ARCHAEOLOGICAL PERSPECTIVES ON WARFARE ON THE GREAT PLAINS

Archaeological Perspectives *on* Warfare *on the* Great Plains

Edited by Andrew J. Clark and Douglas B. Bamforth

UNIVERSITY PRESS OF COLORADO
Louisville

Published by University Press of Colorado
245 Century Circle, Suite 202
Louisville, Colorado 80027

Printed in the United States of America

The University Press of Colorado is a proud member of the Association of University Presses.

The University Press of Colorado is a cooperative publishing enterprise supported, in part, by Adams State University, Colorado State University, Fort Lewis College, Metropolitan State University of Denver, Regis University, University of Colorado, University of Northern Colorado, Utah State University, and Western State Colorado University.

∞ This paper meets the requirements of the ANSI/NISO Z39.48-1992 (Permanence of Paper).

ISBN: 978-1-60732-669-4 (cloth)
ISBN: 978-1-60732-670-0 (e-book)
https://doi.org/10.5876/9781607326700

Library of Congress Cataloging-in-Publication Data

Names: Clark, Andrew J. (Archaeologist), editor. | Bamforth, Douglas B., editor.
Title: Archaeological perspectives of warfare on the Great Plains / edited by Andrew J. Clark and Douglas B. Bamforth.
Description: Boulder : University Press of Colorado, [2018] | Includes bibliographical references and index.
Identifiers: LCCN 2017032682| ISBN 9781607326694 (cloth) | ISBN 9781607326700 (ebook)
Subjects: LCSH: Indians of North America—Warfare—Great Plains. | Indians of North America—Great Plains—Antiquities. | Excavations (Archaeology)—Great Plains.
Classification: LCC E98.W2 A73 2018 | DDC 978.004/97—dc23
LC record available at https://lccn.loc.gov/2017032682

An electronic version of this book is freely available, thanks to the support of libraries working with Knowledge Unlatched. KU is a collaborative initiative designed to make high-quality books open access for the public good. The open-access ISBN for the PDF edition of this book is 978-1-60732-859-9 and the open-access ISBN for the ePUB edition of this book is 978-1-60732-870-4. More information about the initiative and links to the open-access version can be found at www.knowledgeunlatched.org.

Cover illustrations: Shield warrior with lance at Bear Gulch site (24FR2), photograph by John Greer (top); rock art battle scene (No Water Petroglyphs, 48WA2066), photograph by John Greer (bottom).

Contents

Part I

Introduction

1

What Do We Know about Warfare on the Great Plains?

Douglas B. Bamforth

The archaeology of the Great Plains provides some of the clearest and most dramatic archaeological documentation of warfare anywhere in the world: there has been violence on the grasslands for millennia, and there is no doubt that this affected many aspects of human lives in the region. This volume brings together work on major aspects of Plains warfare that have important implications for studies of warfare in general. The topics we consider here include artistic evidence of the role of war in the lives of indigenous hunter-gatherers on the Plains prior to and during the period of Euroamerican expansion, archaeological discussions of fortification design and its implications, and archaeological and other information on the larger implications of war in human history on the Plains. My goal here is to offer a bird's-eye view of warfare on the Plains as a frame for the chapters that follow.

WHAT IS WAR AND WHY DOES IT MATTER?

LeBlanc (2003) has argued that war is essentially a constant in human history: it is always present in some form. This is likely true, at least in the sense that human groups always are, and always were, capable of choosing to go to war. But it is also true that human groups do not always make this choice, and seeing where in human history they did and did not make it is important. Anthropology in general, and archaeology in particular, has paid varying amounts of attention to social

DOI: 10.5876/9781607326700.c001

conflict. Keeley (1996), for example, argues that archaeologists have often pacified the past, creating romanticized views of idyllic periods in human history; widespread denials that war existed in Neolithic Europe and in North America prior to European contact are particularly well known. As we have become more willing to grapple with the reality of war, we also encounter the trap of assuming that all societies are equally warlike and engage in war in more or less the same ways. Should we worry about this? Or, more precisely, do either of these equally false perspectives compromise our ability to see the past accurately, in North America, Neolithic Europe, or elsewhere? It is difficult to argue they do not. Archaeology's value lies in its potential for telling human history as it really happened, not as we wish it happened. As Keeley (1996) notes, "the weight of the evidence" has a literal meaning in our field that requires us to attend to that evidence, and war can leave dramatic traces that demand our attention if we are to approach a truthful account of the human past.

In part, understanding human choices about war and peace depends on what we mean by "war." Formal war in the modern sense—organized violence sanctioned by explicit government decisions and involving combat between standing armies—reflects the organization of modern state societies and thus does not necessarily help us to understand organized social violence in other times and places. If we use a definition like this, we can simply define war out of existence for many past societies, despite the fact that these societies manifestly bore the immense costs of violence. Beyond an aversion to seeing war in the past, the major issue underlying the problem of defining war is the absence of formal decision-making hierarchies in many ancient and modern social groups. Furthermore, a view of war focused on such hierarchies misrepresents the variety even of modern patterns of social violence, which increasingly involve smaller-scale combat by non-state actors.

If we define war more broadly as community-level violence sanctioned by whatever recognized social or political units exist in a particular time and place, it is clear that it takes a variety of forms in non-state societies like those on the indigenous Great Plains. This variety includes raids by small groups (seeking captives or other specific targets, to avenge individual affronts, or in search of glory and status), largely ceremonial and low-casualty confrontations between more or less equally matched forces, and full-scale assaults by massed attackers that can result in the total destruction of large communities. Used in this way, the term "war" subsumes a continuum of violence and a range of relatively distinct kinds of conflict with differing logistic, social, and other implications and requirements. But it does not subsume all violence, and this is especially important in an archaeological context (as I discuss in more detail below).

All of these forms of war are and were important in the lives of people today and in the past. Observations of war in a range of recent societies leave no doubt that it shaped those lives in fundamental ways that we do not always take account of in our discussions of the human past (Allen 2008; Arkush 2011; Cameron 2008, 2011; Keeley 1996; LeBlanc 1999; McCabe 2004; Roscoe 2008). Conflicts that produce small numbers of deaths in any single engagement can have serious aggregate demographic effects in small social groups; construction of even simple defenses takes time, resources, and labor that have significant opportunity costs; and the natural and constructed features that prevent attackers from entering settlements (and from escaping if they do enter and are discovered) are also inconvenient for the people who live in those settlements. Archaeologists typically consider human use of the landscape entirely or almost entirely in terms of the distribution of favorable settlement locations and needed resources, but proximity to enemies can keep residential groups from using even the best land that they might otherwise have access to. Aggregating into larger groups for defense also requires access to larger food supplies, demands longer travel to important locations (such as agricultural fields), and depends on social mechanisms for maintaining order that small social groups do not need. Such aggregations also often bring together previously geographically dispersed kin groups who, when dispersed, might have been able to share geographically dispersed resources in hard times. Fortified aggregations have larger social implications as well: independent defended communities are often isolated from one another, potentially inhibiting the formation of larger regional social groups, and effective fortifications make it possible for such communities to resist the formation of such groups if they choose to do so. Defeats in conflict, whether due to a series of cumulative small losses or to a single massive loss, can also result in the loss of social identity, as survivors integrate into other communities or subservient social groups, and the involuntary movement of captives among groups changes labor and other relations and can introduce new ideas and skills.

But war also has benefits and creates opportunities. Groups who are victorious in war can claim land, resources, and control of trade and labor; successful individual warriors can raise their prestige and enhance their political, economic, and reproductive success. War can also benefit groups who are not themselves principals in a particular conflict. To take just one particularly relevant example, LeBlanc (1999) argues that there was a shift around AD 1300 in the Southwest from self-bows to more powerful compound recurved bows. Arrows fired from such bows penetrate wicker shields easily, but cannot penetrate bison-hide shields. Access to the Great Plains, and the bison on them,

thus became much more important with increasing violence and new weaponry in the Southwest, offering a market for specific products to Plains groups willing to invest in shield production.

Social violence—war—thus often has effects that can drive important aspects of social, demographic, cultural, and economic change over time. Any process that can do this is a process that has been important in human history.

HOW DO WE SEE WAR?

Despite this, though, archaeological evidence of war can be ambiguous, and this is important: if telling truthful history means that we need to attend to conflict, it also means that we need to know what conflict looks like in the archaeological record. This is not always easy. The most direct evidence of social violence takes the form of defensive features in settlements and battle wounds visible on human skeletons, but we cannot always assume that we will see either of these. It is unlikely that there were more warlike social groups in native North America than the Lakota or the Comanche during the 1700s and 1800s. However, evidence of this can be difficult to find: these tribes built no fortified communities (although they destroyed them) and they disposed of their dead in ways that are archaeologically largely invisible, making combat wounds hard to see. Seeing combat wounds in cemeteries also requires that victims of violence were buried, and we know in many cases that they were not. This is because not all societies dispose of their dead in archaeologically visible ways and because circumstances, particularly defeats, often result in the bodies of combat victims being left behind on the battlefield (see Hollinger [2005:118], Riley [1973], and Greer and Greer's [chapter 2, this volume] quote from Zenas Leonard's observation of a battle between the Crow and the Blackfoot for examples of this). This can leave evidence even of large-scale attacks on permanent settlements difficult or impossible to detect (Hoffecker et al. [2012] note an Inuit example of this).

Absence of evidence for war is thus not necessarily evidence of absence, especially in the case of mobile hunter-gatherers. In contrast, settled farmers create durable communities that are archaeologically visible today and that would have been visible and immobile targets during times of conflict in the past. Horticultural communities also often built fortifications to keep attackers out, or located themselves on landforms that are difficult to get access to ("defensible" locations). These communities also often interred their dead in formal cemeteries, increasing the potential visibility of combat wounds. There is thus an inherent difference in the archaeological visibility of social violence

between farmers and hunter-gatherers that we need to keep in mind. This difference is not absolute, as we will see below and in subsequent chapters (also see Allen and Jones 2014), but it is real. Other kinds of evidence, particularly rock art, can help with this problem, but this evidence is not always available and can be ambiguous when it is available.

As these issues might suggest, archaeologists generally focus on two kinds of evidence for social violence: direct osteological evidence of attacks on individual people and evidence for the construction of defenses against attack or of construction of settlements in naturally defensible locations (e.g., Golitko and Keeley 2007; Keeley et al. 2007; Lambert 2002; Milner 1999; Walker 2001). We can infer war on other grounds in some cases—for example, houses abandoned and burned with their contents intact, unusual patterns in the age distribution of burials, or artistic depictions of warriors or of combat—but these two indicators are both the most common basis for inferring war and the strongest evidence that is usually available. But strong evidence and perfect evidence are not the same: people damaged their skeletons in more than one way and dug ditches for more than one reason.

As graphic as osteological evidence for violence can be, it is important to distinguish three kinds of evidence. Hand-to-hand combat can result in broken bones and fractures to the skull, but other activities can produce these injuries as well, and so can interpersonal violence outside of any context that we might call war (Walker 2001). For example, victims of violence can break their forearms warding off a blow from above ("parry factures"), but any number of accidents can break a forearm as well. Similarly, both socially sanctioned hand-to-hand combat and drunken Saturday night bar fights can result in broken facial bones. Not all violence is war, under our definition or any other reasonable definition, and making sense of ambiguous data of this kind often depends on contextual evidence: unusually high frequencies of forearm fractures among young men, for example, might imply organized combat.

In contrast, attacks with projectile weapons can leave undoubted marks on skeletons, most spectacularly embedded points, and these are difficult to interpret as anything except evidence of violence. Projectile points *embedded in* the bone, though, are one thing; points *associated with* a bone are something else. Milner (2005) discusses this on the basis of medical reports on projectile injuries and notes that stone points often fragment within a victim's body and remain inside it even when the shaft of the projectile is removed; he argues that discoveries of such fragments associated with a skeleton, particularly in the abdominal area, are often good evidence for an attack. Milner also emphasizes a critical matter in addressing the implications of osteological evidence

of violence: many—in fact, most—victims of violence do not bear evidence of the way they died on their skeletons. His data indicate that rates of embedded projectile points are likely to underrepresent the number of projectile wounds in a population by as much as two-thirds. As Keeley (1996) and Walker (2001) also note, this indicates that even low levels of direct evidence for violent death in archaeological data imply significant levels of conflict.

A third category of osteological evidence consists of marks on bones caused not by the way a person died but by how their body was treated by their attacker(s). These include cutmarks on the skull resulting from scalping and cut or blow marks documenting mutilation of the head or body, often while taking trophies. Deterioration of the surface of the skull due to infection when individuals were scalped but not killed unambiguously indicates non-lethal violence. Marks like these are evidence of war, but they often also imply an ideological or ritual component to war that goes beyond the simple documentation of organized and socially sanctioned combat.

And practical issues impact our ability to grapple with the ambiguity inherent in even osteological data. For example, data gathered over many years in different research settings are often not perfectly comparable, and reexaminations of collections have sometimes documented evidence of violence that earlier examinations did not identify (e.g., compare Bass and Berryman [1976] with Hollimon and Owsley [1994]). More specific to this volume, and more disturbing, many important collections on the Plains remain unpublished decades after they were excavated and, apparently, studied: the Plains literature refers informally to data from a number of important sites that are nowhere reported publically or systematically (e.g., Blakeslee 1999; Hollinger 2005; Pringle 1998). In an era when archaeological objections to the reburial of human skeletal material depend substantially on how much we can learn from that material, the volume of analyzed but unpublished material from the Great Plains is shocking.

In addition to direct evidence of violence obtained from human skeletons, archaeologists generally take the presence of fortifications as evidence for war, often suggesting that the presence of defensive works implies active warfare while its absence suggests peace. Most commonly, archaeologically visible fortifications include palisades and ditches, often (but not always) built to enclose a residential area. Keeley et al. (2007) point out, though, that people build walls and dig ditches for a variety of reasons other than defense and that even overtly defensive features can serve a variety of other purposes. As in the case of many osteological patterns, archaeologists need to make the case that ancient people built particular potentially defensive features for protection. Keeley et al. (2007) argue that the presence of bastions and baffle gates are unambiguous evidence

of defensive architecture and that ditches with V-shaped cross-sections are likely evidence as well, especially when they are backed by a palisade. All of these are present on the Plains: for example, palisades, ditch forms, and bastions are well documented for any number of sites in the Middle Missouri; Kay (1995:figure 39) documents a simple baffle gate at the Helb site in northern South Dakota, and Anderson (1985:figure 4) shows a more complex causeway and controlled entrance at the Wittrock site in northwestern Iowa.

A NOTE ON CHRONOLOGY

My goal here is to present a broad-brush view of warfare in human history on the Plains, emphasizing the major kinds of evidence (combat wounds, mutilation, and fortifications) that I have just discussed. I do this in terms of a fairly small number of purely chronological periods: Paleoindian/Archaic (from the peopling of the Plains to 500 BC), Woodland (Early Woodland: 500 BC–AD 1; Middle Woodland: AD 1–400; Late Woodland: AD 400–1000), Plains Village (AD 1000–1600), and Contact (AD 1600–1890). Plains archaeologists do not all organize the past using these periods; instead, local chronologies and research traditions have produced an array of regional chronological frameworks. Furthermore, Plains archaeologists often synthesize our data in terms of culture-historical constructs that combine time, space, and archaeological patterns into single taxonomic units. My discussion focuses on chronology in the interests of simplicity and brevity, but also in order to highlight large-scale regional patterns that other frameworks can obscure.

In general, the periods I use here are easy to accommodate to regional chronological sequences. However, local chronologies in two areas of the Plains (the Late Prehistoric I period, AD 500–1100/1200, on the southwestern Plains [Boyd 1997] and the Woodland/Late Prehistoric interval on the northwestern Plains [Scheiber 2008]) span the transition from what I am calling Late Woodland to what I am calling early Plains Village times. For sites in these intervals with radiocarbon dates there is no great difficulty with my organization, but sites placed into this period on the basis of diagnostic artifacts are inevitably chronologically slightly ambiguous. Presently available data offer no solution to this.

WHAT IS THE GENERAL COURSE OF WAR ON THE PLAINS?

Caution in dealing with osteological evidence matters on the Plains because, although there is possible evidence for *violence* fairly early on the Plains, it is

not certain that we are looking at *war*. None of the very few individuals known from Paleoindian burials on the Plains appears to have died violently, but one adult woman from the Early Archaic Gore Pit site in southwestern Oklahoma shows evidence of blunt-force trauma to the right side of her skull that likely caused her death (ca. 6000–5000 BC; Hammatt 1976; Keith and Snow 1976). It is not clear, though, how this woman sustained her injury. With this possible exception, there is close to no evidence for any form of war on the Plains prior to about AD 1, during Middle Woodland times. Most areas of the Plains have produced very small numbers of burials dated prior to this time, so the absence of evidence for violence could be due to inadequate data. However, in the one case where we can see a substantial number of individuals that are clearly dated to this period—the Middle Archaic Gray Burial site in Saskatchewan—evidence for violent death is also absent (Millar 1978), although one adult male in a burial in southern Manitoba dated to approximately 1800 BC bears a point embedded in his femur, fired from behind (Hoppa et al. 2005). The early occupants of North America certainly tried to kill each other at times—like the individual from Manitoba, Kennewick man carried a spear point embedded in his hip when he died some 9,000 years ago (Chatters 2000)—but it is difficult to argue for extensive conflict on the Plains from Paleoindian through Early Woodland times.

This pattern changed over the last 2,000 years, though. Fortified sites are unknown on the Plains until later, but Middle- and Late Woodland–period osteological data suggest increasing conflict. Initially, this does not appear to have been widespread: substantial samples of excavated Middle Woodland burials from mounds and ossuaries on the central Plains and along the Missouri River in the Dakotas show no unambiguous cases of battle trauma (Neuman 1975; Phenice 1969). However, this may be misleading; there are hints of violence in Sonota-complex mortuary samples along the Missouri River. Bass and Phenice (1975; also see Olsen and Shipman 1994) note that the vast majority of marks on this material relate to the preparation of bodies for burial, but they also record at least two healed cranial wounds, an example of apparent decapitation, and a green-bone ulna fracture (possibly a parry fracture) on an adult male. One adult male in the Truman Mounds, associated with pottery that is of either Middle or Late Woodland age, had a broken projectile point in his rib cage (Neuman 1960). Neuman (1975) also describes a series of worked human mandible and maxilla fragments from Boundary Mound that are effectively identical to objects in Hopewell sites to the east, and Seeman (1988) makes a strong case that these eastern objects are trophies taken from defeated enemies. Scalping marks on crania from the

Hanging Valley site in western Iowa indicate fairly unambiguously that the Middle Woodland Great Plains were not universally peaceful (Tiffany et al. 1988). More dramatically, a Middle Woodland–age burial of three individuals in a single pit at the Sullivan-Carpenter site in western Oklahoma includes one individual who was decapitated and two others killed by dart points that remained embedded in their bodies (Boyd 1997:255).

It is difficult to be sure that this represents a real change in patterns of conflict on the Plains: as just noted, samples of human skeletal material are rare in most parts of the region prior to the Middle Woodland and persistent low levels of violence might simply have become visible around AD 1 because of a substantial increase in the number of known burials. But the available data suggest, at least, that small-scale raiding occurred on the northeastern edge and southern portion of the Plains by the Middle Woodland and that this raiding involved trophy-taking, at least in the form of scalping and possibly also in the taking of heads or portions of skulls.

If changes in warfare are sometimes ambiguous across the transition to Middle Woodland times, though, they are not at the transition from Middle to Late Woodland. This period has produced a smaller sample of burials but dramatically higher frequencies of violent death: interpersonal violence became much more widespread and much more common after about AD 400, during Late Woodland and transitional (or possibly early) Plains Village times. In some areas, violence may have developed gradually. On the northwestern Plains, burials dated to the earlier part of the interval (primarily Scheiber's [2008; Scheiber and Gill 1997] Woodland burials) bear few marks of combat. Two adult male burials at the Benick Ranch site in Wyoming (with calibrated radiocarbon ages between AD 400 and 700) show evidence of violence, including a V-shaped cut on the right frontal of one and two depressed cranial fractures on the other (Davis and Miller 2008). However, 17 percent of burials later in this period (the earlier group of Scheiber's [2008] Late Prehistoric burials) have embedded points, most spectacularly one burial in Wyoming with 14. The only Avonlea burial known in Canada, the Bethune burial (Dawson and Walker 1988), is an adult male who sustained and recovered from a serious fracture to the area of his left eye, the area of the head most often struck by right-handed attackers. On the northeastern Plains, the Bahm, Blasky, and Fordville mounds produced evidence of scalping, and a woman in the Jamestown mounds has a projectile point in her lower back (Owsley 1994; Snortland 1994; Williams 1994).

Arrow wounds are very common in burials of this age in Texas and adjacent areas (Boyd 1997), including in the Loeve-Fox site, an Austin-phase cemetery

in central Texas where 6 of 24 individuals were killed by arrows, all of them shot in the back (Prewitt 1974) and a mass burial at the McCutchan-McLaughlin site in eastern Oklahoma (Powell and Rogers 1980). Chronologically ambiguous burials that are likely, but not certainly, of this age in central Texas also show removal of the hands and feet, embedded projectile points, and missing mandibles, these last apparently taken as trophies and sometimes apparently worn as pendants (Boyd 1997:280–281). Milner's (2005) observation that the frequencies of arrow wounds substantially underrepresent rates of combat mortality implies that these data indicate extraordinarily high rates of violence in at least some parts of the Plains, and the McCutchan-McLaughlin burial suggests that the scale of this violence may have increased from small-scale raiding to somewhat larger-scale attacks, at least in the south.

The appearance of Ceremonial-tradition rock art in the region from western Kansas and eastern Colorado northward well into Alberta underscores this shift. Ceremonial-tradition art is fairly diverse, but it commonly depicts human beings holding large, decorated, circular shields and, often, weapons (Keyser 2004a:58–61, 81, 93–97; Keyser and Klassen 2001:191–221; Ray 2007). Rock art is always difficult to date, but Ceremonial-tradition art includes at least one depiction of an individual with a shield, atlatl, and darts. People on the northern and northwestern Plains used dart points (e.g., Besant points) well into Late Woodland times, and this image could be of that age or older. Bows are far more common in this art, though, implying that most of it dates from the Late Woodland through Euroamerican contact; the most recent shield-bearing warriors depicted using the artistic canons of this tradition carry flintlock muskets and ride horses. Most of the weapons that artists depicted in this art—for example, spears, bows, and clubs—could have been as useful in hunting as they were in war, leaving interpretations of them in non-combat scenes potentially ambiguous. However, shields have no use other than protection in combat, and Sahkomaupee's account of pre-horse/pre-gun warfare on the northern Plains documents this use unambiguously (Keyser recounts his story [chapter 3,this volume; also see Keyser 2004a:9–10], which Sahkomaupee originally told to David Thompson in 1787).

In the aggregate, images of shield-bearing warriors on the Plains document offensive and defensive weaponry (bows and arrows, lances, clubs, and maces for attack; body-sized shields for defense) and battle formations (lines of warriors protected by shields, for example), and they sometimes show warriors in the midst of combat (see Greer and Greer, chapter 2, this volume; Keyser, chapter 3,this volume). However, two aspects of this imagery take us beyond simple description. The first is the undoubted evidence that warfare was socially and

ideologically important to western and northwestern Plains hunter-gatherers. Organized shield lines suggest some kind of organized approach to combat, and recurrent associations among specific shield heraldry and other depictions may imply the relatively ancient existence of warrior societies similar to those known on the Plains during the eighteenth and nineteenth centuries (Keyser and Kaiser 2014; Keyser and Poetschat 2014; Ray 2007). Depictions of pre-Contact warriors counting coup suggest that this component of male status has pre-Contact roots as well. Similarly, Ceremonial-tradition art appears to show warriors seeking spiritual power and calling on it through their shields in combat, power that is likely symbolized in the images on their shields.

Second, though, Ceremonial-tradition art likely has its roots in Woodland times, but it clearly persists throughout the subsequent Plains Village period and into the earliest years of Euroamerican contact, and it changes over this interval (especially see Keyser, chapter 3, this volume). Ceremonial-style art appears to have become much more common after about AD 1000 or 1100, at the same time that settled farming spread onto the Plains. Furthermore, after the mid-1400s, when farmers along the Missouri River and elsewhere aggregated into large and fairly heavily fortified towns (see below), the people who created Ceremonial art began increasingly to show warriors armed with shock weapons such as clubs and lances rather than bows, and increasingly depicted these warriors in group battle formations. Scenes of actual combat appear to date late in the period leading up to the appearance of Europeans on the Plains.

These changes mirror shifts in evidence for social violence in other parts of the Great Plains. The least ambiguous evidence for warfare on the Plains appears in sedentary horticultural sites, as it does in many parts of the world. This may not mark a real increase in violence, for reasons of archaeological visibility that I noted earlier, and as the remarkable rate of arrow wounds in Late Woodland contexts in some areas indicates. Nevertheless, settled horticultural communities (Plains Village communities) appeared throughout the eastern portions of the Plains and, in many cases, visible mortuary practices make it possible to assess variation in levels of violence among Plains farmers more accurately than among Plains hunter-gatherers.

Measured by fortifications and osteology, the earliest horticulturalists on the Plains (Great Oasis groups in northwestern Iowa and adjacent areas; Lensink and Tiffany 2005) were relatively peaceful: their communities were open and unfortified and the burial samples studied to date show only a tiny handful of individuals with evidence of violence (Schermer 2003; Tiffany and Alex 2001). However, this changed dramatically along the Middle Missouri

and the lower James River in South Dakota and along the Missouri and Little Sioux Rivers in northwestern Iowa (Mill Creek sites), during the twelfth century, with the appearance of large, compact, fortified communities. Between roughly AD 1100 and AD 1300, farmers in these areas came together to form much larger and more compact or densely packed communities than in earlier times, and often fortified these communities with varying combinations of palisades, ditches, and steep natural topographic features (archaeologists refer to these communities collectively as "Initial Middle Missouri" and, after AD 1200 in more northern areas, "Extended Middle Missouri"; see Johnson 2007a; Mitchell 2013). At least some of their Late Woodland neighbors who had not yet taken up farming fortified themselves as well (Ahler 2007). Excavations at one Initial Middle Missouri site—the Fay Tolton site in South Dakota—produced graphic and unambiguous evidence of a massacre that appears to have terminated occupation at the site; certainly, the victims of this massacre were never formally buried and occupation of the site seems to have been very short (Hollimon and Owsley 1994; Wood 1976). There are reports of a similar pattern at the thirteenth-century Tony Glas site (Howard 1959; Johnson 2007a; Pringle 1998), but osteological evidence of this remains unpublished. Apparent trophy skulls in at least one Mill Creek site (Hollinger 2005; Miller 1994) also suggest violence.

In contrast, horticultural communities were small, scattered, open, and unfortified on the central Plains of Kansas and Nebraska during the eleventh through thirteenth centuries, and archaeologists have generally seen peace in this area during this time. However, Blakeslee (1999) has compiled osteological data, much of it from excavations early in the twentieth century, that suggest widespread violence, albeit probably low-level violence, most clearly indicated by evidence of scalping. However, he also notes unpublished, and unspecified, evidence that at least one structure near Omaha that was excavated in the early twentieth century contained the cannibalized remains of an uncertain number of individuals, as Gilder (1913) suggested long ago (also see Hollinger 2005). There are few examples of curated human remains from the Plains that highlight more clearly than this one the immense gap between the argument that research on such remains offers important insights into human history and the meager insights that have actually found their way into the published literature. South of Kansas onto the southern Plains, horticultural communities of this age show a pattern similar to that on the central Plains, with occasional examples of violent death (Brooks 1994; Brues 1957), and some of the Late Prehistoric I hunter-gatherer casualties on the southern Plains noted earlier probably date to this period.

After AD 1300, and especially after AD 1450, violence in at least some parts of the Plains appears to intensify. In the Middle Missouri, many sites of this age are large, compact, and heavily fortified. Bastioned defenses are common, the Helb site (Kay 1995) shows an entry through overlapping wall segments that appears to be a simple baffle gate like those at some Mississippian sites (e.g., Birmingham and Goldstein 2005), and encircling ditches are typically V-shaped (see, for example, Caldwell 1966; Kivett and Jensen 1976; Wood 1967). The people who built these features piled the fill from the fortification ditches on the inside of the ditch, as expected in a fortification, and at Arzberger (Spaulding 1956) and Huff (Wood 1967) also used the fill to raise the level of the ground surface within the bastions, perhaps to make it easier to fire from the bastion at attackers along the walls. Early in this interval, farmers abandoned northwestern Iowa and much of southeastern South Dakota (e.g., the lower James River valley) and there is evidence of substantial movements of people, including movements of central Plains groups into the Middle Missouri (the Coalescent tradition in archaeological terms) and movements of Oneota groups into western Iowa and southeastern Nebraska from adjacent areas of the Midwest (Pugh 2010; Ritterbush 2007).

Away from the Middle Missouri, though, fortifications are absent, with war implied by such evidence as scalping at the Sargent Ossuary and in Nebraska-phase and St. Helena sites in northeastern Nebraska, embedded arrow points in skeletons at Andrews Lake in western Texas, dismembered bodies and trophy skulls at the Footprint site northwest of Amarillo, five beheaded and otherwise dismembered bodies in a single grave at the Dillard site in Texas, and arrow wounds in a handful of skeletons in Plains Village sites in Oklahoma (Bovee and Owsley 1994; Collins 1968; Lintz 1986; Martin 1994; Miller 1994; O'Shea and Bridges 1989; Owsley et al. 1994). Embedded points are particularly common in later Late Prehistoric burials on the northwestern Plains (Scheiber 2008; Scheiber and Gill 1997). At least one Puebloan community (Bloom Mound) near Roswell, New Mexico, which apparently served as a middle point in trade in bison between the Plains and the Southwest, was burned at this time. Excavations there have revealed unburied bodies as well as deliberate interments of noncombatants (including infants) with clear evidence of violent death and mutilation (Speth 2005; Speth and Newlander 2012).

The Crow Creek site in central South Dakota overshadows every other site of this age on the Plains in this context. Farmers left a complex record of occupation at Crow Creek spanning centuries (Bamforth and Nepstad-Thornberry 2007a; Kivett and Jensen1976). Initial Middle Missouri farmers founded what was probably a large community at the site during the eleventh

century, although we know relatively little about this early settlement because subsequent occupation buried it under as much as 2 m of midden. By the 1300s, a Coalescent group occupied Crow Creek, initially founding an unfortified town but later enclosing it with multiple bastioned fortification lines. Excavation in one of these revealed the skeletons of roughly 500 men, women, and children, apparently the victims of a massacre that took the lives of virtually everyone who lived at the site (Willey 1990). I return to this event below, but for present purposes it highlights both the real danger of violence on the Plains and the scale of the combat that could occur in at least some parts of the Plains within the last millennium.

Where we have sufficiently fine-grained chronological evidence to look, these data imply that the frequency of fortifications and combat victims varied in space and in time: violence was widespread but not constant. By the mid-1400s and later, though, horticultural communities in at least some regions (particularly the Middle Missouri) were fortified extremely frequently, as were some hunter-gatherer sites on the northeastern edge of the Plains (Michlovic 2008). On the central and northern Plains, this continued into the Contact period, but most recent horticultural sites in the south were generally open and unfortified until after Euroamerican contact. The principal exception to this is in the westernmost group of Great Bend (ancestral Wichita) communities in Kansas and in related communities south and west into the Texas Panhandle. Features called "Council Circles" in fifteenth- and sixteenth-century Great Bend sites are identical to fortifications built by the colonial-period Wichita (Drass et al., chapter 8, this volume) and likely served similar purposes (not always successfully, as dismembered bodies in one of them suggests; Baugh 2007; Wedel 1967). To the south, large circular enclosures built at the same time suggest a similar sense of danger (Baugh 2007). The geographic distribution of these suggests danger from the west, most likely from Apachean bison hunters on the western Plains. Coronado's conversations with the occupants of Pecos pueblo in 1540 indicate that Plains groups were quite willing to attack their southwestern neighbors (Hammond and Rey 1940) and we should assume they were equally willing to attack other Plains groups, but archaeological evidence of this is not obvious. Pueblo groups, well organized for conflict after some 300 years of intensive war (LeBlanc 1999), generally repelled these attacks but remained wary of their Plains neighbors.

The appearance on the Plains of Europeans like Coronado had two particular effects for our purposes. As the Pecos case illustrates, it provides written documentation of direct observations of conflict that can underscore the limitations on purely archaeological data. For example, Obregon's *Historia*

observed in 1584 that Pecos "is enclosed and surrounded by a palisade, large houses, and by rows of walks which open out to the country. Here they keep their offensive and defensive arms, bows, arrows, shields, lances, and clubs" (Hammond and Rey 1928: 18). This suggests that warriors at Pecos left their weapons in a constant state of readiness and easy access, as if they might be needed at any time. This habit is consistent with a more or less constant state of danger but would almost certainly be invisible in the archaeological data.

Second, though, the appearance of Europeans (and, later, Americans) changed the conditions of life on the Plains. Europeans brought war with them—often, particularly in the case of the Spanish, utterly unprovoked and spectacularly brutal war—and written histories from the sixteenth through the nineteenth centuries offer a well-documented litany of conflict between indigenous people and in-migrating whites. But whites also altered the relations among indigenous groups, by creating differential access to technology that shifted previous military balances of power, by introducing new and valued trade goods to the region and thus fostering competition for access to these goods, and by actively recruiting particular groups to fight against those groups' traditional enemies (Lewis 1942; O'Shea and Ludwickson 1992; Secoy 1953). The slaughter in 1873 of some 70 Pawnees in a surprise attack by Brule and Oglala warriors at Massacre Canyon in southwestern Nebraska is among the best-known examples of interethnic violence linked to processes like this, but it was simply one of many such attacks by many groups (Riley [1973] recounts this event and the pervasive smaller-scale violence immediately preceding it). Movements of social groups from their traditional territories into the territories of their neighbors as the American frontier moved west also fostered conflict: many groups entered the Plains essentially as refugees fleeing attacks that have been recorded by both documentary and archaeological evidence (e.g., Wood 1971).

Euroamerican contact also altered the role that warfare played in indigenous society on the Plains. Plains anthropologists have long recognized the importance of small-scale raids to get horses once these were widely available and the accompanying strengthened connections between valor in combat and male status (Ewers 1975; Keyser 1979). Northern and northwestern Plains rock art offers a particularly graphic record of this process of change (Greer and Greer, chapter 2, this volume; Keyser 2004a, chapter 3 in this volume; Keyser and Klassen 2001). Raids for horses often resulted in violence, although raiders worked hard to take horses without being detected. However, direct links to important aspects of the Euroamerican economy also drove violence on the Plains, and in some cases did so directly and inevitably. Some of this violence

involved competition for access to the fur trade, especially after traders moved out of native communities and established their own trading centers (Fenn [2014] discusses the effects of changes like these on the Mandan). This must also have led to competition among tribes for beaver and for bison-hunting territories, the latter important both because of the economic importance of the trade in hide and meat and because of its direct subsistence importance, as Newcomb (1950) argued long ago.

But if this component of postcontact economic activity *contributed* to war, other components *required* it. Plains groups—especially, but not only, the Comanche of the southern Plains—forged economic relations with their white neighbors by the eighteenth century that moved large numbers of slaves and stolen domesticated animals, the former captured both from Mexico and from other native Plains communities. Furthermore, increased involvement in trade with the Spanish, French, and Americans in meat and hides and greater dependence on large horse herds greatly increased labor demands among groups like the Comanche, demands that they met by taking slaves for themselves as well as for trade (Brooks 2002; Hamalainen 2009). And there may be a much deeper history of this on the southern Plains and perhaps elsewhere. Habicht-Mauche (2000, 2008) suggests that fifteenth- through seventeenth-century pottery in west Texas and eastern Oklahoma that is made from local clays but in styles linked to Pueblo groups in the Southwest and Caddoan groups to the east was likely produced by captive women from those areas. Perhaps more intriguingly, bone-chemistry data from women in thirteenth- and fourteenth-century Antelope Creek sites in roughly the same region document variation in diet consistent with the possibility that some individuals were outsiders (Habicht-Mauche et al. 1994): slavery, or at least captive-taking, may have a deep history on the Plains.

There is an archaeology of postcontact war, and it tells us both how much archaeological data can show us even about well-known events and also how often we lack those data. Fortifications around eighteenth- and nineteenth-century towns on the Middle Missouri reflected the need for defense, and documentary evidence leaves little doubt that this need arose especially, although not exclusively, from attacks by the Lakota. We know of one such attack in stark detail: the Larson site, an Arikara town in South Dakota, appears to have been overrun and its inhabitants killed and mutilated during the late 1700s (Owsley et al. 1977; also see Sundstrom, chapter 4, this volume). An increase in the frequency of evidence for scalping in eighteenth- and nineteenth-century Arikara skeletons relative to earlier periods also implies increased violence against this group (Olsen and Shipman 1994; Owsley 1994). Archaeological

work on known battlefields related to Indian/white conflict has brought interpretations of specific events more in line with the reality of those events (Fox 1997; Scott et al. 1989, 2011; McDonald et al. 1991). Field investigations support Cheyenne, not military, accounts of the route Dull Knife's Cheyenne band took in their escape from captivity at Fort Robinson in 1879 and suggest that both Indians and cavalry distorted events in fighting along the North Platte River in 1865. Most spectacularly, archaeological data strip away all vestiges of a glorious or romantic "last stand" at the battle of the Little Big Horn, leaving a story of terror and slaughter.

There is thus structured spatial and temporal variation in war on the Plains. Data on very early periods of occupation are too few to say much, but, at least within the last 2,000 years, the aggregate evidence for war concentrates first in the southern and northwestern Plains and, slightly later and more spectacularly, in the Middle Missouri area. Problems of archaeological visibility make it difficult to compare mobile and sedentary groups, but the history of sedentary communities suggests that violence was most pervasive and destructive in the north and that communities in many areas defended themselves more and more frequently over time, particularly after the mid-1400s. Warrior imagery in hunter-gatherer art likely shows a similar pattern of change, with its post–fifteenth century emphasis on shock weapons and compact shield lines suggesting fairly large-scale battles, perhaps with their horticultural neighbors, perhaps with each other, and perhaps with both of these.

