjunction with the tools. Experimental archaeology has played a role in determining the potential use of domestic tools as a weapon. The fending stick is just such an example, where experiments have shown that with its use it can adequately block a dart attack thrown from an atlatl (Wilcox and Haas 1994: 223). LeBlanc (1999: 93-94) addressed the problem of identifying if such tool-like implements were used primarily as a weapon instead of any of the other day-to-day activities for which they are usually intended. He argued that weapons would have been more carefully made than hunting tools in order to ensure successful use in violent situations. Also, weapons are more likely to be kept in greater supply for immediate use against an adversary.

Skeletal Material

The last line of evidence pertaining to violence in the archaeological record is human remains: skeletal remains and their context. This type of evidence is considered by many to be the only source of information that directly illustrates the degree of actual violence and incidentally traumatic injuries caused by weapons are the earliest recognizable evidence of warfare (Keeley 1996; 2001; Robb 1997; Vencl 1999). These traumatic injuries show up on skeletal remains in a variety of ways depending upon the cause of the injury: crushed or depressed skull fractures, nasal fractures, tooth fractures, parry fractures; dismemberment/disarticulation and other signs of trophy taking; arrow points, spears, darts, or bullets imbedded in human bones; scars from projectile wounds; decapitation; cutmarks from scalping; broken ribs; body mutilation; or burned human remains (Emerson 2007; Lambert 2007; Martin 1997; Rohn 1989).

Of these injuries Lambert (2007: 209) explained that cranial trauma is a more well-known form of lethal violence, making depressed cranial vault fractures, as well as projectile injuries, the most common type of prehistoric violence reported (Lambert 2007: 204). Head injuries, prior to the industrial age were most likely caused by spears, rocks and clubs resulting in localized depressed fractures rather than linear cracks, according to modern medical research (Lambert 1997: 83). Injuries produced by a club are round or elliptical, taking the shape of the weapon, while injuries caused by axes or ground stone celts appear elongated and v-shaped in cross-section (Lambert 1997: 84).

In regards to projectile injuries there are two main types of evidence that appear in the archaeological record. The first type includes stone points, point tips or fragments from fractured points found imbedded in a bone or bones (Lambert 1997: 91; Wilcox and

Haas 1994: 226). The second is less direct and includes scars on the surfaces of bones caused by a projectile that was removed by another member of the group or the projectile never became imbedded (Lambert 1997: 91). The physical characteristics of these scars are determined by the shape and location of the wound and the surface appearance on the bone. The projectile points that may cause these injuries can be made from stone, bone, wood, cane or metal. Accidental injuries with projectiles are ruled out by Lambert because of the steady aim needed to be on target and this weapon in particular, whether used with a bow or an atlatl, is designed to kill (Lambert 1997: 90-92).

Forearm parry fractures, nasal fractures and tooth fractures have also been associated with violent conflict in the archaeological record, although injuries such as these may also occur in situations that are non-violent. The ambiguity in the cause of such injuries makes it difficult to interpret the actual event that took place (Ferguson 1997 323; Lambert 2007: 203-205). However, if these injuries were inflicted during interpersonal conflict, the parry fractures would have been caused by the individual raising their forearms to block a blow to the face or torso (Ferguson 1997: 323). Nasal fractures would be a result of a direct blow to the face. Transverse fractures across one or both of the nasals may occur when the bridge of the nose is the point of impact but when this force is severe enough to push the nose to one side there may be some linear fractures on the lateral borders of the nasal aperture (i.e., the frontal processes of the maxillae) (Walker 1997: 154).

Mutilated or dismembered skeletal remains may also be an indication of violence. Trophy taking by the opposing individuals may accompany this type of violence. The most common human trophy is the head or at the very least the scalp. The reason for this

is that for many cultures this part of the body was believed to enhance spiritual power and was a token for status (Keeley 1996: 100). Scalping may leave evidence on the cranium as the skin in the area where the scalp is typically removed is very thin and the sharp implement used results in contact with the cortical bone underneath (Keeley 1996; LeBlanc 1999).

Less common trophies that have been observed include the hands, genitals, teeth and the long bones of the arms or legs (Keeley 1996: 101; Lambert 2007: 205). Also, when these parts of the body are absent with signs of violent removal like cutmarks and breaking of adjacent bones then this may be an indication of trophy taking (Ferguson 1997: 323). In the event that no trophies were taken, mutilation of the eyes, bellies, genitals, or facial bones have been recorded (Keeley 1996: 102). According to Keeley (1996: 103) the most extreme type of mutilation is cannibalism. Christy Turner and Jacqueline Turner (1999: 24) developed six minimum criteria for determining cannibalism: cutmarks, breakage, anvil abrasions, burning, missing vertebrae and pot polishing. The act of cannibalism according to LeBlanc (1999: 90) is possible evidence for violence and warfare as it is unlikely that a group will consume one another.

Contextual data, such as burials and demographics, pertaining to human remains in the archaeological record provides less direct information. The casual disposal of individuals may signify that the dead were handled by a different group of individuals (Ferguson 1997: 323), especially when the individuals are found in haphazard positions, lack grave goods and are not found in prepared graves but in the fill within structures (LeBlanc 1999: 85). According to LeBlanc (1999: 85) individuals that are not formally buried are common in the Southwest, and unburied or hastily buried bodies are a good

indicator of warfare, especially when in the context of abandoned and/or burned sites. In such cases, when burials are found, the appearance of multiple burials may indicate conflict and not just in the Southwest (Ferguson 1997: 323). Often these individuals are also missing body parts, most commonly the head or hands (LeBlanc 1999: 86; Wilcox and Haas 1994: 228).

Additionally, the biases in the age and sex distribution of the skeletal sample can indicate conflict. Two main scenarios have been presented in the literature for these divergences from normal age/sex distributions. First, a higher number of young adult males and a lower number or women and children are argued to represent that men of fighting age were killed in combat while some women and children were taken as captives. Second a lower number of young and adult males may indicate that there was fighting far away and those that were killed in combat were not brought back to the home (Ferguson 1997: 323; Lambert 2007: 209; LeBlanc 1999: 86).

Summary

These lines of evidence are the major ones for interpreting violent occurrences in the past. However, it is necessary to mention that over the years each bit of evidence has been evaluated and critiqued and alternative explanations have been offered. In terms of settlement patterns it has been argued that some features (i.e., palisades, dry moats/ditches, towers, geographic locations) found at sites are in reality unspecific; they may be defensive or they may have entirely different daily functions (Fish and Fish 1989; LeBlanc 1999; Rohn 1989; Vencl 1999; Wilcox and Haas 1994). Additionally, Lambert (1997: 81) makes an excellent overall point about defensive sites and structures saying that they only imply a *threat* of violent intruders.

As for the burned structures within these settlements, there are numerous situations in which such events may have occurred in the past, as violence is not the only plausible explanation. According to Adams (1989: 105) isolated burned structures most likely are the result of accidents (such as lightning strikes) or are intentional, associated with abandonment or ritual. Rohn (1989: 150) and LeBlanc (1999: 74) support the possibility of these alternative causes. As LeBlanc (1999: 74) stresses, meticulous excavation of sites and close scrutiny of burned sites is essential. However in the Southwest, accidental burning may be unlikely due to the fact that cobble and adobe structures, as well as pithouses, are notoriously difficult to burn (Oliver 2001: 209).

The cultural material, including potential weapons, that has been used as evidence for violence in the archaeological record is not exempt from critique either. The main criticism about the depiction of warfare in prehistoric art is that researchers are unable to know the real intent underlying such illustrations and even if such art is depicting violence and conflict, Keeley (2001: 340) notes that it may not be depicting reality but instead visions, dreams, legends or myths. As for weapons, the previously mentioned dual function of tools is the main critique of the use of such objects as evidence of violence. There are actually very few implements that were specialized war weapons (Emerson 2007: 134; Ferguson 1997: 325; LeBlanc 1999: 95; Rohn 1989: 149; Vencl 1999: 65; Wilcox and Haas 1994: 223). The only way that these dual tool/weapons can be identified as having been used to fight is finding the implement in an unambiguous violent context (Vencl 1999: 65).

The main critique of skeletal material pertains to the potential of misinterpreting the broken bones or projectiles imbedded in individuals. Vencl (1999: 57) mentioned

that it is sometimes difficult to distinguish between unhealed traumatic injuries and secondary, postmortem damages. He also points out that wounds to the soft tissue of an individual do not always show up in the archaeological record. Another complication when dealing with traumatic injuries is that the cause of such wounds may not have been violence at all, but accidental. That is why the placement, severity and number of injuries are so critical to making accurate interpretations of events. In terms of disarticulated bone assemblages that exhibit perimortem cultural processing, there are several explanations that are plausible: mortuary practices, ritual destruction, mutilation, cannibalism and violence (Perez, et al. 2008: 124). Two of these explanations (mortuary practices and ritual destruction) have nothing to do with conflict. As for alternate explanations for non-formal burials, LeBlanc (1999: 85) explains that accidental fires could cause rooms to collapse, which bury individuals or the burning of a room could be a punishment for social deviants.

These are the lines of evidence that researchers have used for decades in their work on violence in prehistoric culture groups. Even with the possibility of multiple explanations, the discovery of such evidence still merits the investigation into the possibility of violence. This includes the research that has taken place in the Gallina region. When researchers propose violence in cases of the Gallina, they are utilizing one or more of the previously described lines of evidence.

CASES OF GALLINA VIOLENCE

The matter of Gallina violence has frequently been incorporated into the investigation of the Gallina to varying degrees. Many researchers have produced vivid descriptions of this violence. Charles Gallenkamp (1953; 1954) wrote of tortured and

mangled bodies found at Gallina sites saying "the battle raged periodically for a century or more, paralleling the wars which plague modern civilization (19). Hibben (1944; 1951) was even known to cater to the romanticized version of the Gallina, though his depictions of the Gallina warriors were not as grand. James Chase, in the 1970's, was also a great supporter of the idea that violence was practically all that the Gallina knew, as they "were subject to an extraordinary amount of violence" (Chase 1976; 1978).

These descriptions and interpretations have paved the way for the current view of violence among the Gallina. Currently, a majority of the public and researchers perceive the Gallina as a violent culture, more so than their contemporaneous neighbors. The subsequent review describes examples of all the types of violence found at Gallina sites. Settlement patterns, burned structures, and skeletal material are the main lines of evidence for Gallina violence.

Settlement Patterns

The excavation of many architectural features is one of the major ways researchers have interpreted Gallina violence. Defensive features, for instance, have been found at various Gallina sites, including such features as stockades (Stuart and Gauthier, 1981: 93). Roger Green (1956: 188-190) excavated a pithouse at the Archuleta site in 1950 two miles northeast of La Jara, New Mexico and noticed numerous possible postholes that may have been a stockade as they resembled the ones that made up the stockade Hall described in 1944. Additionally, Mohr and Sample (1975: 3) excavated site L/102 in which they found:

"at the west end of the refuse excavation a line of juniper post stubs…found to extend out from the rocky outcrop and curve gradually around toward the east. This feature was followed for 25 feet and its end had not been reached when discontinued. If this curvature is continued it would form a semicircular enclosure against the outcrop enclosing structure F."

Timothy Seaman (1976), excavating a Gallina site (LA 11843) uncovered at least 65 upright wood posts that surrounded the pithouse, surface structures and hearth area to the north, east and west, though he deliberates on whether it was defensive or not. Another site, LA 15925, was enclosed by a masonry wall that had palisade placed on top (Mackey and Green 1979: 148).

Another architectural feature observed in Gallina sites that has often been identified as defensive by some, are towers. Hibben (1944; 1951) wrote about towers at great length, observing over 500 stone towers in an area roughly 35 x 50 miles in 1933. The next year, he excavated a group of eight towers on one side of the basin of the Gallina Canyon. To Hibben, these seemed to be defensive structures and when they were excavated he identified numerous skeletal remains with evidence of violent trauma in direct association with weaponry, confirming his claim. In addition, several of these towers had been subjected to fire. Mackey and Green (1979) attempted to explain the occurrence of the Gallina towers and concluded that they were built primarily for defense, as evident by their double-wall construction, extreme thickness of walls, fine masonry, and their defensive locations, but that they had a secondary function as storage. In direct contrast to some of these claims, Dick (1976: 17) reported that 'yes' there are towers in the Gallina region, but 'no' they are not a common phenomenon. He claims that there were only three structures that could be considered towers that had been

formally reported: Bg 20 at Rattlesnake Ridge, the Hormigas site and a structure in the Carricito Community.

In addition to the architecture itself exhibiting clues to violence, many researchers have identified the location of structures, such as towers and cliff houses, as being positioned defensively, for instance on hilltops and ridges. In Nogales Canyon there was a small cliff house found near the larger Nogales Cliff House Site, about 400 feet above the canyon floor and 30 feet from the top of the mesa. Several contemporaneous domestic structures were located on top of the cliff, which led Schulman to speculate that the Gallina lived in those structures and in times of danger retreated to the cliff house (Schulman 1949).

Maxine Kleindienst's (1956) Master's thesis also reported on Gallina Phase cliffhouses. Her research focused on three structures; Leeson Cliffhouse, Largo Cliffhouse, and Burriones Cliffhouse in the north-western section of the Gallina region. These cliffhouses were shown not to have been occupied continuously, as would be seen in a unit or pithouse structure. However, these structures did not provide definite evidence of violence, so the suggestion that all cliffhouses are defensive structures in defensive locations is somewhat problematic. Also, those who consider there to be numerous towers in the Gallina region find the structures to be customarily settled in defensive locations (Hibben 1938: 132; Mackey and Green 1979: 147-148; Wilcox and Haas 1994; 217-218).