We can also see some of the organization and effects of war on the Plains. The scattered evidence of combat injuries in hunter-gatherer graves suggests a pattern of intermittent small-scale warfare, perhaps like the one that Lekson (2002) refers to as "raiding and feuding" in the early Puebloan Southwest; arrow wounds in the back particularly indicate this. Patterns of horticultural site fortifications, though, imply larger scale combat. But these patterns also imply variation in this among regions and over time. Definite fortifications are relatively rare on the southern Plains until recent times, as are densely nucleated communities. Instead, sites in the parts of the southern Plains with the clearest evidence for violence—the Antelope Creek area and Puebloan sites like Bloom Mound—are almost all fairly small, with some larger sites located in difficult-to-access locations like Landergin Mesa, although Lintz (2001) suggests that Landergin Mesa may have been a temporary refuge used in times of danger rather than a real residential center. Antelope Creek populations, then, spent most of their time in very vulnerable settings, as did other horticultural groups on the southern Plains, perhaps suggesting a relatively low probability of being attacked at any given moment; Solometo (2004)

argues that communities do not build defenses unless they expect more or less annual attacks.

This stands in stark contrast to the Middle Missouri, where obviously permanent communities defended themselves with fortifications ranging from a ditch and palisade across the neck of a steep promontory into the floodplain to elaborate bastioned walls incorporating *chevaux-de-frise*. The labor invested in these defenses in some cases is astonishing: the bastioned ditch and palisade at the Arzberger site are 2.5 km (1.5 mi.) long (Spaulding 1956). But the design of these fortifications developed over time, with more elaborate defenses, particularly bastioned perimeters, more common after AD 1300, contemporary with a substantial influx of migrant farmers from the central Plains. This pattern of change in fortifications implies a change in the kind of warfare in that region, perhaps particularly in the size of attacking groups: bastioned defenses are designed to prevent massed attacks from breaking down or setting fire to palisades (Keeley et al. 2007; Mitchell 2007), and the absence of such fortifications in earlier times suggests a different kind of attack, perhaps by smaller groups. Sites like Fay Tolton (Wood 1976; Hollimon and Owsley 1994) tell us that these were no less deadly than those in later periods, but this difference in scale suggests a different organizational basis for combat: it is one thing to mobilize 30 warriors, and quite another to mobilize 300.

WHY WAR?

> Comanches embraced battle and built vast hinterlands for raiding because their nation needed pasturelands, buffer zones, slaves, commodities, and commerce, but they did so also because their young men needed to prove their worth as providers and husbands. (Hamalainen 2009:269)

Understanding why people go to war is difficult even in recent conflicts, let alone in conflicts where we do not have direct access to the thoughts and motivations of the participants. This is particularly true because specific conflicts often arise out of specific local events, often personal events (insults, theft, etc.; Diamond 2008; Keeley 1996) that are invisible in archaeological contexts and also because war interrelates so complexly with so many aspects of human ways of life. Anthropologists specifically interested in Plains warfare have argued for a wide range of causes for social violence there (e.g., Albers 1993; Biolsi 1984; Bamforth 2006; Ewers 1975; Hamalainen 2009; Jablow 1951; Lowie 1963; Mitchell 2007; Newcomb 1950; Secoy 1953), focusing on such factors as unpredictable access to important resources resulting from historical

and environmental processes, the drive for male status, revenge, cultural attitudes toward outsiders, and competition for control over trade.

Anthropological debates over many topics often have much in common with the argument among the blind men who were each convinced that the particular part of the elephant they encountered could stand for the whole animal. Academic blindness in contexts like this tends not to distinguish between the variety of factors essential to making sense of human affairs and the particular research interests and experiences of individual scholars, and often confuses *explaining something about things* with *explaining things*. As this might suggest, the essential point is not that one or another of the "explanations" of Plains warfare is right and the others are wrong; it is that war is extraordinarily complex and that different explanations of it tend to be partial and context dependent. Different perspectives examine different parts of the elephant that is war, but none of them by itself accounts for the elephant as a whole.

And the elephant likely was not a static creature: the causes, organization, and consequences of social violence on the Plains shifted over time and in space. For example, Euroamerican expansion onto the Plains severely impacted bison herds, certainly exacerbating existing conflicts over access to hunting grounds. Similarly, Mitchell (2007, chapter 11 in this volume) notes that warfare in the Middle Missouri—the most spectacularly violent area of the precontact Great Plains—likely resulted from different processes at different times, perhaps reflecting competition for control of economic networks during the earlier and later periods of horticultural occupation and competition for land and other resources when new populations moved into the region during the fourteenth century. Furthermore, as the Comanche example above illustrates, specific material causes must constantly have interacted with social issues, ideology, and status, and these latter forces may sometimes by themselves have been enough to precipitate violence.

We can begin to grapple with this complexity by asking targeted questions about warfare on the Plains instead of trying to "explain" it as a single phenomenon. The strongest pattern in the data on Plains warfare is undoubtedly its increase over time and its apparent spike in frequency and scale in the last 1,000 years. There was violence on the Plains for millennia, but it increased, first, after AD 500 in the south and west and, second, after AD 1100 throughout essentially the entire region, especially in the Dakotas. What might account for this? This overall pattern parallels another long-term trend on the Plains: intensification of subsistence production (Bamforth 2013, n.d.). Plains hunter-gatherers first intensified subsistence production after 8000 BC in the south

and southwest by turning to hot-rock cooking of plants and after 3000 BC in the northwest by increasing labor investments in bison hunting (Bamforth 2011; Thoms 2009). Limited horticulture appeared on the eastern edges of the Plains after AD 100 and incorporated small amounts of maize in that area after AD 500, with settled maize agriculture appearing adjacent to the Plains after AD 1000 and spreading over large parts of the Plains after AD 1100.

The similarities in these trends suggest that they are related, and that one underlying material cause for collective violence on the grasslands is competition for resources, perhaps driven by long-term increases in human population. Population/resource imbalances are often manifest most clearly in bioarchaeological data on human health. However, as is true for osteological data on warfare, despite years of collection and analysis, there has been virtually no synthesis of bioarchaeological research on the Plains. However, the limited published information hints at increasing material stresses among hunter-gatherers in the south and west during the Late Woodland, consistent with a link between population/resource imbalance and violence: skeletal indicators of stress increased in the south at that time (M. Taylor 2001) and mean age at death dropped precipitously in the northwest (Scheiber and Gill 1997).

If this is correct, it underscores the importance of material forces in more specific conflicts on the Plains over shorter periods of time. Scholars have often argued that access to either stores of food or potentially productive pieces of the landscape controlled by other groups was important in Plains warfare as a result of unpredictable local access to critical resources caused by drought or the movements of bison herds. This argument fits well with Ember and Ember's (1992) classic analysis of cross-cultural data that linked warfare, at least in part, to unpredictable resource shortages. The fairly detailed record from the Middle Missouri over the last 1,000 years speaks most clearly to this. In this region, there is evidence that violence can be linked to droughts on a decade-to-decade scale: between AD 1000 and 1650, Middle Missouri sites appear to have been fortified during large-scale or extended periods of drought and unfortified in other times (Bamforth 2006). Stuart et al. (1981) make a similar argument for conflict between southern Plains groups and Spanish and Pueblo communities during the seventeenth and eighteenth centuries, arraying written records of attacks against droughts identified in tree-ring sequences.

The details of analyses like these are subject to the precision of our available chronologies and the adequacy of our paleoenvironmental data, though, and the Crow Creek example illustrates both of these issues. There are two radiocarbon dates on the Coalescent levels at the site, one on charcoal associated with the massacre victims (610 ± 55) and one on a burned post from a house

within the innermost fortification line (560 ± 75). Bamforth and Nepstad-Thornberry (2007a) incorrectly suggested that the charcoal from the first of these could have come from burned debris that was older than the massacre; in fact, it came from a hearth burned on the layer of clay that capped the bone bed. Regardless, though, these dates are statistically indistinguishable, and the standard errors for both of them fall directly on a plateau in the radiocarbon calibration curve that runs from roughly AD 1300 to AD 1400. Even their calibrated one-sigma ranges thus span fairly long periods of time. The two dates are statistically identical (t = 0.29, df = 2, p > 0.5), and their average spans a similar time range. The individual dates calibrate to a one-sigma interval of calendar years between AD 1305 and AD 1427 and a two-sigma interval from AD 1280 to AD 1452; their mean calibrates to a one-sigma interval from AD 1305 to AD 1403 and a two-sigma interval from AD 1293 to AD 1417 (Bamforth and Nepstad-Thornberry 2007a:table 1).

Osteological evidence for the nutritional status of the Crow Creek victims leaves no doubt that they had been malnourished for some time (Gregg and Zimmerman 1987), suggesting that they were killed during a drought (Bamforth and Nepstad-Thornberry 2007a:155). However, the paleoenvironmental data we relied on (Fritz et al.'s [2000] detailed analysis of lake sediments from North Dakota) showed evidence of major droughts in the late 1200s/early 1300s and the mid-1400s, within the two-sigma ranges of the individual and average dates. The archaeology of the Coalescent levels at Crow Creek is too complex to fit an attack in the first of these, and we suggested that the massacre is more likely to have occurred in the later of them. More recent work based on continent-wide data on tree rings (Stahle et al. 2007; Cook et al. 2010), though, documents a severe drought in the Middle Missouri in the late 1300s, comfortably within the one-sigma range of both dates, and this may perhaps be a more likely date for the massacre. The inherent ambiguity of radiocarbon dates that fall onto the fourteenth-century calibration plateau means that we need other kinds of chronological information if we are ever to obtain a precise estimate of the date of the Crow Creek massacre, although improved paleoenvironmental information can at least help to plausibly narrow the window around its likely date. In a larger context, though, the chronological ambiguity of the Crow Creek case exemplifies a problem for all analyses of Plains warfare that depend on precise control over chronology: in many cases, radiocarbon by itself simply cannot provide such control, and we have precious few well-developed alternative chronological tools at our disposal.

Changing settlement distributions in the Middle Missouri and adjacent areas also suggest that war in the north may have been linked to competition

for land: violence played a role in how communities gained and lost territory in at least some times and places. In South Dakota, in-migration of population from the central Plains after AD 1300 may have displaced indigenous horticultural groups, although this is not certain. This migration may have resulted from the combination of widespread regional drought during the late 1200s and the movement of substantial Oneota populations into parts of the central Plains from the adjacent Midwest at about the same time (Hollinger 2005, chapter 10 in this volume; Pugh 2010; Ritterbush 2006, 2007). Most recently, there is no doubt that hunter-gatherer groups on the Plains, most spectacularly the Lakota and the Comanche, drove other groups out of their traditional lands by force of arms during the Contact period and possibly earlier.

Furthermore, communities throughout the Plains relied on each other to provide the material basis for their existence just as they relied on themselves; especially in the Middle Missouri, but also elsewhere, settled communities served as critical nodes in economic networks that moved large amounts of goods over long distances (Brosowske 2005; Jablow 1951; Wood 1980). Mitchell (2007, chapter 11 in this volume) argues that competition for control of trade was important at several times in human history of the Plains, and there is little doubt that it drove violence there in the eighteenth and nineteenth centuries.

However, we know that material conditions are only one of the important forces that drive collective violence: war has ideological as well as material links. Ideology is difficult to see archaeologically, particularly in the archaeology of a region like the Plains, where societies were small-scale and obvious iconography is relatively rare outside of rock art. But there are telling hints of what we might be able to see if we look. Eighteenth- and nineteenth-century Plains warriors took scalps and other body parts from combat victims both as a way of achieving status and as a way of marking their victims in the afterlife. Mutilations at the Crow Creek site—scalping and removal of hands and feet, for example (Willey 1990)—anticipate in detail the kinds of mutilations known from more recent times, suggesting similar links between status, ideology, and war as early as the 1300s or 1400s, and I have noted above that scalping on the Plains extends at least as far back as the Middle Woodland. Keyser's (1979, 2004a; Keyser and Klassen 2001) analysis of rock art suggests that the link between war and male status may have developed especially in the centuries just prior to white contact and accelerated after that, although this art does unambiguously depict precontact hunter-gatherer combat (also see Keyser 2004a, chapter 3 in this volume; Greer and Greer, chapter 2, this volume).

But war and status may have been linked strongly among farmers before they were similarly linked among hunter-gatherers (also suggested by trophy

skulls at a Mill Creek village). It is interesting, though, that there is somewhat less evidence of mutilation on the Fay Tolton victims than at Crow Creek: the recent emphasis on taking these kinds of trophies and the quite formal relations between such trophies and male status may have developed as war became more common. With this in mind, the occasional recovery of isolated human bones in Central Plains-tradition sites is suggestive. We know that Plains warriors took body parts and displayed them in the short term (and, in the case of scalps, in the longer term). But we do not know much about how they disposed of those body parts when they were done with them (but see Owsley et al. 2007).

The clearest ancient archaeological linkages among war and male status that have implications for the Plains are evident in falcon-warrior imagery at the Caddoan Mississipian site of Spiro in eastern Oklahoma. Like other Mississippian elites, the elite at Spiro displayed symbols of warriorship prominently, implying that they were themselves warriors, or wanted to be seen as warriors. An engraved-shell depiction from Spiro of what looks very much like a Morning Star sacrifice (Hall 1997) also suggests a motive for at least a low level of raiding of neighbors. This makes it surprising that there is so little evidence of violence in Spiroan sites: although virtually all other Mississippian centers are fortified, Spiro is not, nor are other Caddoan Mississippian sites, and combat victims are rare or unknown in Spiroan cemeteries, also in contrast to many other Mississippian cemeteries (see, for example, Brown 1996).

Climate, subsistence, and ideology, of course, do not by themselves cause war or peace, although they often tip the scales in favor of one or the other of these. Patterns of socialization are essential to creating a heritage or ideology of war, and people go to war against someone. Violence can erupt in many contexts, but war requires a socially defined enemy. As we turn to these topics, we enter a domain where it is harder to say what we know and easier to say what we are not sure of.

WHO WAS THE ENEMY?

The Spiroan data raise any number of interesting questions, but they particularly turn us to the problem of "the Other." If the Spiroan elite defined themselves as warriors, who did they go to war with, and what groups elsewhere were responsible for the mayhem that is so visible in so many other times and places on the Plains?

Plains archaeologists have traditionally answered questions like this in terms of conflicts between archaeologically defined culture-historical taxa:

Antelope Creek people fought against Washita River people, Coalescent people fought against Middle Missouri people, and Oneota people fought against everyone. Like the widespread recognition of a link between Plains violence and resource shortages, this answer fits well with Ember and Ember's (1992) analysis, which also highlighted the importance of socialization for mistrust of outsiders. Violence across ethnic or cultural boundaries is well documented in North America, perhaps most spectacularly, and sometimes horrifically, between Inuit groups and their interior Athapaskan neighbors (e.g., Hoffecker et al. 2012:147; Melbye and Fairgrieve 1994). But this kind of inference on the Plains assumes a social reality to archaeological culture-historical units that we know is often unwarranted. The unit designated "Post-Contact Coalescent" in the Middle Missouri region, for example, certainly includes sites occupied by multiple social or ethnic groups who were at least intermittently hostile toward one another (Lehmer 1971) and the huge geographic extent and long temporal span of the occupations we subsume under the term "Oneota" suggest a similar pattern. Furthermore, inferring conflict between the kinds of groups that may be represented by archaeological traditions implies decision-making at a level somewhere above that of the individual community, suggesting a kind of pan-tribal organization for which we have no evidence.

Despite this, though, there are at least some large-scale patterns on the Plains that make sense in terms of well-known culture-historical units. Most clearly, Boyd (1997) notes a general concentration of victims of violence during Late Woodland and early Plains Village times along the area of contact between groups in the southwestern Texas and their neighbors to the north and east. These Texas groups show clear ceramic links to the Puebloan Southwest and not to the Plains, while their neighbors show the opposite, and this area may have been a border of some kind between mutually hostile groups. The absence of skulls and mandibles in central Texas burials of about this age (see, for example, Krieger 1946) also parallels the burial of isolated skulls and mandibles in some Caddoan centers in adjacent areas of the Southeast, perhaps indicating a similar pattern (Barnes 1992; Dial and Creel 2012). Indeed, skulls and mandibles at the Crenshaw site in Arkansas do appear to have been taken from nonlocal individuals (Schambach 2014).

However, the history of warfare in the Middle Missouri illustrates how complicated this issue can be. Defenses appear there by the eleventh or twelfth century and are scattered throughout the distribution of horticultural sites. In addition, sites just north of these early farmers, like Menoken (Ahler 2007; Krause 2007), occupied by hunters and gatherers, but with pottery clearly influenced by farmers, were also fortified. If the distribution of fortifications tells us

something about who was in danger, this suggests that anyone could be in danger anywhere along the river, possibly implying that these communities may sometimes have gone to war against each other. During the 1300s, though, outsiders moved into the Middle Missouri, and at least some sites shifted toward larger sizes and more complex fortifications. This is widely taken as evidence for conflict between indigenous groups and newcomers. However, the Oneota were also newly arrived on the eastern Plains at about this time, and Oneota sites show no known evidence of fortification, although some of them were very large and other evidence suggests that the western Oneota were as war prone as other Oneota groups (Hollinger 2005; Pugh 2010; Ritterbush 2006).

By the early 1400s, newly established horticultural sites in the Middle Missouri were open and unfortified, and patterns of ceramic variation suggest that there was substantial interaction among neighboring communities regardless of their ethnic identification (Ahler 1993; Bamforth and Nepstad-Thornberry 2007b). This changed again during the mid- to late 1400s, when many communities in the region aggregated into large, fortified towns, and some elements of ceramic design imply a significant reduction in interaction (Bamforth and Nepstad-Thornberry 2007b). At this time, along the Missouri itself, a cluster of sites in South Dakota corresponds to the distribution of the Caddoan-speaking Arikara observed by Europeans a century or two later. An empty area—perhaps a buffer zone—separates this cluster from a second cluster that corresponds to the Contact-period distribution of the Siouan-speaking Mandan and, later, the Hidatsa (Johnson 2007a; Mitchell 2013). This kind of site distribution and postcontact records of Siouan/Caddoan hostilities have suggested ethnic warfare between these two tribes. However, at exactly the same time, fortified hunter-gatherer sites like the Shea site appear on the northeastern edge of the Plains, possibly marking occupations by the ancestors of the Lakota (Michlovic 2008). We know that there were other hunter-gatherer groups to the west and north, in and around the Black Hills and northward into Canada, and it seems likely that these groups were intimately involved with the hostilities we can see to the east, as they certainly were during the eighteenth and nineteenth centuries. As I discuss above, Ceremonial art leaves no doubt that northwestern Plains hunter-gatherer groups went to war, and Walde (2006) argues that military resistance by northern Plains hunter-gatherers limited the northward expansion of Middle Missouri farmers, although there is little direct evidence for this.

But we might also wonder about alliances among social or residential groups including mobile hunters and gatherers. There is no doubt that cultural, adaptive, and linguistic differences did not prevent groups from joining together

to attack other groups on the Plains: to take only one example, European observers reported an assault on a Mandan town in 1796 by a combined force of Lakota and Arikara warriors; Hidatsa fighters came to the town's rescue (Lehmer 1971:177). Changes in the organization of violence over time would also have altered the social basis for constituting combat units: small-scale raiding and feuding, which may have been common over much of the Plains and which may have been more prevalent in earlier periods in the Middle Missouri, does not require the same number of attackers as massed attacks on strongly fortified towns with large populations.

Going beyond these possibilities can be difficult, but there are concrete lines of evidence that can be useful. To take only one, projectile-point styles and raw materials might provide some insights into who attacked whom in some cases. For example, the projectiles found in bodies in a mass grave at the Late Woodland–period McCutchan-McLaughlin site in southeastern Oklahoma were made from material that outcrops north and east of the site, material that is otherwise not present in the stone-tool assemblage there, suggesting that the victims were killed by attackers from that area (Powell and Rogers 1980). Similarly, projectile-point style and material suggest that the people who killed some of the Puebloan victims at Bloom Mound came from central Texas (Speth and Newlander 2012) and a scalped male at the thirteenth-century Nagle site in Oklahoma, apparently a member of a group from the east, had four arrow points in his abdomen, all made from Alibates agate, found to the west, in styles that are common to the west (Brooks 1994:319–320; Brues 1957).

THE PRESENT VOLUME

There are thus strong patterns in evidence for warfare on the Plains in time and space and much still to learn about the ways it developed and impacted human societies there. The chapters here help with this second effort at the same time that they often force us to look more closely at what we already know, or hope that we know. These essays fall into three general categories. The first examines records of warfare made by the people engaged in it, including nineteenth-century ledger art and pecked and painted rock art. The second examines fortifications, and the third considers the place of war in the larger social history of people on the Plains.

Triggers of specific attacks, particularly personal/emic triggers, are rarely evident in archaeological data, although active malnutrition of the victims at Crow Creek suggests that conflict at that site was linked to subsistence problems. However, the chapters here by the Greers (chapter 2), Keyser (chapter

3), and Sundstrom (chapter 4) on rock art and on records kept by northern Plains people in the eighteenth and nineteenth centuries offer insights into some of these issues. Continuity in the conventions and meaning of art on the northern Plains into the nineteenth and twentieth centuries makes it possible to interpret much of this art very specifically, as Sundstrom discusses, although these authors do not all agree with one another in all aspects of their interpretations. Regardless of these disagreements, these chapters document important temporal changes in patterns of violence (including weaponry, tactics, and the size of fighting units, all topics that Bleed and Scott [chapter 14, this volume] help to understand) at the same time that they give us critical insights into the reasons why Plains groups chose conflict over peace.

However, patterns in the emic evidence also highlight the difficulties of using self-representation to understand real human actions. The Greers address this specifically, pointing out that some aspects of war—capturing women, for example—are much less frequent in rock art than the events depicted in that art likely were in the past, and this kind of observation is probably true for more ancient patterns of conflict as well. For example, Ceremonial-tradition rock art (Keyser 2004a:58–61; Keyser and Klassen 2001:191–223) does not appear to focus on actual events—specific battles, for example, or captive-taking—despite the fact that such events must have taken place. In this case, warfare entered into the domain of life in which people produced rock art, but its depiction in that art reflects something other than, or in addition to, efforts to celebrate or record particular actions.

The distinction between what people did from day to day and what they chose to represent in ideologically charged art also implies that we need to temper inferences about preferred weapons and typical combat formations that depend on those artistic or ideological choices. Chapters here note that northwestern Plains rock art often emphasizes shock weapons like clubs and lances and, particularly in earlier periods, often depicts combat between massed warriors. We can see the outcome of combat like this at the Crow Creek site, where the majority of the massacre victims were killed by blows to the head (sometimes many more blows than would have been necessary to kill them). As I discuss above, though, archaeological data from the northwestern Plains, presumably linked to the same societies that produced this art, tell us that remarkable numbers of people died violently from arrow wounds, often wounds that were likely received in ambush. Locations where communities fought in large, massed groups may be poorly preserved in the archaeological record, but mortuary data leave no doubt that people died from other kinds of violence at rates that must have had serious demographic implications. Public,

presumably ritual, art does not celebrate this kind of violence, but osteological data leave no doubt that it must have been a major factor in people's lives.

Fortifications loom large in the essays in this volume, which raise central issues about how archaeologists have used this line of evidence in the past and what we can learn from it in the future. Most fundamentally, as LeBeau (chapter 6) discusses, we cannot assume that every ditch people dug on the Plains (or anywhere else) was a fortification. The long-standing debate over "council circles" (Wedel 1967) on the southern Plains illustrates this unambiguously (as Drass et al., chapter 8, point out here), but this is true in all times and places. This is particularly important here because both Drass et al. and Schroeder (chapter 9) document variation in fortification design that goes beyond the range that most archaeologists expect to see. The strong cross-cultural similarities that Keeley et al. (2007) document for defensive architecture suggest that there ought to be a limited array of ways to build effective fortifications, but the data from these chapters challenge this in some ways. It is not clear whether this variation reflects the time or materials available, specific defensive tactics, experimentation with defensive architecture, or some other factors, but the simple fact that it exists underscores LeBeau's basic point.

Dye (chapter 5, this volume) and Vehik (chapter 7, this volume) also push our approaches to fortified sites in important new directions. We often note that fortifications are costly to build, but we rarely focus on the ongoing costs of maintaining them. Dye's discussion of this has obvious implications for resource use on the wood-poor Great Plains, and the need for ongoing maintenance of ditches and palisades has social implications as well. Assessing the condition of palisades and other defensive works and organizing labor to repair them offer opportunities to aspiring leaders and help to make concrete the links we often hypothesize between warfare and the development of social differentiation. Perhaps most important, though, Dye's contribution should focus us on the implications of the enduring presence of fortifications once they are built. We should remember that the simple existence of defensive architecture provides a constant reminder of the possibility of future violence. This, in turn, underscores the experiences and memories of individuals who participated in past violence at the same time that it requires a continuing labor investment. In long-lived communities, walls may stand for decades even in the absence of attacks, with people refurbishing them when needed. At Cahokia, people refurbished their defenses during drought intervals (Benson et al. 2009), apparently taking care to be sure that they remained effective while repairs were in progress, as Dye discusses. In contrast, the occupants of the Crow Creek site allowed their ditch to fill with trash and may have

substantially dismantled their palisade in the course of building new defenses, and this may have played a role in their defeat.

In this context, Vehik's chapter challenges us most of all. Most fundamentally, her arguments from the literature on military theory make it clear that the absence of archaeologically visible fortifications, often taken as evidence for peace (e.g., Bamforth 2006), does not by itself tell us that communities felt no danger of attack. In some cases it certainly does mean this, but, as Vehik shows, in others it simply means that these communities did not believe that they were in danger of an attack by overwhelming numbers, with "overwhelming" perhaps implying a ratio of attackers to defenders of 3 to 1 or higher. But this is not a simple cautionary tale about problems with the way we see war: when we have other evidence for collective violence, the absence of fortifications tells us about the scale of combat. To take a single example, we see clear fortifications in horticultural sites on the southern Plains very late in time, but there is undoubted evidence of combat in burials centuries earlier, and some sites (e.g., Landergin Mesa) may have served as local refuges. Overall, this pattern suggests a real risk of attack, but not necessarily of an attack by a large force. As Mitchell (2007, chapter 11 in this volume) notes in reference to fortification design, arguments like Vehik's help us to delve more deeply into the organization and logistics of collective violence.

The final group of chapters shifts focus from the details of studying war to larger issues of how and why Plains groups and their neighbors fought and how fighting affected people's lives. Both Hollinger's (chapter 10) and Clark's (chapter 12) essays emphasize regional rather than site-specific analyses, conceiving the "region" at very different scales but showing at both scales how war was woven into both the distributions of human settlements and the social relations among them. Clark's analysis requires contemporaneity among sites in his time periods that, as he notes, may not always be exact. However, his results suggest alliances both within and between linguistic groups, and his data on the shifting locations of fortifications within his study area have important implications for understanding patterns of conflict and cooperation. Hollinger's history of Oneota expansion and contraction documents how central warfare can be in the long-term history of a social group. We need to remember the blind men and the elephant—a variety of social, ideological, and material factors conditioned the choices that Oneota communities made (Theler and Boszhardt 2006). However, Hollinger's argument that collective violence was an integral part of the long-term development of Oneota society emphasizes again why our analyses of the human past need to attend to war as often as they attend to subsistence, political development, and religion.

Mitchell's arguments in chapter 11 about the underlying causes of war in the Middle Missouri area have similar implications. On one hand, they focus us on the diversity of these causes: as alluring as explanations for violence that focus specifically on subsistence factors are to many of us, we all know that the world is too complex to suppose that such factors offer a "complete" explanation. But the elephant matters here as well. Mitchell's discussion focuses on the general cultural context within which we see evidence for war in the Middle Missouri, and there is little doubt that, at the chronological level of his analysis, it is closely associated with the development of large-scale trade networks. In fact, the evidence for this may be stronger than he asserts. He notes the strong link between trade and evidence of war in Initial Middle Missouri communities in northwestern Iowa and adjacent areas of South Dakota. However, exactly contemporary communities in eastern Nebraska, southwestern Iowa, and the Kansas City area (Central Plains–tradition Glenwood, Nebraska phase, and Steed-Kisker sites) show undoubted eastern (Cahokian) ceramic links but little other evidence of exchange, and these sites are small, dispersed, and unfortified. Vehik's chapter implies that this does not guarantee that these groups never fought and I note osteological evidence of violence in these sites above. However, this pattern indicates at least that Central Plains–tradition communities did not worry about the kind of massed attacks by large numbers of warriors indicated by Initial Middle Missouri–tradition defenses. But I noted earlier that fortifications stand whether a community is under attack or not; being prepared for war is not the same as actually going to war. Intercommunity violence linked to control of trade networks may always be imminent, but the timing of actual attacks was likely triggered by some combination of personal factors (see Diamond 2008) and/or material forces like subsistence stress. And Kendall's chapter (chapter 13) on scalping patterns at the Crow Creek site offers an important reminder of the complexity of human motivations and actions in the context of war. We often note the presence of osteological evidence for post- or peri-mortem mutilation, but we do not often consider in detail what it tells us. Kendall's careful analysis documents subtle age- and gender-linked patterns of scalping that force us to consider in more detail issues of status and belief, albeit issues that are difficult to address in detail.

Understanding how communities went to war has important implications for the integration of warfare into Plains history and society, although archaeologists rarely discuss combat tactics and strategies in detail (Scott and McFeaters 2011). However, like Vehik, Bleed and Scott (chapter 14) turn to military theorists to show how the systematic analysis of the practice of war illuminates two closely related battles between the Cheyenne and the

US Cavalry for which we have both written and archaeological documentation. Their focus is specifically on battlefield archaeology and they use military perspectives to make sense of patterns visible in that particular context. Identifying battlefields that we cannot document in the written record is difficult, and many battles in the Plains past (although certainly not all of them) appear to have been fought in and around settled communities. The evidence from these fights that we might make sense of in Bleed and Scott's framework in many cases therefore will be commingled with the remains of everyday life and may thus be difficult to see. But the conceptual basis of their analysis is widely relevant nevertheless. To take just one example, they note that different kinds of weapons select for different kinds of battle formations, implying that we can better understand the organizational implications of persistent warfare by considering both the kinds of defenses people built, as archaeologists have observed, and also the kinds of weaponry used by combatants. This has important implications for understanding the implications of the kinds of evidence documented by the chapters in sections 2 and 3 of this volume. Finally, studying war on the Plains, or anywhere else, matters because of what it tells us about war and peace in human societies in general. The chapters here have implications for this larger discussion and for the practice of archaeology on the Plains. Chapter 15 closes the volume by considering these larger issues.

CONCLUSIONS

What, then, do we know? Warfare has deep roots on the Plains, although it is not clear exactly how deep. But, if it was always possible for Plains people to go to war, we know that they did not always do so, and we know that, when they did, they did so in different ways in different times and places. Issues of archaeological visibility put limits on some of what we can say, but, even so, combat victims appear to be more common in the southern and northwestern Plains than elsewhere during Woodland times and evidence for large-scale violence is clearest and most pervasive in the northeast during Plains Village times. Furthermore, there may have been variable links among social standing, ideology, and violence over time and space, but there is evidence that, whatever these links might have been, violence often erupted during times of material stress.

Archaeological attention to warfare is trendy. For decades, archaeologists substantially ignored and downplayed the existence of organized violence in all but the most obvious cases. However, since the publication of Keeley's *War before Civilization* in 1996, we have discussed it more and more. Plains archaeology, though, is notoriously resistant to ephemeral intellectual trends;

our tribe has always understood that war was important. Plains warfare cost lives, sometimes many, many lives, and it cost effort, sometimes immense effort, to try to keep from paying that cost. We know that in very recent times Plains warfare was bound up with society in many ways. Although we need to be careful of assuming the social reality of our culture-historical taxa, it is true that there is evidence that conflict may be linked to in-migration of new groups and to patterns of extraregional economics and other interactions, as well as to fluctuations in material conditions. Many of the socially distinct horticultural groups recognized on the Plains at Contact, including those along the Middle Missouri and groups like the Pawnee, appear to have taken on something like their Contact-period form in the late 1400s, at the same time that fortifications became most elaborate and particularly widespread. War thus appears to have been part, and perhaps a very important part, of the process of ethnogenesis that helped to define these groups. War, and the possibility of war, mattered in the lives of the people we study, and looking at it in detail ought to matter to us as well.

Part 2

Emic Views

Warfare in Plains Rock Art

2

Northwestern Plains Contact-Era Warfare as Reflected in Ethnohistory and Rock Art Studies

Mavis Greer
and John Greer

Plains rock art has long been recognized as a record of warfare, especially in the northwestern part of the region (e.g., Keyser 1977a; Keyser et al. 2006; Keyser and Klassen 2001; Sundstrom 2004). Numerous images of shields, weapons, armor, and fighting postures support the perception that warfare was ubiquitous across the region, at least in later times. Previous studies have focused on how to read rock art panels based on identified images in historic art, which has led to interpretations of battles and skirmishes as well as attempts at ethnic identity of the scenes' participants based on such elements as shield designs and horse accoutrements (Greene 1985; Keyser 1975, 1987a, 1996; Keyser and Poetschat 2009; Loendorf 2012; McCleary 2008a; Sundstrom and Keyser 1998). The role of women in warfare has gained attention also, and evidence has been examined in the use of the supernatural to obtain victory in war based on the power of images (e.g., Greer and Keyser 2008; Keyser et al. 2006; Keyser and Cowdrey 2008). Ethnographic information has been critical to previous rock art studies in the region to help understand Contact-period rock art scenes, and these documents include early anthropological studies; drawings on hides, clothing, ledgers, and tipis that have associated collector explanations; and some historical first-person accounts by early visitors, such as the painter Karl Bodmer and the explorer Prince Maximilian. Our interest focuses on ethnohistorical interpretations based on documents provided by

DOI: 10.5876/9781607326700.c002

non-Native people who lived with Indians long term, who were not just visitors but traded and traveled with the natives, and who witnessed and/or participated in their battles. Using these records we consider whether rock art is a good indicator of which groups are involved in warfare and what these early traders and trappers offer to identify warfare imagery beyond what can be gained from other sources, recognizing that these records do not always concur with Native accounts (Medicine Crow 1992; Stands in Timber and Liberty 1967). We also consider whether Contact-period warfare as seen in rock art is a reflection of warfare as seen in historical documents or if these sources provide different views of these conflict interactions. Although we use examples from rock art throughout the region, most of our attention is on the Musselshell River of central Montana (figure 2.1). This central portion of the northwestern Plains was chosen because, through historical documents, we know it was an area for warfare at least from the time of initial European contact to the time of settlement on reservations by the tribes of this region, and there is abundant rock art here from the Contact period.

Contact-period rock art for this area can date as early as the 1700s, although there are only a few documented cases of Euroamericans in the region during this century. By the 1800s the area is being infused with trappers, traders, hunters, the United States military, and even tourists. By the 1860s, written diaries, narratives by adventurers, and newspaper articles are available for the area. Contact- or Historic-period rock art is readily identifiable from the context of figures or icons shown in the art. The presence of horses is one of the most common Contact-period indicators: excavated horse remains from the late 1600s in southwestern Wyoming are the earliest evidence for horses in the region (Eckles et al. 1994:64–65). However, the horse did not become widely used throughout the northwestern Plains until about 1730, when it was first reported in use by the Blackfeet, Flathead, and Crow (Ewers 1955a:17). In the 1760s fur traders were increasing across the region and with them came many guns (Secoy 1953:4). Horse and body armor and other forms of European dress (especially hats) also date rock art images and panels to after contact. Likewise, the presence of the bow and arrow indicates a date after AD 500 when the onset of the Late Prehistoric period was marked by the coming of the bow for this region. In addition to context, the kind of paint used can also help with dating pictographs to the Contact period since aboriginal crayon drawings do not occur until this period, as shown by seriation studies (Greer 1995:227–290). Aboriginal crayon paint can be a stick of unmodified charcoal, but it is more commonly a stick or ball of prepared paint mixture containing a red ochre pigment and binder (presumably mainly animal fat).

Figure 2.1. *The Musselshell River area (rectangle) of rock art concentration and other sites and locations discussed on the northwestern Plains.*

DEFINITION OF WARFARE AND ITS SYMBOLISM

Within this volume warfare is broadly considered as a complex mix of ritual warfare, territorial disputes, plunder, and captive-taking for trade and for rebuilding local populations following epidemics (Clark and Sundstrom 2010). The dictionary considers a wide range of definitions for "warfare," but the common denominator is intergroup conflict or struggle of any kind. Nowhere do dictionary definitions specify the number of people involved, kinds of weapons, kinds of captives, or length or intensity of the conflict.

Anthropological studies of warfare focus on why people go to war, benefits to the group, how the group is organized, and what weapons and military tactics are employed (Otterbein 2009:4). Warfare is viewed as group action rather than as individual action, with the target being group members rather than particular individuals. Otterbein identifies the goals for uncentralized political systems engaging in war as "defense-revenge, plunder, and prestige" (Otterbein 2009:4). Thus, the wide variety of physical conflicts recorded in historical documents for the northwestern Plains, most of which involve small groups attacking other small groups, all fall within the generalized "warfare" classification. The goals of such skirmishes during the Contact period include all of those identified by Otterbein, although not all for any one battle.

Warfare images in rock art are assumed to be representational and easily recognizable, so we complacently believe we know which images portray warfare and can consider individual figures and scenes within variable cultural contexts. But this is not always the case. It has been pointed out by Chippendale (2009) that before deciding if rock art portrays warfare we must separate warfare from other kinds of physical or spiritual conflict, especially on a personal or interpersonal level. Examples are ritual reenactment (especially in dance), copying conflict postures in social dance or exercise (such as karate or capoeira), competitive games, and even hunting. All functions can be portrayed in similar ways, so the researcher must look for indirect evidence of warfare since physical posture alone may be misleading. Chippendale advocates identifying defensive weapons (e.g., shields, fending sticks) rather than offensive weapons (such as bows, arrows, spears, lances, clubs, hatchets, swords, and guns) as important in deciding whether warfare is being portrayed. Candace Greene's (1985) recognition that there are rules for reading a warfare scene provides another contextual evidence check. Although not every drawing follows the rule that a conflict scene is read right to left (subject-action-object or in warfare terms—hero, what he did with what weapon, enemy), starting with this concept can help determine whether or not the function of the panel is to relate warfare activity.

When discussing warfare on the northwestern Plains, the distinction between *actual fighting* and *rituals associated with fighting* is blurred because of the cultural context of these activities; and since the distinction was not made in the lives of those people, warfare on the Plains usually considers actual fighting and ritual portrayal as the same, as they are viewed here. Rituals, whether portrayed as occurring before or after a fight or as associated with fighting, such as the Sun Dance, are not the same as fighting, although they can sometimes substitute. Likewise, portraying activities such as counting coup (striking an enemy either living or dead with a stick, quirt, bow, or similar object during battle), preparing for a battle by drawing a shield image on a rock wall for power, or drawing one on the wall after the battle to record one's success, may not be a distinction that is needed by the people in societies where warfare and ritual are intertwined or by researchers attempting to understand how warfare changed through time. However, we do not know for certain that actual and ritual warfare were closely related through time, so separating the two concepts should be attempted whenever possible for the best understanding of how warfare was portrayed in rock art and by whom. On the northwestern Plains there are a few examples of rock art that previous researchers have identified as showing fighting postures and portraying social dance, and in some cases these social dances are directly associated with warfare. The most obvious example of a scene with this function is at the Joliet site (24CB402), with a portrayal of the Grass or Hot Dance conducted by the Hidatsa and their northwestern Plains relatives, the Crow (Keyser and Cowdrey 2008; McCleary 2008a:44–45). At this panel three dancing warriors are carrying a gun, a bow and arrow, and a feather-decorated coup stick as part of a ritual battle (figure 2.2). On this same panel is a woman interpreted recently by Crow informants as having been stolen from another tribe and then thrown away as part of this dance ceremony, representing another aspect of warfare (McCleary 2008a:45).

On the southwestern periphery of the northwestern Plains, at the La Barge Bluffs site (48LN1640) in southwestern Wyoming, two scenes have been interpreted as rituals associated with warfare. Keyser and Poetschat (2005:67–68) hypothesize, based on ethnographic accounts of Northern Shoshone by Lowie, that one scene portrays coup on a captured woman in front of a line of people as she is adopted into the capturing group, thus portraying a war-related activity but not actually showing warfare (figure 2.3a). A second scene at that site shows a warrior brandishing a pistol and riding in front of a group of people in what the authors consider a celebration of warfare, but again not actually portraying war (figure 2.3b). The audience in both rituals is interpreted either as

Figure 2.2. *Warfare dance and capture scene at the Joliet Site (24CB402) in Montana. Drawing by James D. Keyser, from Keyser and Cowdrey 2008:26 [figure 7].*

participants (dancers, celebrants) or simply as observers. These cases support the fact that the context of a single image, including details of its depiction, or the context of a complete scene is critical in determining whether warfare is the theme.

Common symbols that depict warfare are weapons (figure 2.4a–b), shields (figure 2.4c), armor, fighting posture(figure 2.4c), and people in dominant positions facing opponents in subservient positions. Nothing is more conclusive than scenes showing attacks (figure 2.5a–b) or other warrior activities, such as horse stealing. However, although often considered characteristic of regional

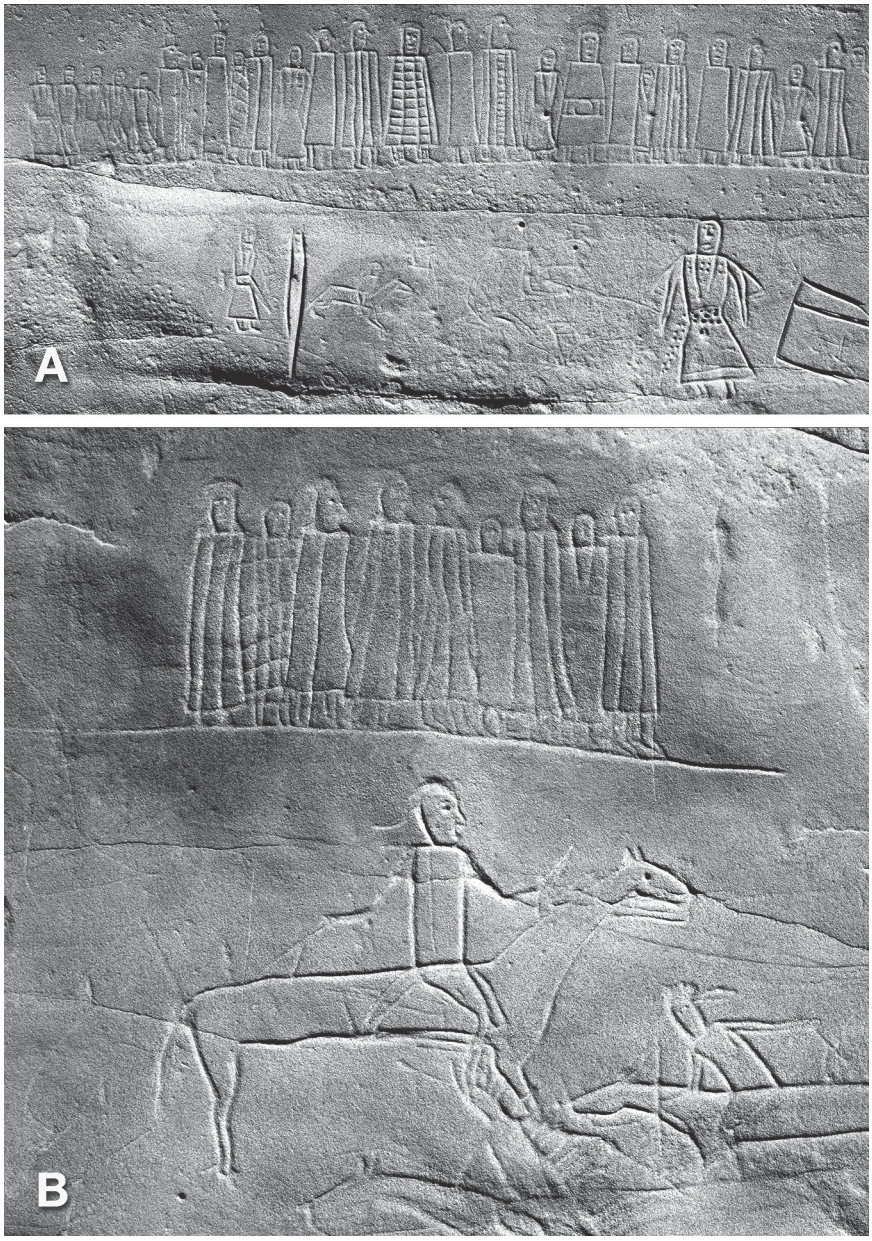

Figure 2.3. *Ritual warfare at the La Barge Bluffs site (48LN1640) in Wyoming. (a) Counting coup on a captured woman (bottom right) in front of a group. (b) Mounted warrior riding with a pistol in front of a group.*

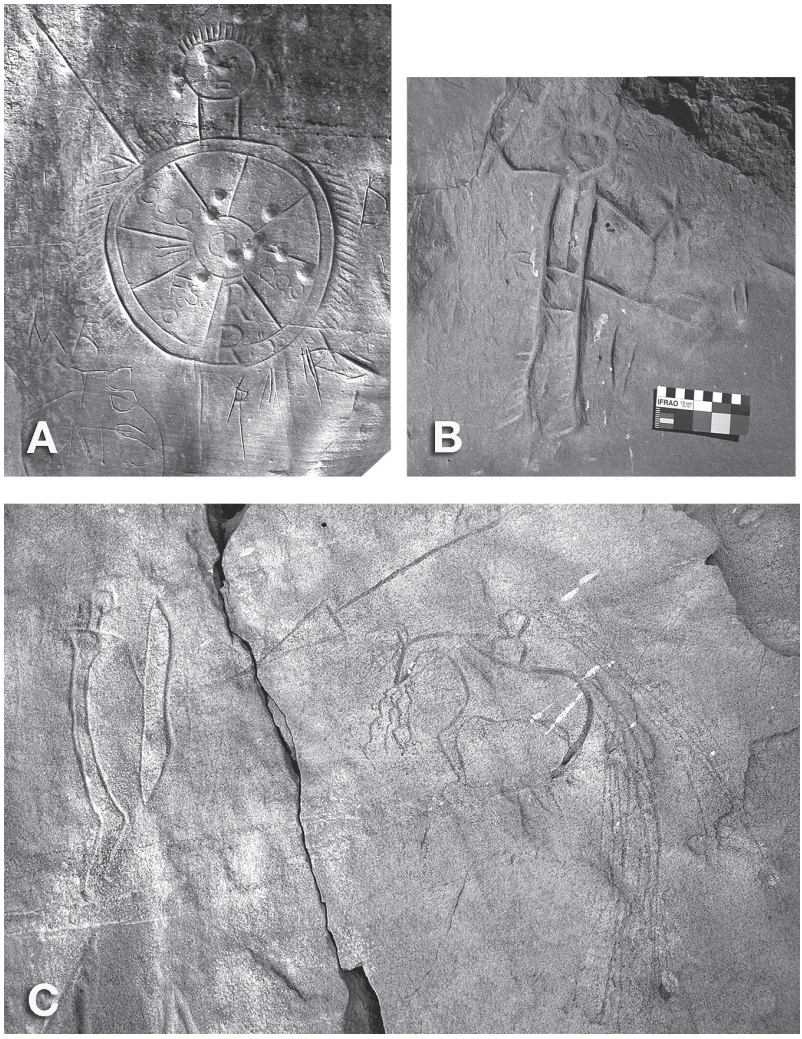

Figure 2.4. *Common rock art depictions of warfare: (a) shield-bearing warrior (Carboni site, 24CB404); (b) person stuck with arrow (Recognition Rock, 24RB165); and (c) battle scene (No Water Petroglyphs, 48WA2066).*

rock art, the occurrence of action-showing battle scenes is limited relative to static portraits of humans that represent warriors. When shields are portrayed with weapons, they are usually considered conclusively warfare related, but when a person (usually male) is shown with a weapon and no shield, unless he

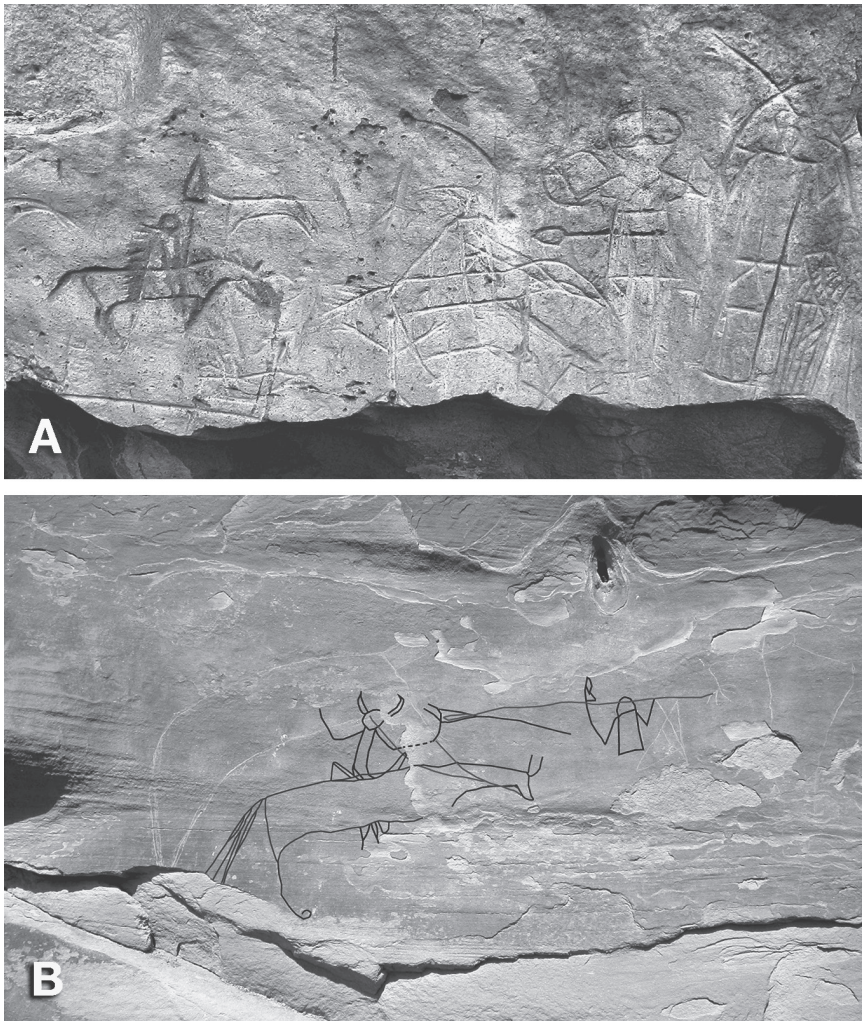

Figure 2.5. *General rock art battle scenes with horse-mounted warriors fighting pedestrians: (a) at White Mountain Petroglyphs (48SW302), and (b) at the Gumby site (24GV139). Some images highlighted with Adobe Illustrator.*

is portrayed in a battle scene, there is no reason to prefer warfare over hunting, indication of status, or some other message. Shields in non-combat scenes, or even static poses without weapons, are usually assumed to be warfare related, such as those at Bear Gulch discussed by Keyser (chapter 3, this volume). But

there are examples in northwestern Plains rock art in which the shield appears to have no association with warfare and may instead portray medicine shields, as symbolic weaponry. We have previously suggested, based on panel context, that the shield may be a personal identifier or have a spiritual connotation, such as assisting in safe passage into the next world (Greer and Greer 2003). Other indicators of warfare include warriors holding severed heads, mounted warriors taking pedestrian captives, and armored people and horses. We also believe that people pierced with spears and arrows, usually interpreted as representing personal injuries through fighting, especially in earlier pre-Contact cases, may not represent fighting but instead may be stylized representations of a different but as-yet unidentified function. Thus, when spears and arrows (from Archaic to Historic) are shown recurringly penetrating specific parts of the body, such as the neck (at an angle), waist (figure 2.4b), knees, and ankles, or even lining the torso, they may not be referring to actual wounding by another individual.

Handprints are found throughout world rock art and are especially common in central Montana (Greer and Greer 1999). There are many explanations for their existence, but the prints (whether positive stamps or negative stencils) generally are not considered directly associated with warfare on the northern Plains. Historical documents, however, suggest that single hands or hands associated with warfare scenes may have a different meaning:

> [Diary of C. W. Lee, February 22, 1870] Some of the Crow Indians brought in some scalps and a hand of some Indians they had killed this morning on Crooked Creek. Seven of them, Flatheads and Ponderays [Pend d'Oreilles] undertook to steal a lot of horses from the Crows this morning a little before day. The Crows turned out and followed them. Aided by the snow, they soon overhauled them and made short work of them, killing all of them. (Hampton 2011:66)

In all cases, it is again context that indicates whether warfare is the theme associated with the images. Associated dress, accoutrements, and posture are important to the warfare function interpretation, especially on non-scene, static figures. We have the added benefit that Contact-period warfare on the northwestern Plains has a rich historical record written by people living in the midst of that cultural change.

WEAPONS IN ROCK ART

Weapons are important in evaluating depictions of warfare, and we have previously quantified weapons recorded in Montana and Wyoming rock art

for types of weaponry relative to function (Greer and Greer 2008a, 2008b). Our analysis (updated in 2013) focused first on weapons in Montana, distribution of weapon types, and likely function relative to the overall scene. Unexpectedly, the rock art mostly suggested changing use of environmental settings through time by different populations. We then expanded analysis to Wyoming, focusing on the northern and eastern parts of the state, that is, the northwestern Plains and Rocky Mountain geographical areas, and excluding the southwestern area with stronger Great Basin cultural associations and Great Basin environment. Based on a sample of nearly 1,000 sites (654 in Montana and 337 in Wyoming) it was found that recorders more frequently recognized—or focused their attention on—weapons than on distinctions in other images, at least to the level of general class, such as bow and arrow, lance, or gun (table 2.1). During our review of these sites we were able to identify 511 weapons (382 in Montana and 129 in Wyoming, or 75% and 25%, respectively).

Shields are usually easily identified, and shield-bearing warriors are often portrayed with active weapons such as oblong rounded-end clubs, pointed elktine clubs, and lances (figure 2.6). Bows are shown alone and with arrows, and arrows are depicted with triangular arrowheads and feather fletching, or with fletching only and no point. Arrows are sometimes in the hands of humans and not accompanied by a bow, some are in quivers on people's backs, some are in flight, and others are shown sticking into shields, animals, or humans. Other weapons include hatchets, guns, lances or spears, and the extremely rare atlatl.

In Montana and Wyoming bows are most frequently shown in hunting and warfare scenes, thus indicating what we recognize as a progressive increase in weapon images and probably a gradual change in importance from hunting portrayal to interpersonal conflict from the Late Prehistoric (ca. AD 500) to the Historic (ca. AD 1700) periods. The bow and arrow usually are not in ceremonial rock art scenes, which may be both a temporal and functional distinction. However, Francis and Loendorf (2002:117) discuss ceremonial uses of the bow as portrayed in some Dinwoody sites in western Wyoming to indicate power and association with evil activities, such as shooting people with invisible arrows to cause illness. Thus, like the shield, weapons may not be depicting warfare and instead may have a completely different referent.

Armored horses occur in rock art across both states, with the greatest concentration along the Musselshell River in central Montana (figure 2.7). Of three recorded armored horses on the Wyoming plains, two are pierced with arrows or lances. Of nine recorded in Montana, only one (at the Nordstrom Bowen site, 24YL419) is pierced, and it is the most attacked armored horse on the Northern Plains from Alberta to Colorado. Five of the 12 armored

Table 2.1. Weapons in Montana and Wyoming rock art. These reflect sites in the State Historic Preservation Records as of 2013.

Kinds of Weapons	*Number of Images of Weapon in Montana*	*Number of Images of Weapon in Wyoming*	*Total*
Armored horses (no arrows or lances)	4	1	5
Armored horses (with arrows or lances)	5	2	7
Armored pedestrian with shield	1	0	1
Arrows (human holding)	6	1	7
Arrows (inserted into human)	21	4	25
Arrows (no attached bow or human)	83	47	130
Arrows or Spear (inserted into animal)	30	8	38
Atlatl	1	2	3
Bow (human holding)	28	18	46
Bow (no attached human)	2	1	3
Gun	76	14	90
Hatchet	9	0	9
Lance/Spear	14	2	16
Shield with associated elk-tine club	19	0	19
Shield with associated rounded-end club	28	0	28
Shield with inserted arrows	3	8	11
Shield with lance	52	21	73
Totals	382	129	511

horsemen have associated lances or spears. Even though horse armor may have been designed principally for battle protection, only just over half the images are associated with weapons, suggesting armor may have had other functions on the Plains, such as environmental protection from brush (or thorny plants in the south) but more likely from cold temperatures by allowing retention of body heat. Only one known figure—a pedestrian—is in full body armor (figure 2.8), and he is engaged in conflict with a person on an armored horse, on a site along the Musselshell River.

MUSSELSHELL ROCK ART

The Musselshell River in central Montana was one of the last places tribes could continue their cultural practices of hunting and warfare. The valley lies

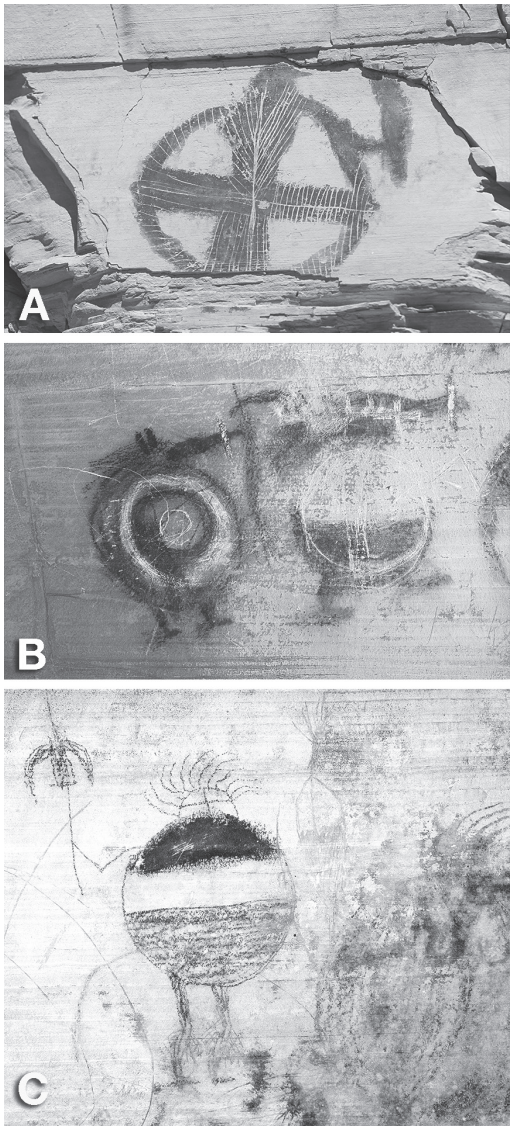

Figure 2.6. *Shield warriors with weapons at the Bear Gulch site (24FR2): (a) oblong rounded-end club, (b) elk-tine club, and (c) lance.*

between the Missouri River to the north and the Yellowstone River to the south (figure 2.1). In 1875, Yellowstone Kelly described the area as "a veritable hunters' paradise for game of all kinds, including elk, deer, and mountain sheep, and cinnamon, black, and brown bear . . . [and] a good country to run

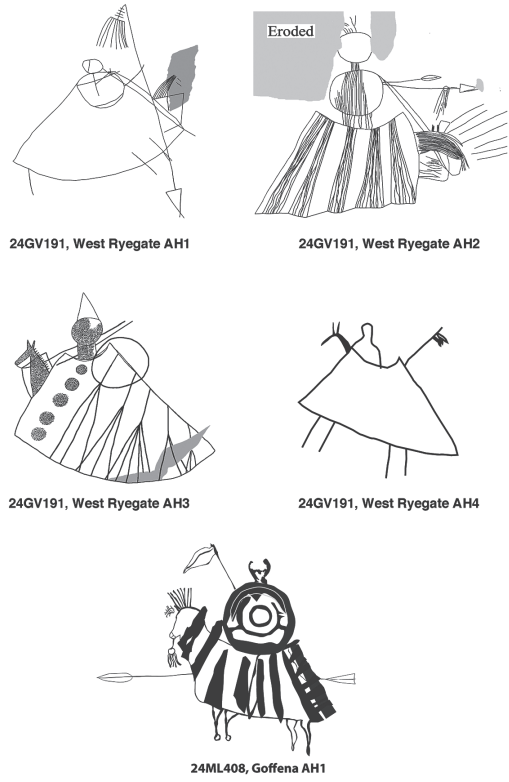

Figure 2.7. *Five of seven armored horses reported from the Musselshell River area. Sketches by John and Mavis Greer and James D. Keyser.*

into war parties of the Sioux, Crow, and Blackfeet tribes" (Quaife 1973:117). However, these three cultural groups were not alone. At the mouth of the Musselshell, C. W. Lee, a young man trained in gun repair who lived at the confluence of the Musselshell and Missouri rivers, observed the following tribes between 1868 and 1872 (Hampton 2011): Arapaho, Assiniboine, Blackfeet, Crow, Flathead, Gros Ventre, Pend d'Oreille, Piegan, and Sioux (Santee, Teton, and Yankton). Of these tribes, those most mentioned were Arapaho, Crow, Gros Ventre, and Sioux. In 1878 and 1879 Andrew Garcia reports encountering Assiniboine, Blackfeet (mainly Piegan, but also Blood and Blackfoot), Cree, Crow, Gros Ventre, Nez Perce, Pend d'Oreille, Sioux, and Spokane (Garcia 1967). He wrote that the Musselshell country drew western as well as northern tribes because bad weather in Alberta drove the buffalo south to winter there and provided an ample supply of food for the

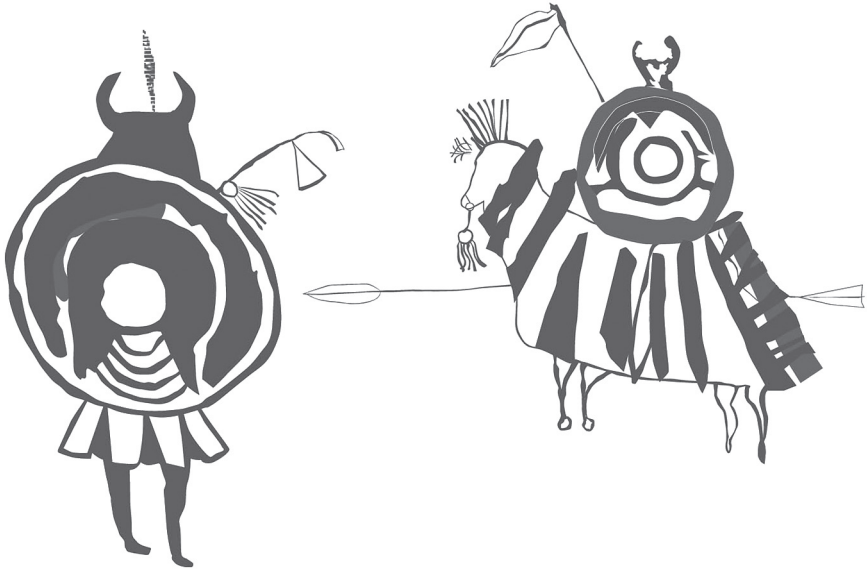

Figure 2.8. *Pedestrian warrior and armored horse with rider (Goffena site, 24ML408).*

many visiting groups. This popular wintering location provided opportunities for intertribal conflict but also complicates assigning cultural affiliation to rock art in the valley.

Sites along the Musselshell mostly contain Contact-period rock art, but only about a third appear to be associated with warfare. There has been little archaeological survey here, but 16 rock art sites have been recorded overlooking the Musselshell River, and 31 for the entire drainage, undoubtedly a small percentage of sites actually along the sandstone-rimmed valley. Of the 16, eight have scenes that portray warfare.

The Gumby Site (24GV139) is one of the smallest with a battle scene. A single rider on a horse appears to be leading two riderless horses and shooting a gun toward a pedestrian shown only from the torso up and carrying a bow (figure 2.5b). Other images at the site are of red paint, and based on our prior studies of central Montana chronology (Greer 1995) probably date much earlier than the Contact period but are too deteriorated to be identified.

The Five Guys Petroglyph (24ML394) has two horseback riders carrying long lances, possibly coup sticks, following five humans. One rider has flowing long hair, which differs from the round heads of the rectangular-bodied pedestrians, who have no arms. No other figures have been noted here.

The Rockshelter Shield site (24ML507), the Horned Headgear site (24ML508), and the Musselshell site (24ML1049) have recently been recorded in detail and found to have warfare imagery (Loendorf 2012). The Rockshelter Shield site has several static-pose, shield-bearing warriors, although only one has a clear weapon. The Horned Headgear site has an action battle scene, which is typical of those found at Writing-on-Stone in Alberta. The Musselshell site has several shield-bearing warriors but no active battle scenes.

The other three sites with battle scenes all have armored horses (figure 2.7), although not all are within conflict compositions. The Goffena site (24ML408) has a painted armored horse confronting an armored pedestrian (figure 2.8). The scene is not only unique among armored-horse depictions along the Musselshell, it is also unlike any others on the northern and central Plains and not just because it is a painting rather than a petroglyph. The Goffena horse has a scalplock hanging from the bridle bit, and a rayed headdress, which is referred to as a horse bonnet (Keyser 2012), and neither of these occurs on other known armored horses. The shielded warrior riding the horse has a horned headdress, carries a flagged lance, and has what appears to be a thrusting spear pointed at the pedestrian warrior. The body-armored pedestrian has a horned headdress, carries what may be a flagged coup stick with an attached scalp, and is protected by a large shield in addition to the armor.

The West Ryegate (24GV191) armored horses are all easily recognizable, but no two are exactly alike (figure 2.7). They are spaced along a quarter-mile of bluff, with no two images together, suggesting they were drawn by different people. Horse 1 (AH1) is flanked by a shield bearer to the right and another to the left. The horse armor is a typical triangular skirt with a curved bottom, and a collar to cover the horse's neck. The horse's head has been lost to calcium carbonate deposits, but a group of lines just out from the collar suggests a decorative bridle. The shield-covered rider at the top opening of the armor is not detailed. However, there is a deliberate slash across the face (the recurring *scar-face* motif), one arm and hand, and a suggestion of reins. In front of the rider is a long, vertical lance with a tassel extending from the top, perhaps representing a scalp. Far to the right (not shown in figure 2.7) is a pedestrian warrior, and closer to the left is another warrior facing left away from the horse. This scene does not clearly depict the armored horse interacting with the pedestrians as it does at other sites.

The second armored horse (AH2) at West Ryegate is very large relative to others of this kind. Although dense carbonate deposits surround the incised figure and cover part of the rider, it is still possible to see that the horse armor has broad slightly expanding stripes that form a pattern similar to those at

Goffena. There is a tassel off the end of the nose, perhaps a scalp or ring bit chains (or *coscojos*). Reins end at a lance extending frontward from the shield-bearing rider. Attached near the front of the lance are what may be feathers or a scalp. The warrior has a wide neck and what appears to be a single feather or ponytail extending from the oval head. Protruding from his shield, above the lance, is a plain arrow or another lance.

Horse 3 (AH3) at West Ryegate has typical triangular-shaped armor with an opening in the top for the rider and a collar to protect the horse's neck. Triangular designs on the armor body may be highly stylized feathers or a pattern in the leather indicating construction. A column of five large dots decorates the front of the armor. This decoration is not on any other recorded armored horse. The pointed-head rider is mostly outside the horse armor but is protected by a personal shield. Lines extending out from the shield on the edge opposite the reins may be from a weapon now not discernible. Superpositioning of the scratches shows that the large shield to the right of the rider and at the top of the armor was engraved before the horse; so presumably the order of engraving was the shield first, followed by the horse armor and horse, and finally the human rider.

Armored horse 4 (AH4) at West Ryegate is on a busy panel also containing at least one horse without armor and rider. Based on superpositioning, the armored horse was not the first of the figures to be incised. The armor is without decoration, apparently to allow the underlying unarmored horse and rider to show through—that is, the engraving order is the unarmored horse and rider, and then the armored horse and rider. The armored rider lacks detail, but the generally rounded body suggests a shield, while a distinctive lance with dangling feathers or scalp protrudes from the back of the armor. The rider of an underlying armorless horse also carries a lance with a possible scalp or feathers.

Although none of the West Ryegate horses is in a definite battle scene, all are associated with weapons or war trophies (i.e., scalps) suggesting they all represent warfare-associated activities. This long bluff also has two other small scenes possibly associated with conflict. One may depict a horse-stealing event—a horse with a down-turned head is partially superimposed onto a conical tipi, and the two are covered with horse prints. The other panel has a well-executed horse with a shielded rider holding a lance or coup stick and being bombarded with arrows from an unseen source.

Two armored horses have been identified at the Twenty-one Guns site (24ML398). Like West Ryegate, this is a large site with several weapons depicted, mostly guns. Also here are several unarmored horses and some shield-bearing humans (one with guns). Neither horse has associated figures,

weapons, or rider. There are no indications that the two horses were made by the same person or by any of the artists of the other five armored horses along the Musselshell.

The Musselshell sites contain several hundred elements of Contact-period rock art, and about a third may be associated with warfare. Ethnographies show that tribes in this area had a social structure with status dependent on military achievement (Lowie 1963:114–123), but historical documents often provide a different view of conflict. In the 1800s horse stealing was still the main way to increase status within most northwestern Plains tribes, and historical documents cite this as the main reason for warfare in the Musselshell area (e.g., Garcia 1967; Hampton 2011; Quaife 1973). However, squeezing so many tribes into the small valley because of diminishing buffalo herds, increasing Euroamerican settlements in surrounding areas, and constant pressure from the US military was causing increased skirmishes between small parties (McGinnis 1990). These conflicts arose from too many people using a more constricted space for activities that previously encompassed massive areas.

ETHNOHISTORIC WARFARE: WHAT WILL WE SEE IN ROCK ART?

By the mid- to late 1800s, traders and trappers, such as Andrew Garcia, a trader from the border area of Texas in the late 1870s, were living with and marrying into tribes that lived in the valley, and some, like Garcia, were writing extensively and in detail about their time on the Musselshell. The Musselshell valley was not only a place for many tribes to winter, hunt bison, and interact, both in conflict situations and at social events that centered on gambling (Garcia 1967:170, 185), but also for white traders and trappers to intermingle with the Indians or to enter the area as part of the US military, and in some cases both (Quaife 1973). From Garcia we see the same tribes that often skirmished would get together for social parties that lasted for days. While living in a camp of Pend d'Oreille and planning to marry a Nez Perce woman living among them, he witnessed such a party in 1878. Tribes came to gamble at the Pend d'Oreille camp: "Assiniboines and Crees, Bloods, Gros Ventres and Piegans" (Garcia 1967:185). However, peaceful interactions are not common topics in historical documents for the Musselshell area, whereas warfare between the tribes, and later between the tribes and the US military, are much more popular subjects. We also learn from individuals who integrated themselves into the tribes, that Indian groups, even when there was no formal social event, were generally composites from different tribes. Although they recognized tribal distinction among themselves, affiliation would not be obvious to

a casual outside observer. For example, Garcia wrote about one camp, "some Spokanes were with them, but most of the band were Pend d'Oreilles from the Kalispell Valley [over 200 mi to the west]. They were camped about three miles from where I was . . . They had come over the year before and had hunted buffalo in the Musselshell country the previous winter" (Garcia 1967:113). He also noted that Indians from west of the mountains generally stayed two or three years before returning home.

Among the conflicts described, those associated with horse stealing are most common. By the late 1870s, stealing horses not only brought prestige within the tribe but increased tribal assets for trade. Horse stealing between tribes and from Euroamericans in the area was a constant in the region (Hampton 2011; Robison 2013). Garcia speaks particularly of Crow and Piegan war parties stealing horses back and forth (Garcia 1967:31, 49, 66). Because of the abundance of horses, Garcia was usually not interested in trading for horses, but he noted that other whites in the area were. Those in the small settlement of Fort Musselshell at the confluence of the Musselshell River with the Missouri fueled horse stealing by offering whiskey in trade: [December 27, 1869] "The Grovents are still here and doing considerable trading: horses and robes for whiskey, although there is a heavy penalty against it, there are plenty that will trade it to them" (Hampton 2011:63). Horse stealing is portrayed in rock art throughout the northern Plains, so to find only one horse stealing scene in the rock art of the Musselshell is surprising, considering its numerous references in the historical record. If cases of horse stealing have the same proportions in rock art elsewhere in the northern Plains, it seems that this was not a war exploit that was commemorated with a frequency relative to how much it was occurring.

Capturing or stealing women during conflict was widespread across the region, but historical references to this for the Musselshell area are few. Keyser, Sundstrom, and Poetschat (2006) reported on the occurrence of women in war and noted only 24 rock art scenes at 16 sites on the entire northwestern Plains that depicted women being captured (figure 2.9). Subsequently, at the Bear Gulch site (24FR2) in central Montana, at least five women were found to be in coup-count scenes and tallies (Greer and Keyser 2008:97–98; Keyser, chapter 3, this volume). In 2009, a woman-capture scene was recorded at the No Water site (48WA2066) in northwestern Wyoming (Keyser and Poetschat 2009:13, 83–91). However, even with the addition of the new panels, capturing or stealing women does not appear to be a popular topic for rock art.

No woman-capture scenes have been found in the Musselshell drainage, but there also are almost no indicators of gender. Even historical references to stealing woman for the Musselshell are few. There is a general comment

Figure 2.9. *Woman-capture scene (with armored horse) at 38HN210, South Dakota.*

that the Blackfeet steal robes in raids, like they do horses and women (Garcia 1967:163), and a specific instance regarding a Blackfeet raid states that

> We could see that they [Blackfeet warriors] had gotten quite a bunch of horses from their raid on the Crows. They also had eight or nine young Crow squaws that they picked up in the raid. The Crows did not seem any too sorry. They knew that they would be traded back soon to their people for the Blackfeet women the Crows had. (Garcia 1967:66)

Full-time residents of Fort Musselshell at the mouth of the river were few in number (in April 1870 there were 13 men, 4 women, and 2 children), but there were always many visitors, among them captive women.

> [C. W. Lee's Diary, September 7, 1870] A large party of Indians came in to Musselshell today: Grosvents and Rappahoes [Arapahos] . . . They arrived a little after noon and toward evening they moved in among the Col.'s building timber below his house and made themselves some barricades for themselves and horses. They have a Piegan squaw among [them] that the Grovents took

> prisoner a short time ago killing 7 bucks and taking 3 squaws prisoner at the time. (Hampton 2011:102)

Seldom are women specifically identifiable in rock art battle scenes. Even if drawn genderless, figures in a warfare scene are assumed by most researchers to be men. However, Garcia reflected on women fighting: "There was also a hatred between the women of one tribe and the women of a different tribe. Many times a despised Indian squaw was known to stand and fight to the death by the side of her man, sometimes even against her own people" (Garcia 1967:56). In 1841, near present-day Baggs, Wyoming, in the south-central part of the state near the Colorado state line, Jim Baker observed a battle that involved a woman in a prominent position,

> The trappers were no doubt startled as they looked out upon a horde of about 700 redskins, comprising the Sioux, Cheyenne, and Arapahoe tribes. The Indians were covered with war paint, armed both with bows and arrows and with flint-lock muskets. The attack was led by an Arapahoe princess who was decked in her war dress, which was embellished with the barbarous emblems of her tribe. She made a heroic figure leading the Indians in their murderous design; chanting a weird war song, with gestures she urged them on. The Indians demanded that the trappers give them their horses, which numbered fifty. The white men, relying upon their advantageous position, after holding council, decided not to accede to their wishes without a fight. (Mumey 1972: 24, 28)

C. W. Lee reported Crow women acting as lookouts for possible attacking Sioux in 1868 (Hampton 2011:40), and Healy told about a Gros Ventre war party along the Missouri River between Fort Benton and Fort Musselshell (ca. 1862) where the male "Chief, followed by his squaw mounted on a war horse, was in the lead and a long distance ahead of his nearest followers" (Robison 2013:117). Thus, in rock art, women may be among the men in those genderless scenes, and it may not necessarily be the case that they are of the same tribe.

Zenas Leonard (Quaife 1978) observed warfare throughout the northwestern Plains and beyond in the 1830s and understood that it was important for people to retain their social status within the tribe. He commented on tribal competiveness that

> each one [was] trying to excel the other in merit, whilst engaged in some dangerous adventure.—Their predatory wars afford them every opportunity for this, as they are at liberty and sometimes compelled to engage in the battle's strife as soon as they are able to bend the bow or wield the tomahawk. (Quaife 1978:232)

This need to be successful for status in one's society is behind McClintock's observation that "the painted War Tipi of Running Rabbit was of an entirely different character, being covered with picture records of tribal victories." He notes that "it is an interesting fact that Indians never make records of their defeats" (McClintock 1992:220–221), and today almost no rock art panels are interpreted as showing defeats. Keyser and Klassen (2001:255) provide an example from a battle scene at Writing-on-Stone that has been interpreted as the record of "Retreat up the Hill" based on 1924 information from Bird Rattle, a Piegan elder. However, there are no indications of recorded battles lost so far in Musselshell rock art.