Burned Structures

Evidence of the burning of structures has also been a long standing form of evidence for violence; however this may be one of the more problematic lines of

evidence, as structures may be burned for various reasons (Sleeter 1987: 40). This being said, burned Gallina structures have been noted by many. Hibben (1938) in his publication about the Gallina Phase and the Cerrito Community mentioned that several of the rooms had been subjected to fire, with one room containing burned corn, though he neglects to make any conclusions regarding this aspect of the excavation. Several articles authored by Roger Green mention burned Gallina structures that may have been the result of violent events, including the Archuleta site (Green 1956), Bg 91 (Green, et al. 1958) and nine LA sites located in the Llaves Quadrangle (Mackey and Green 1979).

Skeletal Violence

Skeletal data is the last of the major lines of evidence generally used in the analysis of Gallina violence. Thomas Bahti (1949) briefly described the skeletal material that was found in association with two surface structures and a single pithouse at the Rattlesnake Point Site. The excavations yielded 10 adults and one infant in the pithouse, situated in the northern portion of the structure in a heap. The infant was found at the bottom of a ventilator shaft. Bahti noted that every adult skull had evidence of perimortem fracturing, direct association with projectile points, cutmarks on one foot and one lower arm. No tarsals or metatarsals were present, which may indicate trophy taking (Bahti 1949).

Chase (1976) also remarked on the occurrence of violence among the Gallina when he examined 12 burials containing 16 individuals excavated from several locations in the Gallina region. Thirty eight percent of this sample demonstrated evidence of violence. This evidence is observed in the form of fractures to several individual's crania, one projectile point lodged in a left tibia, and fractures to a leg bone. Of these 16

individuals, none are complete, which Chase considered as evidence of dismemberment. However, this evidence, if correct, in and of itself does not demonstrate that violence occurred as there are several reasons why not all elements are represented in what had been a primary burial (Chase 1976).

In 1975, David Weaver (1976) analyzed eight sets of skeletal remains from three Gallina sites. These sites included LA 11850, LA 11843 and LA 11841. Of the eight skeletons, only two individuals exhibited trauma. An elderly adult male from LA 11850 had a partially healed puncture wound on his right parietal. The other individual was also male, although younger, and exhibited a perimortem cut on the right side of his face, which subsequently separated his zygomatic process of the temporal from the rest of the temporal.

Mackey and Green (1979) utilized the skeletal information from five sites as one of their lines of supporting evidence in the suggestion that the towers found at several Gallina sites were primarily defensive in nature. These sites included Bg 2, Bg 3, Bg 20, Bg 51 and Bg 88B. The context in which the individuals were discovered at each of these sites in conjunction with any traumatic injuries evident led Mackey and Green to conclude that intervillage warfare or raiding, with possible cannibalism, occurred at these sites. This in turn verified, for Mackey and Green (1979), that Gallina towers were primarily defensive in nature. However, possible cannibalism in the Gallina region prompted Turner and colleagues (1993) to reexamine the skeletal material from these five sites in order to clarify whether or not some of these instances of traumatic injury could be more definitely attributed to cannibalism. The authors concluded that the skeletal remains from these sites failed to meet the minimum criteria of cannibalism and that such

events were not the cause of traumatic injury to the skeletal remains. Turner and Turner (1999) concur with the earlier analysis and believe the events to be examples of raiding.

Ann Stodder (1989: 187), using a sample of Gallina individuals, determined this cultural group to be violent in comparison to 14 other samples from her project area; the Basin and Range region that consists of all of New Mexico and parts of Colorado and Texas. The Gallina data she used included 41 individuals from four different sites. She subsequently recorded the frequencies of both cranial and postcranial trauma. These frequencies show Gallina cranial trauma at 20% and postcranial trauma at 22%. These frequencies are higher than any of the comparison groups. Following far below the Gallina are San Cristobal's 8% cranial trauma and Hawikku's 17% postcranial trauma. Stodder's trauma data are discussed again in Chapter Five.

As is evident, skeletal trauma has been used in the investigation of violence and as one aspect of skeletal or site analysis. In fact, many more publications mention skeletal violence in passing. These publications include Blumenthal (1940: 12) in his introductory publication to Gallina archaeology, Lange, Jr. (1940: 15) in his brief summary of a small Gallina cranial series, and Pendleton (1952: 149) in his publication on the Gallina Phase. While many of these are older publications, they are still the basis for current interpretations of Gallina, as recent publications are limited.

CONCLUSION

Each major line of evidence for violence has been demonstrated by the Gallina to varying degrees, except for cultural material. Whether this lack of cultural material associated with violence is a result of excavation and/or reporting bias is not known. In regards to the most pertinent type of evidence to this thesis research, skeletal material,

only parts of the entire Gallina skeletal sample have been observed and analyzed for evidence of violence. This study provides the opportunity to re-evaluate violence among the Gallina by examining and evaluating the entire skeletal sample, thus creating an inclusive account of Gallina skeletal violence. The next chapter details the methods and materials used for this research.

CHAPTER 4 – MATERIALS AND METHODS

INTRODUCTION

Evidence observed on human skeletal remains is the most direct means for identifying violence in the archaeological record. As such, this research endeavors to create a comprehensive macroscopic look at skeletal violence among the Gallina. Often, human remains are uncommon, or even completely absent, at archaeological sites. Fortunately, there are three Gallina skeletal collections that total a minimum of 142 individuals, from which data were collected in order to identify and subsequently analyze the prevalence of violence among the Gallina Phase inhabitants.

A complete inventory of each individual was prepared upon initial observation of the remains. When possible, age-at-death and sex were determined. As violence is the focus of this study, the identification and recording of traumatic injury on the skeleton was essential. These injuries were described, many were photographed, and then placed into five general trauma categories: blunt force trauma, sharp force trauma, sharp/blunt force trauma, projectile trauma and cremation. The details of the skeletons utilized, as well as the methods used to collect the data follow. These methods used in the study follow current and standard osteological procedures.

MATERIALS

Three major Gallina skeletal collections are available for this study, permission was given by Colorado State University, the University of New Mexico and Dr. Greg Nelson to collect and utilize this data. These three collections, together, make up over 95% of the known Gallina skeletal material. From these collections, a minimum of 142 individuals were identified, with data collected from each. The first sample is housed in

the Osteology lab at Colorado State University. In this collection there are 30 individuals, which were brought to the CSU in the 1970's by graduate student James Chase. The second and much larger Gallina sample is currently housed in the Osteology lab of the Maxwell Museum at the University of New Mexico in Albuquerque. This collection contains 105 individuals from excavations by numerous researchers working in the region. The third and smallest sample is currently housed at the Department of Anthropology at the University of Oregon under the care of Greg Nelson. This collection consists of seven individuals from a single site, Cañada Simon I. This site was discovered in 1992, when skeletal remains were eroding out of a road cut.

METHODS

The data forms used during this study were adapted from Buikstra and Ubelaker (1994), the most common and widely accepted standard of data collection for human skeletal remains. Once the general skeletal and dental inventories were complete, the sex and age-at-death of the individual were determined when possible. Fragmented and incomplete remains often made age and sex determination difficult beyond the general categories of adult and sub-adult. Finally, macroscopic evidence of violent trauma was recorded, described, and a photograph was taken for most instances of trauma. When possible, metric data needed to aid in age-at-death and sex identification were collected using a digital sliding caliper and a tape measure. All measurements were collected in millimeters.

Sex

To determine the sex of adult individuals, certain features of the pelvis, skull or the long bones (humerus and femur) need to be present. These methods rely on the fact

that in general males, cranially and post-cranially, tend to be more robust than females (White and Folkens, 2005: 386-387). Also, there are certain qualitative characteristics that one sex tends to exhibit, while in the other it is lacking. Five pelvic characteristics and seven cranial characteristics were scored appropriately when available (Buikstra and Ubelaker 1994: 16-21). The use of long bones to determine sex included direct measurements in millimeters (Bass 2005: 152, 230, 231). Once all features were scored or measured, the collection of these scores determined the sex of the individual.

Sex determination of sub-adults, did not occur as the general consensus is that "any determination is little better than a guess, as secondary characteristics do not manifest themselves until puberty" (Bass 2005: 19). However, if the individual was nearing adulthood and the characteristics were already exhibiting robust male features, that individual's sex was estimated, even though growth was still occurring as scores were already male or nearing male standards.

Age

Age-at-death of an individual, unlike sex, can be identified for both adults and sub-adults. However, the methods are different as adult aging is based on deterioration of the individual and sub-adult aging is based on maturation (White and Folkens 2005: 363). Additionally, sub-adult aging is generally more accurate as the formation and the development of teeth and bone are under tighter genetic control. However, there were cases when the skeletal remains were so minimal that only adult or sub-adult categories could be assigned to the individual.

There were four methods used when aging adult skeletons, all of which were utilized on an individual when available. These methods are based on the morphological

changes that occur as an individual ages. First, is pubic symphysis morphology (Suchey-Brooks 1990). Second, is the sternal end of the fourth rib (Iscan and Loth 1986). Third, cranial suture closure was occasionally used when other methods were not available, because closure is highly variable (Buikstra and Ubelaker 1994), and it makes for less accurate age estimation. Fourth, is dental attrition. As teeth are often still present I commonly utilized this method (White and Folkens 2005: 364). In general, dental wear was used more as corroboration for the more reliable methods, unless the dentition was the only criterion available. When required, dental attrition was compared to that reported by Lovejoy (1985) for the Libben population.

To age sub-adult skeletal remains there are three techniques commonly used that have a high level of accuracy (White and Folkens 2005: 364). First, dental maturation is the most commonly used aging technique for sub-adults. Ubelaker's (1989) graphic summary of dental development and the standards of Moorrees, Fanning and Hunt (1963a; 1963b) were utilized. Second, diaphyseal length of the long bones is another sub-adult aging method. This technique is not as precise as dental development or epiphyseal union (White and Folkens 2005: 273) and this method was often used in order to support the age estimates from dental maturation or epiphyseal union, unless, however, this method was the only one available for an individual. Baker and colleagues (2005) publication "The Osteology of Infants and Children" provided actual size illustrations of all the long bones, beginning with the first trimester and ending at five years of age, which were utilized in this study. Third is epiphyseal union which provided the means for estimating age-at-death of older sub-adults. Baker and co-workers (2005) were also the source of this standard.

Trauma

After estimating age-at-death and sex for each individual, the bones were macroscopically inspected for evidence of violent trauma. All instances of trauma were recorded. Information included the type of trauma, description and location of the trauma, and photographs were taken of several of the injuries. The traumatic injuries were placed into five general categories using current forensic definitions and descriptions: blunt force, sharp force, sharp-blunt force, projectile, and cremation. These categories are based on the type of object used or mechanism that inflicts injury upon the individual and the resultant macroscopic morphology of the trauma on the skeletal material. Kimmerle and Baraybar's (2008) and Byers (2005) provide descriptions of skeletal trauma and this assisted in the identification, categorization and description of Gallina skeletal injuries

The first category of trauma, blunt force trauma, can occur by several mechanisms. However, only one mechanism is pertinent to this research. Blunt force trauma is defined as being caused by an instrument that is usually wide and has either a flat or round surface, thus creating an injury that has a wide focus (Byers 2005: 287; Kimmerle and Baraybar 2008: 49, 151). The forces that are applied over this wide focus include compression, which is the most common, bending and occasionally shearing (Byers 2005: 287; Kimmerle and Baraybar 2008: 54). The physical characteristics of such injuries are crushing of the bone, depressed fractures, and penetrating defects that may or may not include radiating or concentric fractures as the bone around the point of impact bends inward, away from the direction of force (Kimmerle and Baraybar 2008: 52, 158-159).

Sharp force trauma is the second type of trauma. In contrast with blunt force trauma, the focus associated with sharp force trauma is narrow (Byers 2005: 288; Kimmerle and Baraybar 2008: 54). Force is applied (most often) perpendicular to the bone and downward on the surface of the bone. This produces either cutmarks, puncture wounds or chop marks (Byers 2005: 288). The chop marks, however, are generally placed in their own category, as they exhibit both sharp and blunt characteristics and will be discussed next. Sharp force injury physical characteristics generally mimic the object used. These sharp-edged instruments typically have a pointed tip and a v-shaped blade; therefore, one will often see v-shaped trauma in cross section (Kimmerle and Baraybar 2008: 268). The orientation of this v-shaped cross section depends on the angle of the weapon used on the surface of the bone (Kimmerle and Baraybar 2008: 270). When the injury is penetrating trauma, called point insertions or notched defects, the resulting physical trait is a deep and often elongated trauma, triangular or v-shaped in cross section (Kimmerle and Baraybar 2008: 272).

The third category of trauma, sharp-blunt trauma, is a blending of the previous two categories and commonly termed chopping wounds (Byers 2005). The objects that produce this type of trauma include weapons such as axes, hatchets and machetes. These objects have sharp edges like those seen to produce sharp trauma; however the way in which the force is applied is vertical or nearly vertical, which produces clefts or notches in the bone (Byers 2005: 344; Kimmerle and Baraybar 2008: 54). The physical characteristics of sharp-blunt trauma include both cutting and crushing injuries (Kimmerle and Baraybar 2008: 54). The cross section of the notch is usually v-shaped and it may or may not penetrate through the bone into the interior. Additionally, the

force with which the weapon is wielded often creates extensive radiating fractures. Finally, given enough force, hinged segments may occur and wastage fragments may even break off (Byers 2005: 344).