While in the Musselshell area, Kelly spent much time staying in and describing conical wickiup war lodges. In 1869 he wrote:

> When we arrived at the Musselshell River we found that the snow had fallen during our absence and there were many old footprints made by Indians around our camp. On looking around we found a newly constructed war house in the pines, a great green tepee covered very cleverly with pine boughs. We were certainly fortunate to have missed the party that built it, for it was a large one. (Quaife 1973:134)

He discussed another war lodge in the Bear Paw Mountains, northwest of the Musselshell and north of the Missouri River:

> War houses in that region were built according to the material at hand. If slabs and poles were available the structure was made in the shape of a conical tepee, thick enough for shelter and protection, with the open entrance overlapping and the loose top affording an exit for smoke. A similar shelter was sometimes built in the shape of an unfinished Mandan wigwam. The one we had come upon was conical and shapely, and showed signs of having been occupied recently by Indians. (Quaife 1973:110)

Yellowstone Kelly, while in the Musselshell area in 1875, wrote that "we came upon a substantial war house and concluded to camp for the night. This war house was well put up, roomy and comfortable, and had probably held twenty-five" (Quaife 1973:110). Lee also reported on pole lodges in the Musselshell area: [February 5, 1871] "up Squaw Creek about 3 miles and found where the Indians [Crow] camped . . . [They] built a lodge of dry poles . . . From the size of the lodge there could not have been over 25 Indians at the most" (Hampton 2011:1260).

Rock art representations of tipis and conical lodges occur throughout the northwestern Plains. Some rock art drawings of a single conical lodge, or occasionally multiple lodges, are made of several converging lines or many

Figure 2.10. *Conical pole lodge petroglyph at Deer Medicine Rocks (24RB401).*

poles making up the body (figure 2.10). Such pole lodge figures do not have smoke flaps, doorways, exterior decoration, or details present on other tipi representations. Also pole lodges are usually not associated with other figures, while eagle-catching lodges are (Sundstrom 2004:124). Although structural difference may reflect individual artistic style, it is likely that isolated pole lodges shown without other interior detail or associated images depict expedient pole war lodges and not a skin-covered family residence or lodge of another function. The lack of associated context becomes the important element in functional identification of these depictions.

Long, feathered staffs in rock art are often thought to be coup sticks, and counting coup is considered a non-invasive part of warfare (e.g., Keyser 1977a,

1987a; Keyser and Cowdrey 2008; McCleary 2008a). In Musselshell rock art we identify several people shown with coup sticks. Coup sticks were often decorated with scalps (Garcia 1967:121), indicators of violence in warfare on a tool supposedly used for nonviolent contact. Yellowstone Kelly discussed a coup-counting situation in which

> twenty-three Crows had started on a horse-stealing raid against the Sioux on the Yellowstone. They discovered two large camps of the enemy in the bad lands before reaching the Yellowstone, and succeeded in rounding up and driving off, unperceived, a number of horses . . . The Sioux discovered their presence and pursued them . . . [and] harassed them with fire from every rock, bush, and hollow in the vicinity, and when the Crows were reduced to five or six in number a charge was made by the young and untrained warriors of the camp, to whom was presented a grand opportunity of winning the aboriginal spurs and counting a first coup under the eyes and encouragement of their own people. (Quaife 1973:89)

However, coup sticks could do damage. A Blackfoot warrior hit a Nez Perce woman on the side of her face with "his coup stick with such force as to bulge the eye from its socket, leaving it completely exposed on her cheek" (Garcia 1967:363).

Scalping was a major part of northwestern Plains warfare and is often mentioned in ethnohistorical studies. Dangling multiple lines from horse bridle bits and lances in rock art are often identified as scalps (figure 2.8). All fighters in the region, including Euroamericans, scalped their enemies. Scalping is generally thought of as being done on dead bodies only, but it occasionally occurred on someone who lived. The only Euroamerican woman living at Fort Musselshell was scalped while out with two Crow women when they were attached by a party of Sioux warriors. One of the Crow women was shot through the leg, and the white woman was shot through the neck. Thinking she was dead, the Sioux warrior scalped her, but she survived (Hampton 2011:50–51). She subsequently covered her scalped head with a wig made from red rope, suggesting another option for unusual head dresses shown in rock art.

Depictions of severed heads are not common in northern Plains rock art sites (Greer and Greer 2002). A life-sized warrior at the Daly Petroglyphs (48CA58) in northeastern Wyoming is the only one we know of on the northern Plains actually to hold a severed human head (figure 2.11). In his bent right arm he holds a bow, while his bent left arm holds the head, and he has at least one arrow entering his lower leg. The head may be held at the neck, with a feather coming out of a headdress hanging down, or the warrior is holding the top of the head by the hair with blood trickling out of the wide neck. The

Figure 2.11. *Warrior panel at Daly Petroglyphs (48CA58). Person on far right holds a severed head. Images highlighted with Adobe Illustrator.*

severed head is different from those of the warrior and other large humans next to him, presumably indicating membership of a different group. Two life-sized humans next to the warrior also hold bows and arrows, and one has a breastplate. These attributes suggest that this integrated panel portrays the results of a conflict situation.

At least two inverted heads, seemingly severed and suspended as trophies, are at the Hewlett South site (48CK1544) in extreme northeastern Wyoming, and at least two others are at Medicine Creek Cave (48CK48), also in extreme northeastern Wyoming. These are alternatively interpreted as representing Spring Boy and Lodge Boy in Hidatsa-Crow and Kiowa mythology (discussion in Sundstrom et al. 2001:18–24, figure 11), but the heads are clearly detached.

Another possible decapitation panel is at the Manuel Lisa site (24YL82) in southeastern Montana near the mouth of the Bighorn River, where it enters the Yellowstone. Here at least five non-inverted heads are attached to a generally horizontal line by secondary cords (or perhaps weapons) to the tops of the heads (figure 2.12). Like the heads at the Daly Petroglyphs, these have distinctive hairstyles. Three have a single braid coming out of the top of the head, while two have several tassels coming out of the head.

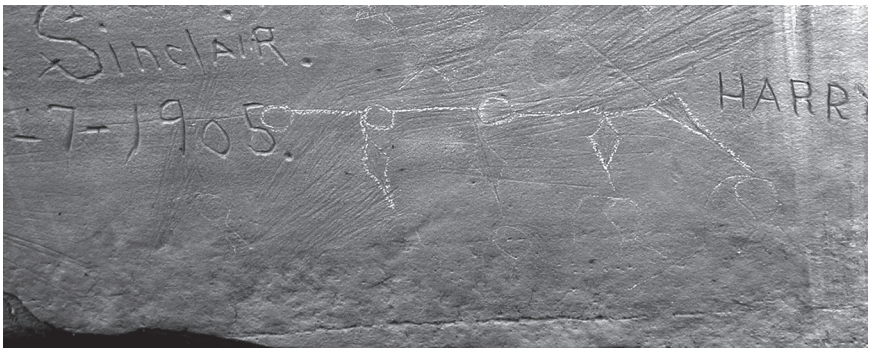

Figure 2.12. *Heads (previously chalked) at the Manuel Lisa Site (24YL82). The 1905 date is engraved over the image.*

In 2002 we suggested these multiple heads may be trophies, and instead of literal decapitation may represent coup counts (Greer and Greer 2002; Keyser 2006a:62–63). Later, in 2008, McCleary, working with modern Crow and their interpretive system, suggests that the panel may be a Crow drawing of "a series of heads of enemy men and women he [the warrior on the horse above the heads] dispatched throughout his career. The first four he killed with a diamond-shaped French trade axe known as a spontoon which was favored by the Crow, and the last he speared" (McCleary 2008a:37–38). McCleary's modern informant prefers that these are heads of dead people and not people on whom coup was counted and lived to tell about it. Although the heads at the Daly Petroglyphs and Manuel Lisa site do not have lines from the severed neck that represent blood dripping down, neither do they have attached bodies, which indicates that the person making the drawing deliberately wanted to show that the head was separated. Although we do not know if the artist was simply indicating that the people are dead, or if their heads were actually removed from their bodies at the time of death, in a battle between Crow and Blackfeet in the Big Horn Basin of western Wyoming in 1834, Zenas Leonard, who was traveling with the Crow, witnessed a decapitation associated with a battle:

> After they had finished tormenting the living, which was not done until there was no more to kill, they commenced cutting off the heads of the mangled bodies, which were hoisted on the ends of poles and carried about, and afterwards dashed them against trees, rock, &c. leaving them on the plain to be devoured by wild beasts. (Quaife 1978:246)

CONCLUSIONS

Ethnohistorical interpretations for the northwestern Plains show groups were composed of people from different tribes who would party together and then battle one another. At the time of contact many groups were using the Musselshell River drainage area, and it is highly probable that all these different groups were making rock art in the area. Ethnographies, histories written by short-term visitors, and drawings in later robe and ledger art provide information useful for image identification and inventory lists of tribes present in the area. But due to the changing cultural complexity of the region and the intensive cultural mixing, which is best described for the Musselshell country, confidence wanes when trying to link the majority of images, panels, or recurring artistic attributes with specific tribes. For instance, the seven armored horses along the Musselshell show seven different styles and are separated on the landscape, suggesting all were made by different people. Although we know the Shoshoni used horse armor as late as 1805, as observed by Lewis and Clark (Coues 1987:561), they were not the only tribe to use it (Secoy 1953). The Musselshell horses could have been put on the wall anytime from the late 1600s to the early 1800s and could have been placed there by people who owned the armor or people who observed others using it. When people of this region began drawing on robes and ledgers, it was easier to depict more detail so drawings found on these portable objects could clearly portray their tribe's particular item of clothing (leggings, moccasins, breechcloth, or necklace) or hairstyle (hair extensions, braids, roach, etc.), but that was more difficult to do on rock and often was not included, although there are exceptions. At the Horned Headgear site on the Musselshell, a horse and rider were drawn in such detail that when Loendorf compared them with a Catlin painting he felt confident in assigning a Crow affiliation to the image, although he suggests the artist was an Assiniboine based on the detailed headdress and clothing of the person counting coup on the horse and rider, whom he believes is the artist's self-portrait (Loendorf 2012:11–13). Thus, in order to determine tribal affiliation, style differences of costume, hair, accoutrements, and other details are needed (Keyser and Klassen 2003; Loendorf 2012). Without these clues, either because the author never included them (as such information was perceived to be artistically unnecessary), or (less likely) because details have not survived weathering of the panel, it is difficult to assign images an ethnic identity in an area where there is so much interaction and mixing of groups, as there was along the Musselshell from contact to reservation times.

Rock art evidence indicates that prior to the introduction of the bow about AD 500, weapons are scarce in northwestern Plains rock art. Before that date

just as much rock art was being made (based on the number of sites recorded), but weapons portrayal was not important—atlatl figures (and even clubs) were not a topic of interest, although common in the Southwest and Great Basin. In addition, there are no identified portrayals of Archaic warfare, and the lack of intensive warfare during that time period is generally supported by skeletal evidence. After the introduction of the bow, burial sites show increased violent deaths, and weapons become prevalent in rock art. After the widespread dissemination of horses and guns in the 1700s, there is an obvious increase in warfare reflected in rock art in Wyoming and Montana, with such images as warfare scenes, interpersonal conflict, armored horses, shield-bearing warriors with weapons, and people pierced with spears and arrows. By the 1800s when traders, trappers, and the military begin recording everyday Indian life in the region, warfare was popular and familiar. However, counts of weapons and warfare images in rock art, and supported by direct observation by people living on a daily basis together with Indians (such as Andrew Garcia, Zenas Leonard, C. W. Lee, and Jim Baker), show that conflict occurred here mainly in Plains settings and in pine and juniper parklands. Warfare imagery and by extension native warfare seldom occur in mountain settings of high elevations, limestone caves, deep snow, and denser forests (Greer and Greer 2008a, 2008b). The main impetus for change was almost certainly the infusion of new groups with different practices and beliefs, and the introduction of deadlier weapons most efficient in open environments. Limestone mountains did not lose their emotional appeal as ceremonial or story-telling centers, but the sandstone-dominated plains became the main focus for rock art and its portrayal of the growing cultural importance of weapons aimed at other people. Warfare was fought by several tribes in this area to defend their territory (especially from the large groups of incoming Sioux), as revenge for killing and mutilating their fellow tribal members, to obtain goods they could not afford through trade, and for prestige, which for these groups meant elevation of status mainly through horse acquisition and coup counting. Although most battles involved small war parties of fewer than 50 people, and there was a quest for individual status, the overall view of the group being attacked was that of defending their people and preserving the honor of their tribe. Thus, the skirmishes, although small, reflected on the group as a whole, and victory benefited them all.

In conclusion, although tribal differences become harder to discern in rock art after European contact, historical documents by those living their daily life year after year with the Indians and marrying into their families provide insight into rock art interpretation different from documents produced by

formal ethnographers and visitors, both of which by the 1800s viewed Indians as living museums and curiosities. Historical documents written by long-term residents come closer to providing an emic view of tribal societies making the rock art, and their reports on what was actually happening keep us from becoming too confident in assigning an explanation to a rock art panel without considering other alternatives. The diaries and narratives of area residents show that most warfare-themed rock art of Montana and Wyoming cannot be identified to a particular tribe involved in the activity because (1) there are far too many tribes in the area at the time of contact, and (2) most of the rock art dealing with warfare is too generic in how it portrays individuals, horses, and war-related activities. However, for rock art images with more detail, the descriptions and drawings by visitors and ethnographers that noted the particulars of hair, clothing, and accoutrements of the people they encountered are invaluable when attempting to make a tribal identification of these pictographs and petroglyphs. Likewise, records of early traders and trappers can offer suggestions for more broad-spectrum explanations for warfare imagery, such as that the person leading warriors into battle may not necessarily be a man when no gender is shown for the people depicted on the panel. Our consideration of whether Contact-period warfare as inferred from rock art is a reflection of warfare as portrayed in historical documents shows that these sources provide different views of conflict interactions and taken together can provide a more complete understanding of life at that time. Thus, we must continue to reevaluate our field observations of rock art panels of warfare relative to eyewitness accounts by people who lived during those times because the combined record increases our knowledge about how and why warfare was conducted in this area during that time.

3

Warriors and Weapons

Late Prehistoric/ Protohistoric–Period Warfare in Bear Gulch Rock Art

James D. Keyser

Until recently, our knowledge of pre-1750 northern Plains Indian warriors' armaments, accoutrements, and tactics was limited to the recollections of Sahkomaupee, the journals of Verendrye, and bits of data from fortified Middle Missouri villages and a few northern Plains burials (Burpee 1927; Kendell, chapter 13, this volume; Lehmer 1971:107–128; McGinnis 1990; Owsley et al. 1977; Scheiber 2008; Thompson 1962; Wood 1976; Zimmerman and Bradley 1993; Zimmerman and Whitten 1980). Yet, spanning a period of about 300 years, from AD 1450 to 1750, the northern Plains rock art record is replete with illustrations of warriors, their equipment, and their battles (Greer and Greer, chapter 2, this volume), and it is from these that we are beginning to understand much more about how and why these warriors fought one another and with what they were armed.

Northwestern Plains rock art scholars have been interested in the shield-bearing and V-neck warrior motifs (figure 3.1), as hallmarks of northwestern Plains warrior art, for more than 50 years (Conner 1962a, 1962b, 1984; Conner and Conner 1971; Dewdney 1964; Ewers 1975:399; Gebhard 1966; Keyser 1975, 1977a, 1984, 2004a; Keyser and Klassen 2001:191–221; Loendorf 1990, 2009; Loendorf and White 2010; Magne and Klassen 1991; Mulloy 1958; Ray 2008). Frequently shown with weapons, headdresses, heraldic shield designs, and other battle accoutrements, these are the two most common motifs in the Ceremonial-tradition

DOI: 10.5876/9781607326700.c003

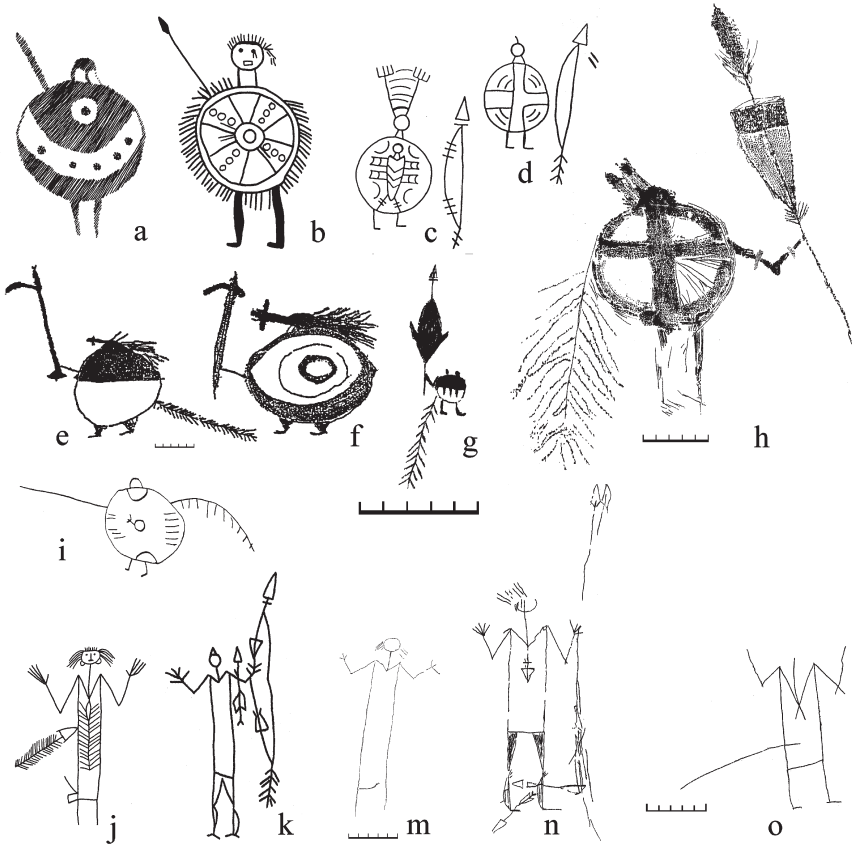

Figure 3.1. *Shield-bearing and V-neck warriors from various northern Plains sites. Note weaponry, accoutrements, and heraldic shield designs. (a) Hilej; (b) Decker; (c–d, k) Writing-on-Stone; (e–h, m–o) Bear Gulch (n and o are composed in a combat scene); (i) Castle Gardens; (j) Bighorn County. (See figure 3.2 for site locations.) Scales are 5 cm.*

art that dominated the Late Prehistoric/Protohistoric–period northwestern Plains rock art record (Keyser 2004a:58–66; Keyser and Klassen 2001:190–256). Surprisingly, however, as of yet only a few studies (Greer and Greer, chapter 2, this volume; Greer et al. 2010; Keyser 1979; Keyser et al. 2006; Loendorf and Porsche 1985:78–85) have been oriented primarily toward elucidating what rock art motifs and compositions are actually trying to tell us about how the artists viewed warfare and why they participated in it.

Fortunately, recent recording of the Bear Gulch and Atherton Canyon rock art sites in central Montana has allowed our research team to expand an initial interest in this subject, and we find ourselves in the enviable position of having sufficient quantity and detail of data about this particular period to provide fodder for many such discussions. Although these have just recently begun (e.g., Kaiser et al. 2010; Keyser 2004b, 2006a, 2007a, 2008a, 2008b, 2010; Keyser and Kaiser 2010; Keyser et al. 2012) additional research will likely continue for decades. Coupled with renewed interest in the indications of warfare evidenced in Plains skeletal populations (e.g., Gill and Weathermon 2008; Owsley and Bruwelheide 2008; Scheiber 2008) and the focus on warfare provided by the chapters in this volume, these newly acquired Plains rock art data offer an unparalleled opportunity to increase our understanding of the genesis and evolution of the Plains warfare complex and many of its various components. This would come as welcome news to those pioneering anthropologists who laid the groundwork for the topic in the years before and just after World War II (Ewers 1975; Grinnell 1910; Lewis 1942; Mishkin 1940; Newcomb 1950; Secoy 1953; Smith 1938, 1951).

THE SITES

Bear Gulch and Atherton Canyon (figure 3.2) are the two most extensive Plains rock art site complexes yet discovered and recorded, containing, respectively, more than 5,000 and 1,000 distinct elements (Keyser et al. 2012). In number of images and complexity both Bear Gulch and Atherton Canyon are larger than any other single northwestern Plains rock art site and both are nearly equal to or larger than rock art site complexes at Writing-on-Stone, Verdigris Coulee, and the North Cave Hills, each of which contain from 10 to 50 individual sites (Keyser 1977b, 1984; Klassen 1995; Sundstrom 2004).[1]

The primary motif at both sites is the shield-bearing warrior, with 856 at Bear Gulch and 168 at Atherton Canyon. This total of 1,024 is more than three times greater than all other known shield-bearing warriors so far recorded on the northwestern Plains (Keyser 2006b).[2] Of these 1,024 images, more than 960 are part of the formally defined Bear Gulch–style shield-bearing warrior that represents a recognizable cultural type (Kaiser et al. 2010). A handful of armed, rectilinear, or stick-figure humans without shields are directly associated with these Bear Gulch–style shield-bearing warriors and are included in this research.

In addition to the Bear Gulch–style shield figures and associated humans, nearly 30 V-neck humans and five unique shield-bearing warriors belonging to an identifiable Blackfoot style (Keyser 2011; Keyser et al. 2012) are also drawn

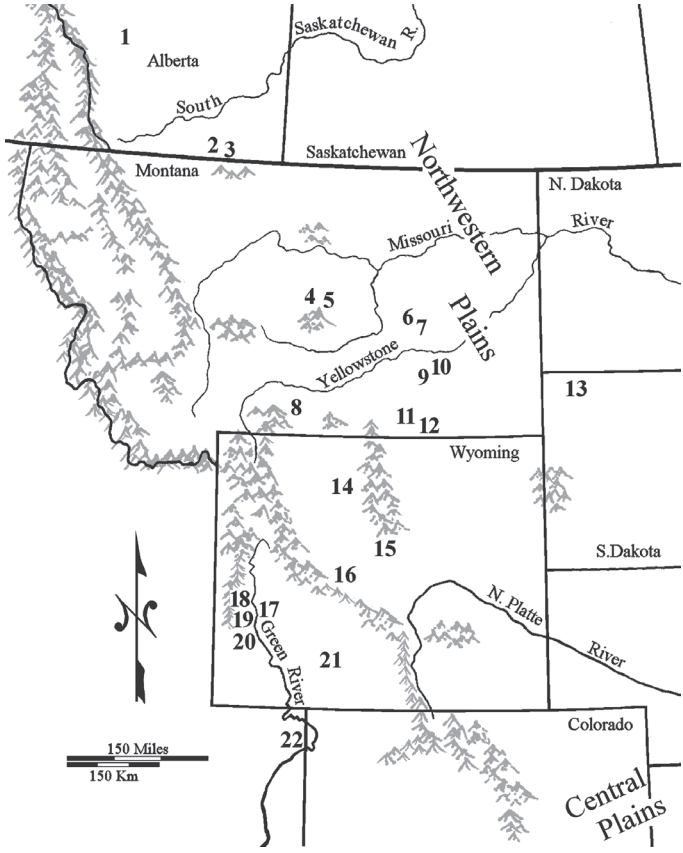

Figure 3.2. *Northwestern Plains showing locations of sites referred to in text. (1) Williams Coulee; (2) Verdigris Coulee; (3) Writing-on-Stone; (4) Bear Gulch; (5) Atherton Canyon; (6) Nordstrom-Bowen; (7) Castle Butte; (8) Hilej; (9) Recognition Rock; (10), Ellison's Rock; (11) Bighorn County; (12) Decker; (13) North Cave Hills; (14) No Water; (15) Castle Gardens; (16) Red Canyon; (17) La Barge Bluffs; (18) South Piney; (19) Names Hill; (20) Gateway; (21) Pine Canyon; (22) McKee Spring.*

at Bear Gulch. These are frequently armed and often depicted as engaged in various war-related activities.

Both sites also contain many freestanding weapons and shields, and when it can reasonably be inferred that these war-related items are associated with the other Late Prehistoric and Protohistoric imagery at the site, they are included

in this discussion. The few scenes of horse-and-gun-period combat[3] that occur at both sites have been described and discussed in considerable detail elsewhere (Keyser 2006a; Keyser et al. 2011, 2012) and are included here only as comparative material.

All Bear Gulch–style shield-bearing warriors and the few associated humans and most V-neck humans at these sites are relatively securely dated to the last two centuries of the Late Prehistoric period (AD 1450–1650) and the century-long Protohistoric period, which spans AD 1650 to 1750 (Keyser et al. 2011, 2012). Dating evidence at these sites includes radiocarbon dates on charcoal pictographs and a wooden stake associated with other rock art, radiocarbon-dated occupation levels at Bear Gulch, and information in the rock art subject matter itself, such as the size of shields and the presence of metal projectile points illustrated in the absence of horses and guns (Keyser 2010, 2011; Keyser and Kaiser 2010; Keyser et al. 2011). In addition, detailed superimposition sequences allow us to relatively date both particular styles and many individual images within this 300-year span (Kaiser et al. 2010; Keyser et al. 2011, 2012). Essentially the evidence from these sites provides an almost ideal data set for discussing warfare in the period immediately before the introduction of the horse and gun into the northwestern Plains.

WARRIOR ART AND WARFARE: BEAR GULCH AND ATHERTON CANYON

Warriors represented by shield bearers and V-neck humans at Bear Gulch and Atherton Canyon provide a rich record for the study of arms and accoutrements, battle tactics, and the motives for warfare in the Late Prehistoric and Protohistoric periods in Central Montana. In order to describe such a wealth of information this discussion is divided into two major sections: "Arms and Accoutrements" and "Battle Compositions and Tactics." Then, using the classic "direct historical approach" (e.g., Deetz 1965; Strong 1935; Wedel 1938, 1961; Wood 1967, 1969) components of each of these are compared to the rich Plains Indian ethnographic record of the horse-and-gun period to help construct a summary of what warfare was like during the 300 years immediately preceding European contact with Plains Indian cultures.

Arms and Accoutrements

Warriors at these sites are well armed with detailed representations of five basic weapons, and they wear a variety of headdresses, hairstyles, and face

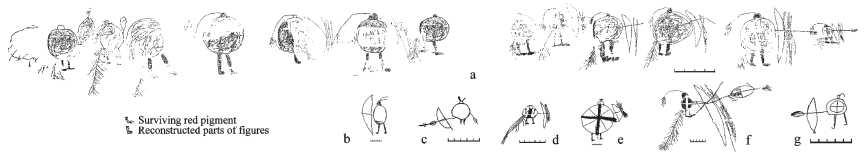

Figure 3.3. *Bowmen at Bear Gulch (a, b, d–f) and Atherton Canyon (c, g). (a) is a phalanx of 13 similarly armed, solid-variety warriors. Note that parts of warriors at left are reconstructed. Scale bars are 5 cm except for a, which is 20 cm.*

paint. In addition to weaponry and headgear, their shields are decorated with a limited suite of heraldic designs and many are further elaborated with feather bustles or medicine bundles. Several men wear animal tails attached to their moccasins or animal pelts slung over their shoulder. In addition to these accoutrements of dress, warriors' weapons are often elaborately decorated—much more than can be explained by simple function as killing tools. Each of these categories is discussed below.

Offensive Weaponry

Not surprisingly offensive weapons characteristic of our period of interest at Bear Gulch and Atherton Canyon are those typical of close combat, shock-troop warfare. The bow and arrow is the only long-range weapon portrayed, and bows are relatively much more common in the earliest subset of Bear Gulch–style shield-bearing warriors—solidly-colored, Solid variety warriors (figure 3.3a)—most of whom are arranged in ranks of men portrayed as marching off to war (Keyser et al. 2012). These bows are long, single-curve weapons, and most bowmen are equipped with several arrows. Combined with their large, full-body-size shields we can readily assume that these bowmen's role would likely have been analogous to that of medieval archers who rained arrows down on enemy troops massed in an opposing phalanx formation.

This sort of battle formation and such tactics are clearly described by Sahkomaupee for some of the latest battles in pre-horse/pre-gun times (Lewis 1942:47–48; Secoy 1992:34–37). However, the paucity of bowmen in Bear Gulch–style compositions, where bows account for only 38 of the nearly 660 shield-bearing warriors' weapons (6%), suggests that archers were somewhat specialized soldiers.[4] Furthermore, their much greater occurrence in the earliest Bear Gulch–style imagery suggests that, contrary to Sahkomaupee's recollections, this weapon was falling out of favor in the latest decades of the Late Prehistoric period and the Protohistoric period, at least for the tribal

groups responsible for drawing Bear Gulch–style imagery. Interestingly, only occasional shield-bearing warriors armed with clubs and lances accompany the early groups of archers, but these weapons become much more popular for later warriors.

The primary Bear Gulch–style weapons, accounting for more than 90 percent of the armed shield-bearing warriors, are lances, maces, and clubs, in that order of popularity. Lances or spears (figure 3.4) are by far the most common offensive weapon for Late Prehistoric and Protohistoric combatants at these two sites, with 441 warriors so armed. An additional 87 lances, all portrayed with a characteristic point and often a weapon flag identical to those on shield-bearing warriors' weapons, are drawn as freestanding examples. About 30 percent of spears have a large triangular or lanceolate point, 34 of which (figure 3.4d, e, j, k, o, p, r) are identified as metal blades (Keyser and Kaiser 2010). Nearly 100 other lances have tips indicated by a simple crosspiece drawn perpendicular to the spear shaft or a small "brush-like" attachment at the tip composed of three to a dozen forward-pointing lines. Exactly what type of killing tip was meant by these latter two depictions is not clear, but some of the brush-like tips could have been a multiple-pointed leister type weapon (though there are neither archaeological nor ethnographic examples of such weapons on the Plains). Some lances are the most detailed, finely drawn examples in Plains rock art, complete with carefully drawn points and attachments of exquisitely detailed feather flags and fluffs (figures 3.1h, 3.4j).

Other than guns, which were obviously a Historic-period introduction, lances are the most common weapon in both Late Prehistoric– and Historic-period rock art (Keyser 1977a:40–41, 1984:16; Keyser and Klassen 2001; Keyser and Poetschat 2005:26) and also in robe and ledger art from the Historic period (Afton et al. 1997; Bates et al. 2003). In Protohistoric-period rock art, lances are by far the most common weapons depicted (Keyser 2010:91–92), and they are the weapon of choice for more than 40 percent of all armed shield-bearing warriors from other Plains sites (Keyser 2006b). The general observation that lances were more common than bows and arrows for both Late Prehistoric– and Protohistoric-period warriors, as evidenced in rock art all across the northwestern Plains, is likewise at variance with the emphasis given the bow and arrow in Sahkomaupee's account, suggesting that his experiences were either slightly anomalous compared to a broader regional pattern, or that the emphasis was more a factor of Thompson's reporting than the actual situation.

The second-most-common weapon at these sites is the spike mace—a club-like halberd-type implement whose shaft is studded near its upper,

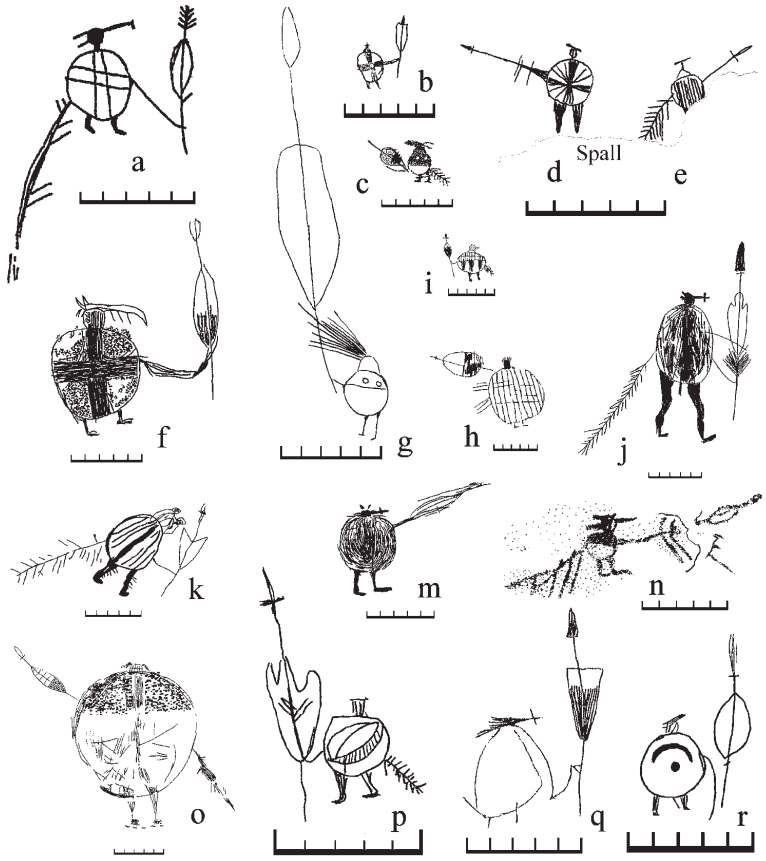

Figure 3.4. *Shield-bearing warriors armed with lances: (a–f, i, j, n, p–r) Bear Gulch; (g, h, k, m, o) Atherton Canyon. Scale bars are 5 cm. Note bundles worn by a, o; bustles by c, e, i, j, k, n, p; and wolf hats by a, c, f, j, m, n, q, r.*

occasionally slightly bulbous, end with one or two long curved spikes, presumably elk- or deer-antler tines (figure 3.5). Ninety such weapons are split evenly between single- and double-spike varieties, and 84 of these are carried by shield-bearing warriors or other associated humans. Often the spike or spikes show a marked downward curve, but others project nearly straight out from the shaft. Some maces are drawn about the length of the clubs commonly carried by other shield-bearing warriors at these sites, but others are significantly longer, approaching almost 2 m in length (as estimated relative to the anatomical height of the warrior), similar to the size of a lance. Six

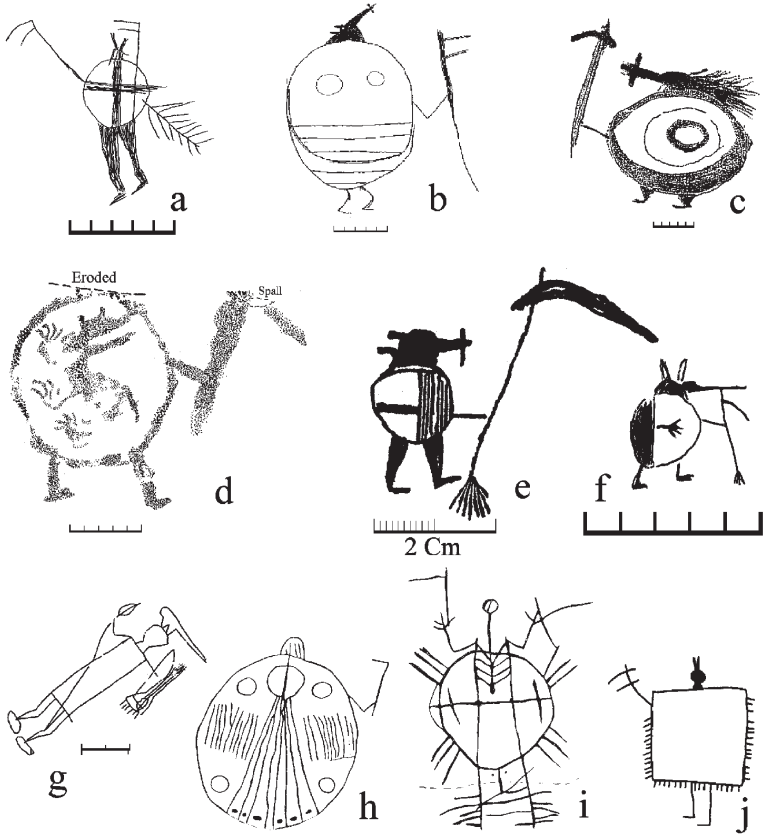

Figure 3.5. *Spike maces are a common Late Prehistoric- and Protohistoric-period weapon: (a–g) Bear Gulch; (h–i) North Cave Hills; (j) Red Canyon. Note tabs or tassels on e and f, while g shows a floating weapon counting coup by striking the head of a warrior armed with spear and bow. Scale bars are 5 cm except e.*

examples have a tassel or fringed tab pendant from their bottom (figure 3.5e, f), and one has a clearly drawn knob on its lower end (figure 3.1e).

Most maces are brandished by shield-bearing warriors, but one of the most carefully drawn examples is embedded in the head of a vanquished enemy (figure 3.5g). In one phalanx of 14 warriors (12 of whom carry shields), eight men brandish such maces, while the only other armed members of the party are two lancers and a third man with a club (figure 3.6b).

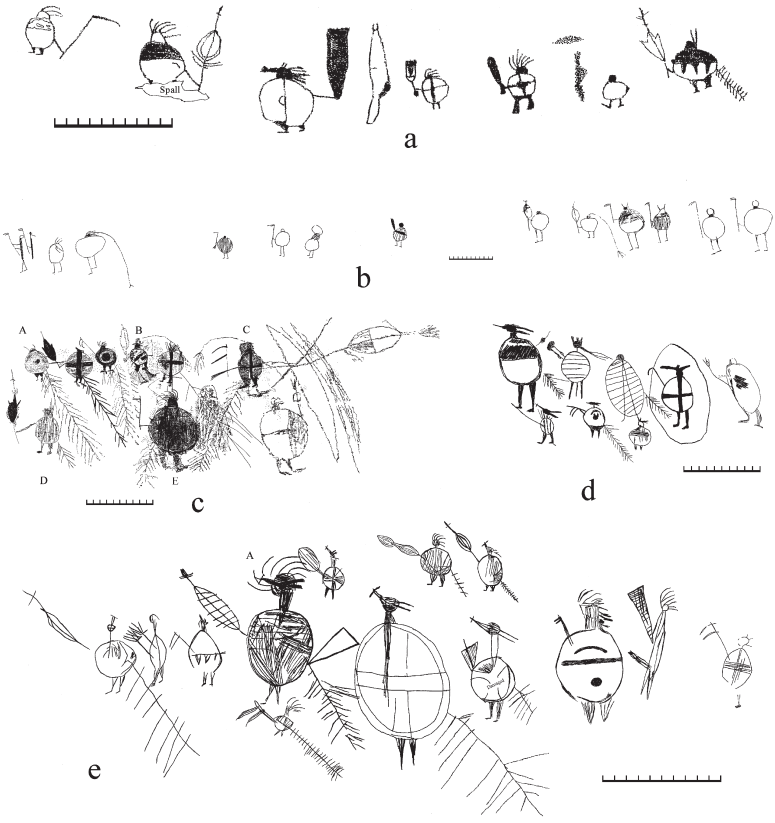

Figure 3.6. *Ranks of warriors grouped and ready for battle are common in the Late Prehistoric and Protohistoric-period rock art at Bear Gulch. Note the variety of weapons and headdresses. Labels a and b show single phalanxes, while c–e show warriors more in a cluster. Note that each phalanx has at least three different weapons. Warriors indicated by capital letters (A–E in c and A in e) are combination figures consisting of the original warrior and a second warrior drawn as a direct conjoined overlay. Scale bars are 10 cm.*

Spike maces are occasionally illustrated in other Late Prehistoric– and Protohistoric-period rock art, usually wielded by shield-bearing warriors (e.g., Francis and Loendorf 2002:149; Fredlund 1993:43; Keyser 1977a:figure 13b, d, 14a; 1984:figure 3a,c; 2004a:21; 2006b; Keyser and Klassen 2001:196, 199, 246; Keyser and Poetschat 2008:46, 59; Mulloy 1958:figure 42, numbers 1,

5, 7). Most are single-spike weapons, but several are clearly two-spike maces (figures 3.5a–b, 3.6b). They are not illustrated in ledger drawings or on buffalo robes, but they do occur in ethnographic and archaeological collections. The best-documented example is a club (figure 3.7c) illustrated by Bodmer that has a decorated wooden handle and an elk-antler spike carved in the form of a bird's head (Hunt et al. 1984:334).[5] An archaeological specimen, a 70-cm-long proximal end of an elk-antler main beam with a sharpened bez tine (the second tine above the skull), was found in the vicinity of several high-altitude bighorn-sheep traps and was likely a mountain sheep–killing club (Frison 2004:161; Kornfeld et al. 2010:309). Prince Maximilian also noted elk-antler war clubs used by the Gros Ventre Indians (Hunt et al. 1984:334) and somewhat similarly shaped war clubs with metal spikes were made and used later in the historic period (Taylor 1994:163). Although it is possible that some of those illustrated at Bear Gulch and Atherton Canyon had metal spikes, the curvature of most spikes suggests that they were deer- or elk-antler tines.

Clubs, carried by 71 shield-bearing warriors and another associated human occur as two primary types. Most common are baseball bat–shaped weapons, which account for nearly half of the illustrated examples (figure 3.6a, 3.8c–f). These are shown either projecting out at an angle from behind the warrior's shield or held vertically in his hand just outside the shield perimeter. Some are quite elaborate, with a knob on the handle (figures 3.6a, 3.8f), a tassel or feathers at the top, and decorative lines drawn along the weapon's barrel. Broad, blade-like, triangular clubs (figures 3.6a, 3.8a) are also quite common. These show a distinct triangular shape, sometimes with a round knob at the bottom and lines decorating the club's blade (figure 3.8a). A few other clubs—primarily the pogamoggan type with a small stone head bound at the end of a flexible shaft—are carried by fewer than 10 shield-bearing warriors (figure 3.8b).

War clubs of various sizes and shapes were common among Historic-period Plains Indians (Catlin 1973 [1844]:V.1:figures 99, 101; Hunt et al. 1984:334–338; Penney 1992:228–229; C. Taylor 2001:14–23; Thomas and Ronnefeldt 1976:20). Those drawn at Bear Gulch and Atherton Canyon indicate clearly that their origins extend back into the Late Prehistoric and Protohistoric periods. The clearly illustrated baseball bat–type is much more common among these rock art warriors than in later Historic-period paintings or ethnographic collections, but at least three archaeological specimens (e.g., figure 3.9) found near bighorn sheep traps in Wyoming and identified as a mountain sheep–killing clubs (Frison 2004:161; Kornfeld et al. 2010:309) are a nearly perfect match for several illustrated rock art clubs (cf. Figures 3.6a, 3.8f).

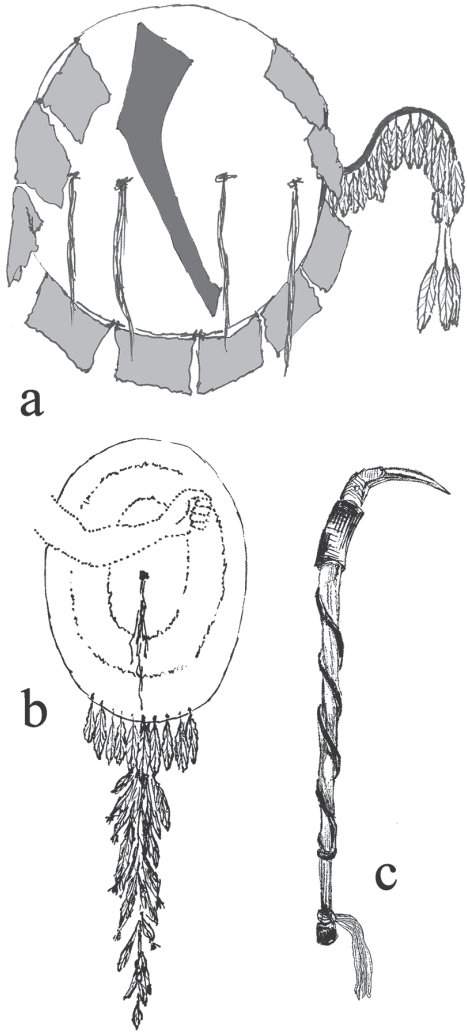

Figure 3.7. *Shields and clubs from the Upper Missouri River region drawn by Karl Bodmer (a, c) and George Catlin (b). Note: (a) erected buffalo bull's tail bustle (light gray-colored rectangular objects around margin of shield are flaps of red cloth or red-stained hide); (b) feather bustle pendant from a shield; and (c) one-spike mace made of wooden handle with an elk-antler tine spike. Images redrawn from Bodmer (Hunt et al. 1984) and Catlin (1973 [1844]).*

The only other notable weapons used by these Late Prehistoric/Protohistoric–period warriors are the bow-spear (figure 3.10a, b) and crook-neck coup-stick (figure 3.10c-e). Held by two shield bearers and shown four times in one detailed Protohistoric-period tally of a warrior's coups, bow-spears are long, elaborately decorated, single-curve weapons with large triangular points affixed to one end and a feathered tab or trailer pendant from the other. Four examples of a single bow-spear drawn touching three shield-bearing warriors

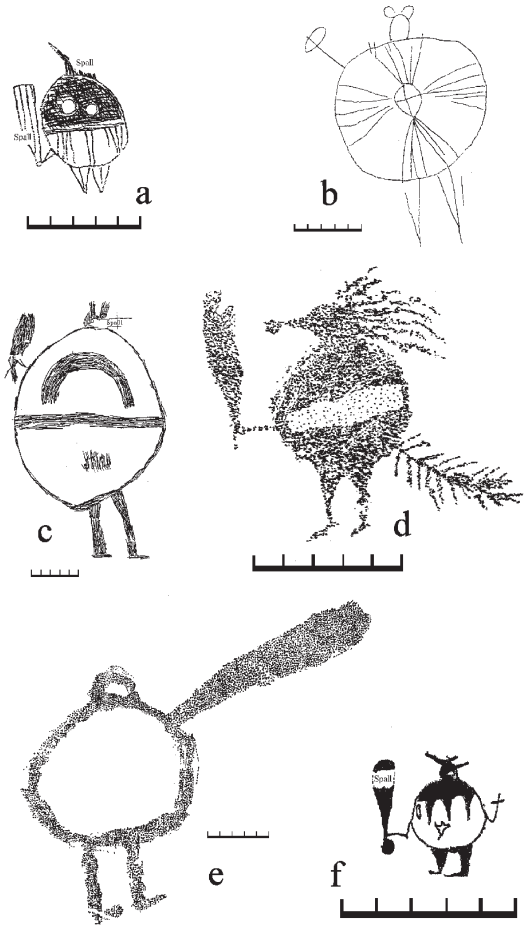

Figure 3.8. *Clubs are also a common weapon for Late Prehistoric–period warriors at Bear Gulch (b–f) and Atherton Canyon (a). Note three types of club: triangular (a), pogamoggan (b), and baseball bat–shaped (c–f).*

and floating over the heads of two V-neck women in the coup-count tally (Keyser 2008b:68; 2011) each have fluffs of feathers and additional streamers attached to the bow stave above and below the handgrip. A distinct quillon barb at one basal corner of the illustrated lance point demonstrates it was a metal blade (Keyser and Kaiser 2010). The bow-spear portrayal is a classic example of the floating weapon convention in the Biographic art lexicon (Keyser 1987a; 2006a; 2008b:69–71).

Figure 3.9. *Wooden club from Wyoming found associated with a mountain sheep trap. Note shape and knob on handle that resemble clubs used by Bear Gulch–style shield-bearing warriors. Photograph courtesy of George Frison.*

Rock art bow-spears are illustrated at only six other Plains sites from Writing-on-Stone, Alberta, to the Texas Panhandle (Keyser 2008b).[6] The floating bow-spears in the Bear Gulch coup-count tally are nearly identical to three at Writing-on-Stone; and all have been identified as part of a Protohistoric-period Blackfoot tribal style (Brownstone 2001a:260–261; Keyser 2006a:71; 2008b:71; 2011; Keyser and Cowdrey 2008:21–23). In Historic times the bow-spear was thought to have potent supernatural power, and versions of the weapon served as emblems of leadership in various military societies of several Plains tribes (Keyser 2008b).

Four "crooked lance" coup sticks (figure 3.10c–e) are associated with Bear Gulch–style shield bearers—three carried by warriors and a fourth drawn as a floating weapon counting coup on another warrior. All are clearly depicted crook-neck staffs, commonly shown in Historic-period northwestern Plains robe and ledger art (Afton et al. 1997:219; Berlo 1996:103, 166, 201; Horse Capture et al. 1993:105; Maurer 1992:189, 223, 226, 235, 241, 253) and occasionally in rock art (Keyser and Cowdrey 2008:28; Keyser and Mitchell 2000:27, 30). Contrary to most of those drawn in Historic-period art, none of these four is decorated in any fashion.

Defensive Weaponry: The Shield

The only defensive weapon shown in the rock art under consideration at these sites is the full-body-size shield, carried by 1,024 shield-bearing warriors (figures 3.1, 3.3, 3.4–3.6, 3.8, 3.11a–f) and drawn as another 146 freestanding images. When the size of these round shields can be assessed against the height of the warriors carrying them, they measure between 80 and 140 cm (30–55 in) in diameter (Keyser 2010). More than 750 of these show heraldic designs, including both geometric and representational images. Simple counts

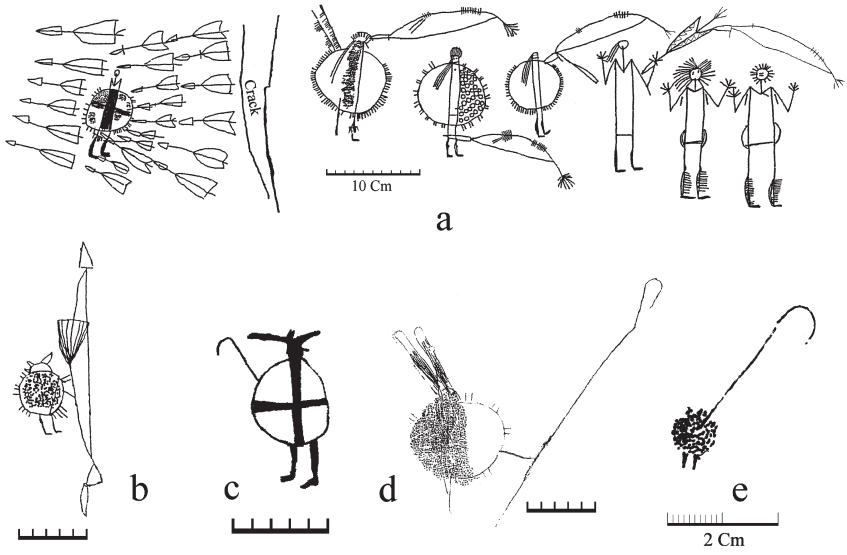

Figure 3.10. *Bow-spears and coup sticks, although uncommon, do occur as Late Prehistoric/Protohistoric–period weaponry. Note that a is a coup-count tally with four examples of the same bow-spear counting coup on enemy warriors and capturing two enemy women (at far right). The male warrior between the last shield figure and the two women is coup-struck on his upper arm by a large, very detailed arrow or spear with outsized fletching. Scale bars are 5 cm except a and e.*

of basic meaningful units (cf. Nagy 1994) show that shield heraldry among the group(s) that drew these figures was based primarily on geometric forms (Keyser and Kaiser 2014). Sometimes this is simply a division of the shield's circular field, but more often it is a distinctive geometric element drawn to span the face of the shield. The cross is the most common such element, comprising 30 percent of all geometric designs, and has the most variations.

Representational images comprise only about 17 percent of heraldic designs and occur as five basic meaningful units, including various animals or birds, eyes, teeth, and the Hand of God motif. Bears are the most common recognizable animal design and occur in two forms—the Bear Coming Out and the Standing Bear motifs (figures 3.3d, 3.5d)—both of which are common in Historic-period shield heraldry (Keyser 2004b; Keyser and Kaiser 2014). The Hand of God motif (figure 3.5f) shows a human-like arm and hand reaching

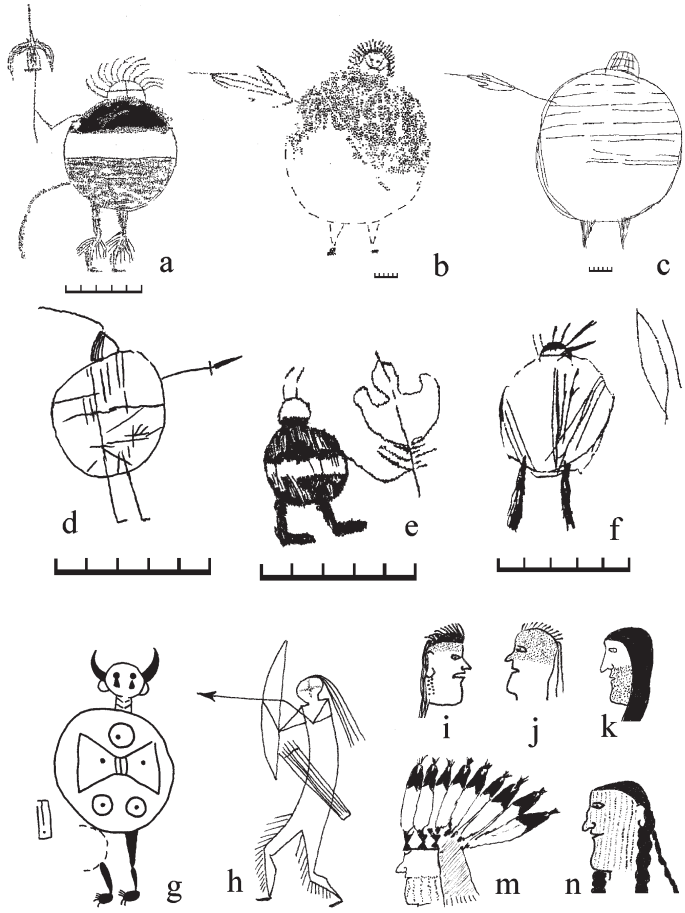

Figure 3.11. *Face paint is a common accoutrement for Bear Gulch (a–c, e–f) and Atherton Canyon (d) shield-bearing warriors. Tear streaks on shield-bearing warrior in North Cave Hills (g) is the only type of facial marking drawn on shield-bearing warriors elsewhere in Plains rock art. All types of face paint at Atherton Canyon and Bear Gulch can be duplicated in robe art (h) and ledger art (i–n). Scale bars are 5 cm.*

out from the darker half of the shield into its lighter half to symbolize the intervention of a being reaching out from the supernatural realm to influence the secular world and assist the shield owner in vanquishing his enemies (Keyser and Kaiser 2014).[7]

These full-body shields are rarely fringed, but 190 examples have a feather bustle extending out horizontally or drooping downward from one lower quadrant of the shield (figure 3.1e, g, h). An additional 15 shields have a small weasel- to fox-sized animal-skin medicine bundle attached in lieu of a bustle (figure 3.4a, o).

Accoutrements of Dress

Five categories of ritual dress characterize Bear Gulch and Atherton Canyon shield-bearing warriors (table 3.1), but only one of these—headdresses and hair styles—is shared with V-neck humans. In addition to head gear, other items include—in order of their relative frequency—feather bustles, face paint, animal-skin medicine bundles, and animal tails attached to the heels of moccasins or to garters worn at the knees.

HEADDRESSES AND HAIRSTYLES

More than 635 human figures, including both women and men and V-neck humans and shield-bearing warriors, wear headdresses or hairstyles. Multiple examples of six distinctive headdresses are recorded and eight different hairstyles can be distinguished. Headdresses illustrated multiple times include feathers in many different configurations, bison-horn war bonnet, wolf hat, "sheep horns," and a tall bishop's mitre–type hat. Recognizable hairstyles include roach, scalplock, bear's ears, hair extensions, pompadour, long hair, mullet, and a sun-ray hairdo that appears to represent "disheveled hair" used to indicate women. In fact, some of these, such as the roach or bear's ears could represent either a headdress or a hairstyle, depending on whether the headgear was a separate attachment or simply a way of cutting or wearing the hair. Of these, the roach, wolf hat, scalplock, and feather headdress of various types are worn by more than 50 warriors each.

Most common at these sites is the roach, worn in three different ways by nearly 225 warriors (figures 3.4h–i; 3.11a–b); usually as a series of short, similar length, evenly spaced, curved lines crowning the top of the warrior's head and often arching down over one side nearly to the neck as if illustrated in side profile. Other roaches consist of either short, straight, evenly spaced rays atop the head and arching down around one quadrant, or a "flat top" hairstyle shown as a series of relatively evenly spaced, short, straight, vertical lines standing only atop the head. This roach motif could represent either a "Mohawk" hairstyle where the shaved sides of the head leave only a crest of hair standing from the forehead back to the neck, or a roach headdress in the form of a crest made of stiff animal hair worn as a cap or hair attachment. Both the hairstyle

Table 3.1. Accoutrements of Dress and Weapon Decorations.

Accoutrements of Dress	*Bear Gulch*	*Atherton Canyon*
Headdresses/Hairstyles		
Hair roach	192	32
Wolf hat	124	24
Feathers	92	12
Scalplock	39	8
Scalplock with tassel	15	
Roach & scalplock	5	1
Bear's ears/Scalplock	2	
Bear's ears	20	2
Disheveled/Sun-ray	4	
Bison-horn bonnet	11	1
Mountain-sheep horns	4	11
Bishop's mitre	5	
Pompadour	1	
Pompadour/Long hair	2	
Long hair	3	
Hair extensions	2	
Mullet	4	
Other	21	3
Bustle	161	29
Face Paint	86	17
Bundles and Pelts		
Animal bundle	13	4
Bird bundle	2	
Animal pelt	5	
Moccasin Tails	14	1
Knee Tails	5	1
Weapon Decorations		
Weapon flag	316	58
Weapon fluff	65	6
Weapon tab	23	4

and headdress were common in Historic times (Bates et al. 2003:157; Keyser 2004a:103; Mails 1973:300; Maurer 1992:144).

The roach is occasionally illustrated in Plains rock art; most often worn by shield-bearing warriors (Keyser 2006b; Keyser and Klassen 2001:233, 240; Keyser and Poetschat 2009:11, 34). At Writing-on-Stone it is worn by two shield-bearing horsemen that date—like much Bear Gulch and Atherton Canyon imagery—to the early Protohistoric period (Keyser 2010:91).

Nearly 150 warriors at Bear Gulch and Atherton Canyon wear a distinctive wolf-hat headdress (figures 3.1e-f, 3.4, 3.5), so far positively identified only at these two sites (Keyser 2007a). This characteristic headdress shows a prominent long, thin nose in combination with two ears and a cluster of lines extending behind the head that represents the wolf-skin cape hanging down the warrior's back (Keyser 2007a; Keyser et al. 2012). On 66 examples a short crosspiece is painted or scratched near the end of the nose essentially perpendicular to its long axis. Although there is a good ethnographic reference for the wolf-hat headdress (e.g., Blish and Bad Heart Bull 1967:172, 174, 177; Densmore 1918:380–381, Plates 57, 58, 66b; Ewers 1997:198; Keyser 2007a), there is no clue as to what this crosspiece might actually represent.

Just more than 100 warriors wear feather headdresses of various sorts (figures 3.1h, 3.3c, 3.4d-e), ranging from "stand-up" eagle-feather bonnets, much like those typically worn by Historic-period Blackfeet warriors (Keyser 2004a:6), to single or double feathers worn upright in their hair, to a feather worn horizontally in the hair atop the warrior's head. This wide variety of arrangements corresponds to other Late Prehistoric/Protohistoric–period rock art imagery (Keyser and Klassen 2001) and closely mimics the almost limitless ways in which Historic Plains warriors wore feathers, either as formal headdresses or simply tied into various places in their hair (e.g., Mails 1973; Taylor 1975; Thomas and Ronnefeldt 1976). Interestingly, the stereotypical Plains feathered war bonnet with feathered trailer is not present in the precontact rock art at either site.

A scalplock, shown as a single line extending up and back from the top of the warrior's head and then drooping down toward the ground, is worn by 64 shield-bearing warriors and 5 other humans at Bear Gulch and Atherton Canyon (figures 3.3a, f–g, 3.6b). This almost certainly represents a braid, and one specialized variety terminates in a tassel of short lines that represents either unbraided hair or feathers or streamers attached at the braid's end. The scalplock hairstyle shows a statistically significant association with the earliest, solidly painted Bear Gulch–style shield figures and serves, in part, to identify one particular cluster of these figures (Young 2010). Elsewhere on the Plains, fewer than half a dozen scalplocks are drawn in Late Prehistoric–period rock art (Keyser and Klassen

2001; Keyser 2006b), but they are much more frequent in Historic-period rock art and robe and ledger art, where they are one of the most common hairstyles (Afton et al. 1997; Bates et al. 2003; Berlo 1996; Conner and Conner 1971:figures 14, 18; Keyser 1977a:68, 71; 1996:36, 42; 2000; Keyser and Klassen 2001:197, 220, 240, 248, 252, 259, 266, 275; Keyser and Poetschat 2005:41, 98, 107, 2009:36).

At least seven other kinds of headgear are worn by multiple humans. The two most important are the bear's ears headdress and a distinctive "sun-ray" hairstyle composed of short lines coming out all around the head.

The bear's ears headdress (figures 3.1g, 3.4k), which is represented as a pair of short, round or squared ear-like knobs arising singly from each side at the top of a warrior's head, could represent either a pair of real bear's ears tied into the warrior's hair, or his own hair knotted and tied up on each side of the head to mimic this shape. In several Plains tribes, warriors who possessed bear power wore either real bear's ears or this knotted hair style (Ewers 1955b; Mails 1973:352–354; Rockwell 1991:101), and this headdress is worn in rock art by shield-bearing warriors and a few other humans across the northwestern Plains (Francis 2007:219; Keyser 2004a:112; Mulloy 1958:126, 130).

The sun-ray hairstyle (figures 3.1o, 3.12d) at Bear Gulch represents dishevelled hair used frequently in later Plains Indian art to represent women (Greer and Keyser 2008; Horse Capture et al. 1993:85; McCleary 2008b:141–142, 248). In every Bear Gulch example it is associated with a human figure identifiable as female by the depiction of breasts and hips and/or a vulva.

Several other hairstyles drawn much less frequently at these sites are similar to later Historic-period examples. These include very long hair (sometimes combined with an upswept forehead pompadour), and hair extensions shown either as a hairnet-like attachment or dots painted along the length of a warrior's flowing tresses.

FEATHER BUSTLES

Feather bustles are drawn as a central line with multiple short lines branching from it, representing a cord or leather strip to which multiple feathers are attached. Such bustles embellish five freestanding shields and 185 shield-bearing warriors (figures 3.1, 3.3–3.5). Bustles are drawn either as single-sided examples with feathers attached only to the lower side of the main stem, or double-sided bustles that have feathers extending from both sides. One particular single-sided example (figure 3.13c) obviously represents a stiffened, erected buffalo bull's tail with feathers suspended below it, since it has exactly the same configuration as the erected tail (e.g., figure 3.8a) seen on early Historic-period Mandan shields (Thomas and Ronnefeldt 1976:212, 217).

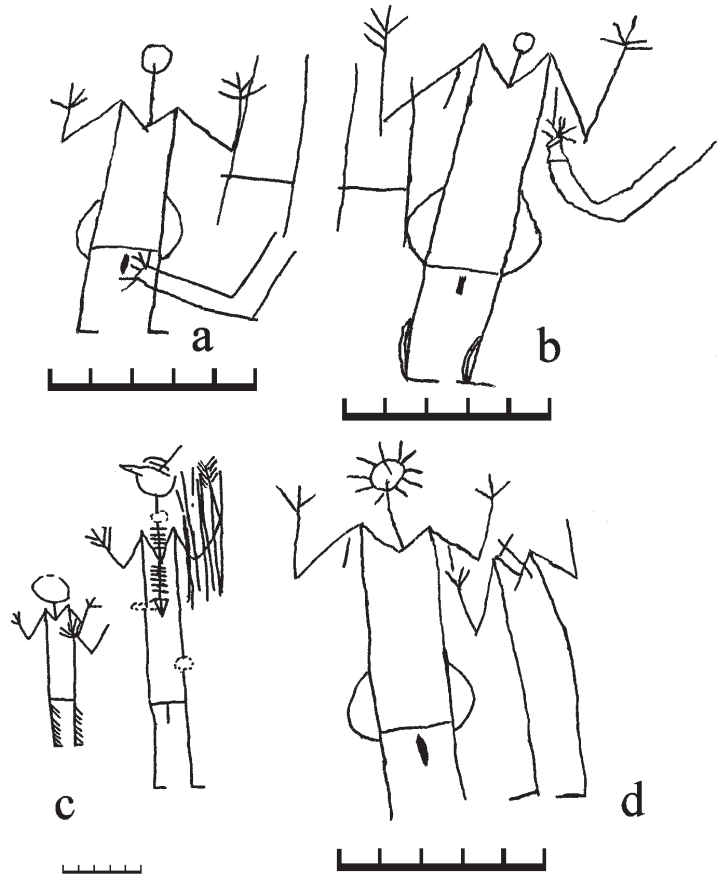

Figure 3.12. *The disembodied capture hand is a specialized convention used to show the taking of war trophies and war captives in Biographic art. Note women in a, b, and d. Scale bars are 5 cm.*

Feather bustles were a common accoutrement among Historic Indian tribes from the Southwest to the upper Missouri (Flint and Flint 2005:191; Thomas and Ronnefeldt 1976:212, 217) and were often illustrated on decorated robes and war shirts (Keyser and Brady 1993:figure 1; Maurer 1992:186; Taylor 1998:63). Rock art examples are much less common, occurring at only two other sites (Gebhard et al. 1987:figure 20; Keyser and Poetschat 2009:14, 37), but the Castle Gardens example (figure 3.11) also appears to be an erected buffalo-bull's tail.

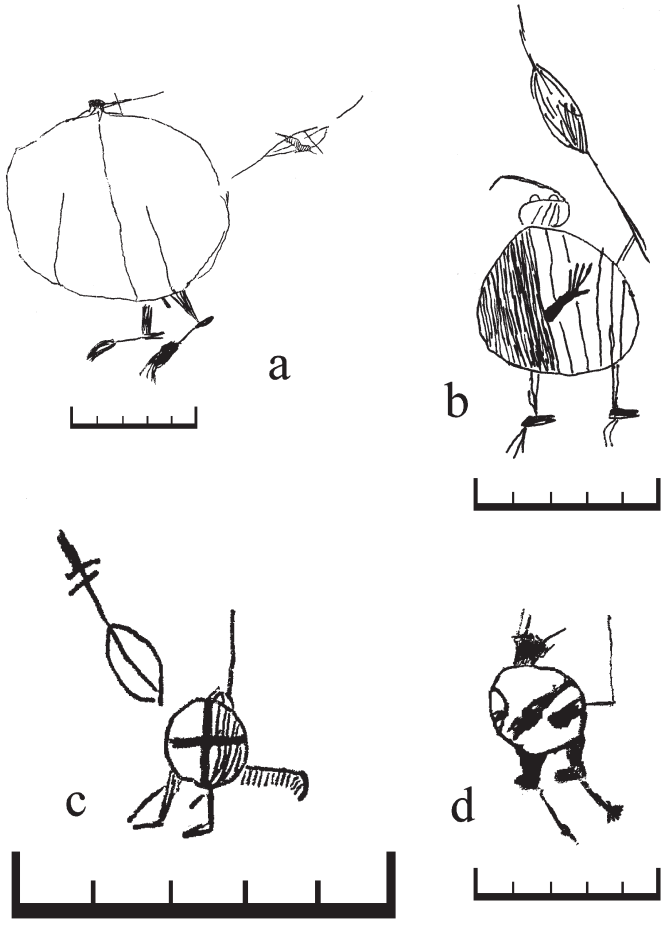

Figure 3.13. *Streamers, probably made from animal tails or other parts, are worn by these Bear Gulch shield-bearing warriors at the heels of their moccasins (a, b, d) and at their knees (c). Note erect buffalo-bull tail bustle on c and Hand of God shield design on b. Scale bars are 5 cm.*

Although sometimes illustrated as hanging from near a man's waist (Catlin 1973 [1844]:figures 223, 289; Keyser and Poetschat 2009:14), all Bear Gulch and Atherton Canyon examples are attached directly to a shield, as was more frequently illustrated (figure 3.8a, b) by Catlin (1973 [1844]:figures 172, 287; C. Taylor 2001:10) and Bodmer (Thomas and Ronnefeldt 1976:217).

FACE PAINT

Just more than 100 humans (including 88 shield-bearing warriors) at these two sites wear nine repeated face paint or tattoo designs (figure 3.11). All are simple geometric line patterns carefully drawn across the head, or sections of the head filled in solidly with pigment or scratches. The most common show the warrior's head decorated with a series of deliberately spaced vertical lines or bisected by a vertical line, but other warriors wear a cross centered on the head (figure 3.11a) or have half their head (either vertical or horizontal) solidly colored (figure 3.11 d–f). All of these patterns are duplicated in both ledger and robe art (Berlo 1996; Taylor 1994:191; 1998:13, 48–49, 62; Maurer 1992:191, 195), but face paint is not commonly illustrated elsewhere in rock art. Among other known Plains shield-bearing warriors only 16 have facial lines that might be paint or tattoos and only the tear-streak motif (figure 3.11g)—repeated on seven different warriors—is found multiple times (Keyser 2006b).

ANIMAL-SKIN MEDICINE BUNDLES

There are 24 personal medicine bundles (figures 3.3d; 3.4a, o; 3.14a, d) illustrated at Bear Gulch and Atherton Canyon, including the skins of 17 small weasel- to fox-sized animals, five fox or wolf pelts slung over a warrior's shoulder, and two bird bundles, one tied in a warrior's hair and another attached to a spear. Most small-animal-skin bundles are attached to a warrior's shield, but one is suspended from the waist of a rectangular-body human and another is freestanding.

Pelts worn by shield-bearing warriors sometimes obscure the warrior's head, and one clearly arches up overhead and extends behind (figure 3.14a). But given the well-documented and characteristic lack of Western perspective in Plains-warrior art (Ewers 1968:8–13), these were clearly intended to show animal skins slung over the shoulder as they were worn in Historic times (Keyser 2007a:65; 2008a:67–68). One bird bundle (figure 3.14d) tied in a shield-bearer's hair is an elongated, cigar shape with short stubby wings and a short line extending further back with small "knots" tied in it. This bundle is paired with the warrior's hawk-beak mask and face paint indicated by a solidly scratched lower half of his face.

Medicine bundles and animal pelts are only rarely illustrated in other rock art (Keyser 2008a:64; Keyser and Klassen 2001:71; 2003; Keyser and Poetschat 2008:43, 62), but bird bundles worn in a warrior's hair and fox or wolf pelts are quite common in robe art and ledger art (Barbeau 1960:147, figure 99; Bates et al. 2003:290–295, 301; Berlo 1996:93, 103, 114, 166, 208–209, 215; Brownstone 1993:19; Horse Capture et al. 1993:103; Keyser 2004a:69–71,

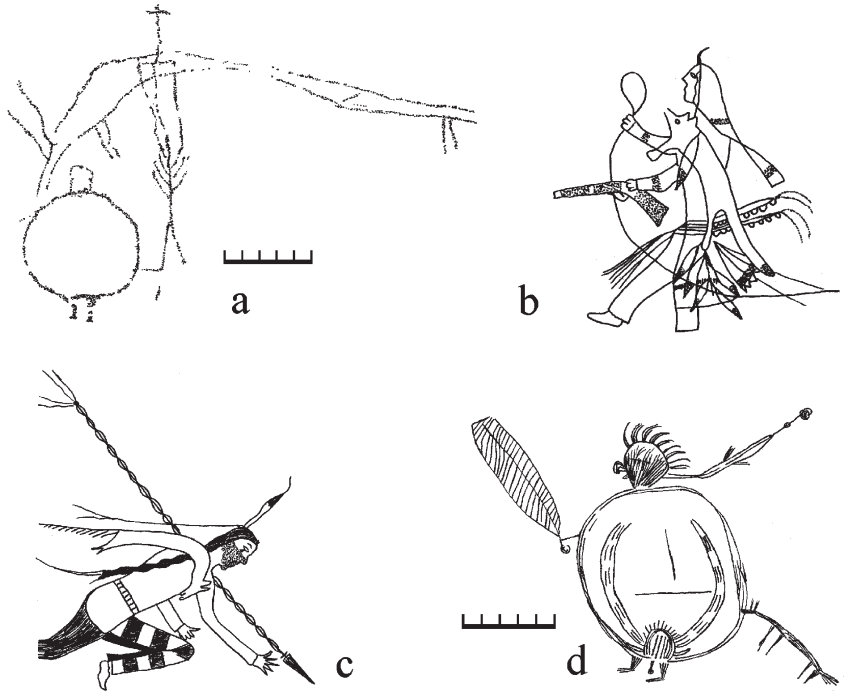

Figure 3.14. *Medicine bundles and animal-skin pelts are worn by more than a dozen Bear Gulch–style shield-bearing warriors. Note pelt overhead on a, animal bundle attached to shield of d, and bird bundle tied in hair and bird-beak mask on head of d. Both b and c are ledger drawings showing wolf pelts worn over a warrior's shoulder. Scale bars are 5 cm.*

117; Keyser and Klassen 2003:13–15; Maurer 1992:194–195; Miles and Lovett 1994:51–52; Taylor 1998:62–63).

moccasin tails

Fifteen shield-bearing warriors wear streamers attached to the heel of both moccasins. Extending out to the side or straight down from the heel, these range from simple straight lines, to fan-like groups of two or three straight lines, to long lines with a knot tied near each end (figure 3.13a, b, d). Similar but unelaborated pendant streamers are also illustrated hanging at an oblique angle from one or both knees of six other shield-bearing warriors (figure 3.13c). Such streamers attached to a warrior's moccasins or to garter belts at his knees are commonly portrayed in robe and ledger art (Afton et al. 1997:66–67; Berlo 1996:78–79, 85, 98, 149, 153, 155, 169, 175, 183, 197, 221; Stirling

1938:27–33; Thomas and Ronnefeldt 1976:221) and they are shown in rock art at Writing-on-Stone and Joliet (Keyser 2004a:100; 2008b:63, 68; Keyser and Klassen 2001:22, 230).

Weapon Decorations

Rock art weapons at Bear Gulch and Atherton Canyon are often elaborately decorated (table 3.1), primarily with feather flags, but also with smaller feather or hair "fluffs" and elaborate tabs or tassels.

FEATHER FLAGS AND FLUFFS

Almost 370 lances and a single bow-spear are embellished with a distinctive feather flag in one of four basic patterns: oval, maple leaf, spade, and split spade in order of frequency (Fossati et al. 2010). Attached to the forward third of a spear's wooden shaft between the point and handgrip, these flags (figures 3.1, 3.4, 3.11, 3.13) are often augmented with a small "fluff" drawn as a more-or-less matched set of short, upward-pointing, oblique lines placed on each side of the spear shaft in a "point down" chevron design. Many fluffs are found just below the feather flag, but others occur just behind the spear point. They could represent the downy barbs commonly found on the quill at the base of the feather's vane, smaller eagle plumes like those attached at the base or tips of eagle feathers that were used in Historic-period headdresses and other ritual items, or decorations of stiffened animal hair.

Frequently the flag itself is further decorated with various combinations of vertical or horizontal lines and solid colored areas drawn within its outline. A limited set of decorative patterns common to all types of flags suggests that these symbolically indicated the performance of different sorts of brave deeds and/or the attainment of special status or position within a military hierarchy (Fossati et al. 2010).

Oval flags are far more common than any other, making up just more than 70 percent of all recorded examples (Fossati et al. 2010). All flag types decorate the weapons of shield-bearing warriors and other humans, and a few also elaborate freestanding spears. Elsewhere in Plains rock art similar weapon flags are uncommon, though more than half a dozen oval and spade flags are drawn at Writing-on-Stone (Keyser 1977a:figure 14b; 1977b:31, 44, 49; Keyser and Klassen 2001:199, 229, 247) and single examples are carved at other sites in Montana and Wyoming (Fredlund 1991:4; Fossati et al. 2010; Keyser and Klassen 2001:246).

Bodmer illustrated somewhat similar feather flags and hair fluffs attached to the butt end of Mandan warriors' spears (Thomas and Ronnefeldt 1976:172,

212, 217), but nothing similar is drawn in robe or ledger art. Feather or hair fluffs also adorn each of the four drawings of a single bow-spear in the elaborate Bear Gulch coup-count tally (figure 3.10). Positioned on the bow stave both above and below the handgrip, these fluffs are paired with longer streamers in two instances. Similar decorative elements are common on most robe and ledger art bow-spears (Keyser 2008b).