The fourth category of trauma is projectile trauma, where projectiles pierce the bone surface. Both displacement and fracture lines can occur (Byers 2005: 295). The resultant injuries from any number of projectile weapons share characteristic qualities. As the Gallina resided in the Southwest around AD 1100, arrows shot from bows, darts shot from atlatls and, spears are the implements of concern, and though these weapons are characterized as low velocity projectiles, as compared to a firearm, they can nonetheless leave evidence on the skeletal material characteristic of this category of trauma.

In general there are three ways in which projectile trauma are identified in the skeletal record. The first, and the most direct, is identifying projectile points imbedded within the bone. The second involves identifying a projectile point in close association with the skeletal remains, but this is less direct evidence and is assuming that the point was not a grave good. The third involves the observation of evidence of traumatic injury to the bone that is interpreted by researchers as the product of a projectile contact (Smith et al. 2007: 541). With this third category there is an entrance wound that bevels inward and if there is an exit wound, outward beveling occurs. Fracturing may occur with low velocity projectile trauma; however, injuries like this are not common (Downs et al. 1994).

Cremation is the last main type of traumatic injury, which involves an individual's exposure to heat or flame and is common in the archaeological record

(McCutcheon 1992: 347). When bone is subjected to fire, chemical and physical changes occur, which alters the appearance of the bone. Burned bone takes on certain characteristics once it has been burned including a series of changes in color, which follows a predictable pattern: yellowish-brown to darker yellow/brown to black. As bone becomes carbonized it changes to a dark gray, then a lighter gray and finally pure white (so long as it's oxidized). Another change that occurs to bone when burned is that the surface and texture change, including the cracking, warping, distortion and shrinkage of the bone (Byers 2005: 396-397).

Ante-/Peri-/Postmortem Bone Changes

The last facet of violent trauma analysis involves the timing in which the injuries were inflicted on the individual. Identifying whether trauma occurred antemortem (before death), perimortem (at or around the time of death) or postmortem (after death) is crucial after the initial identification of the injury. This information can inform researchers as to whether or how much violence played a role in the individual's life and/or death.

Antemortem is defined by Kimmerle and Baraybar (2008: 55) as events that occur prior to and apart from an individual's death resulting in either partial or complete healing of the bone (Byers 2005: 289). This remodeling of bone manifests itself in the form of abnormal bone growth, callus formation, abnormal bone shape, necrotic tissue, or characteristics associated with infection. Byer's (2008: 289) descriptions follow that of Kimmerle and Baraybar (2008), though he includes the description of bone porosity near the focus of the injury. This particular aspect of antemortem traumatic injury allows for easily identified timing based on the presence and amount or quality of remodeled bone.

Perimortem is defined as events occurring at or around the time of an individual's death and may be a contributing factor in the cause of death (Byers 2008: 289; Kimmerle and Baraybar 2008: 55 & 57). This means any injuries that occur within this window of time will not exhibit any healing of the affected bone. According to Byers (2005: 290) this type of trauma is recognized as the 'green bone response' because injury to the bone occurs when it is still encased in soft tissue and contains the fluids present in life so the bone will bend and return to its former shape. This does not occur with damages that occur postmortem. Also, Byers (2005) identifies five characteristics that apply to perimortem trauma. These include sharp and irregular edges of the broken bone, hinging, fracture line formation (radiating or concentric fractures), shape of the broken ends (angled with a jagged surface), and staining from the hematoma, which rarely preserves in the archaeological record (Byers 2005: 291; Kimmerle and Baraybar 2008: 57-58).

Finally, identifying postmortem fractures, as opposed to perimortem fractures, is extremely important in the analysis of violence. This is defined as events occurring sometime after the death of an individual. If the bone is still fresh but changes morphologically, for instance as a result of traumatic injury, the bone characteristics will manifest itself in line with perimortem changes; however, if the bone is dry a different set of characteristics occur. The identification of these different morphological characteristics is vital as some postmortem modification can look like violence but in reality is the result of carelessness or accident during archaeological excavation and recovery, or natural taphonomic processes, like root etching, all of which have no bearing on the analysis of violence. The characteristics of postmortem modification, such as fracturing, include different coloring (often lighter) of the edges of the break from the

surrounding bone, lack of radiating fracture lines, hinging and green stick fractures, and breaks more closely resembling right angles that are straight and sharp (no evidence of bending) (Byers 2005: 289, 291; Kimmerle and Baraybar 2008: 58, 61).

Also important is the ability to distinguish between perimortem and postmortem cremation of bone, as the timing of each may have very different implications. Distinguishing between the two is based on color, location of burn patterns, and the morphology of the occurring fractures (Kimmerle and Baraybar 2008: 65). Some of the characteristics of fresh bone cremation include more warping than in dry bone and a whitish blue grey coloring when calcined instead of the more dull tan color dry bone often takes on when calcined. Also, the appearance of curved fractures can indicate that the bone was covered with flesh when burned. Curved fractures can also indicate the direction of the fire, because of the tissue pulling away from the heat. Dry bone exhibits a cracking pattern that is checkered or patinaed that is similar to an aged oil painting (Kimmerle and Baraybar 2008: 69; Magennis 1986: 142-149).

CONCLUSION

The methods used during this research are the current methods in forensic and archaeological investigations. These methods allow for the aging and sexing of many of the Gallina skeletons. These data will allow for the creation of a Gallina demographic profile, which when combined with the trauma data will show the age-sex distribution of interpersonal violence among the Gallina. Original research and experimentation have allowed for such information to be utilized for this study. Basic qualitative and quantitative characteristics obtained from the cranium, pelvis and long bones allow for

the determination of age-at-death and sex when possible. Defect morphology and fracture patterns were the basis for trauma identification and categorization.

After the collection of data, the information was coded in Excel in order to create an arbitrary number system in which to classify the information into categories. This included age range categories, sex categories and general trauma categories. This coding allowed for the sorting and organization of the data into manageable groups, which in turn facilitated my ability to identify and explain the demographic distribution of the sample as well as the frequencies of violence. The end result of this analysis is an understanding of what violence among the Gallina may have looked like and is described in the next two chapters.

CHAPTER 5 – DATA OVERVIEW, RESULTS AND ANALYSIS

INTRODUCTION

The results of the data collection are presented in this chapter. Age-at-death and sex distributions were created for the Gallina sample in order to understand the basic structure of the group. Next the frequencies of traumatic injuries due to interpersonal violence were included in order to see the extent of violence in the lives of the Gallina. Unfortunately, the context of each burial was omitted from the analysis as only a few of the individuals had adequate information from which to draw realistic interpretations of the relationship between violence and the immediate environment. Finally, a general analysis for the Gallina skeletal sample is presented.

DATA OVERVIEW

The overall sample size for this study totaled at least 142 individuals of varying completeness. Of the 142 individuals, I personally examined 135 from two collections; CSU and the Maxwell Museum at UNM. The data from the remaining seven individuals from a single site, Cañada Simon I, were provided by Greg Nelson of the University of Oregon. Nelson is curating this small collection in the Anthropology Department and was the lead researcher of this site when the human remains were excavated.

Both collections that I analyzed had assigned numbers to each individual. These individuals were accepted as single individuals unless there was evidence to the contrary, such as extra skeletal material. The occurrence of a couple of extra bones, usually small hand or feet bones, happened a number of times. There were 37 cases of this occurring. Unfortunately, this was beyond my control and I was therefore forced, due to time restraints and scope of this research, to just make a note of them and essentially disregard

them. However, there were a few instances in which I thought it prudent to create a second, or even a third, individual number based on either a large quantity of extra skeletal material, the type of extra bones or evidence of different ages among the bones that were present. Of these 37 instances only five merited separation into a separate individual. Two cases include individual #4 from Rattlesnake Point (Bg20) and the remains from a pithouse from the same site. The skeletal remains of individual #4 mostly consisted of adult bones from a single individual. However, in addition there was a complete sub-adult cranium, a right calcaneus, a left scapula, an unnumbered thoracic neural arch and five lumbar neural arches. This second individual was roughly 10 years old based on bone size and development, as well as dental development. In the pithouse example there were three sub-adults. These individuals included the remains of a neonate, a child of about 1.5 years of age, and a child between 1.5 and 5 years of age.

With the final individual count at 142 the basic sex distribution of this sample is shown in Table 5.1.

Table 5.1 – Sex Distribution of the Gallina Skeletal Sample

Sex Category	N	Frequency Within Sample (N/142 = %)	Frequency Within Subtotal (N/66 = %)
Male	39	27.5	59.1
Female	27	19.0	40.9
Sub-total	66	46.5	99.9
Undetermined	76	53.5	-
Total	142	99.9	-

In terms of age distribution there are 86 adult and 36 sub-adult skeletal remains in this sample. Age-at-death could not be determined for the remaining 20 individuals. The age-at-death distribution of the collection is shown in Table 5.2.

Table 5.2 – Age-at-Death Distribution of the Gallina Skeletal Sample

Age Category	N	Frequency Within Sample (N/142 = %)	Frequency Within Subtotal (N/86 = %)
1: Neonate-newborn	5	3.5	5.8
2: 1 year – 4.9 years	8	5.6	9.3
3: 5 years – 10.9 years	9	6.3	10.5
4: 11 years – 19.9 years	14	9.9	16.3
5: 20 years – 29.9 years	22	15.5	25.6
6: 30 years – 39.9 years	11	7.8	12.8
7: 40 years – 49.9 years	8	5.6	9.3
8: 50+ years	9	6.3	10.5
Sub-total	86	60.6	100.00
9: Adult	36	25.4	-
10: Unknown	20	14.1	-
Total	142	99.9	-

Finally, Tables 5.1 and 5.2 are combined below to create Figure 2.

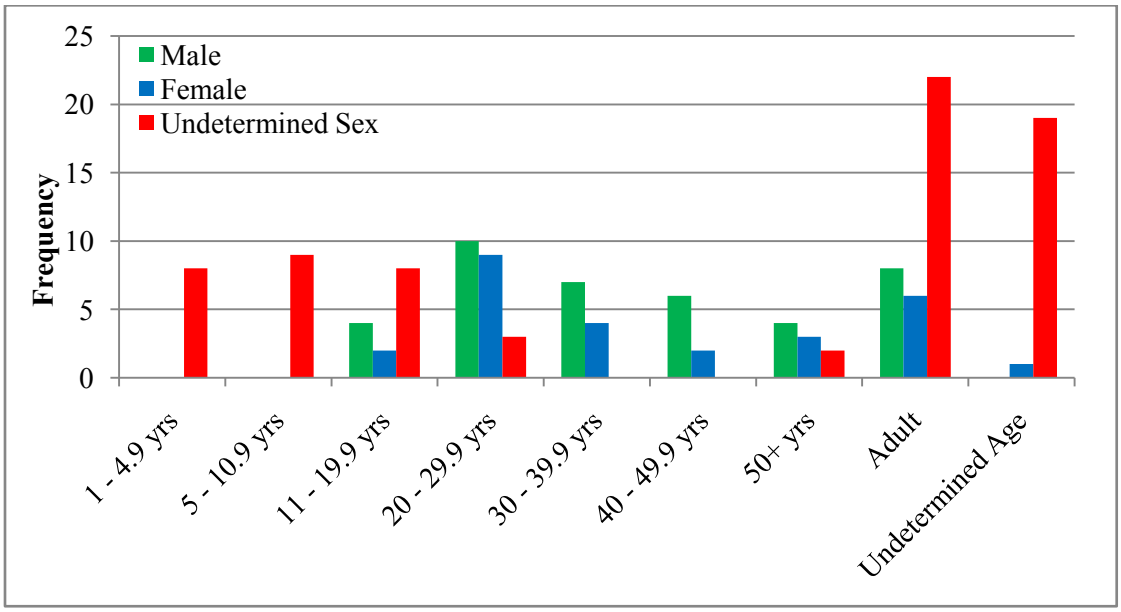

Figure 2 - Age and Sex Distribution of the Skeletal Sample

TRAUMA OVERVIEW

The total frequency of trauma evidenced among the Gallina sample is illustrated in Table 5.3 below. Note that of the 42 individuals exhibiting interpersonal traumatic injury 25, are cases of cremation.

Table 5.3 – Individuals with Traumatic Injuries Observed in the Gallina Sample

Total N	N – All Observed Trauma*	N – Interpersonal Trauma**	
		Trauma	Cremation
142	52	17/42	25/42

*number of individuals with any type of trauma (postmortem, accident, interpersonal violence)
**individuals with trauma related to interpersonal violence: not including post-mortem cremation and post-mortem cutmarks or injuries that have an equally likely chance of being accidental

Individuals demonstrating postmortem cremation were removed from the overall count of those exhibiting signs of interpersonal violence, as there is more than one equally likely cause of burning not attributed to violence. The postmortem cremation of an individual may be the result of interpersonal violence, but just as probable is the cremation of individuals as part of a mortuary ritual or the socially sanctioned intentional burning of a building in which individuals have already been buried beneath the floor. As these other possibilities are just as valid, the eight postmortem cremations were removed from this count. Also, individual #2 at Rattlesnake Point was removed, as the injuries observed were not the result of interpersonal violence. This individual exhibited four small cutmarks on and just above the medial malleolus of the left tibia. This was the only evidence of trauma of any kind. These cutmarks occurred postmortem and were most likely the result of accidental marks during excavation. The last instance of an individual being removed from the overall count involves individual G-38-1 where trauma included

antemortem fracturing of the right femur and fibula. G-38-1 was removed because the most likely cause of these breaks was accidental during the individual's life.

With the omission of these 10 individuals from the overall trauma count, 29.6% of the sample of 142 individuals demonstrate signs of interpersonal violence. Removing the cremations drops the percentage of those exhibiting interpersonal violence to 12%. These 42 individuals were excavated from at least 10 sites. The term 'at least' is used here because there are 4 individuals in the University of New Mexico collection for which site location is missing.

Two final caveats must be made pertaining to the analysis. First, there is the possibility of underrepresentation in the number of injuries identified in this sample. This is because of the fact that not all of the individuals are complete; many are missing various elements and some individuals are extremely fragmented. Also, there is the very likely possibility that some violent trauma only affected the soft tissue of an individual, which means that any evidence of interpersonal violence is not evident. Therefore, the trauma as observed on the skeleton is a conservative estimate of interpersonal violence among the Gallina.

The second caveat pertinent to the analysis of Gallina interpersonal violence is that all antemortem and perimortem trauma identified on the skeletal material, except in two instances, was assumed to be the result of interpersonal violence. Some instances of trauma are clearly the result of interpersonal violence; i.e., individual 60/5 from the Nogales site has a healed chop mark from a hatchet or an axe on the left parietal; a single individual from Bg 19 had a projectile point imbedded in the posterior cervical vertebrae. Other instances of trauma are less clear, but have been categorized as the result of

interpersonal violence in the absence of evidence that would indicate a different scenario. In terms of cremation, the most problematic line of evidence, the subsequent analysis presented below will show what violence would look like in the collection both with and without the cremation data.

DESCRIPTION AND FREQUENCIES OF TRAUMA

In the Gallina sample there is at least one example of each of the general types of trauma; blunt force, sharp force, sharp-blunt force, projectile, and cremation. However, these types of trauma are not equally represented in the sample. For instance, there are only two cases that demonstrate projectile trauma, while there are 25 documented cases of cremation. Figure 3 illustrates the frequency of each type of trauma that was identified on the 42 individuals. Of these 56 instances of trauma, 31 were identified as having occurred perimortem and seven occurred antemortem, while 18 instances of trauma could not be categorized as ante- or perimortem with confidence. In the undetermined situations all but one was a case of cremation.

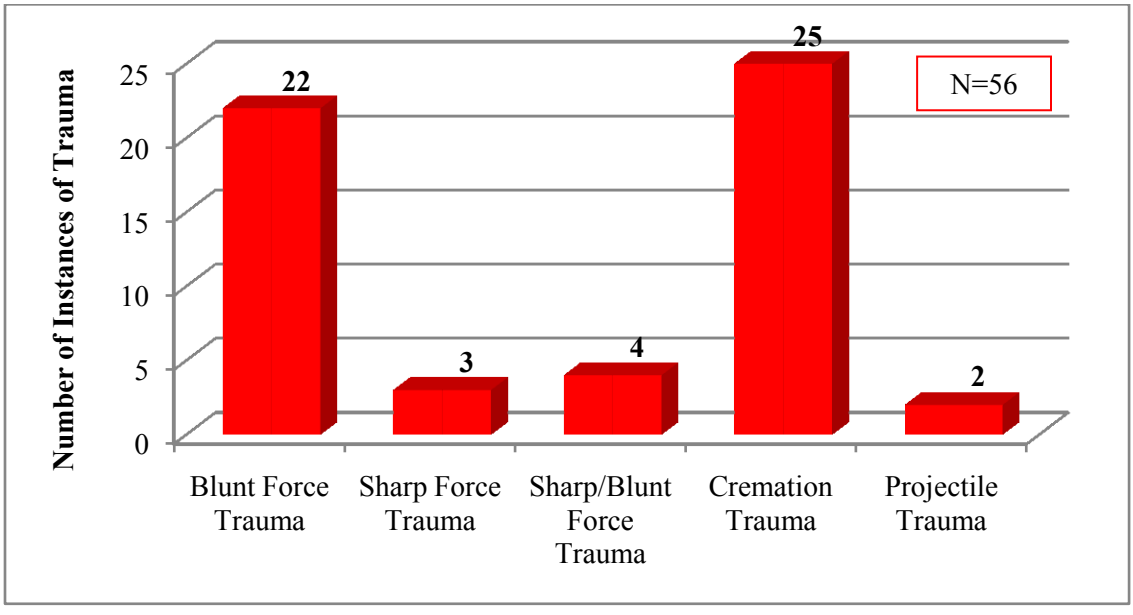

Figure 3 – Interpersonal Trauma Frequency in the Gallina Skeletal Sample

Blunt force trauma was identified on 10 individuals. There were 17 instances of blunt force trauma on the cranium, and three of these instances occurred antemortem while the rest occurred perimortem. Four examples of blunt force trauma can be seen on long bones and one instance on the pelvis. All of these depressed fractures occurred perimortem, except for one antemortem depressed fracture, on individuals from Cañada Simon I. Photographs of blunt force trauma can be found in Appendix 1, 1-3.

Sharp force trauma was identified on three individuals. Two occurrences were located on the cranium. The first is an antemortem cutmark on the right frontal near the temporal line of individual #84.1.3. The second cranium cutmark occurred perimortem on the left parietal of individual 60/8 from Nogales. The last cutmark occurred antemortem on the right ulna, just inferior to the coronoid process, on individual #5 from Rattlesnake Point. Photograph 4 in Appendix 1 illustrates this individual's sharp force trauma.

Sharp/blunt force trauma was identified on four individuals. These have been identified as chopmarks from an axe or hatchet-like weapon. Two of the four trauma occurrences were located on the cranium, both occurring antemortem, of individuals 60/3 from Nogales and 84.1.4 from Huerfano Mesa. Chopmarks three and four both occurred on the long bones of two individuals (#2 and #5) from Cañada Simon I, both of which occurred perimortem. The chopmark on individual #1 occurred on the proximal end of the right femur and the chopmark on individual #5 occurred on the lateral epicondyle of the right humerus. Photographs can be seen in Appendix 1.

Cremation of an individual in this study refers to any instance of burning, to whatever degree. The degree of burning varies from simply smoking of the bones to

complete calcination. There are 33 individuals who exhibit cremation and of that number at least eight of them occurred upon dry bone. These eight were excluded from this study, leaving 25 individuals to represent the frequency of cremation in this study. Photographs of general Gallina cremation are found in Appendix 1.

The last general type of trauma is projectile trauma and there were only two instances on two individuals in the Gallina sample. Individual 84.2.0/G-81-B has a small projectile point imbedded in the lateral proximal epiphysis of the left tibia. The projectile had been glued into the tibia prior this study; therefore it is difficult to analyze the interior of the trauma or the actual projectile. This injury most likely occurred perimortem. A photograph of this trauma is shown in Appendix 1. The second projectile injury involves a projectile point imbedded in a cervical vertebra of the only individual (no associated number) found at Bg 19 near Rattlesnake Ridge. At the time of this study, the projectile point had already been removed from the cervical vertebra and therefore no photographs of this trauma could be taken.

With the trauma identified on the individuals in the sample, frequencies of trauma for age and sex were calculated. Of the known adult individuals there are 14 that exhibit trauma and 28 if cremation is included. As for the sub-adults there are three that exhibit trauma and four if cremation is included. Table 5.4 illustrates a breakdown of age-at-death and trauma which shows blunt force trauma and cremation covering the most age ranges. Table 5.5 shows adult sex and trauma and illustrates that males exhibit a higher or equal frequency of trauma as compared to females, except in terms of projectile trauma. Finally, Table 5.6 provides the raw number distribution of trauma among both age and sex. These tables show that there is a five percent difference between males and

females showing interpersonal violence, and that age ranges 20-29.9 and 30-39.9 exhibit the highest frequency of trauma. Again, these numbers in the tables below are conservative as many of the individuals that were examined were very incomplete because of preservation issues or cremation. With much of an individual missing there is no way to tell whether or not the missing elements exhibited any type of trauma caused by interpersonal violence.

Table 5.4 – Interpersonal Traumatic Injury by Age-at-Death

Age Category	Prevalence of Interpersonal Trauma		Prevalence of Cremation	
	x/N	%	x/N	%
1: Neonate-newborn	0/5	0.0	-	-
2: 1 year – 4.9 years	1/8	12.5	-	-
3: 5 years – 10.9 years	1/9	11.1	-	-
4: 11 years – 19.9 years	1/14	7.1	1/14	7.1
5: 20 years – 29.9 years	3/22	13.6	2/22	9.1
6: 30 years – 39.9 years	5/11	45.5	1/11	9.1
7: 40 years – 49.9 years	2/8	25.0	-	-
8: 50+ years	1/9	11.1	1/9	11.1
9: Adult	3/36	8.3	10/36	27.8
10: Unknown	0/20	0.00	10/20	50.0
Total	17/142	13.3	25/142	17.6

Table 5.5 – Adult Interpersonal Traumatic Injury by Sex

Sex Category	Prevalence of Interpersonal Trauma		Prevalence of Cremation	
	x/N	%	x/N	%
Male	9/35	25.7	2/35	5.7
Female	5/24	20.8	2/24	8.3
Undetermined	0/27	0.0	20/27	74.1
Total	14/86	16.3	25/86	29.1

Table 5.6 – Adult Interpersonal Traumatic Injury by Age and Sex

	Male		Female		Unknown Sex	
	Interpersonal Trauma	Cremation	Interpersonal Trauma	Cremation	Interpersonal Trauma	Cremation
20 yrs – 29.9 yrs	2	1	1	1	-	-
30 yrs – 39.9 yrs	4	-	1	1	-	-
40 yrs – 49.9 yrs	1	-	1	-	-	-
50+ yrs	1	-	-	-	-	1
Adult	1	1	2	-	-	9

Finally, Figure 3 below illustrates the number individuals based on adult sex that exhibit each of the five types of trauma, while Figure 4 illustrates the number of individuals based on age that exhibit each type of trauma. One caveat associated with the Figures 4 and 5 below must be mentioned. At first glance there seems to be two extra males and two extra 30-39.9 year olds in these graphs; however, this is because the first 30-39.9 year old male exhibited both blunt force trauma and sharp force trauma, while the second male exhibited both blunt force trauma and blunt/sharp force trauma.