TABS

Roughly triangular tabs or tassels, drawn most commonly as a cluster of two to six short lines, but also shown as a clearly triangular attachment, adorn the ends of 27 weapons, including maces, clubs, a knife, a lance, and three bow-spears (figures 3.5e, f; 3.10a, b). One distinctly triangular tab on the lower end of a bow-spear also has a pendant feather. These items represent either clusters of feathers, streamer tassels, or quilled or beaded pennants hanging from the bottoms of these weapons. Similar decorative elements (figure 3.15) are commonly illustrated on various rock art weapons (Keyser 1977a:76; 2008b:66; 2008c:3–4; 2010:89; Keyser and Cowdrey 2008:28–30; Keyser and Klassen 2001:225, 229, 236; McCleary 2008b:265–266; Parsons 1987:260) and frequently adorn hatchets (figure 3.16) and bow-spears in robe and ledger drawings (Barbeau 1960:148, 170, 171; Brownstone 2001b:80; Greene 2006:83; Keyser 2008b:64; Keyser and Cowdrey 2008:29). Beaded tabs are common on ethnographic specimens and in Historic photographs where they hang from hatchets and pipe stems (C. Taylor 1994:77, 200; 2001:8).

Battle Compositions and Tactics

In several cases Late Prehistoric and Protohistoric warriors at Bear Gulch and Atherton Canyon are arranged in compositions that tell us a great deal about how pre-horse/pre-gun warfare was conducted and how it was viewed by participants. Foremost among these compositions are at least 19 instances where groups of 5 to 14 warriors occur in a horizontally oriented row or phalanx of men posed as if marching off to war or standing ready for battle (figures 3.3, 3.6). Most ranks are exclusively shield-bearing warriors, but four rows also include one or more other combatants. Likewise each phalanx contains several individuals who appear to have been drawn by the same hand, suggesting that most of these compositions are the work of single artists. Individual warriors in rank often wear quite elaborate headdresses and other regalia, including moccasin tails and bustles, and carry highly detailed weapons and decorated shields. A few ranks, identified by superimposition sequences as the earliest

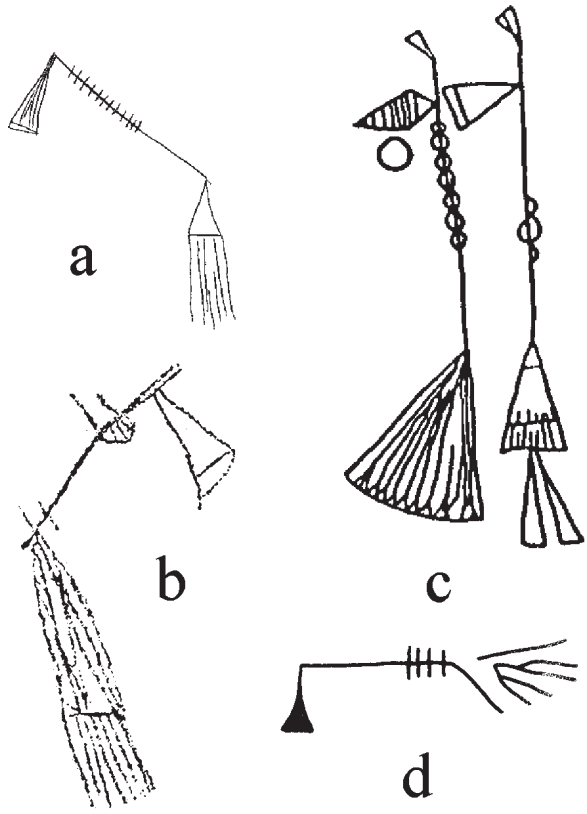

Figure 3.15. *Tabs and tassels are commonly drawn in Historic-period rock art, especially decorating tomahawks. (a, d) Writing-on-Stone; (b) McKee Spring; (c) Nordstrom-Bowen.*

examples of the Bear Gulch style, are composed exclusively of warriors with solid-colored shields and almost identical arms and accoutrements, but most ranks are composed of warriors whose shields have elaborate heraldic designs and who carry various weapons. In one rank of 12 shield bearers and two other men, nine warriors carry plain shields, two men have decorated shields, and one carries a solid shield.

Despite the fact that many of these compositions appear to be drawings by single artists, in nine instances obvious ranks of warriors have been modified by later artists who superimposed from one to seven of the original figures with a second shield-bearing warrior drawn directly over the original image,

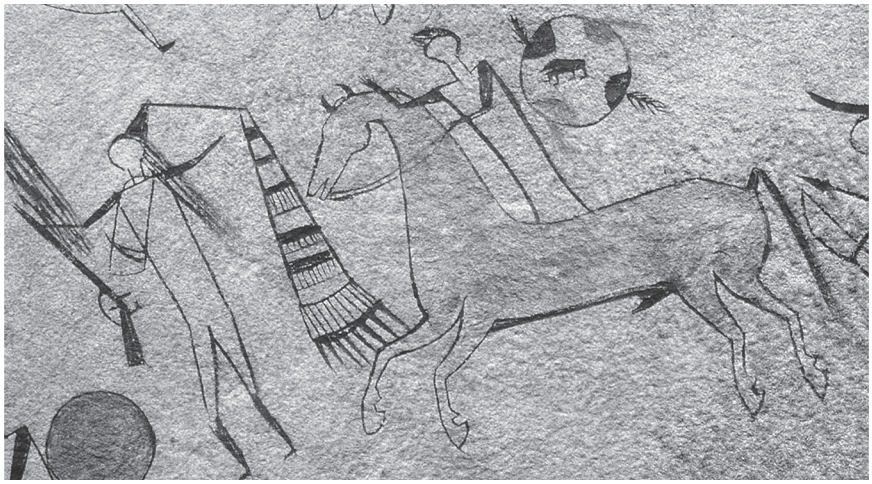

Figure 3.16. *This extremely complex tab decorating the handle of a tomahawk shown counting coup is illustrated on a bison robe in the Deutsches Ledermuseum, Offenbach, Germany. Photograph by the author.*

using the existing figure as a template (figure 3.17). Such carefully crafted superimpositions are termed "direct conjoined overlays" (Kaiser and Keyser 2008). The most complex of these shows an original rank of nine painted solid and decorated variety shield-bearing warriors that was later modified by an artist(s) who scratched directly conjoined shield figures on at least seven of the original warriors (figure 3.6c). Another complex composition shows a later rank of warriors superimposed on an original phalanx and clearly related to it by a three-part conjoined overlay (Keyser et al. 2012). In some cases (e.g., figure 3.6d, e) it appears that a later artist also added warriors to the original composition (sometimes to accompany the direct conjoined overlay). Often these are smaller warriors placed on the periphery of the original group.

Thus, the Bear Gulch and Atherton Canyon artists obviously intended to show groups of men prepared for—or actually marching off to—war; and such depictions were drawn during both the Late Prehistoric and Protohistoric periods. That these ranks of warriors were a crucially important motif is documented by the careful effort often expended to reuse them through the means of direct conjoined overlays and added warriors.

Notably rare among these shield-bearing warriors, however, are scenes of combat showing two or more warriors actually fighting one another. Among the more than 1,000 shield-bearing warriors, only 17 pairs of opposing figures

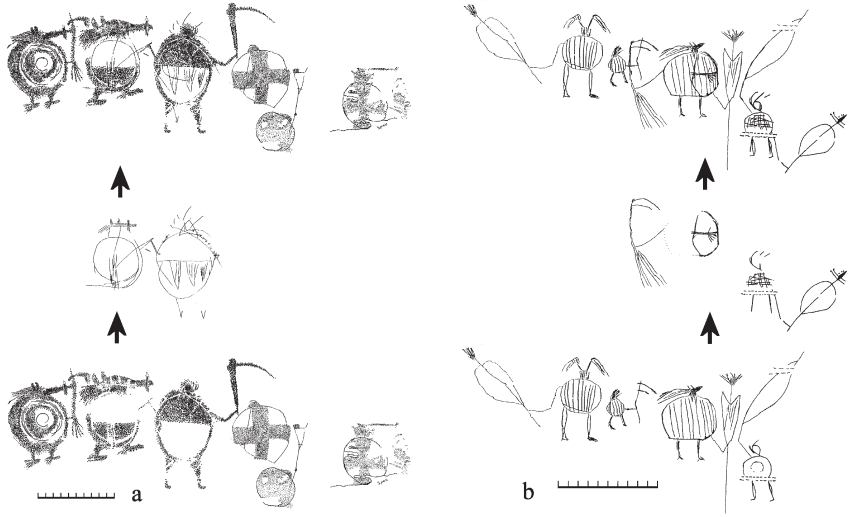

Figure 3.17. *Ranks of shield-bearing warriors often show multiple examples of direct conjoined overlays, indicating reuse of the specific imagery. At Bear Gulch (a), two warriors (middle) are conjoined on an original group of six (bottom row); top row shows rank of warriors as it appears today. At Atherton Canyon (b), two warriors (middle) are conjoined on original group of four warriors (bottom row); top row shows rank of warriors as it appears today. Note that the light gray lines in b indicate parts of the original figure incorporated into the overlaid figure. Scale bars are 10 cm.*

and one pair of warriors fighting a third enemy are engaged in what might represent hand-to-hand combat (figure 3.18). This is less than 4 percent of the total shield bearers at the site. Furthermore, several of these combat "scenes" are drawn in such an extremely sketchy manner (e.g., warriors lacking shield heraldry and using the simplest of weapons) that they appear almost as an afterthought, unlike the carefully detailed ranks of standing warriors that characterize these sites (e.g., figure 3.18d, f, g).

In contrast to the relative paucity of shield-bearing warriors fighting each other, however, Bear Gulch V-neck warriors show at least five identifiable combat compositions (four of which are quite detailed), involving 10 of the 33 humans. Thus, more than 30 percent of V-neck figures are illustrated in the act of fighting.

Likewise, among all Bear Gulch–style shield-bearing warriors only two are shown with floating weapons counting coup on them, and 25 more are wounded by an arrow. In contrast, there are more than a dozen examples of

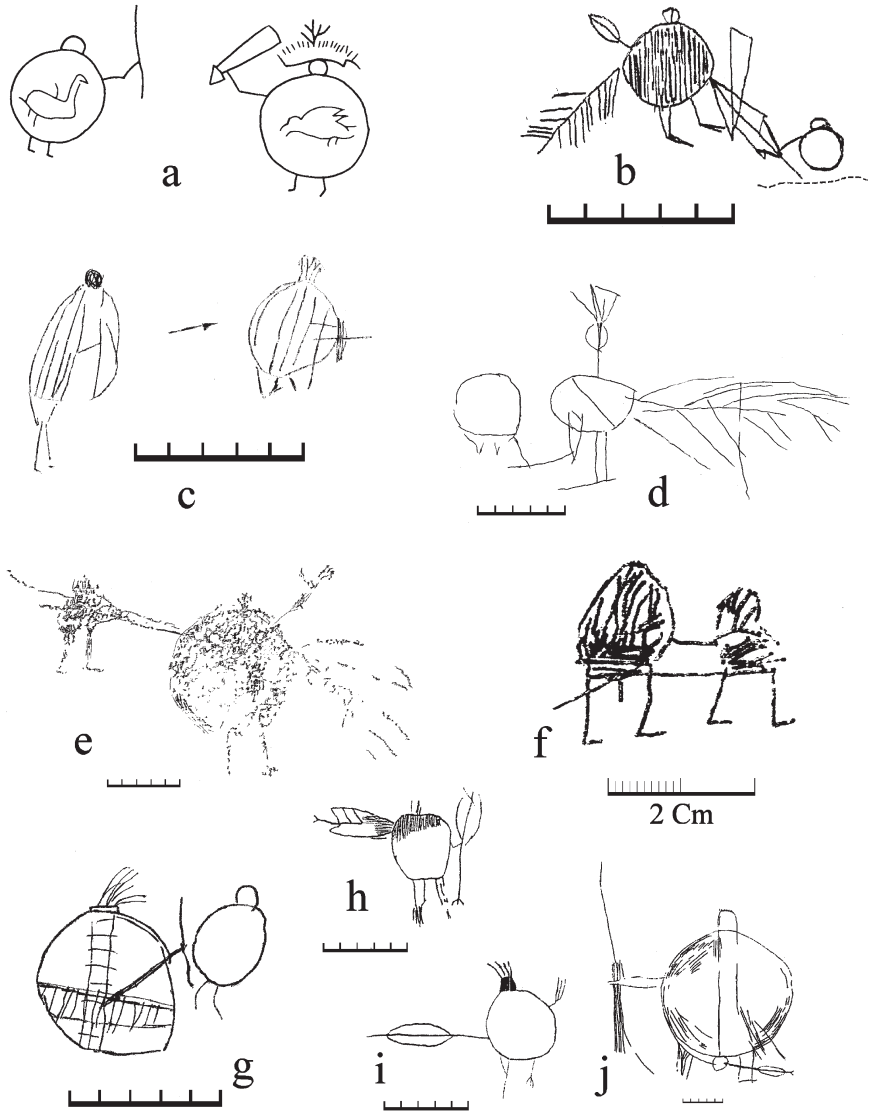

Figure 3.18. *Evidence of conflict in Late Prehistoric–period rock art includes occasional combat scenes (a–g) and warriors wounded with arrows (e, h–j). (a) Writing-on-Stone; (b, d–f, h–j) Bear Gulch; (c, g) Atherton Canyon. Note how sketchy appearance of scenes d, f, and g, and the floating bow counting coup on the larger shield-bearing warrior in e. Scale bars represent 5 cm except f.*

this convention involving other types of Protohistoric-period warriors at these sites. These include three unique shield-bearing warriors and three V-neck humans in a coup-count lineup. In addition, capture hands[8] touch three other V-neck figures. In all, more than 60 percent of V-neck humans are engaged in individual fighting actions, while fewer than 5 percent of shield-bearing warriors give any indication of individual combat.

Instead, shield-bearing warriors are illustrated as corporate groups, and when the artists wanted to show their destruction they sometimes defaced these figures using "rub outs" created by scratching so heavily across the original figure that it is all but obliterated. More than two dozen shield-bearing warriors and a row of several other Late Prehistoric–period humans are rubbed out in this manner. While some rub outs may have been scratched by later Historic-period artists not responsible for the original Bear Gulch–style figures, others almost certainly were done by Bear Gulch–style artists. Whether this signified victory over enemies or the loss of one's own military comrades cannot be determined.

Strategy, Tactics, and Motives

Given the weaponry and battle compositions documented in the Late Prehistoric/Protohistoric–period rock art imagery at Bear Gulch and Atherton Canyon, what does this imagery tell us about strategy and tactics used by these warriors and the possible motives that caused them to fight? In fact, we can infer some specific details about the use of certain weapons and the function of particular examples, and also the warriors' psychological motivation for warfare.

the efficacy of precontact weaponry

From the types of weapons that dominate Bear Gulch and Atherton Canyon rock art and those carried by shield-bearing warriors at other northwestern Plains sites (see Keyser 2006b), it is clear that precontact warfare was fought primarily at close quarters with "brute force" implements. Bows and arrows, which strike an enemy from a relatively safe distance, were used by fewer than 6 percent of the armed Bear Gulch–style shield-bearing warriors; and only an additional 25 examples (fewer than 3% of the more than 1,000 individuals) have enemy arrows sticking in them. Interestingly, these percentages are about the same for shield-bearing warriors at all other published northwestern Plains sites, where 8 of 180 (4.4%) of the armed, Late Prehistoric shield-bearers use bows and arrows (Keyser 2006b), and only 7 (2%) of all shield bearers are shot with arrows. Instead, throughout the northern Plains, armed shield-bearing warriors

Table 3.2. Weaponry for Plains Shield-Bearing Warriors

Weapon	*Bear Gulch and Atherton Canyon*		*Other Northwestern Plains Sites**	
Bow/Arrow	38	4%	8	3%
Spear	441	43%	79	26%
Bow-spear	2	< 1%	5	2%
Spike mace	82	8%	29	10%
Club	71	7%	20	7%
Other	9	1%	44	15%
None	385	38%	113	38%
Total warriors†	1,024	100%	300	100%

* Data taken from *Keyser (2006b)*.

† Columns numbers do not total warriors because a few individuals are armed with multiple weapons.

overwhelmingly favored lances, clubs, and spike maces (table 3.2) for warfare;[9] all weapons that required killing and combat to be at no more than arm's length.

Furthermore, two of these weapons—clubs and maces—would have been truly effective only when used to disarm an opponent and beat him to death with multiple blows. Imagine the mayhem caused by wielding the equivalent of a baseball bat or an axe handle studded with one or two 10–15 cm (4–6 in) long antler spikes. But spike maces may have had an even broader function. Larry Loendorf (2009) has suggested that these weapons could also have served to hook an opponent's shield and pull it away from his body so that other warriors would have had a better opportunity for a close-quarters kill. In either case, killing like this would have been face to face; up close and personal.

The fact that so many Bear Gulch–style lances are tipped with what appear to be some of the earliest metal blades in Plains rock art (Keyser and Kaiser 2010) is also suggestive of close-quarters combat. Given the hand-to-hand warfare suggested by clubs and maces, a lancer armed only with a spear tipped with a several-inch-long, very fragile chipped-stone point would have been at a distinct disadvantage against a club-wielding opponent who could parry a thrust and shatter the killing point with one well-placed blow. Conversely, metal points are certainly less fragile and are more likely to have remained intact even after multiple thrusts and parries. Hence, they must have been seen as extremely more potent and more valuable weapons, and thus were quickly adopted.

Some limited evidence suggests that bow-spears may be an exception to the brute force nature of these battles. Carried by one Bear Gulch–style shield-bearing warrior and shown in use counting coup in the Blackfoot-style

coup-count tally, these weapons are decorated very similarly to the most elaborate of their Historic-period counterparts (Keyser 2008b), and tipped with long lethal metal points. However, of the four bow-spears shown counting coup, only one strikes a blow (touching the enemy's headdress) that could possibly have been immediately fatal, and even this may not have caused a fatal wound. Others hit the shield of one warrior and the legs of another, and a third bow-spear arches above two female captives.

Such non-lethal blows, and the symbolism showing captives under control of this powerful weapon, are exactly the same for bow-spears depicted in ledger art, where they rarely strike a fatal blow but instead record a counted coup or are shown being brandished to exercise their power. This is also consistent with ethnographic reports where special "thunder bow" bow-spears were not used to kill enemies, but rather to count coup by striking the foe with the flat of the lance point and to magically strike at or control enemies from a distance (Grinnell 1972:Vol. 2:83–84; Keyser 2008b:62; Powell 2002a:63–68; 2002b:56–57). In short, it appears that the bow-spear in the coup-count tally was portrayed more as a magically imbued weapon used to count coup and control enemies than a close-quarters killing tool.

Finally, many warrior artists obviously took great care to elaborate their weapon, far beyond any functional necessity. Lances and bow-spears are adorned with a feather flag and/or eagle plume or animal-hair fluffs; bow-spears have a tab or tassel at the proximal end; and clubs and maces sometimes have a tab or streamers attached to their handle end, and the barrel is carved or painted with lines and geometric elements. The only purposes such things could have served were as decoration, personal aggrandizement, or possibly the infusion of the weapon with supernatural power. In none of these cases do these elements improve the weapon's function, but they do show a high value placed on such elaborations by their owners.

THE PSYCHOLOGY OF PRECONTACT WARFARE

V-neck warriors at Bear Gulch, which are dated within the same Late Prehistoric and Protohistoric timespan as the Bear Gulch–style shield-bearing warriors (Keyser et al. 2011, 2012), provide even more detailed information about how at least one precontact group viewed warfare. Apparently drawn by early Blackfeet intruders into this area of central Montana (Keyser 2006a:71; 2011; Keyser et al. 2012),[10] these particular V-neck warriors are in compositions that typically show direct hand-to-hand combat and emphasize counting of several different coups. Involving the fewer than 30 Blackfoot-style V-neck warriors at the site are at least 16 different coup-count episodes, including

multiple instances of hand-to-hand combat, braving an opponent's fusillade of fire, touching (but not killing) an enemy, revenge killing, and capturing enemy women and children (Greer and Keyser 2008:94–95; Keyser 2006a, 2011; Keyser et al. 2012). Another shield taken by a capture hand documents the capture of war booty in the same part of the site as most of these combat scenes, but unfortunately this image cannot be securely associated with nearby Protohistoric-period Blackfoot-style petroglyphs, and may instead be a later Historic-period coup count.

Likewise, six V-neck war captives, including four women, a prepubescent female, and one child, indicate that women and children were "fair game" in the Protohistoric period, exactly as they were in Historic-period warfare. Possibly more important, however, these figures suggest that even at such an early date women and children were a commodity worth capturing, either for the slave trade or to bear children that would replace warriors fallen in battle. While these practices are well documented in the Historic record (Keyser et al. 2006) and inferred for Protohistoric times (Lewis 1942:49), this is the first rock art demonstration that they commonly existed in precontact warfare.

Finally, one coup-count tally, identified as a Blackfoot artist's drawing (Keyser 2006a:71; 2008a:71; 2011), shows several obvious coups, including touching of enemies, revenge killing, and capture of women (figure 3.10). Dated to the pre-horse/pre-gun Protohistoric period, the image is a striking demonstration that the concept of coup counting and advertisement of such honors at sacred sites existed in pre-horse Plains warfare.

With this marked emphasis on coup counting by V-neck warriors, we can infer that deeds of bravery similar to those central to Historic Plains warfare (Grinnell 1910) were also a key element of Late Prehistoric and/or Protohistoric-period warfare—at least to the Montana Blackfeet. Similarly, other evidence also suggests that war honors were the basis for warfare actions undertaken by the artists responsible for drawing Bear Gulch–style imagery. In Historic-period Plains cultures, moccasin tails are so strongly associated with the performance of specific deeds of bravery (Lowie 1956:217; Mallery 1972:436; Thomas and Ronnefeldt 1976:251) that it seems almost certain that those illustrated at Bear Gulch are similarly honorific. But not just moccasin tails support the assertion that a system of ranked war honors was in place on the central Montana plains prior to the horse. Elsewhere, Keyser (Fossati et al. 2010:119–121) has argued that the various forms and relative proportions of different weapon flags "represent various earned honors such as the accomplishment of specific deeds of bravery in warfare or the attainment of 'officer' positions within a pan-tribal military organization" (Fossati et al. 2010:120).

In addition, a strong case has been made that wolf-hat headdresses and animal pelts worn by several warriors likely represent attainment of the honorific "scout" position, as did similar wolf symbolism in Historic times (Keyser 2007a:67–68; 2008a:67–68).

In addition to counting coup (as evidenced by the above-described imagery and insignia), precontact Plains warfare also apparently had a strong supernatural component. Several heraldic designs common on Bear Gulch–style shields suggest that in addition to their defensive utility, shields also played an important psychological role in offensive warfare. Two repeated Bear Gulch shield designs show a bear painted so that it appears to be coming out of the shield to directly confront the owner's enemy (Keyser 2004b; Kaiser et al. 2010; Keyser and Kaiser 2014). These designs are quite similar to Historic-period heraldry used by several tribes for exactly such psychological "shock" value (Keyser 2004b). Likewise, designs incorporating eyes and teeth, and another with a human arm and hand reaching out from a darkened half of the shield, have also been interpreted as representing supernatural power in a way that was intended to frighten or confuse an attacking enemy (Keyser and Kaiser 2014; Schaafsma 2000:113).

Other items, such as medicine bundles and bustles also provide an indication of the supernatural basis for precontact Plains warfare. In Historic times, medicine bundles were derived from visionary imagery in which a spirit helper instructed the supplicant to acquire protective amulets. The presence of such bundles at both Bear Gulch and Atherton Canyon is strong indication that one major premise of precontact warfare was that a man was better off with supernatural assistance. Likewise, Prince Maximilian noted that many warriors wore "an appendage of feathers, intended to represent the [buffalo] bull's tail, hanging down their backs" (Thomas and Ronnefeldt 1976:202). These bustles, along with the erected buffalo-bull tail bustles incorporated as part of the shield were widely understood to symbolize a buffalo bull's aggressive behavior (Maurer 1992:125),[11] something that a warrior would be only too happy to embody and advertise.

A TRANSITION FROM CORPORATE COMBAT TO INDIVIDUAL HONORS

Viewing the phalanxes at Bear Gulch and Atherton Canyon as fighting units, a few observations can be made about the structure of combat-ready groups in the Late Prehistoric–period culture responsible for drawing Bear Gulch–style shield-bearing warriors. Chronologically, the earliest phalanxes (and related single warriors) favored the bow and arrow as the weapon of choice and a solidly colored, otherwise undecorated, shield for protection. A

warrior's headdress was uniformly a tasseled scalplock or a roach. Another phalanx of similar size and age, shows a slight change in preferred weaponry to very long spike maces and lances, but the warriors' shields remain undecorated, shown as plain circles without either pigment or scratches for infilling. Headdresses are tasseled scalplocks, roaches, or bison-horn bonnets.

Then, very rapidly over the course of a few generations (150–200 years), phalanxes diversified markedly. In this period, each phalanx is typified by a variety of shield designs, several different weapons (often with unique weapon flags for decoration), and multiple types of headdresses. Among the warriors composing these groups bows are very rarely the preferred weapon.

What this tentatively suggests for the ethnic group drawing these figures is a transition from a fighting unit with a more corporate identity (limited shield designs, weapon types, and headdress styles) in which individuals intentionally did not stand out, to a fighting unit more obviously composed of individuals, where many (if not all) of the participants were readily identifiable. This change, combined with the more close-up and personal nature of combat (as indicated by shortened spike maces and clubs, and lances with large killing points), implies an increased emphasis on personal deeds and individual self-aggrandizement. What we appear to be seeing in this transition is the beginning of the Historic-period focus on the accomplishment of individual war honors.

CHANGING WARFARE PATTERNS ON THE NORTHWESTERN PLAINS

So what do Plains rock art warfare compositions indicate about the origin and evolution of the Plains warfare complex? To address this, one must first summarize the model of Plains warfare as reconstructed from ethnohistoric, ethnographic, and historic sources and then compare and contrast that to the first-person rock art record of Plains warfare to evaluate how closely the two correspond.

Fortunately, we have one good ethnohistoric account that provides a reasonable sketch of Protohistoric-period warfare (and even a glimpse of precontact warfare actions), at least through the eyes of one man, Sahkomaupee, an aged Cree living with the Blackfeet in 1787 (Lewis 1942:46–52; Secoy 1992:34–37). Several other early accounts provide additional sketchy data about warfare immediately after the earliest contacts with Euroamericans (e.g., Lewis 1942:45, 50, 54–55; Loendorf and Porsche 1985:80–85). Then the later Historic-period warfare complex is so widely described and well known (e.g., Grinnell 1910; McGinnis 1990; Mishkin 1940; Smith 1938) that it became a cultural icon

by the turn of the twentieth century with "Wild West" shows, "dime novels," and paintings by Russell and Remington, and it has been celebrated ever since in books, art, movies, and television.

The only detailed account of how northwestern Plains war was fought before the widespread use of horses and guns is the one Sahkomaupee provided when he told David Thompson in 1787 about how and why warfare was conducted during his young adulthood (Lewis 1942; Secoy 1992; Thompson 1962). Summarizing Sahkomaupee's lengthy account, Secoy described pre-horse/pre-gun warfare as:

> taking two forms. Both put a premium on numerical strength. The first one, usually preferred, was for a large war party [sometimes as large as several hundred warriors] to locate a small, isolated enemy camp . . . and make a surprise attack at dawn, slaughtering the inhabitants. The second was used when the enemy was too vigilant to allow a successful surprise attack [because their scouts were out patrolling], or when both sides were nearly equal in numbers. . . . Under these conditions the battle was drawn between two opposing lines of infantry, armed with bows, spears, clubs, and very large leather shields, the men separated by about three-foot intervals [but not all warriors had shields and sometimes two men sheltered behind a single shield]. The battle began when the lines had advanced to a point within archery range of each other, at which time the warriors, protecting themselves with their shields, sat on the ground and subjected the opposing line to archery fire for a varying period. The next stage of the battle arrived when one side decided to substitute shock for fire. A chief would then lead the . . . charge. . . . The ensuing hand-to-hand struggle would usually be brief and bloody, and the issue quickly decided. The defeated side would either flee in a complete rout and be hotly pursued by the enemy warriors until the latter halted to struggle among themselves for loot, trophies, and scalps, or, if the defeat were not so severe they [the defeated party] would retreat in a fair state of organization, maintaining the line formation and carrying off their dead and wounded. (Secoy 1992:34, summarizing Sahkomaupee's account in Tyrell 1916)

Hidatsa oral history shows the corporate nature of such warfare. Describing a battle that took place about AD 1740, when there were a few horses but no guns, Bear's Arm told of separate ranks of shield bearers and bowmen working together to assault an enemy group taking refuge atop a butte:

> The men with shields were told to go ahead and all the others would follow closely behind them in a compact group. Each man, using his bow and arrows,

> was supported by a shield carrier who walked in front to deflect the [enemy] arrows with his shield, thus protecting the man in back of him. (Bowers 1965:351, as summarized by Loendorf and Porsche 1985:81)

As author of one of the most specific discussions of Plains warfare history, Lewis has combined Sahkomaupee's account with other historic sources to provide a slightly more in-depth model. Lewis argues that pre-horse-period warfare was largely a corporate action involving hierarchically organized military forces fighting to expand and/or defend hunting territory and capture women, whose importance was "to strengthen the tribe, both by their own numbers and as child bearers" (Lewis 1942:49). Various bits of ethnohistoric evidence from several sources further suggest that truly effective fighting during pre-horse times was at close quarters with shock troopers' weapons, and effort was focused primarily on amassing superior forces to overrun and annihilate small, band-level enemy villages (Lewis 1942:52; McGinnis 1990:4, 6; Secoy 1992:34). Otherwise, battles between relatively equally matched groups were apparently hours-long "standoff-type" conflicts where few were wounded and warriors were rarely killed. Nevertheless, in this system, coups were, in fact, counted, women were captured, and multiple casualties occasionally occurred. However, usually this happened only when the victorious force was able to rout the other, due either to their numerical superiority, or—as these new, game-changing "weapons" arrived in the region—the presence of the horse or gun (Lewis 1942:47–48; Secoy 1992:36–37).

Following the initial introduction of horses, when a few became available to warriors, these animals afforded equestrian groups a distinct advantage. Combined with leather armor and military tactics diffused from the Spanish Southwest, horses were first heavily armored and typically used somewhat like "tanks" to crash through enemy defenses and rout opposing pedestrian forces (Secoy 1992:36–37). Sahkomaupee reported that "the Snake Indians . . . had *Misstutim* (Big Dogs, that is Horses) on which they rode, swift as the Deer, on which they dashed at the [Piegans], and with their stone Pukamoggan knocked them on the head, and they [the Piegans] had thus lost several of their best men" (Secoy 1992:36).

In a few years, however, the arrival of guns obviated the horse's advantage as a tank, but the rapidly expanding horse herds increased the animals' value for nearly every aspect of everyday life, from baggage hauling to hunting and warfare, and the increased supply of horses changed warfare into a series of quick-hitting surprise attacks and horse raids that relied primarily on stealth and light cavalry tactics. This sort of warfare was undertaken not by a large

force led by a war chief and his various officers, whose intent was to smash an enemy village or opposing military force, but instead by a highly motivated individual who handpicked a small cadre of accomplished warriors and kinsmen to accompany him in his personal quest to steal horses and acquire war honors; for it was these horses and coups that embodied a man's wealth and gave him status (Lewis 1942:53–59; McGinnis 1990). This horse-and-gun warfare has been described in intimate historical detail (McGinnis 1990; Mishkin 1940; Smith 1938), often including first-person recollections of famous warriors who fought both in well-documented battles and in hundreds of other, nearly anonymous, horse raids (Ewers 1985:171–215; Linderman 1962; Miles and Lovett 1994, 1995).

So, how does the rock art record correspond to this ethnohistoric/ethnographic reconstruction? The topic has been previously addressed, albeit with a much more limited data set that included only the then newly recorded imagery from Writing-on-Stone and Verdigris Coulee (Keyser 1979). Keyser (1979:44–48) originally suggested that Plains rock art compositions illustrated a notable change in both strategy and tactics from Prehistoric- to Historic-period Plains Indian warfare. He contrasted the paucity of individual combat scenes in Late Prehistoric–period rock art to the commonly depicted scenes of individual actions that characterize Historic-period rock art, and suggested that the rock art showed that prehistoric warfare was primarily a large group activity conducted by shock troops whose motives were essentially economic (the acquisition and protection of hunting territory), while Historic Plains warfare focused instead on the individual and his actions—termed coups—which were done primarily for purposes of self-aggrandizement and subsequently recorded as rock art to validate a warrior's status.[12] As part of his argument Keyser (1979:45) asserted that "no example of a Prehistoric period combat or battle scene explicitly depicts a warrior counting coup or acquiring any war honor," and in the next paragraph he indicated that the same was true in Writing-on-Stone's few Protohistoric-period scenes.

More than three decades later we have considerably more information, and we can modify parts of those conclusions, confirm some, and augment others. Initially, recording and study of dozens more rock art sites from Canada to Texas (e.g., Conner 1980; Keyser 1984, 2006a, 2010; Keyser and Klassen 2001; Klassen 1995; Parsons 1987) has identified many more Protohistoric-period images so that we now have large samples from all three periods for comparison to one another and to the ethnohistoric record. Furthermore, comparison of these and other rock art images to Biographic art drawn on robes, war shirts, and in ledger books (e.g., Brownstone 1993, 2001a, 2001b; Keyser 1987a, 1996, 2000; Keyser

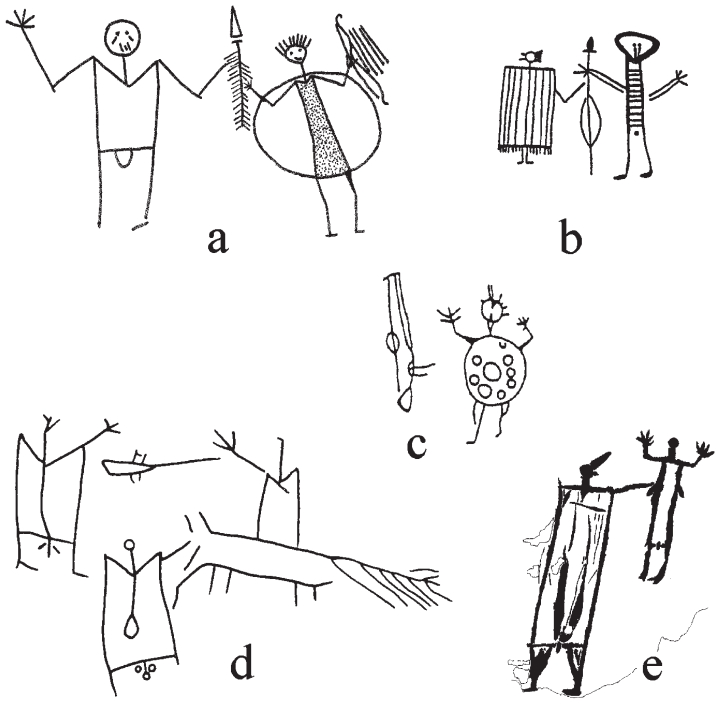

Figure 3.19. *Prehistoric- (e) and Protohistoric-period (a–d) coup counts occur occasionally in Plains rock art: (a–d) weapon capture; (e) capture of woman. (a) Ellison's Rock; (b) Red Canyon; (c, d) Verdigris Coulee; (e) No Water. Note tear streaks decorating faces in a and b.*

and Brady 1993; Keyser and Klassen 2001, 2003; Petersen 1971) has led to the recognition of readily identifiable coup counts in Protohistoric-period rock art (Keyser 2006a; 2010:92, 96–98; Keyser and Klassen 2001:224–253; Keyser and Poetschat 2005:137–155; 2009:83–84; Klassen 1998:55–57) and also even a few in Late Prehistoric–period imagery (Keyser 2006a; Keyser and Poetschat 2009:84). Though illustrated in a typically more static, less fluid style than later Historic-period images, these Late Prehistoric/Protohistoric–period coup counts (e.g., figure 3.19) show a variety of Biographic conventions, including weapon capture, loser's posture, the capture hand, floating weapons, capture of women, and the fusillade of fire that are among the most common in the Biographic art lexicon (Keyser 1987a, 2006a, 2010; Keyser and Poetschat 2005:153; 2009:84). These scenes prove unequivocally that coups were counted and documented in

precontact warfare, even though fighting was primarily conducted with shock troops who fought in close-quarters combat with clubs and maces and protected themselves with oversized buffalo-hide shields and, later, their mounts with leather horse armor. This evidence for coup counting corresponds well to Sahkomaupee's description of the aftermath of one such rout:

> The War Chief . . . rushed on their line and in an instant the whole of us followed him, the greater part of the enemy took to flight. . . . Part of us pursued and killed a few, but the chase had soon to be given over, for at the body of every Snake Indian killed, there were five or six of us trying to get his scalp, or part of his clothing, his weapons, or something as a trophy of the battle. (Secoy 1992:37)

What do rock art warfare compositions indicate about the size of precontact war parties and whether these actually became smaller through time? Late Prehistoric–period rock art warfare compositions are usually war parties portrayed as ranks of five to more than a dozen warriors (table 3.3). In several examples these men are shown fighting as interacting groups of four to seven combatants (figure 3.20). Certainly there are instances where two men square off one-on-one (e.g., figure 3.18), but these individual combat scenes are proportionately far less common in both Late Prehistoric– and Protohistoric-period imagery than they are in Historic-period rock art (table 3.4).

But do illustrated rock art forces document the actual sizes of the fighting forces in these battles? This seems unlikely since Plains Biographic rock art is renowned for its use of synecdoche, where a drawing of a single weapon or person or a part of a person or horse can stand for multiple actual persons or animals. Thus, a hoofprint may stand for a horse, a human footprint for a warrior, a tipi for a village, or a group of stacked freestanding weapons for a force of combatants (Fredlund 1990; Keyser 1977a:70; 2000:38, 50–52; 2005:35). Likewise, in such a system, a group of horses, weapons, or even humans often indicates the relative size of the force in a fight rather than an actual count of participants. Essentially, then, a structured group of things often simply indicates the concept of "many."