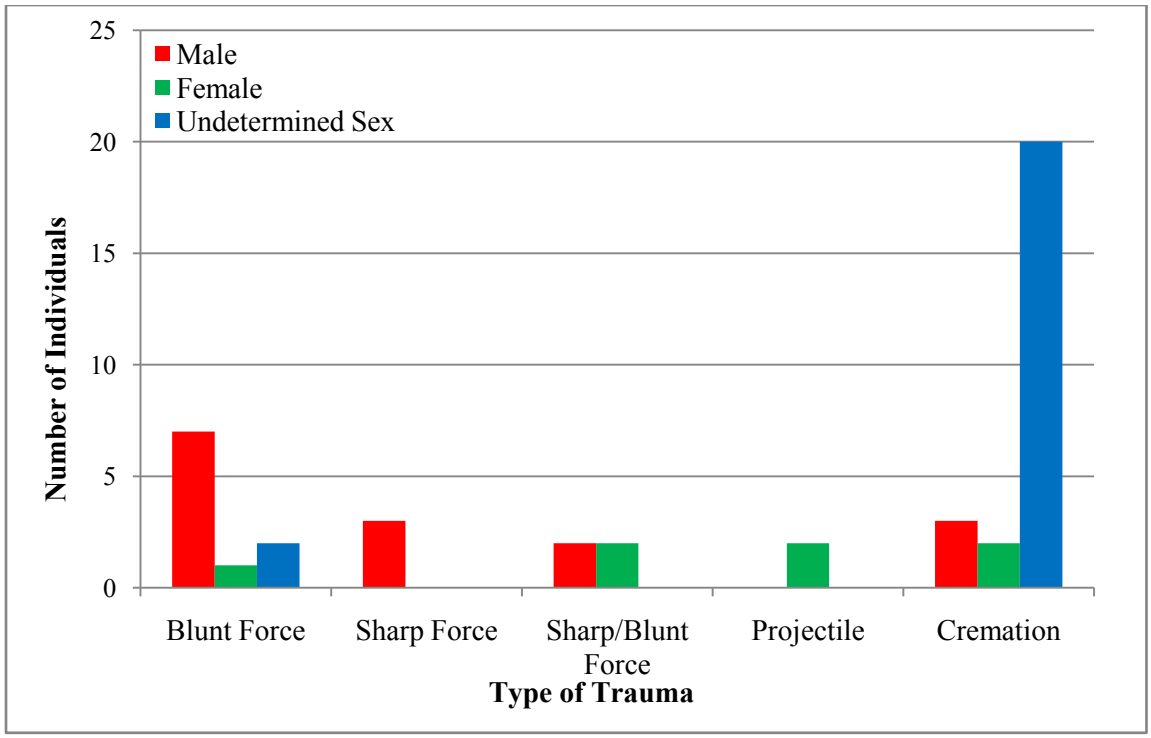

Figure 4 - Type of Interpersonal Trauma by Sex

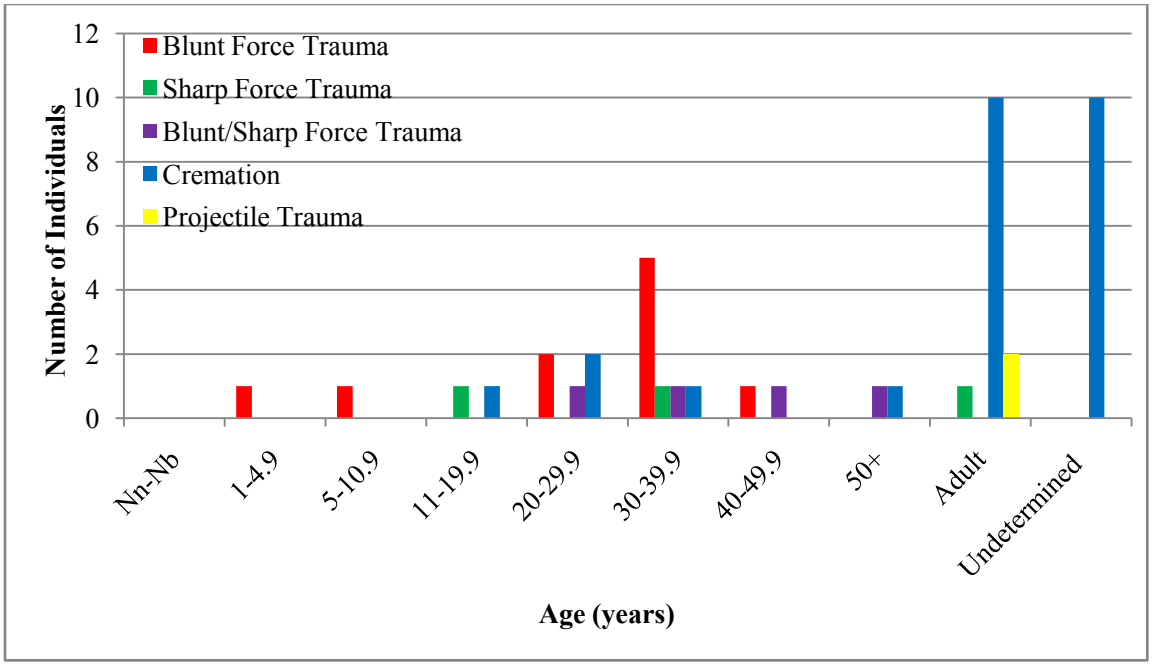

Figure 5 - Type of Interpersonal Trauma by Age

Trauma is also shown by skeletal element among adult males, adult females, unsexed adults and unsexed sub-adults in Table 5.7 and Figure 6. There are some elements not included in the table below as these elements did not demonstrate trauma of any kind, and thus there is no reason to incorporate them into the table. Additionally, there were six instances of trauma that occurred on the mid-line of the bone and thus could not be sided. For instance, an antemortem circular depressed injury occurred directly on the sagittal suture of individual #9 from Rattlesnake Point (Bg 20). Also, individual #5, from Cañada Simon I received massive amounts of blunt force traumatic injury to both the left and right os coxa. As this is considered to be one injury it too was left in the unsided column so as not to count the trauma twice by placing it in both the left and the right os coxa columns.

Skeletal Element	Adult Male			Adult Female			Unsexed Adult			Unsexed Sub-Adult			Total	
	Left x/N (%)	Unsided x/N (%)	Right x/N (%)	Left x/N (%)	Unsided x/N (%)	Right x/N (%)	Left x/N (%)	Unsided x/N (%)	Right x/N (%)	Left x/N (%)	Unsided x/N (%)	Right x/N (%)	Left x/N (%)	Right x/N (%)
Cranium	8/21 (38.1)	3/22 (13.6)	4/22 (18.2)	1/15 (6.7)	1/15 (6.7)	1/15 (6.7)	0/2	0	0/2	1/16 (6.3)	0	2/17 (11.8)	10/54 (18.5)	7/56 (12.5)
Vertebrae	0/17	0	0/17	0/11	1/11 (9.1)	0/11	0/2	0	0/2	0/3	0	0/3	0/33	0/33
Humerus	0/22	0	1/20 (5.0)	0/12	0	1/12 (8.3)	0/5	0	0/4	0/14	0	0/10	0/53	2/46 (4.3)
Radius	0/19	0	0/18	0/12	0	0/12	0/3	0	0/2	0/9	0	0/8	0/43	0/40
Ulna	1/17 (5.9)	0	1/20 (5.0)	0/10	0	0/12	0/1	0	0/3	0/8	0	0/11	1/36 (2.8)	1/46 (2.2)
Os Coxa	0/20	1/20 (5.0)	0/20	0/7	0	0/10	0/2	0	0/0	0/6	0	0/7	0/35	0/37
Femur	0/26	0	3/25 (12.0)	0/12	0	0/12	0/3	0	0/4	0/12	0	0/14	0/53	3/55 (5.5)
Tibia	0/24	0	0/24	1/13 (7.7)	0	0/12	0/4	0	0/5	0/12	0	0/14	1/53 (1.9)	0/55
Fibula	0/22	0	0/21	0/11	0	0/10	0/3	0	0/3	0/8	0	0/9	0/44	0/43

Table 5.7 – Interpersonal Trauma by Skeletal Element

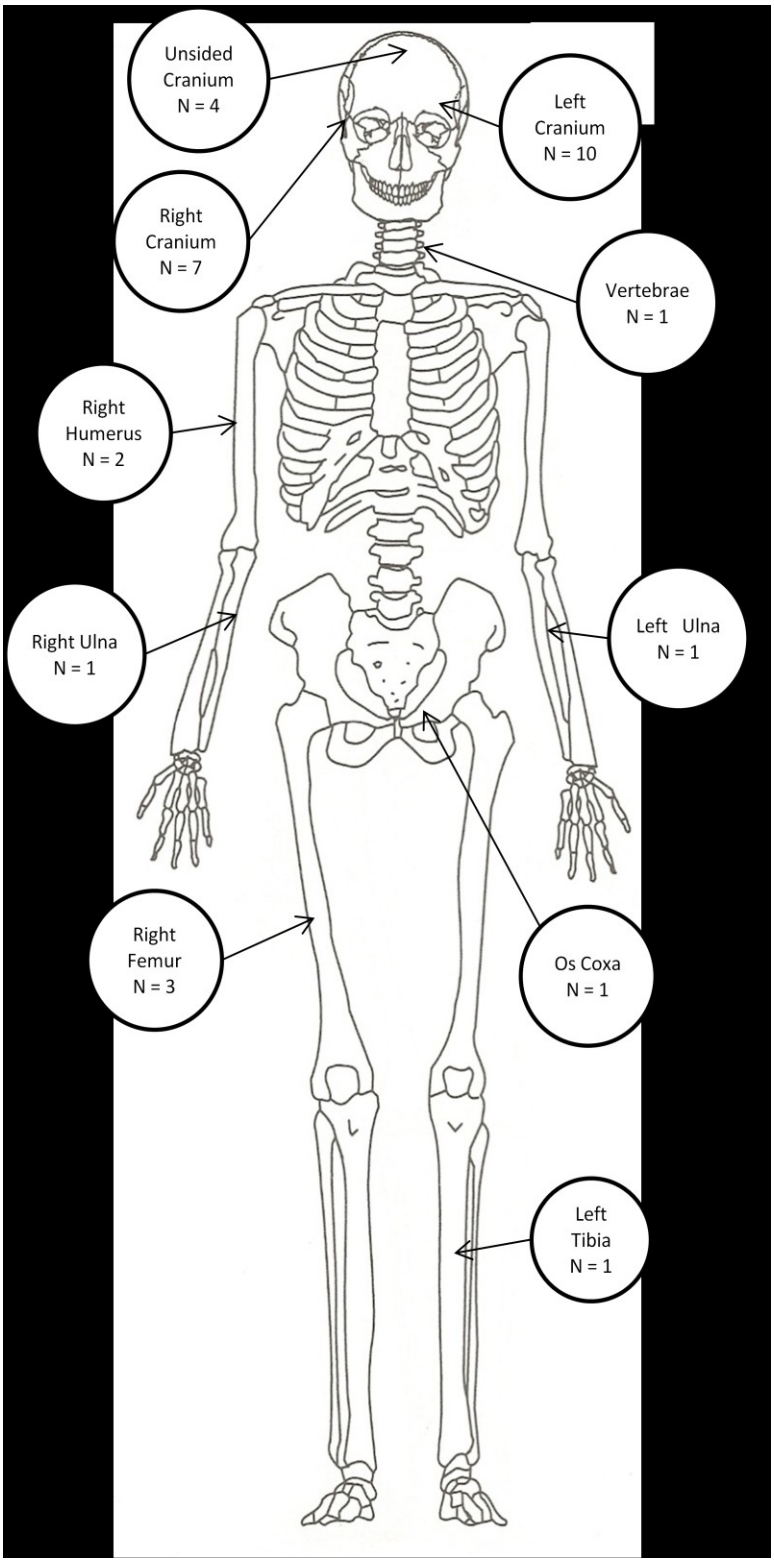

Figure 6 – Diagram of Trauma by Skeletal Element.

There appear to be no major differences in left and right trauma frequencies. There are a total of 12 injuries occurring on the left side of the body and there are 13 that occur on the right side. In terms of cranial injuries there are more left injuries than right, by three instances. Trauma on the left side of an individual indicates right handedness of the enemy attacker, and vice versa for right sided trauma. With more cranial trauma occurring on the left side, this may signify the enemy may mostly have been right-handed individuals. When considering the left and right sides of the post-cranial remains, there are two injuries that occur on the left side and six that occur on the right. This shows that injuries to the right side of the body are three times as likely as compared to injuries to the left side. In terms of comparing cranial to postcranial injuries, cranial injuries are more frequent. Specifically, there are over twice as many instances of cranial trauma than postcranial trauma.

Finally, known sites with multiple individuals and/or trauma are shown in Table 5.8. Skeletal remains from all these sites, with the exception of Bg 88B, exhibit some type of violent trauma. Descriptions of each of the sites that show violence are detailed below.

Table 5.8 – Known Sites with Multiple Individuals with Interpersonal Trauma

Site	Total Number of Individuals	Number of Individuals with Trauma		Tentative Date
		Traumatic Injury	Cremation	
Cuchillo (Bg 2)	15	-	15	≈1050 AD & 1250 AD
Nogales (Bg 3)	14	4	-	≈1250 AD
Rattlesnake Point (Bg 20)	22	2	1	≈1050 AD & 1250 AD
Bg 51	15	-	7	≈1150-1200 AD
Bg 88B	13	-	-	≈1200 AD
Cañada Simon I	7	7	-	Unknown
Huerfano Mesa	15	3	-	≈1150-1250 AD
Madre Hill	3	-	-	≈1150-1250 AD

The five sites that are known to have multiple individuals with traumatic injuries include Cuchillo (Bg 2), Nogales (Bg 3), Rattlesnake Ridge (Bg 20), Bg 51 and Cañada Simon I. There were 15 individuals found at Cuchillo, all of which were burned to varying degrees and were extremely fragmented. This fragmentation prevented the identification of any other types of trauma if there were any, and made it extremely difficult to estimate age-at-death or sex for a majority of them.

Fourteen individuals were recovered from the Nogales site, four of which exhibited evidence of traumatic injury. This site yielded the remains of four adult males, three adult females, five unsexed sub-adults, one adult of unknown sex and age and one young unsexed adult in their early 20s. Two adult males show traumatic injuries to the

cranium, one adult female exhibits trauma on the cranium and one sub-adult (5 ½ to 6 years) shows trauma to the cranium. All trauma at this site occurred perimortem except for the chopmark to the left parietal of a female, which was caused antemortem.

The skeletal remains from Rattlesnake Point (Bg 20) consist of 22 individuals including seven adult males, five adult females, five unsexed sub-adults, and five adults of unknown sex. Two adult males showed evidence of traumatic injury. Individual #5 has an antemortem cutmark on the right ulna just inferior of the coronoid process and individual #9 has a perimortem depressed fracture on the right parietal and an antemortem depressed fracture on the sagittal suture. Also, two adults of unknown sex showed evidence of burning; however, one instance most likely occurred post-mortem as only the endocranial surface of the skull was smoked. The second occurrence is a completely smoked humerus and it is unclear whether this occurred when the bone was fresh or dry.

At site Bg 51 there are 15 individuals, most of them are unsexed and unaged, but there is one unsexed individual over 50 years of age, one adult probable female and one unsexed early twenty year old. The only trauma seen at this site includes the burning, to varying degrees, of seven individuals. Two instances of burning were identified as having occurred while the bone was still fresh; however, of the other five instances the timing of the burning could not be determined. The individuals that were cremated were all very fragmented and missing numerous skeletal elements. Other trauma, if there was any, cannot be identified. With this limited data, the specific events that caused these individuals to be exposed to fire are unclear.

Cañada Simon I also has multiple individuals with multiple injuries. This site has seven individuals, including two adult males, three adult females and two unsexed sub-adults. All of these individuals, except for the 6-12 month old, exhibit some type of traumatic injury with a majority of those injuries occurring perimortem and most likely the result of interpersonal violence. Most of the trauma is blunt force trauma illustrated by numerous depressed fractures and bone crushing. There is also one probable chopmark on the right humerus of one of the females. Details of this trauma are discussed in greater detail in the next chapter.

The last site with multiple individuals that show evidence of traumatic injury is Huerfano Mesa. Fifteen individuals have been found at this site. There are five adult males, four adult females, five sub-adults and one unsexed older adult. All of the traumatic injuries observed from this site involve adults. Two of the adults are males and the other is a female. Male #1 exhibits an antemortem chopmark to the cranium, male #2 has a depression fracture on the left frontal bone of the cranium, and the female has a large depression on her sagittal suture on the cranium.

CONCLUSION

There were a total of 142 individuals in the three Gallina skeletal collections utilized for this study. The sex distribution of the collection shows more males than females; 39 vs. 27. When these numbers are divided by the known sex subsample size (n=66) the percentages are 59% and 41%, respectively. When males and females are placed into age categories, there are consistently more males in each age category. As for the age ranges without regards to sex, there is at least one case of traumatic injury in each age range except for the neonate-newborn category, and the highest frequency is

observed in the 30-39.9 category followed by the 20-29.9 age group. This shows that most individuals in this collection were dying during their twenties and thirties. It should also be noted that there is a fairly high frequency of death in the 5-10.9 age category, though only one shows any skeletal trauma.

The most common type of trauma in this skeletal sample is burning of individuals. If the burning is attributed to interpersonal violence, several scenarios are plausible. It could be the result of direct fighting or a feature of the aftermath of violence, whether from the opposing group or from the remaining Gallina. Unfortunately, most of the cremation examples are extremely fragmented to the point that if there is additional trauma (i.e., blunt or sharp force trauma) that would be a more definite indication of interpersonal violence it is not identifiable. Blunt force trauma is the second most common type of injury and is occurs mostly on the cranium. This indicates close contact fighting among the combatants. This is supported by the fact that though the raw number is much smaller for sharp/blunt trauma it is still the next highest in the data set with projectile trauma having the lowest frequency.

Understanding the basic population distribution is vital to an understanding of violence in this skeletal sample. If, for instance, a sample has a majority of males, then logically the frequency of violence against males will be higher as well. The same observation holds true for age. In terms of age, logically the majority of trauma occurs on adult skeletons (n=29), as these individuals are the ones most often engaged in actual combat. However, it is interesting to note that three sub-adults exhibit trauma on their skeletons. One individual is a male in his late teens with sharp force trauma to the

cranium. The other two instances involve children of 2 and 5 years of age. These two children exhibit blunt force trauma to the cranium.

In terms of trauma associated with each sex, males are almost twice as likely to exhibit traumatic injury as females, but even so there are several instances of females showing evidence of violent trauma. This illustrates that while men were engaged in combat, females were either also engaged in combat or the fighting was occurring at home and they were collateral damage. The distribution of trauma type does not appear to be atypical. Males, of course, generally show the highest frequencies of traumatic injury or are equal with female frequencies, except in the projectile trauma category. There are two females and no males exhibiting this type of trauma; however, as there are only two instances of this type of trauma it is difficult to draw conclusions about projectile injuries. A majority of all trauma occurred perimortem (n=31), but there are several instances of healed trauma (n=7) indicating that interpersonal violence was not a new phenomenon for the Gallina.

CHAPTER 6 – INTERPRETING GALLINA VIOLENCE

INTRODUCTION

With some type of violence most likely occurring within the Gallina Region, the next step is understanding the extent of this violence, relative to the larger Ancestral Pueblo tradition, and to advance explanations for this violence. It proved somewhat difficult to find adequate comparisons for the Gallina because of a general lack of detail about violence frequency in a skeletal sample in an extended region. However, two comparisons can be made between the Gallina and the La Plata River Valley, a culture group north of the Gallina, and the Southwest Basin and Range region. The comparisons show that the Gallina sample exhibits slightly more individuals with evidence of interpersonal trauma than neighboring Ancestral Puebloans and general Southwest sites.

COMPARISONS

La Plata River Valley

The La Plata River Valley was home to Ancestral Pueblo farmers with sites dating to Pueblo II and III with its peak occupation around A.D. 1025-1125. This region is located near the borders of New Mexico and Colorado. Over 900 archaeological sites have been identified in the area with four main communities in the lower valley. This area appears to have experienced a population decline starting around A.D. 1125 with resultant abandonment by around A.D. 1300 (Martin, et al. 2008).

This Ancestral Pueblo cultural region was chosen as a comparison because its occupation occurred around the same time the Gallina Region was inhabited. Both areas were abandoned about the same time as well. The La Plata River Valley was also known for its small farming sites, a situation analogous to the Gallina. However, the La Plata

River Valley did have some communities that were more complex, where communities consisted of a central village with public architecture surrounded by smaller pueblos.

Debra Martin and colleagues provided an analysis of skeletal violence in the La Plata River Valley. The skeletal material was recovered from 12 sites that yielded 67 discrete burials. Of these 67 burials, 51 could be analyzed for traumatic injury. Table 6.1 demonstrates the basic sex distribution of the La Plata River Valley sample.

Table 6.1 - Sex Distribution of the La Plata River Valley Skeletal Sample

Sex Category	N	Frequency Within Sample (%)	Frequency of Adult Males and Females (%)
Male	16	31.4	53.3
Female	14	27.5	46.7
Subtotal	30	58.8	100.0
Sub-adult	21	41.2	-
Total	51	100.0	-

Table generated from data presented in Martin, et al. 2008: 98-122.

Table 6.2 – Interpersonal Traumatic Injury by Age from the La Plata River Valley

Age Category	N	Frequency of Interpersonal Trauma Within Sample (N/51 = %)
1: Neonate-newborn	0	0.00
2: 1 year – 5.9 years	0	0.00
3: 6 years – 19.9 years	1	2.0
4: 20 years – 29.9 years	5	9.8
5: 30 years – 39.9 years	5	9.8
6: 40 years – 49.9 years	0	0.0
7: 50+ years	0	0.0
Total Injury	11	21.6
Total Sample	51	-

Table generated from data presented in Martin, et al. 2008: 98-122.

The overall age distribution of the La Plata River Valley sample was not provided by Martin and colleagues (2008). Only the ages of the individuals with traumatic injury were specified, and therefore traumatic injury and age-at-death were incorporated into one table; Table 6.2. Table 6.3 illustrates the distribution of trauma for the La Plata River Valley sample according to sex. Originally, of these 51 individuals 14 illustrate traumatic injury, which is 27.5% of the sample: six males, seven females, one sub-adult. However, Martin and colleagues have attributed three of these occurrences of trauma to accident and/or occupational injury and I removed them from the count. These three injuries were post-cranial injuries on three adult males were excluded from my count and the final trauma total is shown in Tables 6.2 and 6.3.

Table 6.3 – Interpersonal Traumatic Injury by Sex from the La Plata River Valley

Sex Category	x/N	Frequency of Interpersonal Trauma Within Sex (x/N = %)	Frequency of Interpersonal Trauma by Total Trauma Number (x/11 = %)
Male	3/16	18.8	27.3
Female	7/14	50.00	63.6
Subtotal	10/30	33.3	90.9
Sub-adult	1/21	4.8	9.1
Total	11/51	21.6	100.0

Table generated from data presented in Martin, et al. 2008: 98-122.

The type of trauma demonstrated in the La Plata River Valley sample includes only blunt force trauma, both on the cranial and the post-cranial elements. The specific number of blunt force injuries is unknown, as several individuals exhibited multiple wounds and the authors did not always provide the count of multiple injuries. These

blunt force traumas usually took the form of depression fractures, especially on the cranium. Additionally, all of these traumatic injuries caused by violence occurred antemortem. There is a lack of perimortem blunt force trauma, meaning these individuals were not dying as a result of the kind of violence occurring among them.

When comparing the La Plata River Valley sample to the Gallina there is a difference in the frequency of individuals exhibiting traumatic injury. In the Gallina sample there are 17 individuals that exhibit traumatic injury plus 25 more individuals that demonstrate evidence of exposure to fire. Using these numbers, the frequency of violent traumatic injury for the Gallina without cremation is 12% (17/142) and including cremation is 29.6% (42/142). In the La Plata River Valley sample, 11 of 51 illustrate traumatic injury or 21.6%. This frequency of traumatic injury for the La Plata River Valley falls between the two frequencies (with and without cremation) of the Gallina. If we are to assume that the instances of cremation are not acts of violence then the La Plata River Valley sample illustrates a higher frequency of trauma, but if cremation is included with the other Gallina examples of traumatic injury then the Gallina exhibit a higher frequency of traumatic injury. In terms of the sex distribution in each sample, the Gallina have a higher frequency of males exhibiting traumatic injuries relative to the female frequency (Male: 25.6% vs. Female: 18.5% or 33.3% vs. 25.9% with the inclusion of cremation), while the La Plata has a higher frequency of female traumatic injury relative to males (Male: 18.8% vs. Female: 50.0%). These sex differences in injury frequency suggest a difference in the type of violence occurring among these populations, which will be discussed below.

Southwest Basin and Range

In 1989 Ann Stodder produced a bioarchaeological synthesis for a portion of the American Southwest for the Desert Research Institute (DRI) during a larger study commissioned by the Southwestern Division of the U.S. Corps of Engineers of all the Southwest land within the Southwestern Division's jurisdiction (Stodder 1989). The information she accumulated was compiled from previously published literature in the area. Her portion of the area consisted of the Basin and Range region which includes the entire state of New Mexico, excluding the extreme eastern counties of the state; the majority of the Trans-Pecos of western Texas; and the south-central mountains of Colorado (Simmons 1989).

Stodder provides an overall history of bioarchaeological research in the area, a summary of the human assemblages by cultural affiliation and adaptation type (i.e., hunter-gatherer, semi-sedentary, agriculturalist), and a portion of the osteological information that has been obtained from current and previous osteological analyses (Stodder 1989). Stodder provides data on various aspects of the collections from the study area: age, sex, stature, life tables, and skeletal pathology, among other things. Pertinent to my study is her section on trauma, cannibalism and mass burials in the region. To summarize the data, Stodder generated a table that illustrates the frequencies of traumatic injury reported for several of the skeletal samples. This table is reconstructed below but with my Gallina data included in the table.

Stodder explains that the frequencies of traumatic injuries reported include instances of interpersonal violence, as well as occupational accidents and age-related

degeneration. Specific types of trauma were not detailed nor were violent or accidental trauma separated. This means that actual violence is less than the numbers reported here.

Stodder (1989) explains that the Gallina illustrate the highest frequencies of both cranial and post-cranial trauma, which she considers unsurprising as the literature on the Gallina describe them as warlike. She provides examples of cannibalism and mass burials, briefly detailing some of the data. She finally concludes that more-in-depth analysis is required for the human remains in the project area, including the Gallina Region, to allow for more concrete interpretations of the injuries in order to assess possible causes of the trauma.

Though there are 142 individuals in the Gallina sample, not all were included in my revision of Stodder's comparison of violent injuries. Those individuals who were less than 75% complete were excluded in order to reduce the uncertainty of the missing portions potentially exhibiting trauma that cannot be observed. With individuals that are 75% or more complete the chance that there is trauma that is unobservable is greatly lessened. However, those individuals that were less than 25% complete but demonstrated traumatic injury were still included in this count. Even including these relatively incomplete individuals, the estimate of traumatic injury is probably conservative as only a small number of individuals were sufficiently complete to say definitively that trauma was or was not present. Individuals in the total column were counted as one, even when they exhibited both cranial and post-cranial trauma.

Table 6.4 - Revised Gallina Frequencies of Traumatic Injury Reported for Basin and Range Area Population Samples

		Cranial		Postcranial		Total	
Site/Sample	**Stage/Date**	**N**	**%**	**N**	**%**	**N**	**%**
Chaco Canyon	Pueblo I – Pueblo III					135	17
Gallina Sites*	Pueblo I – Pueblo III	29	38	19	32	41	41
Sopris Phase	1150-1250	25	4	25	0	25	4
Jornada Sites	900-1400					45	7
Pindi Pueblo	Pueblo II – Pueblo IV					86	22
Paa 'ko	Pueblo III – Pueblo IV	57	3	57	16	57	19
Arroyo Hondo	Pueblo IV					89	12
Tijeras Pueblo	Pueblo IV	64	2	64	14	64	16
Pottery Mound	Pueblo IV					94	3
El Morro	Pueblo IV	26	4	26	8	26	12
Cochiti	Pueblo IV	101	4	101	5	101	9
Pecos Pueblo	Pueblo III – Historic	581	5	581	4	581	9
San Cristobal	Pueblo IV – Historic	247	8	232	14	245	15
Hawikku	Pueblo IV – Historic	181	5	151	17	182	14
San Antonio de Padua	Pueblo IV - Historic	40	5	40	0	40	5

* data from this study
Table adapted from Stodder 1989: 187

From Table 6.4 it is clear that the Gallina sample exhibits a much higher trauma frequency than any of the other sites or areas included here. This observation is the same as Stodder's original one, only the values I obtained increased with my more comprehensive sample. No sample in the Southwest comes close to the frequency of traumatic injury exhibited in the Gallina. The sample that comes closest to the Gallina collection in any category is Pindi Pueblo with a total trauma frequency of 22%, which is about half of the 41% exhibited in the Gallina. Also, it is unknown whether individuals at Pindi Pueblo showed equal frequencies of cranial and post-cranial trauma. Table 6.4 illustrates that a majority of the post-cranial trauma values are higher than the cranial values, though Stodder does not mention this detail nor provide an explanation for the observed differences between cranial and post-cranial trauma.