However, given the continuity of structure, context, and content demonstrated for Plains Indian warrior art from the Late Prehistoric, Protohistoric, and Historic periods (Keyser 1987a, 1996, 2000; Keyser and Klassen 2001; Keyser and Poetschat 2005:137–169; Klassen 1995, 1998; Magne and Klassen 1991), we can compare the relative size of forces depicted at various times as an indicator of relative war party size (table 3.3). Across the northwestern Plains, almost exactly one-third of Late Prehistoric–period warfare compositions include five or more warriors. Nearly half of the ranks of Late

Table 3.3. Combat Scenes and Ranks of Warriors

		*Combat Scenes**										*Ranks†*									
Location		*1 vs. 0*	*2+ vs. 0*	*1 vs. 1*	*1 vs. 2*	*1 vs. 3+*	*2 vs. 2*	*2 vs. 3+*	*3 vs. 3*	*3 vs. 4+*	*4 vs. 4+*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10+*	*Total*
Writing-on-Stone	LPP	—	—	2	—	—	1	—	—	—	2	1	2	—	1	—	—	—	—	—	9
	PP	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2
	HP	6	1	16	2	—	1	—	—	1	2	—	—	—	—	—	—	—	—	—	29
Verdigris	LPP	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	PP	—	—	1	1	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	3
	HP	1	—	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5
Atherton Canyon	LPP	—	—	2	—	—	—	—	—	—	—	4	—	2	—	3	1	—	—	—	12
	PP	—	—	—	—	—	—	—	—	—	—	2	—	—	1	—	—	—	—	—	3
	HP	3	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Bear Gulch	LPP	—	—	17	1	—	—	—	—	—	—	9	4	3	2	4	—	4	2	3	49
	PP	—	—	—	1	—	—	—	—	—	—	2	3	3	—	—	—	—	1	1	13
	HP	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
Green River Basin	LPP	—	—	—	—	—	—	—	—	1	1	—	—	—	—	—	—	—	—	—	2
	PP	—	—	—	—	—	1	—	1	2	—	—	—	—	—	—	—	—	—	—	6
	HP	6	1	1	—	2	—	1	—	—	2	—	—	—	—	—	—	—	—	—	13

continued on next page

Table 3.3—*continued*

Location		*Combat Scenes**										*Ranks†*									
		1 vs. 0	*2+ vs. 0*	*1 vs. 1*	*1 vs. 2*	*1 vs. 3+*	*2 vs. 2*	*2 vs. 3+*	*3 vs. 3*	*3 vs. 4+*	*4 vs. 4+*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10+*	*Total*
No Water	LPP	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	HP	—	—	3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
North Cave Hills	LPP	—	—	2	—	—	—	—	—	—	—	—	—	—	1	—	—	—	—	—	3
	PP	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
	HP	—	—	4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4
Williams Coulee	LPP	—	—	—	—	—	—	—	—	1	—	—	—	—	—	—	—	—	—	—	1
Turner Rockshelter	HP	—	—	5	1	—	1	3	—	—	—	—	—	—	—	—	—	—	—	—	10

LPP = Late Prehistoric period, PP = Protohistoric period, HP = Historic period

* Numbers in Combat Scenes columns indicate size of opposing forces. 1 vs. 0 and 2+ vs. 0 indicates warriors stealing horses, capturing war trophies, counting coup on tipi or fortification, or similar action.

† Numbers atop Ranks columns indicate number of warriors in phalanx

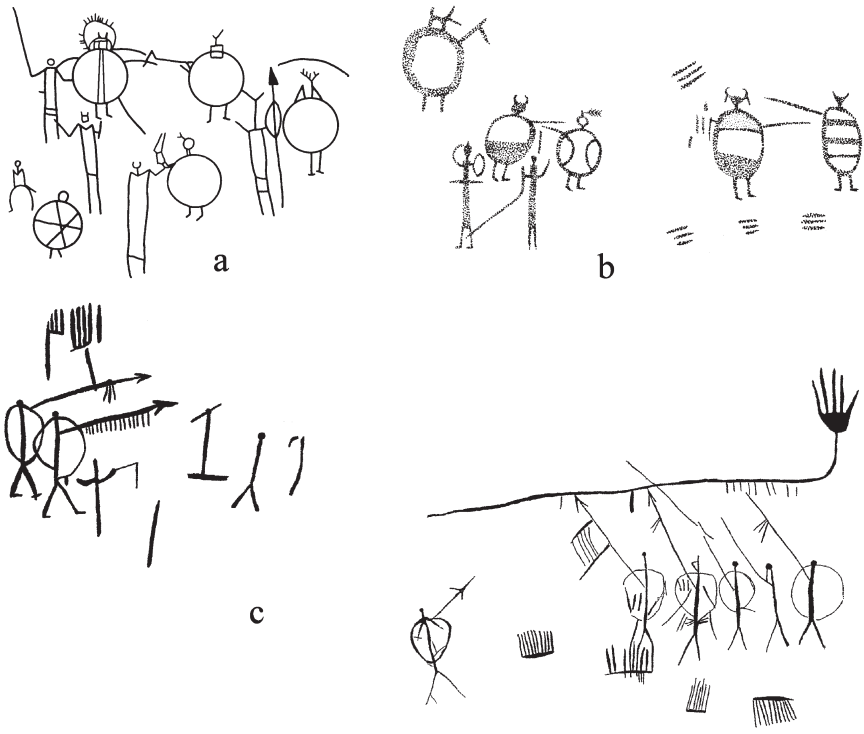

Figure 3.20. *Shield-bearing warriors are more often shown fighting in larger groups with an apparent corporate structure, in contrast to Historic-period combat compositions: (a) Writing-on-Stone; (b) Williams Coulee; (c) Gateway.*

Prehistoric–period warriors obviously prepared for battle at Bear Gulch and Atherton Canyon include five to 14 men (table 3.3); all equipped more or less the same. Several other northwestern Plains sites show similar size forces (Keyser 1977a:69; 1979:43; Keyser and Klassen 2001:238–240; Keyser and Poetschat 2005:115, 147; Schuster 1987:32). In addition, when actually shown fighting, these larger forces are bunched together and appear to be interacting as organized opposing groups (figure 3.20). Direct combat between two Late Prehistoric–period individuals (figure 3.18; see also Keyser 1977a:68, figure 13a) is shown far less frequently than in Historic-period rock art.

As depicted in rock art, Protohistoric-period warfare is very similar to that from the Late Prehistoric period (table 3.3). Across the northwestern Plains about one-third of Protohistoric-period warfare scenes involve five or more

men, and at Bear Gulch and Atherton Canyon these are often ranks of warriors drawn as if awaiting combat. Protohistoric-period combat at other sites includes smaller fights involving only two or three men (Keyser 1977a:69, 1984:49; Keyser and Poetschat 2005:126–127) and larger ones showing groups with as many as three or four combatants on each side (figure 3.21). In the post-horse Protohistoric period these fights often include horsemen, and there seem to be more examples of hand-to-hand combat between pairs of warriors (e.g., Keyser 1977a:64, 68; 2010:89, 92; Keyser and Poetschat 2005:141–151).

Historic-period warfare is markedly different. By far the great majority of warriors—70 percent of the 70 warfare scenes—show a single warrior either fighting a single enemy, stealing horses, taking a weapon, or counting coup on a structure (figure 3.22, table 3.3). Considering the size of specific fighting forces, the trend is even more notable, with more than 93 percent of Historic-period imagery showing single warriors or war parties of two to four combatants, compared to only 77 percent of Late Prehistoric/Protohistoric–period forces with that few people (table 3.4). Thus, while the two biggest battle scenes—one involving more than 100 people at DgOv–81 at Writing-on-Stone (Keyser 1977a:70; 2004a:84–85) and the other showing 26 combatants at La Barge Bluffs (Keyser and Poetschat 2005:36)—are far larger than any other rock art compositions, they are a distinct anomaly in all Plains rock art combat images.[13] But synecdoche rules even these large scenes, since the fight reportedly portrayed by DgOv-81 actually involved hundreds of warriors and resulted in more than 300 reported casualties (Dempsey 2007:29; Keyser and Klassen 2001:254–256).

Therefore, acknowledging the significantly synecdochical character of Plains warrior art we can understand that many if not most of these warfare images represent more warriors than are portrayed. But the fact that there is such a greater proportion of Late Prehistoric/Protohistoric–period scenes composed of relatively large groups of warriors (table 3.4) indicates that war parties in Prehistoric times were, in fact, actually significantly larger than those common in Historic times, at least as portrayed in rock art. This fits well with what we know from Sahkomaupee's report and the many other sources for late Historic-period warfare. This is also consistent with the existence of bastioned fortifications designed to withstand massed attacks that dominate the Late Prehistoric/Protohistoric–period Missouri River villages (Bamforth, chapter 1, this volume).

The earliest northwestern Plains rock art horses, usually drawn as boat-form animals (Dewdney 1964; Keyser 1977a:34; Keyser and Poetschat 2009; Keyser and Klassen 2001:19; Keyser et al. 2005), also tell us quite a bit about Protohistoric-period warfare and enable us to evaluate how well it corresponds to the ethnohistoric model. Found in very limited numbers throughout the

Table 3.4. Relative Size of Individual Forces in Rock Art Warfare Scenes*

	Period											
	Late Prehistoric Period				*Protohistoric Period*				*Historic Period*			
Warriors	*1*	*2–4*	*5–10*	*11+*	*1*	*2–4*	*5–10*	*11+*	*1*	*2–4*	*5–10*	*11+*
Writing-on-Stone	4	5	5		2	1			39	8	2	2
Verdigris	2				3	3			8	1		
No Water	2								7	1		
North Cave Hills	4		1			2			8			
Williams Coulee		2										
Green River Basin		3	1		4	6	2		10	5	3	1
Turner Rockshelter									11	8	1	
Bear Gulch	35	17	12	3	1	9	4	1	1			
Atherton Canyon	4	6	4			2	1		3	1		
Total	51	33	23	3	10	23	7	1	87	24	6	3
Percentage	47%	30%	21%	3%	24%	56%	17%	2%	73%	20%	5%	3%

* *N* in table heading = number of warriors per combat force; *N* in table columns = number of opposing forces illustrated. Each opposing force entered separately.

region (Greer et al. 2010; Keyser 1977a; 1984:49; Keyser et al. 2005), these early rock art horses frequently wear protective leather armor and are often shown in combat with pedestrian shield-bearing warriors (Greer et al. 2010; Keyser 1977a:69; 1984:49; Keyser and Poetschat 2005:126–127; Keyser et al. 2005). These animals are illustrated, however, not racing into or out of combat—with rider leaning forward, quirting his mount, and reaching out to strike an enemy, as is typical of Historic-period horse-warfare scenes (figure 3.22h)—but instead typically as one to three animals with their riders often carrying shields (or sometimes wearing their own body armor), and somewhat ponderously engaging pedestrian opponents. The visual effect of these compositions is to show the horse as a sort of armored tank whose superiority in such shock-troop warfare is evident in several compositions by the ineffectual spears or arrows attacking but not killing the animal (occasionally arrows are stuck in the armor), the relatively exaggerated size of the horses themselves, or the clearly illustrated

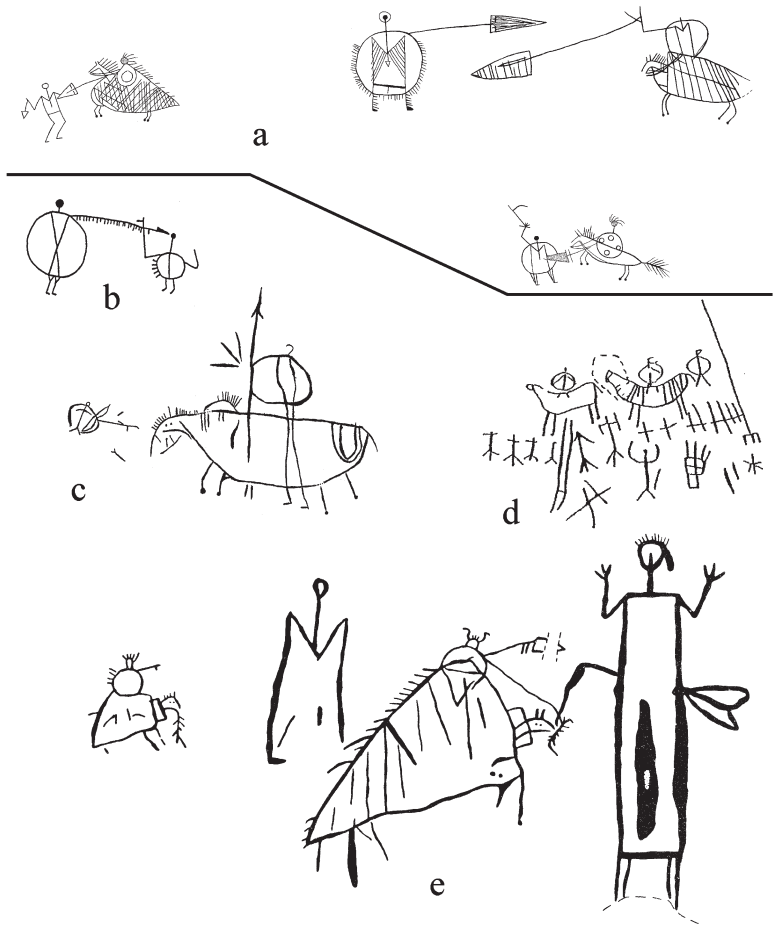

Figure 3.21. *Protohistoric-period combat includes both corporate group type compositions (a, d, e) and individual fights (b, c): (a) Verdigris Coulee; (b) Writing-on-Stone; (c, d) South Piney; (e) North Cave Hills. Note armored horses in a and e, and boat-form horses in a, c, and d.*

loser's posture of several pedestrian opponents (Greer et al. 2010). In fact, in the nine known Protohistoric-period equestrian combat scenes only three show the pedestrian warrior(s) as winning or even holding their own, and two of these also feature the armor or rider's shield warding off an otherwise fatal wound (Greer et al. 2010; McCleary 2008b:266). Likewise, there is no example that clearly shows a man having dismounted from one of these early horses

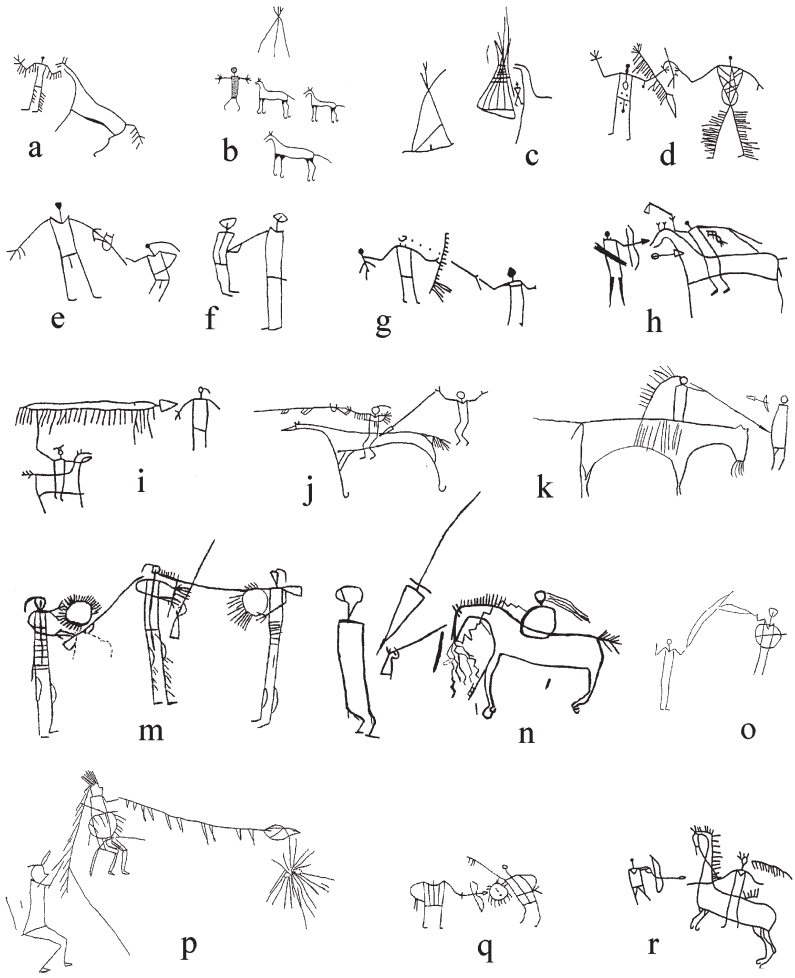

Figure 3.22. *Historic-period combat primarily focuses on individual's actions, especially (a–c) stealing horses, (f–k, n–r) counting coup, and (d, e, m, n) capturing weapons. a–c, e, f, h, i, q, Writing-on-Stone; d, g, r, Verdigris Coulee; j, Castle Butte; k, La Barge Bluffs; m, Pine Canyon; n, No Water; o, Recognition Rock; p, Names Hill.*

to forfeit his advantage specifically to increase the daring associated with the coup count, yet such images are quite common in Historic-period Biographic art (figure 3.23; see also Afton et al. 1997:124–125, 142–143, 188–189, 278–279; Keyser 1987a:68; 2004a:97).[14] In summary, Protohistoric-period warfare rock

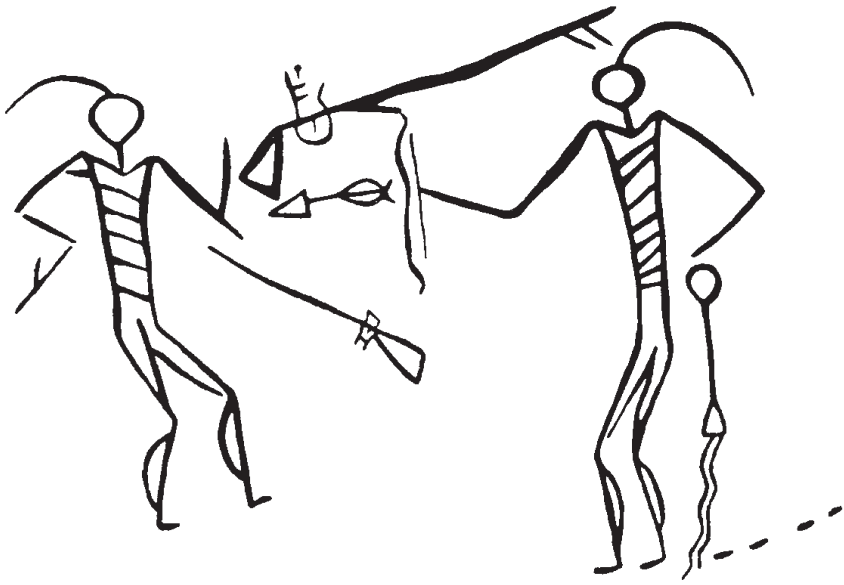

Figure 3.23. *This Historic-period combat scene at Castle Butte shows that the winning warrior at right has dismounted (note quirt and footsteps leading to fight) to forfeit the advantage provided by his horse.*

art adds significantly to our understanding of northwestern Plains warfare in the transitional period from pedestrian to fully equestrian conflict.

Finally, Historic-period rock art is replete with images showing individuals fighting, stealing horses, capturing war booty, and counting coup (Keyser 1977a:68, 73, 1987a, 2007b; Keyser and Poetschat 2005, 2009). Although the largest known rock art battle compositions occur in Historic-period imagery (Keyser 1977a:70; 2004a:84–85; Keyser and Klassen 2001:254–255; Keyser and Poetschat 2005:36, 90), the art is overwhelmingly dominated by illustrations of individual actions oriented toward earning war honors, with more than 93 percent of warfare scenes involving four or fewer combatants (table 3.4). This rock art correlates almost exactly with the warfare strategy and tactics so well documented in historic and ethnographic records.

CONCLUSIONS

Comparisons among Late Prehistoric–, Protohistoric-, and Historic-period rock art warfare illustrations show that these correspond quite closely to the

changing pattern of northern Plains warfare posited from the ethnohistoric and ethnographic record (Lewis 1942:46–59; McGinnis 1990:1–48; Secoy 1992:33–77). But rock art images also add significant information not available from ethnohistory. Bear Gulch and Atherton Canyon provide the richest record yet available for arms, accoutrements, and battle tactics from precontact times, and even highlight major psychological motives for how and why war was fought on the northern Plains of central Montana during the pre-horse/pre-gun Late Prehistoric and Protohistoric periods. With these incredibly detailed images as a basis, we finally have a first-person account of how and why war was fought during that time.

Data from Bear Gulch and Atherton Canyon, when combined with evidence from other sites across the region, provide both strong support and some corrections and elaborations for Sahkomaupee's account. In terms of weaponry, Sahkomaupee's and Bear's Arm's experiences reflect more bowmen—at least in Protohistoric-period conflict—than we see in rock art, and thus more archery action than is apparent from the data for all Plains shield-bearing warriors. This may reflect a real difference, or it may simply be due to rock art artists' desire to portray themselves with the weapons that put them in close contact with the enemy. It must be noted, however, that of the four known battle scenes in Late Prehistoric/Protohistoric–period rock art (figures 3.20b, 3.21e), only two show a single bowman each (Keyser and Klassen 2001:229, 240, 247). Correspondingly, we have no battle formations that show different ranks of shield carriers and bowmen without shields bringing up the rear, as was reported by Bear's Arm. The only indication we have of significant bow-and-arrow warfare is the one shield bearer in the Protohistoric-period coup-count tally who is facing 22 arrows. Whether this is an enemy killed by overwhelming firepower or the artist/author of this tally braving an enemy fusillade of fire, it clearly shows that some battles featured intensive bow-and-arrow fire.

Likewise, Sahkomaupee does not specifically mention spike maces even though they are quite common in the Late Prehistoric/Protohistoric–period imagery at many northwestern Plains sites, including Bear Gulch, Atherton Canyon, Writing-on-Stone, Verdigris Coulee, Pictograph Cave, the North Cave Hills, and Red Canyon (Francis and Loendorf 2002:149; Keyser 1977a:68, 69; 1984:32; 2004a:21; Keyser and Klassen 2001:196, 199, 246; Mulloy 1958:126). For this weapon it seems likely that Sahkomaupee simply included them in his reported "clubs."

Sahkomaupee's account also mentions scouts, taking scalps, capturing war trophies, and the fact that forces lined up in ranks often with some warriors

who fought without shields. If we consider the taking of scalps and war trophies in precontact warfare as equivalent to how these same acts were treated as coups in Historic times, it suggests that other coups were almost certainly also counted by Prehistoric/Protohistoric–period combatants. Hence, examples of all of Sahkomaupee's observations can be found in the rock art data.

But what of taking women and children as captives? Although Sahkomaupee was apparently silent on this subject, Secoy (1992:38) notes that at least as early as Protohistoric times, war captives quickly became a valuable trade commodity in the effort to obtain Euroamerican trade goods, and he cites several examples of large-scale capture of women and children on the eastern margins of the Plains in the 1600s (Secoy 1992:41). The occurrence of several capture scenes at Bear Gulch, coupled with the fact that by the late 1700s northwestern Plains tribes were regularly capturing women and children to replace fallen warriors and to augment groups hard hit by early smallpox epidemics (Ewers 1997:194; Keyser et al. 2006:65), strongly suggests that war captives must also have been important in precontact warfare.

Rock art data also provide significant information about the spiritual aspects of warfare that was not reported by Sahkomaupee. By reference to Historic Plains Indian cultural practices, we can make some particularly detailed conclusions about Late Prehistoric/Protohistoric-period warfare. For instance, shield heraldry includes both anthropomorphic and zoomorphic symbolism and compositional structures like those prevalent on Historic-period shields. By using analogy, we discover that these indicate that warriors routinely obtained strong supernatural power to assist them in their warfare actions. Furthermore, the structure of several heraldic designs suggests that in part they were emblazoned on their shields specifically for the shock value of frightening enemies. Finally, supernatural power was also embodied in medicine bundles, various headdresses, and even feather bustles that symbolized aggressive behavior as a warrior's desired quality. These are all directly analogous to similar items used in Historic times.

Thus, the rock art record confirms and expands Sahkomaupee's observations of many aspects of Late Prehistoric/Protohistoric-period warfare. Finally, if one carefully considers rock art warfare compositions and their structure in light of the synecdoche characteristic of Plains Indian warrior art, it is clear that the rock art data do, indeed, indicate larger military forces in Late Prehistoric times, followed by a transition to smaller war parties in the Historic period.

So what light does this shed on the likely motivations for warriors in various periods of Plains warfare? Historic-period Biographic art images are primarily concerned with recording an individual's actual personal honors—achieved

in horse raids and combat defending one's own herds from enemies. One-on-one fights where the protagonist touches or kills his enemy or takes his weapon or another war trophy are more than half again as common in Historic-period rock art as in the combined Late Prehistoric/Protohistoric-period imagery (tables 3.3, 3.4). In contrast, Late Prehistoric and many Protohistoric-period warfare-related scenes are better characterized as corporate images, where cooperating groups of warriors are shown in a battle-ready state, and when they are fighting it is as a more or less organized group. This is exactly the difference illustrated between Sahkomaupee's report of Protohistoric-period fighting and the fighting that is so well documented in most Historic-period warfare. Of course Sahkomaupee reports that group cohesion broke down on both sides during a routed enemy's disorganized retreat, and ultimately—as the Protohistoric-period scenes of V-neck humans at Bear Gulch so strongly attest—warriors were out to earn honors by taking scalps and war trophies. However, it was not until the horse provided a ready source of a relatively easily captured commodity, and a mechanism for increasing the fluidity of war parties and their effective range of influence, that small-scale, personal actions became paramount in Plains warfare illustrations.

ACKNOWLEDGMENTS

The research at Bear Gulch and Atherton Canyon has benefited from the support of many people and organizations. Macie Lundin Ahlgren and the Royal Melton family graciously provided access to Bear Gulch and Atherton Canyon. Funding was provided by the Oregon Archaeological Society, Montana Archaeological Society, Greer Services, and more than 30 private donors. Among the latter I particularly want to thank Jean M. and Ray B. Auel, David Easly, Carol Garner and Marty Geller, Fred and Jeri Kawabata, Mike and Kellee Taylor, George and Cathy Poetschat, and Alison Stenger. David A. Kaiser and George Poetschat assisted with this research in several ways and Jean Harris constructed the tables.

NOTES

1. See Keyser et al. (2012) for a discussion of how elements, motifs, and images differ and how this affects comparison of tabulated imagery between sites. In this regard, the same relative size ranking would be true if we tallied images or motifs for Bear Gulch and Atherton Canyon versus other large Plains sites or site complexes. It should also be noted that Bear Gulch is spatially smaller—and Atherton Canyon only modestly

larger—than DgOv-2, by far the largest individual site in the Writing-on-Stone site complex. In summary, by any measure both Bear Gulch and Atherton Canyon are as large and complex as any other concentration of northwestern Plains rock art.

2. For imagery to compare to the Bear Gulch/Atherton Canyon shield-bearing warriors, I originally used a database of shield-bearing warriors that (as of 2006) included all known published shield-bearing warrior images. Throughout the chapter, when making comparative statements, it is this sample of warriors to which I am referring. Certainly, there are many other shield bearers known at rock art sites across the region that were not yet published when this chapter was written, but these could not be considered here because they were unavailable to me. A shield-bearing warrior compendium, completed long after this chapter was finalized, has since been published (Keyser and Poetschat 2014) and contains data on more than 600 northern Plains shield-bearing warriors at sites other than Bear Gulch and Atherton Canyon. This was the entire sample of this motif—published and unpublished—known at the time of publication. Superficial comparison of the results reported here with the data in that compendium shows no significant discrepancies between the sample used from the 2006 database and that in the compendium.

3. Throughout this discussion I use Secoy's (1992) warfare patterns since his is still the best summary of how the expanding frontiers of European firearms and horses influenced Plains warfare.

4. Elsewhere on the northern Plains, bows are also rarely depicted as the shield-bearing warrior's weapon of choice. Possibly this is due to the difficulty of using a bow while burdened with the large shield, but the number of early Bear Gulch–style bowmen at Bear Gulch indicates that for some engagements it predominated. The number of bowmen at Bear Gulch and Atherton Canyon who do not carry shields is also quite small (15 of the 208 humans other than shield bearers). While this percentage is not quite double the number of shield bearers who are bowmen, 6 of the 15 other humans with bows are shown in hunting scenes. Hence, the number of bowmen who are shown as warriors is almost exactly the same among both shield bearers and other humans.

5. The same drawing of this weapon is erroneously identified as a goad in another publication on Bodmer's art (Thomas and Ronnefeldt 1976:60), but that identification was not made with access to the actual artifact in Bodmer's collection. The form of this piece unequivocally indicates that it was a war club.

6. Since publication of that 2008 article the bow-spear painted at the sixth site in Big Coulee, Montana, has been called to my attention (Keyser et al. 2012:123).

7. "Hand of God" is used here not to imply that Plains Indians had a monotheistic view of a single personified God. However, this depiction is undeniably a human arm and hand. Elsewhere, Keyser and Kaiser (2014) suggest that the being whose hand and arm is represented may be something similar to Long Arm, a popular mythological

being who "lives in the sky, where you cannot get at him; but he can hurt you, for his arm is so long that it reaches from the heavens to the earth" (Matthews 1877:69). Versions of Long Arm are found among the Mandan, Hidatsa, Lakota, and Crow, and long arms, apparently interceding from the heavens to the world of mortals are drawn at several northern Plains rock art sites.

8. The capture hand is a Plains Biographic art convention used to show several things including touching an enemy to count coup and capturing an enemy woman or a war trophy (Keyser and Poetschat 2012:40–44).

9. See note 2.

10. The V-neck warriors at Bear Gulch and Atherton Canyon have been identified as belonging to a Blackfoot style of this image based on extensive analysis of both rock art and early painted bison robes and war shirts (Brownstone 2001a; Keyser 2006a, 2011; Keyser et al. 2012:233–237, 349–350). Characteristic size and shape (including the occasional V-neck hourglass body shape), features such as heartlines and kidneys, types of associated figures, and characteristic accoutrements (such as weapons and ceremonial feather fans) are the basis on which such an identification is made. Certainly there are other V-neck figures in Plains rock art that are the product of other tribal artists.

11. Maurer (1992:125) actually notes that the buffalo bull's urination, which is shown on several Crow shields, is "an observed detail of natural behavior that is associated with mating, aggression, and the marking of territory." It must be noted, however, that the posture of an aggressive buffalo bull also always shows a raised tail (Maurer 1992:125–126, 248), and thus, this attribute is equally indicative of the bull's aggressive attitude.

12. Certainly some of the motive was economic (e.g., the capture of horses), but the point made in the 1979 article is worth making again—that is, if the primary motive for Historic-period Plains warfare were economic, it would make no sense to rank stealing a picketed horse from in front of an enemy's tipi higher than running off his entire herd, nor would touching an enemy be ranked higher than killing him.

13. It should be noted that this analysis does not consider Biographic tally compositions from any period. Such tallies found in both the Protohistoric and Historic periods contain from 10 to more than 100 human figures and/or weapons.

14. Keyser (2010:96) has suggested, based on the relative sizes of the shields, that one Writing-on-Stone scene shows such a pedestrian fight between one warrior equipped with a large, pedestrian-sized shield and a second unmounted equestrian combatant, who carries a smaller shield, but unlike many Historic-period art scenes there is no indication (e.g., quirt, footprints leading to the fight, a horse standing by) that the motivation of the warrior with the smaller, post-horse-period shield was to forfeit his equestrian advantage. Very likely, he simply was engaged in this combat in the absence of his horse.

4

Coup Counts and Corn Caches

Contact-Era Plains Indian Accounts of Warfare

Linea Sundstrom

Plains Indian records such as rock art, winter counts, ledger-book drawings, and hide paintings document a wide range of motives, tactics, and outcomes for intergroup fighting. Plains Indians made such records generally for their own use to supplement oral histories. These records thus provide an emic view of armed conflict on the Great Plains from the last few centuries before European weaponry and horses reached the area up until the end of the Indian Wars. These native records chronicle different kinds of conflict: large-scale attacks on horticultural villages; small-scale raids for horses, captives, and scalps; sustained campaigns to keep enemies (including non-Indians) out of hunting territories; defensive actions; and at least one captive-rescue operation.

Sometimes these documents reinforce archaeological findings; for example, the battle locations known as the Larson and Leavenworth archaeological sites appear in the Lakota winter counts (Sundstrom 1996). Both sites were Arikara earthlodge villages: one raided by a Lakota war party and the other attacked by a US military force that included a large contingent of Lakota warriors. In other cases, the indigenous documents record or detail conflicts not visible in the archaeological record, such as skirmishes between small war parties or battles fought far from settlements. While the archaeological record highlights the larger battles and attacks on villages, the pictographic records and associated oral narratives suggest

DOI: 10.5876/9781607326700.c004

that sites like Crow Creek are more anomalous than representative of Plains Indian lifeways in the precontact era.

EMIC VERSUS ETIC RECORDS

Euroamerican documents such as newspapers, military reports, and history books frequently misrepresent armed conflicts. Because of the high stakes involved, each side tends to demonize the enemy, minimize its own failures, and exaggerate its own successes. The saying "the first casualty of war is truth" is often repeated in journalism schools; its more general version is that the winners get to write the history books.[1] Today, many people wonder why 23 Congressional Medals of Honor were awarded to US soldiers for the Wounded Knee massacre, but at the time many people viewed the event as a hard-won victory against a fierce enemy. In an article for the *Nebraska State Journal* about the burial of US soldiers killed at Wounded Knee, reporter William Fitch Kelley (1971:206) wrote: "Gallant soldiers, you fought the foe most nobly; you wavered not in the hour of danger, when the treacherous Indian, without warning, shot you down upon Wounded Knee." Kelley's stories omitted the fact that these noble men had mostly died from their own side's "circular firing squad" at a conflict in which they took the lives of an estimated 200 unarmed women, children, and infants. That might still be the story in the history books, had not photographs such as that in figure 4.1 and the accounts of Lakota survivors collected by Charles and Mary Eastman (1945) and James Mooney (1896) eventually come to light.

This is just one example of why it is important to seek out multiple accounts. The winners might write history, but they typically do not write the whole, unvarnished truth.

KINDS OF PLAINS INDIAN RECORDS

Warriors created painted hides and ledger-book drawings to publicize individual deeds or coups. These Contact-era works have been a key to interpreting late-period Indian rock art throughout the Great Plains (Keyser 1979, 1987b, 1996, 2000; McCleary 2008b; Rodee 1965; Sundstrom 1990:316–321; 2004:99–113; Sundstrom and Keyser 1998). Because ledger-book drawings, hide paintings, and Biographic rock art together form a single narrative art tradition, interpretations from art in one medium can be applied to another. In the words of Father Pierre-Jean DeSmet, "They have . . . still more remarkable modes of communicating thought. The large figures displayed on their buffalo robes are

Figure 4.1. *Wounded Knee battlefield: Big Foot's camp three weeks after the Wounded Knee Massacre. (Digital file from original item. Digital ID: ppmsca 15849 Library of Congress Prints and Photographs Division Washington, DC 20540 USA http://www.loc.gov/rr/print/.)*

hieroglyphics, as easily understood by an intelligent Indian as written words are by ourselves; and they often contain the narrative of some important event" (Chittendon and Richardson 1905:681). Those creating these records retained the same or similar pictographic conventions for showing the protagonist, enemy/victim, capture of weapons or horses, and the like as the media shifted from painted hides to pencil drawings on paper (Greene 1985) (figure 4.2).

Like the ledger-book drawings and hide paintings (Afton et al. 1997; Berlo 1996; Greene 1985; Keyser 2000; Mallery 1972; Maurer 1992; Szabo 1994), the vast majority of the narrative rock art in the northern Plains depicts battle scenes, horse raids, or other warrior activities. The art tradition includes few scenes of everyday activities or ceremonies, although some artists created such drawings on paper to sell to non-Indians during the early reservation period (Berlo 1996:18, 35; Ewers et al. 1985:8–10; Maurer 1992; Szabo 1994:27). Many petroglyphs can be interpreted within the larger narrative warrior-art tradition of the northern Plains, including hide paintings and ledger-book drawings, which are in turn interpreted based on the recorded

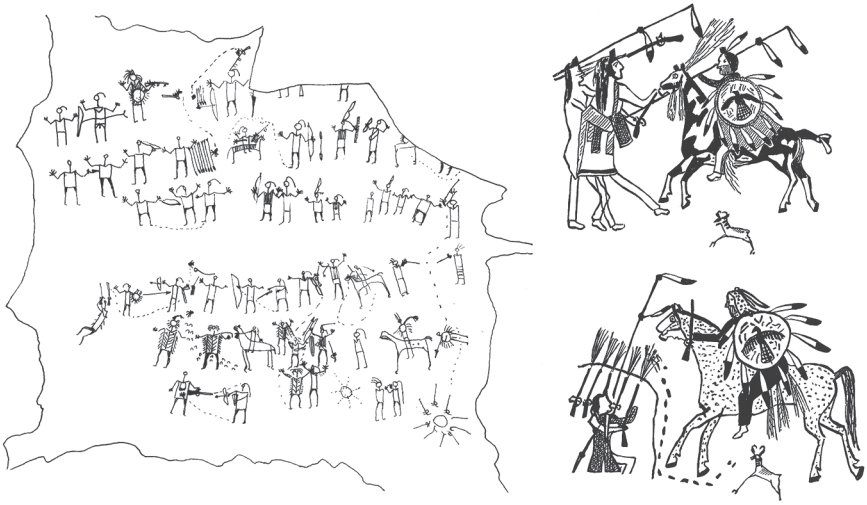

Figure 4.2. *Pre-horse-era hide painting from Musée del Homme, Paris, (left) and two pages from Running Antelope's pictographic autobiography (right).*

statements of the people who created them (Keyser 1996, 2000; Mallery 1886, 1972; McCleary 2008b).

Winter counts are lists of year-names representing the most significant events in the life of the individual or band for each of the years included in the count (Calloway 1996:31–33; Greene and Thornton 2007; Howard 1960, 1976; Mallery 1886, 1972; McCoy 1983; Sundstrom 1997, 2003, 2006). Originally, these lists comprised pictographs, but later many were recorded as Lakota, Dakota, or English text. The vast majority of winter counts available for study are from the Lakota, but a few Yanktonai Dakota, Mandan, Kiowa, and Blackfoot winter counts also exist. Each year's name was something like a headline for a specific event, the details of which the winter count keeper had committed to memory, and that event in turn evoked everything else important that had happened that year (figure 4.3).