In regards to the frequency of traumatic injury for the Gallina, it is important to note that cremation has been excluded from the discussion here, though there are at least 25 individuals that were cremated. The reason for their omission is that this type of trauma is the more problematic line of evidence for violence, along with the fact that these individuals are so burned that it is difficult to determine with confidence if cranial, post-cranial, or both are represented in the small fragments. However, if these remains are considered the result of violent trauma and are added to the total sample size the number of individuals showing trauma increases to 66 and the frequency of traumatic injury rises to 64%. With this potential new statistic, the gap between Gallina and the rest of the reported skeletal collections increases dramatically.

VIOLENCE HYPOTHESES FOR THE GALLINA

There are many possible explanations for the amount and type of violence observed in the skeletal remains of the Gallina. General hypotheses for violence in the archaeological record have rarely been discussed in the literature about the Gallina, except to say that they were warlike, or to debate the possibility of cannibalism. The major models of violence will be summarized to determine whether the Gallina evidence of skeletal violence emulates any of the patterns of evidence used to identify certain other causes of violence. This identification of different types of violence using osteological evidence is through the reflection of the combinations and patterning of those modifications illustrated on the skeletal material, according to Hurlbut (2000:6) during her evaluation of cannibalism in the prehistoric American Southwest.

Domestic Violence Against Women

Violence against women as a form of social violence is one hypothesis that has been the subject of research in the archaeological record for years. Debra Martin and colleagues (2008) conducting research in the La Plata River Valley focused on this type of violence when studying the osteological material in the area. The result of this analysis is used here in order to identify whether or not this is the type of violence in the Gallina skeletal sample.

A higher frequency in female trauma in the La Plata River Valley sample, according to the authors, suggests women were the subject of some type of domestic violence, probably a form of dominance by men of the same cultural group. Martin and colleagues came to this conclusion after identifying the type and frequency of trauma in the skeletal sample. The La Plata River Valley sample exhibits only blunt force trauma, most commonly on the cranium. This trauma is almost always demonstrated on the female skeletons. The pervasiveness of depression fractures may indicate the use of various blunt objects. Also, all trauma among the La Plata occurred antemortem, which illustrates that the violence was not lethal. The non-lethality of the La Plata River Valley trauma may indicate that murder or execution was not the intent.

In contrast to the La Plata River Valley sample, the Gallina skeletal material demonstrates a distinctly different pattern. There is a higher frequency of male trauma relative to female trauma; Gallina - 25.6% (males) vs.18.5% (females) and La Plata River Valley - 18.8% (males) vs.50.0% (females). This may indicate that the cause of Gallina violence was more like that of combat situations. Additionally, the Gallina skeletons exhibit different types of injury. For example, the Gallina sample has at least two

examples of each category of violence (i.e., sharp-force, blunt-force, sharp/blunt force, or projectile), which is distinctly different from the strictly blunt force trauma seen among the La Plata River Valley sample as reported by Martin and colleagues (2008). Finally, the timing of injuries indicate that different kinds of violence were occurring in each region, as a majority of the Gallina trauma resulted in death. This is in direct contrast to the La Plata River Valley.

The Gallina seemed to have experienced a greater frequency of violent injury, and many of the injuries were caused by a greater force than the injuries reported in the La Plata River Valley. Among the Gallina, this violence resulted in more fatalities, which indicates that the intent was to kill. Also, the fact that females in the La Plata River Valley bore the brunt of blunt-force violence attests to the fact that different types of violence were occurring in each region.

Cannibalism

There are numerous publications on the controversial subject of cannibalism in the archaeological record. At least six general criteria have emerged as being distinctive of cannibalism. These criteria have become the standard for identifying cannibalism and were proposed by the Turners in *Man Corn* (1999), though others have used less to argue for cannibalistic events. According to Turner and Turner (1999), these criteria include: 1) impact (percussion) breakage, 2) cutmarks, 3) anvil abrasion, 4) burning, 5) missing vertebrae and 6) pot polishing (Turner and Turner 1999). In regards to the last criterion, pot polishing, Billman and colleagues maintain that "the absence of pot polish cannot be taken as evidence that stewing did not occur, only that vigorous, rolling, boiling or stirring were not part of the cooking process" (Billman, et al. 2000: 161) or perhaps not

all individuals were cooked. These authors went on to conclude that in the absence of pot polishing the occurrence of a pale color of the bones may be the result of processing them for fat. These authors' used the six criteria, with their substitution, to demonstrate cannibalism at 5MT10010 near Mesa Verde (Billman, et al. 2000).

In 1999, Turner and Turner looked at the Gallina skeletal sample housed at the Maxwell Museum at the University of New Mexico. The authors examined the skeletons for evidence of cannibalism using their six minimum criteria. They concluded that these Gallina sites showed evidence of violence but did not meet the criteria for cannibalism as the type of violence. Turner and Turner (1999) did not speculate on what type of violence may have been occurring among the Gallina.

During my study, the skeletal evidence also did not meet the minimum criteria for cannibalism as there are no instances of pot polishing, impact (percussion) breakage or anvil abrasion among any of the Gallina skeletons. However, there are a few instances of cutmarks on three individuals. The first individual had cutmarks on his cranium but this is more in line with scalping than cannibalism and the other two individual's cutmarks occurred antemortem. In terms of missing vertebrae, there are several instances of this occurring; however, this is usually coupled with the absence of numerous other skeletal elements of the individuals and is most likely the result of poor preservation or taphonomic processes, not cannibalism. Lastly, the burning of Gallina skeletal remains is apparent on numerous individuals. Unfortunately, this line of evidence regarding cannibalism is an extremely problematic characteristic, as there are numerous reasons for the burning of an individual (Hurlbut 2000: 8) and used alone does not imply cannibalism. For example, the burning of individuals could be the result of accident or

ritual. Therefore, considering the criteria of cannibalism, the Gallina do not meet the minimum requirements to suggest cannibalism was occurring among the Gallina.

Witchcraft Execution

The next potential explanation for violence in the archaeological record is witch execution. The evidence for this scenario overlaps with some of the evidence that has been used for identifying cannibalism. In fact, several authors, like Darling (1999), believe that witch execution is an acceptable alternative when cannibalism has been suggested as the cause of violence in the archaeological record.

The execution of witches is often a complex ritualized event that often results in the complete destruction of the body(ies) of the individual(s) convicted of witchcraft to ensure the witch's inability to return (Hurlbut 2000: 19). In killing one convicted of witchcraft, the perimortem modification of the skeletal material can emulate that which is considered a criterion of cannibalism. The execution of a witch or witches typically occurs by clubbing, or sometimes stoning (Darling 1999: 742). This results in excessive blunt force trauma in the form of depressed fractures all over the body. Once the witch is dead, dismemberment, burning and/or corpse pounding will occur in order to purify and exorcise the bad spirit, as well as to prevent the use of the body later by the spirit or other witches (Darling 1999: 735, 740; Walker 1998: 273-274). Corpse pounding will increase the already high frequency of depressed fractures and cause fragmentation of the bone (Ogilvie and Hilton 2000). The dismemberment of the individuals will produce cutmarks along the joints of the individuals and sometimes breakage at the distal and proximal ends of the bone.

This production of cutmarks, impact (percussion) breakage, burning and perhaps missing vertebrae during witch executions are also said to be characteristic of cannibalism. However, witch execution does not produce anvil abrasions or pot polishing. These are strictly a cannibalism feature that indicates processing for marrow and herein lies the key differences between these two events in the archaeological record. According to Hurlbut (2000: 19), evidence of witch execution will usually only involve one or two individuals, where cannibalism and warfare will include groups of people. This statement by Hurlbut is not accepted by all as Darling gives several ethnographic and ethnohistoric accounts of multiple executions, and with multiple witch executions comes "a high degrees of relatedness among the victims" (Darling 1999: 744).

In regards to the Gallina sample, only the individuals at the Cañada Simon I site may have been the subject of a multiple witch execution. If witch execution is the case, these individuals were probably part of the same familial unit, as Darling (1999) has pointed out that with multiple executions the odds that the individuals were related is increased. The individuals at this site consisted of three adult females, two adult males, one child of about two and a half years of age and an infant of less than one year. Individual #5 (adult male) shows evidence of having experienced an extensive beating; left radius and ulna possible parry fractures, fracture of the lesser trochanter of the right femur, crushed pelvis with the left os coxa rotated anteriorly, corpus of the mandible broken near the left canine, fracture at the right temporal, sphenoid and zygomatic process, separation of the maxilla and a possible chopmark on the posterior portion of the lateral epicondyle on the right humerus. This individual may have been the accused witch and therefore received the worst of the punishment, while the rest of the familial

unit were guilty by blood relation and were not as excessively punished before or at death. Individual #7, an adult female, showed a perimortem occipital (ring) fracture. Individual #4's cranium is crushed medio-laterally and the left zygomatic and interior orbit has been broken. Individual #2 exhibits a chopmark on the head of the right humerus and individual #1 has two depressed fractures on the proximal right femur.

As for the rest of the Gallina sample there are depression fractures apparent on several individuals from the use of a blunt weapon, like a club. These individuals only exhibit one or two injuries at the most. This is not the excessive beatings that we would expect to see if these were witch executions. Also, when there is skeletal material present, the bones are usually not overly fragmented, which would be the result of corpse pounding. Those individuals that are extremely fragmented were also exposed to significant fire and this is most likely the cause of the fragmentation and even though burning of an individual can be the result of witch execution this evidence alone is not sufficient to make an argument for such events.

Warfare

The last model that is a possibility for the observed traumatic injury in the Gallina sample is warfare or general interpersonal conflict. Like the models before there is some overlap in what perimortem bone modifications look like, and warfare also shares some characteristics with cannibalism and witch execution. The results of warfare include perimortem fracturing and breakage, cutmarks, fragmentation and mutilation; however, finding bones with arrowpoints imbedded in them is usually a good indicator of warfare (Hurlbut 2000: 13; Keeley 1996: 36; LeBlanc 1999: 84). Also with the lack of other model's characteristics, this leaves warfare as the most likely other alternative.

With the Gallina sample, we see two instances of projectile point trauma, which is indicative of warfare. We also see depressed fracture trauma (mostly on the cranium), usually occurring in ones and twos, strikes which are not as excessive as we would expect to see in witch execution (Hurlbut 2000; LeBlanc 1999). Also, scalping is usually an indicator of warfare of some type. This is illustrated by a series of parallel shallow cutmarks going around the crown of the head (Keeley 1996: 101; LeBlanc 1999: 88) and there is one instance of this occurring among the Gallina (individual 60/8 from Nogales). Also, according to Hurlbut (1996: 14) the blunt force trauma should be concentrated on the cranium, with little on the postcranial remains, when indicating warfare, which is the case with the Gallina. There are nine specific instances among the Gallina of blunt force trauma to the cranium and only two examples of blunt force trauma to the post-cranial remains.

CONCLUSION

It seems apparent that the Gallina were, in fact, engaged in violent events during their occupation of the region during the Pueblo II and III periods. This is illustrated repeatedly in the Gallina skeletal sample. When comparing the sample in this study to other samples that have been reported in the Southwest, specifically within the Ancestral Pueblo tradition, we see that often the Gallina exhibit a higher frequency of violent injury. This is certainly true when this sample was compared to the data collected by Stodder and is also true when the cremation data is added to the count when compared to the La Plata River Valley sample. However, when cremation is left of out of the mix, the La Plata River Valley has a higher frequency of traumatic injury, by just under 10%.

With this much interpersonal violence occurring among the Gallina, I also looked at the potential causes for this patterning of trauma. I looked at the patterning and combination of perimortem bone modification and compared it to what the literature details about several common models used to explain violence in the archaeological record. These models overlap often and it is the lack of some patterns and the inclusion of others that makes each model distinct. Domestic violence against women, cannibalism and witch execution were ruled out as the Gallina sample took on a different pattern than what is generally expected for these models. However, the last model details general warfare and, the Gallina sample was most in line with this evidence pattern. Without further research into other aspects of violence among the Gallina (settlement patterns, fortification, or iconography) we cannot identify who they were fighting with. However, it is clear that interpersonal conflict was occurring in one form or another.

CHAPTER 7 – SUMMARY AND CONCLUSION

The Gallina are a small Pueblo II/III cultural group that engaged in limited agriculture with some hunting and gathering. The culture group experienced numerous instances of interpersonal violence as demonstrated by their skeletal remains. Both men and women were engaged in these events and even sub-adults were not exempt. The Gallina skeletal sample shows all the major different types of trauma; projectile points imbedded in bone, sharp force, blunt force, sharp-blunt force, and cremation. Cremation and blunt force trauma showed by far the highest frequencies. Males exhibit slightly more trauma than females and most trauma occurred on individuals in their 20s and 30s. When trauma was examined on the left and right sides, there was slightly more trauma occurring on the left side on the cranium, indicating general right handedness of the enemy attackers.

When comparing this cultural group to other Southwest prehistoric groups we see that the Gallina exhibit a slightly higher frequency of interpersonal trauma than the other groups, especially when including cremation in the count. Specifically, the Gallina interpersonal violence injury frequency falls below the La Plata River Valley frequency if cremation is excluded from the count, but when cremation is included the Gallina frequency is higher. In terms of the comparison to the 14 sites in the Southwest Basin and Range (Stodder 1989), the Gallina frequency of violent trauma is higher whether considering the cranium, post-cranium, or overall total violent occurrences.

It has been established that violence was occurring among the Gallina so the question then becomes what are the causes for the observed interpersonal violence. From the skeletal material it is possible to examine the pattern of perimortem bone

modification in order to generate hypotheses about the nature of the interpersonal violence. Based on my analysis of the age and sex of those individuals exhibiting interpersonal trauma, and by comparing the Galina data with the La Plata River Valley sample, domestic violence against women was ruled out as a possibility. Cannibalism was also excluded as a possible hypothesis for what is seen in the Gallina sample because the material does not meet the six minimum criteria for cannibalism, as defined by Turner and Turner (1999), as it should if it were cannibalism. Witch execution, established by Darling (1999), Hurlbut (2000), Ogilvie and Hilton (2000) and Walker (1998), was almost completely excluded from the Gallina sample, except at the site of Cañada Simon I, where the evidence cannot definitively rule out witch execution. This left warfare of some form for the majority of the Gallina collection as the most logical explanation for the pattern that is observed in this sample.

Unfortunately, the Gallina skeletal data is still lacking some very vital information which would aid in explaining this violence. This missing information includes context for many of the individuals, as well as a time component. But this opens up the possibility of future research regarding violence and the skeletal remains. Perhaps one will then be able to get at what was the catalyst for this violent behavior, and whether this is inter- or intra-group fighting. Also, research regarding violence and warfare could be expanded to include settlement patterns, burned structures, iconography, fortification and weaponry in order to understand the type of warfare that was occurring among the Gallina during their occupation of a small region in north-central New Mexico.

This study has been a description and analysis of Gallina violence as observed in the skeletal material. This research can be seen as shedding light on one of the many

aspects of Gallina life, as well as within the larger Ancestral Pueblo tradition. However, the question that remains to be answered is what made the Gallina so violent and to engage in such acts of war? Was it the degradation of the environment as Mackey and Holbrook hypothesize or is there some other factor playing a pivotal role for the Gallina? More research is needed in order to adequately address the underlying 'why' of violence.

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APPENDIX I

Photograph 1- Blunt Force Trauma occurred perimortem to the wormian bone on the occipital of individual 60/4, an unsexed child of 4-6 years, from the Nogales Cliffhouse Site (Bg 3)

Photograph 2- Blunt Force Trauma occurred perimortem to the left parietal of individual 60/8, a 35-40 year old male, from the Nogales Cliffhouse Site (Bg 3)

Photograph 3 – Blunt Force Trauma occurred antemortem on the sagittal suture of individual #9, a 25-29 year old male, from Rattlesnake Ridge (Bg 20)

Photograph 4 – Cutmark on the right ulna just inferior to the coronoid process of individual #5, an adult male from Rattlesnake Ridge (Bg 20)

Photograph 5 – Antemortem chopmark on the left parietal of individual 60/5, female in her early 20's, from the Nogales site

Photograph 6 – Antemortem chopmark on the right frontal of individual 84.1.4, a male 54-64 years old, from Huerfano Mesa

Photograph 7 – Cremation trauma on a rib fragment from an unknown individual housed at UNM

Photograph 8 – Cremation trauma of left portion of a mandible from individual 84.1.6, elderly adult of unknown sex, from Alkali Springs

Photograph 9 – Projectile point imbedded in the lateral proximal epiphyses of the left tibia of individual 84.2.0/G-81-B, an adult female, Alkali Springs.

APPENDIX II

Site Name/Number	Skeleton #	Skeletal # assigned	Sex	Age	Type of Trauma
Cerrito/Bg 1/LA 22860	1.1	60/1*	3	9	4 -unknown
	2.1	60/1	3	9	4 - dry
	2.3	III	3	9	4 - fresh
	2.4	IV	3	9	4 - fresh
	2.5	V*	1?	9	4 - fresh
	2.6	60/6	1?	7	4 - dry
	2.7	VII*	2?	10	4 - dry
	2.8?	? (Bg 2)	3	10	4 - fresh
	2.9	IX	3	9	4 - unknown
	2.10'	X	3	9	4 - unknown
	2.11	XI*	1	5 (early 20's)	4 - unknown
	2.12?	? (A24)	3	10	4 - dry
	2.13	60/13*	2	5 (early 20's)	4 - unknown
	2.14	V & XIV*	3	9	4 - unknown
	2.15	XV	3	9	4 - dry
Cuchillo/Bg2/LA 22861	2.16	XVI	3	9 but (T & T say 15-18 yrs)	4 - fresh
	3.1.1	60/3	1	7	NONE
	3.1.2	60/3	3	3 - (btwn 6-12 yrs)	NONE
	3.2.1	60/4	2?	6	NONE
	3.2.2	60/4	3	3	1(cranium)Peri
	3.3	60/5	2?	5 (early 20's)	3 (cranium)Ante
	3.4	60/6	3	1	NONE
	3.5	60/7	2?	8	NONE
	3.6	60/8	1?	6	1 & 2 (cranium)Peri
	3.7	60/9*	3	2	NONE
	3.8	60/10	1	6	NONE
	3.9	60/11	1?	7	1 (cranium)Peri
	3.10'	60/12	3	4 (mid to late teens)	NONE
	3.11	B60/BXIII	3	9	NONE
Nogales/Bg3/LA 649	3.12	60/19	3	5	NONE
Gavilan/Bg4/LA 84870	4	blank	3	9	NONE
Tapicitoes/Bg5/NA	5	60/1*	2?	5	4 - dry
Bg 19 (on Rattlesnake Ridge)	6	blank	2	9	5 (in c vert)
	7.1	#1*	1	5	NONE
	7.2	#2*	3	9	2 (tibia) ANTE
	7.3	#3*	2	5 (early 20's)	NONE
	7.4.1	#4	1	9	NONE
	7.4.2	#4	3	3 (~10)	NONE
	7.5	#5	1?	9	2 (R ulna)
	7.6	#6	1	9	NONE
	7.7	#7	2?	5	NONE
	7.8	#8	3	9	NONE
	7.9	#9*	1	5	1 (cranium x2)Ante andPeri
	7.10'	#10	1	9	NONE
	7.11	?	3	9	4 - maybe dry
	7.12	?	3	3/4 (11 ± 2.5 yrs)	NONE
	7.13	Round Tower Interior Fill	3	9	4 - Unknown
	7.14	?#2	2?	9	NONE
	7.15	(-)	2?	5	NONE
	7.16	Pithouse* **(n=3)**	3, 3, 3	1=1 & 1=2 & 1=2	NONE
	7.17	BB 60/3	2	5	NONE
Rattlesnake/Bg20/LA 35648	7.18	BB 60/5	1?	5	NONE
	7.19	TT*	3	9	NONE

Carricito Group/Bg 22/LA 22915	8	60/1	1?	9	NONE
Bg 32	9	(-)	3	1	NONE
	10.1	60/4	3	10	4 - unknown
	10.2	#4	3	10	4 - Fresh
	10.3	#22	3	10	4 - Fresh
	10.4	#25	3	10	4 - unknown
	10.5	#36	3	8	NONE
	10.6	#37	3	10	NONE
	10.7	#38	3	10	NONE
	10.8	#39	2?	9	NONE
	10.9	#40	3	10	4 -unknown
	10.10'	#41	3	10	NONE
	10.11	#42	3	10	NONE
	10.12	#43	3	10	NONE
	10.13	60/45b	3	4	NONE
	10.14	60/45a	3	10	4 -unknown
Bg 51/LA 61578	10.15	#46	3	10	4 -unknown
Bg 70	11	60/1	3	4	NONE
Bg 80	12	Room 8	3	10	NONE
Bg 88T	13	60/1	1	8	NONE
Bg 88A	14	60/1	3	5	NONE
	15.1	MISC*	3	9	NONE
	15.2	60/1*	1?	4 (17-19 yrs)	NONE
	15.3	60/2*	3	4	NONE
	15.4	60/3*	1?	5 (early 20's)	NONE
	15.5	60/4*	3	5	NONE
	15.6	60/5*	1	9	NONE
	15.7	60/6	1?	8	NONE
	15.8	60/7	1	6	NONE
	15.9	60/8*	1?	5 (early 20's)	NONE
	15.10'	60/9	1?	4 late teens	NONE
	15.11	60/10*	3	4	NONE
	15.12	60/11	1?	5 (early 20's)	NONE
Bg 88B	15.13	60/21	3	4	NONE
Bg 89	16	#1	3	3 (6-10 yrs)	NONE
Bg 89-30	17	#2	3	2	NONE
Bg 91	18	60/1	1	6	NONE
Bg 92	19	(-)	3	9	NONE
Bg 95	20	60/1	3	9	NONE
Bg ?	21	A-4	3	10	4 - unknown
Bg ?	22	A-6	3	10	4 - unknown
Bg ?	23	(-)	3	10	NONE
Bg ?	24	A59 (burials VI & XIV)*	3	10	4 - dry
Bg	25	(-)*	3	4	NONE
Bg	26	60/2	3	9	4- unknown
Bg	27	1950 #2*	1?	7	NONE
Bg	28	1950 #3*	1?	5	NONE
Bg	29	ST 1950 B	3	2	NONE
???	30	74.35.2	1?	9	NONE
Gal	31	Burial 1 1972 - 60/1	3	3 (btwn 5-10 yrs)	NONE

AR 03-10-02-03	32	G-3-35 (burial 10)	3	3 (btwn 5-7 yrs)	NONE
AR 03-10-02-38	33	G-38-1* (burial 12)	1?	7	1 fracture (R fib & fem) Ante
AR 03-10-02-04	34	G-4-52 (burial 6)	1?	7	NONE
AR 03-10-02-08	35	84.1.4 G-8-138 (burial 1)	1?	8 (54-64 yrs)	3 (chopmark to crania)Ante
AR 03-10-02-80	36	84.1.6 G2-109/G-80 (burial 8)	3	8 (old - no range)	4 - unknown
AR 03-10-02-03	37	84.2.4 G-3-7 (burial 3)	3	3 (8-9 yrs)	NONE
AR 03-10-02-81	38	84.2.0 G-81-A (burial 4)*	1	5 (early 20's)	1 (cranium)Peri
AR 03-10-02-81	39	84.2.0 G-81-B (burial 5)	2	9	5 (tibia)Peri
AR 03-10-02-1A	40	83.1.1.2 G-1A (burial 16)*	1	8	NONE
	41	84.2.2 (unknown Chase Burial)	3	2 (3 yrs ± 2 yrs)	NONE
AR 03-10-02-64B	42	84.2.3 G-64B-2? (burial 19 or 20?)	2	9	NONE
AR 03-10-02-03	43	84.1.8*	3	9	NONE
AR 03-10-02-03	44	84.1.7 (burial 17)	1	6	1 (cranium/L frontal)Peri & 3 (cranium/R frontal)Post
AR 03-10-02-03	45	83.1.1.4*	3	3 (btwn 7 & 10 yrs)	NONE
(-)	46	83.1.1.1 (-) burial 14?)	2	6	4 - Unknown
	47	83.1.1.3* (burial 24?)	1?	4	4 - unknown
	48	83.1.76.2* (burial 21)	2	6	NONE
AR 03-10-02-189	49	84.1.2 G-189 (burial 2)	1	5	NONE
AR 03-10-02-64B?	50	84.1.5* (burial 18?)	2	5	NONE
	51	83.1.76.1	2	4	NONE
	52	83.1.76.4	2	7	NONE
	53	83.1.76.5	2	9	NONE
	54	84.1.9* (burial 20)	2	8	NONE
	55	85.1.2	2?	8	NONE
	56	83.1.C.B.11 (in box 84.1.1) (burial 11?)	2?	4	NONE
	57	84.1.1 G-3A-#	3	9	NONE
	59	Site 618	3	3 (10 yrs ± 2.5 yrs)	NONE
	60	84.1.3	1	4 late teens	2 (cranium)
	61	17A, 81, 32B, 76-burial 32A* (burial 9?)	3	2	NONE
	62	84.2.1 (burial 22 & 23?)	3	1	NONE
Cañada Simon I	63.1	#1	1	6	1(R Femur x2)Peri
	63.2	#2	2	7	3 (head of right humerus)Peri
	63.3	#4	3	2	1 (compressed cranium - mediolaterally)Peri?
	63.4	#5	1	6	1(several - see other info)Peri and an ante
	63.5		3	1	NONE
	63.6	#7	2	6	1 (cranium depressed fracture) Peri::::also possible antemortem injury to the R 5th metatarsal
	63.7	#0	2	5	NONE

Sex	Male (1)	Female (2)	Undetermined (3)		
Age Range	Newborn – Neonate (1)	1 yr – 4.9 yrs (2)	5 yrs – 10.9 yrs (3)	11 yrs – 19.9 yrs (4)	20 yrs – 29.9 yrs (5)
	30 yrs – 39.9 yrs (6)	40 yrs – 49.9 yrs (7)	50 + yrs (8)	Adult (9)	Undetermined (10)
Trauma Type	Blunt force (1)	Sharp force (2)	Sharp/blunt force (3)	Cremation (4)	Projectile (5)

Coding Key