Most of the scholarly literature on winter counts treats them as items of material culture, rather than sources of historical data (e.g., Maurer 1992). Few scholars have brought winter counts and other indigenous documents to bear as primary sources on historic research. One exception is George Hyde, who used Lakota winter counts in his accounts of Oglala history (Hyde 1957, 1961). James Howard's study of Yankton ethnohistory also treats winter counts as historical documents (Howard 1976). Ron McCoy analyzed winter counts as a

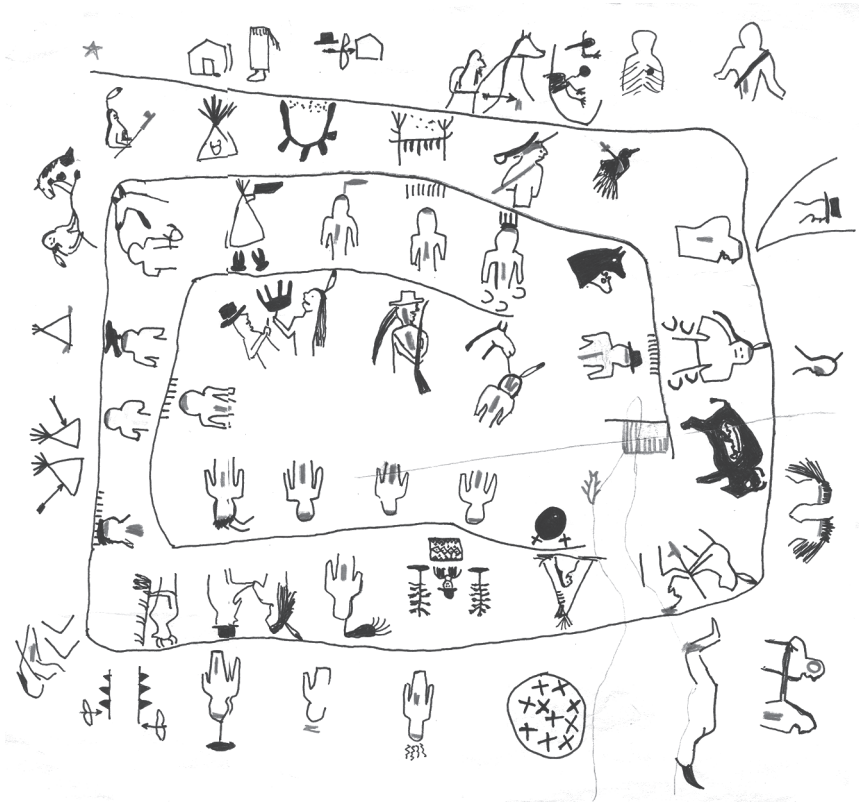

Figure 4.3. *The Thin Elk–Steamboat Winter Count, Buechel Lakota Museum, St. Francis Mission, St. Francis, South Dakota. Drawing by author.*

source for pre-1800 Lakota history (McCoy 1983). Other studies using winter counts have focused not on history per se, but on epidemics, migrations, and astronomy (Chamberlain 1984; Henning 1982; Sundstrom 1997).

The neglect of these sources has several explanations. The first is either a lack of awareness that they exist or a lack of understanding of how to interpret them. As mnemonics for more detailed oral narratives, the pictures themselves provide limited information. With winter counts, the picture refers to an event, which in turn refers to all the important events of that year; thus, the picture itself is only a tag for the historical events linked to it. Drawings on hide or paper provide a more complete narrative of a war event or deed, but the researcher must learn how to interpret the narrative from the pictures (e.g., Greene 1985).

A second problem is distrust of the accuracy of the indigenous accounts. This springs from Western culture's privileging of the written word and from an ethnocentric view that oral history is necessarily less accurate than written history (Lowie 1915). Because our culture does not train us to hear and memorize narratives with accuracy, we assume that this skill is either difficult to acquire or not present in other cultures. But even literate cultures use rote memorization to implant information such as the Koran, Bible verses, addition and multiplication tables, nursery rhymes, and poems. Clearly, people can learn to recite long narratives with near-perfect accuracy. A related, third problem is researchers' assumption that such records are too biased to be of value. While it is true that the system of recording and publicizing war deeds so central to Plains Indian life was likely to omit or minimize unsuccessful expeditions, it also demanded detail and accuracy in the records and their interpretation. A warrior who falsely claimed credit for a coup faced ridicule and punishment. The omission of defeats is less a problem in the winter counts, in which unsuccessful military actions are as likely to be recorded as successful ones. A fourth impediment to use of indigenous documents is simply one of cultural chauvinism, whereby researchers privilege the familiar forms of European documents over the less familiar and more esoteric non-European forms or lump together all forms of oral tradition as mythological (DeMallie and Parks 2001:1062; Goldenweiser 1915; Wolf 1997).

While indigenous records have limitations, pictographic narratives from the contact and late precontact era on the Great Plains, properly interpreted, can fill in the blanks left by archaeological data and can help to correct the biases inherent in the history that archaeological studies produce for this time and place.

WEAPONRY AND TACTICS

Scenes of conflict are rare in early Plains Indian rock art. Although rock art is notoriously difficult to date, best current data indicate that so-called warrior art is limited to the last 1,500 or so years before European contact. The earliest conflict-related Plains rock art consists of pictures of shields and shield-bearing warriors. The weapons complex here consists of large body-shields and bows, spears, antler-tine pikes, and clubs (Greer and Greer, chapter 2, this volume; Keyser, chapter 3, this volume). Most of this early warrior art focuses on showing the details of shields, weapons, and other accoutrements, including items indicating membership in warrior societies, such as the bow-spear. Early warrior art that shows action often depicts the shield-bearing warrior spearing or counting coup on a hapless individual lacking shield or weapons.

The observation that women as well as men are depicted as such unarmed victims suggests that, as in later times, warriors could gain status by slaying any enemy, not just men or other warriors (Keyser et al. 2006). Some women did go to war in later times (Ewers 1994; Greer and Greer, chapter 2, this volume; Keyser et al. 2006), but the extent to which this happened before the contact era is unknown. It is frequently impossible to tell the sex of warriors in the early warrior art, because the warrior's body is concealed behind the large shield; those that do show sex are male. An exception is a rock art panel depicting a woman—or a person in a dress, at least—engaged in combat with a warrior on horseback (McCleary 2008b:266, figure 78).

Some early warrior art includes depictions of severed heads or scalps, indicating that scalp-taking was practiced at this time; however, whether the practice had a religious function as in later times cannot be construed from either the rock art or other archaeological remains (figure 4.4). The first definite reference to scalp-taking in the winter counts is for the year 1749, although one can speculate that reports of small, wide-ranging war parties first mentioned in 1711 also refer to scalp-taking expeditions.

The early days of equestrian warfare are poorly recorded in the winter counts. This is because most winter counts available for study today do not extend back before the early 1800s: too late to record initial encounters with horses, which must have taken place before 1700. A few winter counts are older (McCoy 1983), but it appears that the extent of any given winter count was limited, as the earliest years were forgotten or generalized and dropped off the winter counts over time. For example, the winter count of Battiste Good generalizes early history into one pictograph for every 70-year period (Mallery 1972:287–328). This series of legendary events records early encounters with horses for the periods AD 1141–1210 and 1421–1490, both of which are obviously not historically accurate. The same winter count refers to using horses for bison hunting sometime between 1631 and 1700, which is reasonable for the northern Great Plains. At 1700, the Battiste Good winter count begins a year-by-year record of Lakota history, with horses referred to routinely throughout the subsequent record. We do not know when northern Plains warriors began to employ horses in battle, but the Battiste Good winter count records equestrian warfare for 1714 and 1715, and horse raids for 1708, 1709, 1717, and 1718.

Turning instead to rock art, the earliest pictures of equestrian warfare in the Great Plains show warriors carrying shields atop horses with leather armor (figure 4.5; also see Greer and Greer, chapter 2, this volume, and Keyser, chapter 3, this volume). These warriors carry lances and are most often shown attacking unarmed and unmounted enemies. Horse armor had a short tenure on the

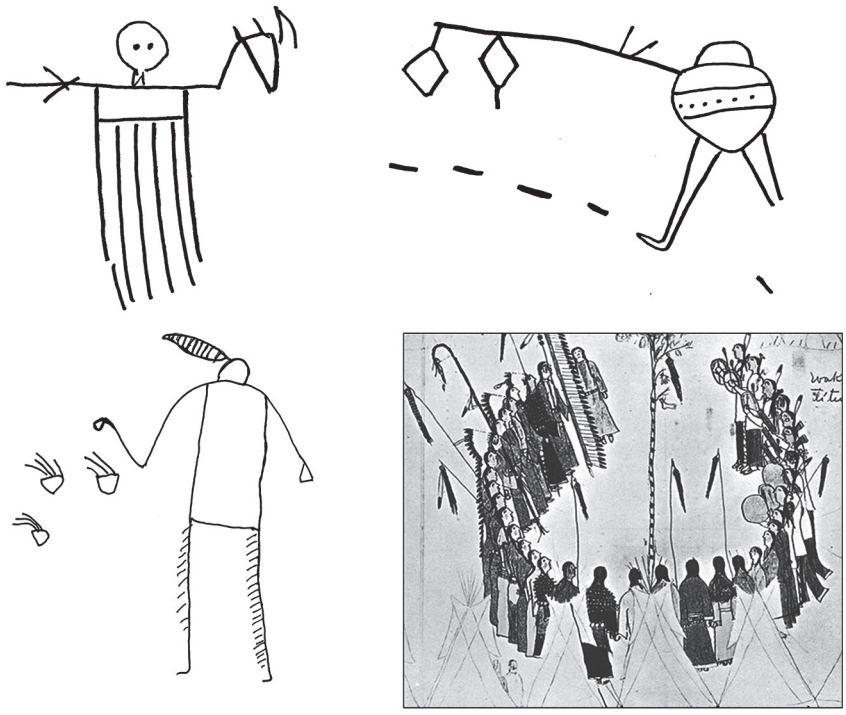

Figure 4.4. *Rock art and ledger drawing of severed heads or scalps. Upper left and upper right, rock art, North Cave Hills, South Dakota; lower left, rock art, southern Black Hills, South Dakota; lower right, Amos Bad Heart Bull drawing of Lakota Victory Dance, date unknown (pre-1918 book of drawings), showing women with scalps attached to coup sticks (Amos Bad Heart Bull Ledger, Plate 39b, No. 85. View the complete book at plainsledgerart.org).*

Plains, probably because it impeded the great advantage of horse warfare, the speed and agility of a well-trained mount. After the larger shield and horse armor were cast off, the weapons of choice were the bow and arrow and the lance, with a much smaller shield, if any. Rock art and ledger art of this later period of equestrian warfare typically show mounted warriors overcoming pedestrians, including women (figure 4.6). On the northern Great Plains, guns are first mentioned in the winter counts later than horses, circa 1800. According to the winter counts, the bow and arrow retained its place as the primary combat weapon until the mid-1800s and continued in use well after guns were widely available.

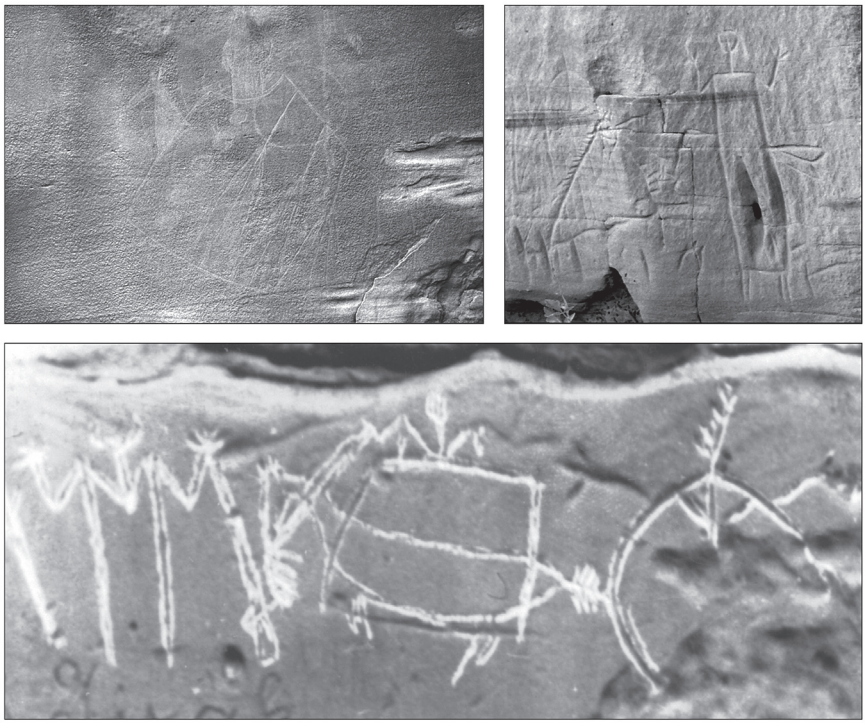

Figure 4.5. *Rock art depicting horse armor. Upper left, Bruner Ranch, eastern Montana; upper right, North Cave Hills, South Dakota; lower, Wilson Creek, Kansas.*

TYPE, SCALE, AND GEOGRAPHIC RANGE OF ARMED CONFLICT

Regarding types of conflict, the indigenous sources considered here are consistent in indicating that the vast majority of armed conflict during the contact era was limited in scale. Because winter counts list only one event per year, battles that involved large numbers of combatants, prolonged engagements, or mass casualties should be well represented. Nevertheless, a sample of Yanktonai Dakota, Sicanju Lakota, Oglala Lakota, northern Lakota, and Peigan Blackfoot winter counts[2] mentions small war parties and opportunistic attacks twice as often as large battles (Appendix 4.A). This sample included 26 mentions of large-scale battles, meaning battles involving more than 30 warriors per side. By comparison, the sample included 29 mentions each of small war parties (a few to as many as 30 warriors) and opportunistic attacks on hunters, wood gatherers, eagle trappers, women gathering prairie turnips, families camping away from the main group, and the like. Another 43

Figure 4.6. *Warrior on branded (US Cavalry?) horse counting coup on pedestrian warrior, North Cave Hills, South Dakota. Drawing by James D. Keyser.*

events recorded in the winter counts are individual battle casualties, of which most if not all took place in skirmishes between enemy war parties. Only 22 multiple-casualty events appear in the winter counts. Of these, 12 report between two and 12 deaths, and presumably refer to battles between war parties, as opposed to attacks on villages. Events involving more than 30 deaths or simply recorded as "many killed" include three attacks on Middle Missouri earthlodge villages and one on a Skiri Pawnee village. Two others refer to the annihilation of entire bands, but it is not clear whether this took place at a village or encampment or in some other circumstance. Four of the 10 high-casualty (more than 30 killed) events were losses suffered by forces attacking encampments or settlements. In these cases, an enemy attack on a camp or village was suppressed at high cost to the attacking force. Three others refer to fights against non-Indian forces: the Villasur fight, the Grattan fight, and the Fetterman fight.

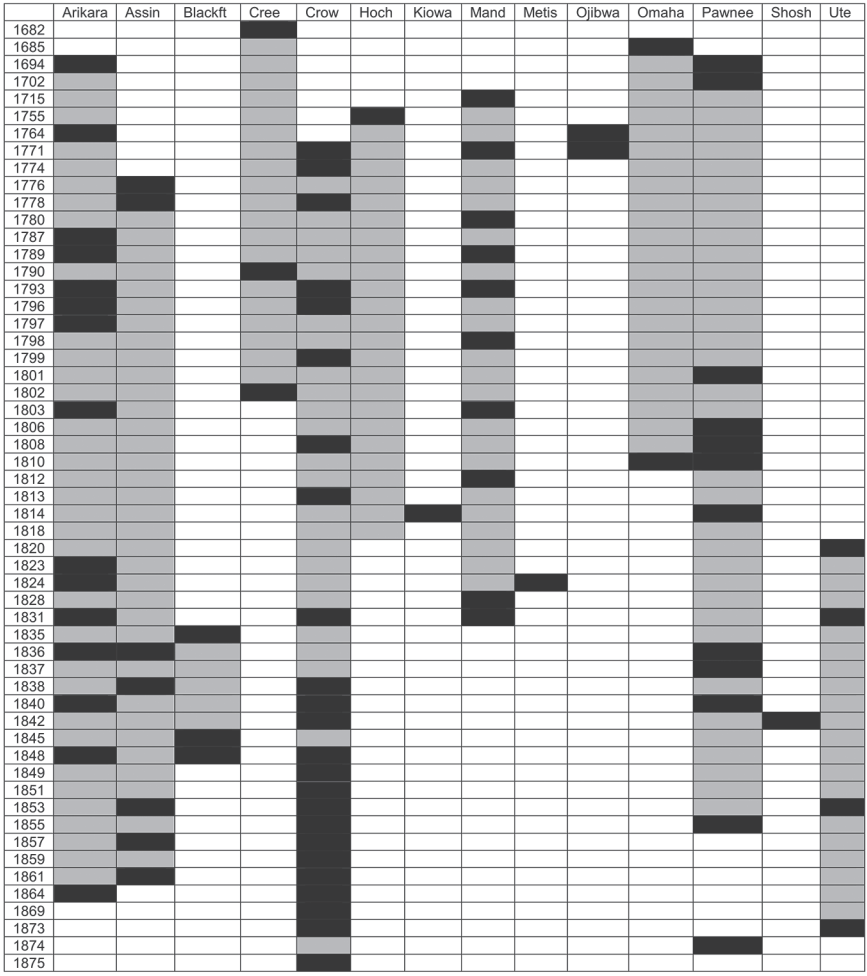

Figure 4.7. *Enemies mentioned in Dakota/Lakota winter counts, 1685–1875; specific incidents (black) and timespan (gray). Ho-Chunk, ??; Mand, Mandan; Shosh, Shoshone.*

While the scope of warfare was limited and many conflicts unplanned, the Lakota winter counts also show that the geographic range of war parties was wide and gradually shifted toward the west over the period covered by these records. Conflicts sometimes broke out between widely separated groups, such as the Ho-Chunk and Lakota, or the Lakota and Utes (figure 4.7). Because these groups were not fighting for commonly claimed territory, it would appear that such conflicts were the result of chance encounters between

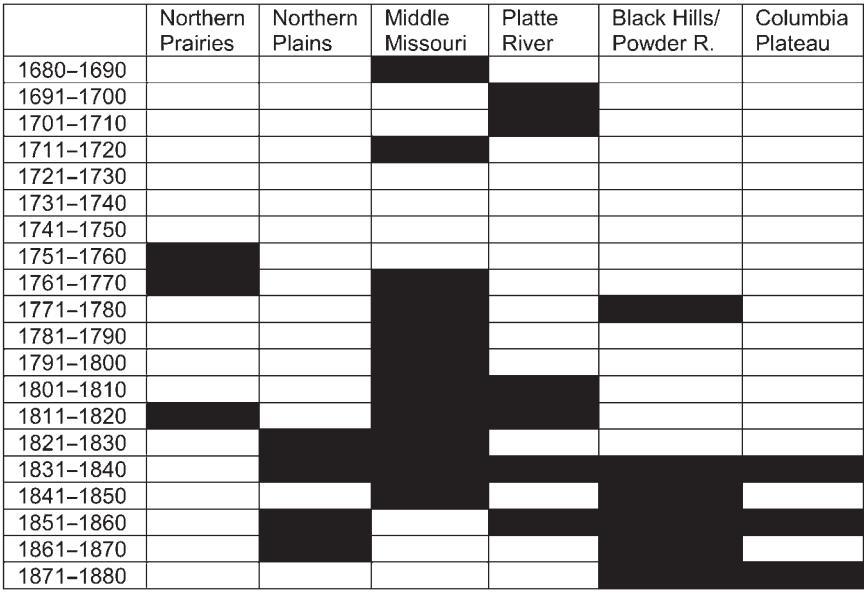

Figure 4.8. *Geographic locations of battle mentioned in Dakota/Lakota winter counts.*

war parties. At the same time, the locations of battles recorded in the Lakota winter counts indicate a shift toward the west (figure 4.8). This presumably reflects the increased power and territory of the Lakota alliance as it expanded westward across the Missouri and into the Black Hills, Powder River, and Little Missouri country.

MOTIVES FOR WARFARE

As noted, scalp-taking was an important motive for small-scale armed conflict in the contact era and the late precontact Great Plains. Acquiring a scalp to assist the soul of a deceased comrade or relative along the way to the afterlife was a regular part of mourning and is best understood in this religious context, rather than as trophy-taking (Sundstrom 2015). Such events most often occur in the winter counts not as records of the scalp raid itself, but as records of the ceremony in which the deceased person's loved ones impelled his comrades to pledge themselves to getting a scalp when the season for battle next came around. In the 200 conflict-related events in the winter counts, scalping is explicitly mentioned only four times, although the

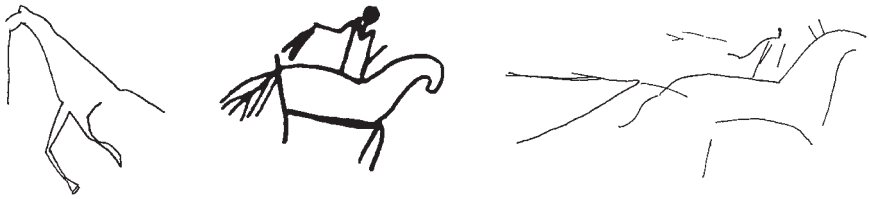

Figure 4.9. *Three horse-raid scenes in rock art from the North Cave Hills, South Dakota: (left) remnant of horse with tether rope; (center) horse raider with quirt in back hand; (right) capture of a horse carrying a travois.*

pictographic winter counts frequently depict a forehead wound on warriors killed in battle.

Horse raids are mentioned only four times in the sample of winter counts used in this study. This apparently is a result of underreporting, because horse raids are shown frequently in ledger-book drawings and in rock art. Unless a new breed of horse, an especially fine warhorse or racehorse, or a very large herd was taken, horse-raiding events were likely overshadowed in the winter counts by more significant or unusual events. By contrast, records of horse raids are common in northern Plains rock art (figure 4.9).

Counting coup was undoubtedly a strong motivator for offensive warfare. This is less evident in the winter counts than in the innumerable ledger-book drawings and rock art panels depicting individual coups. But even in the winter counts, which were not created explicitly to record or publicize coups, 12 of 200 conflict events recount unusual or especially impressive coups. Only a small percentage of coups would have been recorded as year names in winter counts, because they record only the most memorable or important event of each year.

Winter counts indicate that several attacks on hunting parties, as well as many of the large battles, were attempts to take over or defend good buffalo-hunting grounds. A Blackfoot winter count mentions a large battle with the Salish over a bison hunting territory, while another mentions Blackfoot fighting Kutenai who came to hunt bison in the Alberta foothills. The latter may have been during a time when the herds were decreasing, but the former event in 1811 is not likely to reflect reduction of the herds. The numerous clashes between Lakota and Pawnee, and Lakota and Crow, were motivated in large part by Lakota attempts to take over bison grounds on the North Platte and in the Powder River Basin (McGinnis 1990:109–128). An event recorded in Lakota winter counts not included in the sample used here records a fierce

battle with a group of Metís who had come south to hunt bison in territory claimed by the northern Lakota tribes.

Luc Bouchet-Bert (1999) proposed that some warrior art was made to warn away enemy intruders. This idea is given credence by ethnographic accounts of war parties leaving behind pictographic notices when they killed enemies (Grinnell 1926:31–34; Hans 1981:50; Hyde 1968:54; King 1880:84), and by the observation that warrior art appears to be relatively uncommon in areas held as neutral zones, such as the Black Hills, Pipestone (Minnesota), and the Sweetgrass Hills. By depicting well-armed, powerful warriors and scenes of victory, warrior art that was placed permanently within the landscape in the form of rock art served notice to any trespassers. If correct, this use of rock art supports the concept of warriors defending hunting territories. The winter counts, as well as other oral histories, clearly demonstrate that warriors moved within vast territories, occasionally encountering and often confronting their counterparts from tribes living hundreds of miles away. This degree of mobility very likely created opportunities to exploit new territories and increased the conflict between groups as core territories shifted and expanded or contracted. The warrior set could keep their own villages and camps safe and scout out promising hunting grounds by engaging in such long-distance expeditions. In this way, warriors could effectively defend and expand their territories while protecting their villages from direct attack.

Finally, the Lakota and US Cavalry attack on the Arikara village known archaeologically as the Leavenworth site (Krause 1972) is recorded in the winter counts primarily as a plunder event. The invading Lakota force raided the Arikara corn fields and corn caches, but not much fighting ensued because the Arikara abandoned the village when they saw the combined force approaching. The year name is "much spoiled corn" or "much dried corn," in reference to the raid on the Arikara fields and cache pits. It seems unlikely that the Lakota were induced to join the US force by the possibility of plundering the corn stores, but this is mentioned here as a possible secondary motive for attacking the horticultural village.

While precontact and early Contact-era rock art depicts both men and women as victims of enemy attack, a trend emerges in the later records of taking women and children captive rather than killing them (Keyser et al. 2006). The Yanktonai winter count records that in an attack on the Nuptadi Mandan village in 1780 many women and children were taken captive to boost the population of the Yanktonai. This presents a striking contrast to the Crow Creek and Larson archaeological sites, at which large numbers of women and children were among those killed in attacks on earthlodge

Figure 4.10. *This rock art panel from the North Cave Hills, South Dakota, shows a warrior touching a woman's genitals, indicating that he is claiming her as a wife.*

villages. By the late 1700s, epidemic disease introduced from Europe had taken a heavy toll on native populations; thus, enemy women were increasingly seen as more valuable as potential wives and mothers than as sources of scalps. Although the attacks on the Larson site and Nuptadi were only nine years apart, the attack on Nuptadi corresponded with, or closely followed, a very widespread smallpox epidemic that may have both weakened the village's defenses and made its potential captives an attractive target for attackers. In 1838, a Skiri Pawnee war party attacked a Lakota family and carried off a young girl to be sacrificed in the Morning Star Ceremony, which they were

performing in hopes of abating an especially deadly smallpox epidemic. A Lakota war party avenged her death soon thereafter, but brought the deadly virus back with them to their own camps.

It is not clear whether warfare on the northern Great Plains was motivated by a slave trade. The winter counts mention captive women and children, but not slaves for trade. Pictographic records such as rock art and ledger-book drawings clearly show capture of enemy women (Keyser, chapter 3, this volume), but these lack clear evidence of taking captives as chattel, as opposed to adopting women and children into the captors' group (figure 4.10). This contrasts with some ethnographic accounts of Plains Indians trading captive women to other groups (Greer and Greer, chapter 2, this volume).

CONCLUSION

In conclusion, records made by Plains Indians reveal several things about warfare. First, they show that motives behind warfare were many and overlapping, but that principal among them were scalp-taking, acquiring war honors, and defending or expanding hunting territories. Horse raiding was an activity that might be accomplished without fighting; however, many such raids precipitated defensive or retaliatory action from the enemy. Both acquiring the horses themselves and gaining the honor of bravely capturing them belong in the list of motivations for warfare. Most hostile encounters were either between wandering groups of warriors or between war parties and civilians caught off guard while away from their camps or villages. Large-scale attacks on villages that led to mass casualties, such as those recorded archaeologically at the Crow Creek and Larson village sites, were relatively rare and not always successful. Finally, tactics and motives changed over time as horses and European-manufactured weapons became available and as population declines due to waves of imported epidemic disease promoted taking women and children as captives to be adopted into the captor society.

APPENDIX 4.A

200 Armed Conflict Events, 1682–1876, from Yanktonai Dakota, Sicangu Lakota, Oglala Lakota, Northern Lakota, and Blackfoot Winter Counts

Large Battles

1682	Dakota v Cree
1685	Santee v Omaha

1704	Entire Yankton tribe went on the warpath
1783	Battle at Big Woods
1787	Battle between Dakota and Arikara
1790	Took 8 Cree tipis in battle
1798	They fought six days in the foothills
1803	Battle at Heart River (Yankton)
1810	All the Yanktonai went on a war expedition to Stone Hill
1811	Large battle between Salish and Peigan over bison grounds; killed 7 Peigan and 5 Salish
1811	Blackfoot fought the Cree
1814	Peigan were in a great battle
1816	Peigan attacked Pend d'Oreilles who were moving camp
1818	Yantonai battle with the Winnebago
1823	They attacked with the whites (Leavenworth–Arikara village)
1824	Yanktonai report a big battle
1828	Peigan lost the battle
1831	What started as a skirmish turned into a large battle (Yankton)
1835	Lakota and Pawnee fought across the ice
1836	Wood Striker Yanktonai fought with Arikara
1845	Sioux attacked Peigan who were moving camp
1859	Peigan fought the Kutenai in the Alberta foothills when they came to hunt bison
1863	Sioux Uprising
1870	Blackfoot beat the Crees at Lethbridge
1875	They fought Bear Coat Miles
1876	Little Big Horn

Expeditions of Small War Parties

1711	A few Dakota went on a war party
1726	Dakota war party went to the Big Horns
1743	White Warbonnet went to war
1749	They returned from a raid with many scalps
1755	They fought the Winnebago
1758	A few Dakota went on the warpath
1764	War party of nine Arikara or Pawnee came (Yanktonai)
1768	Feather Shirt passed the pipe
1771	Two war leaders were killed
1775	A woman killed an enemy and came back
1776	A fight with the Assiniboin
1781	Holy Elk won a battle
1796	Bear Paw wore an eagle bonnet and was wounded
1797	Arikara killed a Lakota water boy

1808 A small war party killed an enemy
1815 They fought in the thin brush
1825 Brave Man went to war
1827 Blue Feather was wounded
1828 Peigans fought with Elk in states
1834 Blackfoot fought Crow at Yellowstone River
1835 Peigan beat the Sioux in battle
1840 The starve to death war party
1841 Bloody Hand killed enemies and returned
1843 Shaves Forehead was wounded
1844 Blackfeet fought Assinboin at Belly River
1846 They came back without Two Herds
1847 They abandoned Good Heron's younger brother
1859 Yellow Robe was killed
1860 Big Crow was killed by a bullet

Horse Raids

1805 They killed a horse thief
1813 A Crow was cut up coming into camp
1848 A great horse raid
1873 Bear Paw killed a Crow horse raider

Opportunistic Attack

1688 They attacked hunters
1693 Man attacked but made it back safely
1698 Enemy attacked and killed Good Hunter
1719 Buffalo hunter killed by enemies
1761 Eagle hunters were killed
1772 Enemies killed three wood gatherers
1775 Killed two scouts
1779 A hunter and his family were killed while hunting
1788 Cheyenne killed Shade's father
1789 They killed two Mandan
1791 Man watching a steamboat was killed
1793 Killed a Crow in his lodge
1795 A woman fetching water was killed
1796 Arikara attacked Yankton when they were out hunting buffalo
1797 Woman digging tipsin was killed
1806 An eagle catcher was killed
1808 Eagle hunters were killed together
1810 Pawnee killed Blue Blanket's father
1814 Big Road's father was killed by Pawnee

1814 They killed a Kiowa envoy
1829 They killed a Crow in winter
1835 Lodge was killed while skinning a buffalo
1838 Pawnee attacked family in their lodge, killed men, and took the daughter as a Morning Star sacrifice
1839 They killed a man in his lodge at night
1838 They killed three Assiniboin boys
1840 Calf Falling was killed in his lodge
1859 They surrounded the red tipi
1863 They scalped a boy
1874 They killed someone while moving camp

Other Records of Individual Casualties

1727 Yankton Good Cedar Woman shot and killed
1737 They returned and killed Running Bull
1751 Enemy came and killed Red Bull
1752 Bird was killed in battle
1753 Grouse was killed in battle
1754 Charging Bull was killed in battle
1756 Warbonnet was killed in battle
1757 White Weasel was killed in battle
1758 White Cow was killed in battle
1760 White Bird was killed in battle
1761 Head was killed in battle
1763 Camps in Center was killed in battle
1764 Red Camp was killed in battle
1767 They killed a buffalo dreamer or Wears-a-Mask
1769 Charging Eagle was killed in battle
1769 Mask Wearer was killed
1780 Sacking of Nuptadi Mandan village—took many women and children captive
1784 Red Robe was killed
1785 Charging Eagle was killed
1786 Coyote was killed
1787 A heyoka was killed in battle
1785 They came and killed Brown Bear
1796 They killed a Crow with very long hair
1802 Big Rattlesnake was killed in battle with Cree
1808 They came and killed Bull Elk
1809 Again they killed one wearing a red coat
1816 Lumpy Heel was killed
1820 Killed two Utes

1821 They killed a white soldier
1835 Running Bull killed an enemy and returned
1839 Eagle was killed in battle
1845 He Crow was killed
1846 White Bull was killed
1849 They killed a Crow, Buffalo Track
1854 They killed Deer Dung
1858 Big Crow was killed
1861 Red Feather was killed
1863 The killed a Crow
1869 Big Fish was killed
1869 High Forelock was killed
1871 Hump was killed in battle
1871 They killed the one on the white horse
1872 Strikes Two was killed

Records of Unusual Coups

1694 Yankton chased the Arikara into the water
1701 Killed one wearing a warbonnet
1762 Yellow Hide counted coup on a Crow
1765 A wounded woman counted coup on an enemy with her stick
1766 Black Lodge counted coup on an enemy
1774 Red Bug counted coup on a Crow with his bow
1774 A heyoka was killed
1784 A man wounded with an arrow counted coup on the enemy with his coup stick
1799 Black Face counted coup on two Crows
1801 Blackfoot took an American flag from the Pend d'Orielles
1807 Man in a red shirt was killed with a bullet (first report of gun—Brule)
1834 Lame Deer pulled out his own arrow and shot the enemy with it again

Mass Casualty Events

1702 Pawnee attacked Dakota camp, but were annihilated
1710 Yanktonai surrounded and annihilated the Wicosawan [Tsistsistas?]
1723 The enemy charged and none survived
1723 Oto, Pawnee, and French traders killed 42 Spanish soldiers and 60 Pueblo warriors
1771 They burned the Mandan out (Larson Village)
1771 They killed many Crows

1793 Many killed in battle
1798 Three Mandan were killed together
1801 Killed seven Pawnee
1804 Four Sioux killed
1805 Eight were killed
1806 Killed three Pawnee
1807 Eight were killed in battle
1811 Six were killed in a surround
1813 Killed six Mandan together
1827 They killed many Mandan
1828 They killed many Mandan
1841 Crow killed Blackfoot Walking Crow band
1849 Peigan killed 50 Cree or Assiniboin
1853 They killed 30 white soldiers
1856 They killed 10 Crow
1857 They killed 12 together
1862 Eight were killed in battle
1866 A great massacre of Gros Ventre and Crow who attacked a Blackfoot Sun Dance encampment
1867 They killed 100 white men
1874 They killed eight Pawnee

Capture Events

1766 Pine Shooter was captured
1769 They took the Snake women and children captive
1780 Big battle with Mandan (Nuptadi Village) took many women and children captive
1808 Getting paint, they were captured by the Crow
1838 Pawnee took a Lakota girl for Morning Star sacrifice
1843 A boy was captured
1849 They captured and then killed a winkte

Other

1767 Those speaking the same language fought
1768 They divided themselves into two sides
1835 A Cheyenne was killed by accident by his Lakota band
1842 Pointer gave a Shoshone scout refuge
1856 White Beard (Harney) took hostages
1860 They scalped Four Horns by mistake in battle
1863 They killed four Crow

NOTES

1. The origins of these quotations are disputed. The first appears to go back to the Greek dramatist Aeschylus (525–456 BCE).

2. For this analysis, I looked at the Yanktonai Dakota winter count of John Bear (Howard 1976), the Oglala Lakota winter count retained by the Amiotte family (unpublished), the Sicangu Lakota winter count given to John Anderson (2002, my interpretation), the northern Lakota winter count of Charles Holy Bull (unpublished), and the Peigan Blackfoot winter count of Bull Plume (version at the Glenbow Museum).

Part 3

Fortifications as Evidence for Violence

5

Rotten Palisade Posts and Rickety Baffle Gates

Repairing Native Eastern North American Fortifications

David H. Dye

Proto-Arikara farmers, who had moved into the Missouri River valley from the central Plains around AD 1300, were digging a new fortification ditch in the early fourteenth century around an expanded area of their settlement, now known as the Crow Creek site, located in central South Dakota, when they suffered a massive attack by enemy warriors (Hollinger, chapter 10, this volume). The defensive barrier that encircled the community was being constructed to protect the villagers against an aggressive and violent enemy—perhaps Siouan-speakers who were being slowly pushed out of the Big Bend of the Missouri River, or by Caddoan-speakers like themselves who competed for the arable strips of land along the narrow Missouri trench. Before the project could be completed, an overwhelming enemy force overran the settlement, burned the earthlodges, and tortured, mutilated, and killed at least 486 inhabitants with war clubs (Johnson 2007a:120; Kendell, chapter 13, this volume). Children and women are underrepresented in the body count—suggesting that many were led away as captives. The carnage was so extensive that it is estimated that few if any villagers survived the onslaught. The bodies lay unburied for months before being interred in the unfinished fortification ditch and then covered with a layer of clay, perhaps by relatives from neighboring villages. In 1978 archaeologists excavated and studied the victims prior to reburial, providing a wealth of information on the massacre and the nature of violence in

DOI: 10.5876/9781607326700.c005

the northern Plains (Johnson 2007a; Willey and Emerson 1993; Zimmerman 1985; Zimmerman and Bradley 1993). The warriors' ability to take advantage of unfinished defensive system provided them a decided tactical advantage.

Some three hundred years later in the Northeast, an Iroquois force attacked villages of the Huron Confederacy. After striking two frontier towns in 1648, Iroquois warriors hit the Huron town of Taenhatentaron (St. Ignace) the following summer. Upon breaching the weakest point in the town's palisade, the warriors entered and captured or killed a number of Huron, primarily children and women. The Iroquois then stormed the Huron village of St. Louis, and assaulted the palisade, cutting their way through the wall and burning the town. Their success was predicated on their ability to breach the Huron's defensive walls, to achieve the element of surprise, and to amass an overwhelming offensive force (Abler 2000; Brandão 1997; Lee 2007:707–709; Otterbein 1964, 1979; Starna and Brandão 2004; Trigger 1976).

In the winter of 1712 South Carolina troops, composed of colonists, allied Yamassees, and other Native allies, under the command of John Barnwell, embarked against the Tuscarora. Finding a number of small, unfinished forts throughout the region, Barnwell assaulted, besieged, and burned each one in turn. The Tuscaroras, having been surprised at Barnwell's approach, were forced to abandon their incompletely fortified towns. In the process they left behind a great deal of "plunder" for the South Carolina forces. Barnwell's strategic surprise attack caused the Tuscaroras to decide against protecting their goods and the partially fortified settlements, and to relocate to a completed fort at Hancock's Town (Lee 2004).

As these examples testify, fortifications throughout eastern North America provided varying degrees of protection for indigenous people. Some settlements, such as those of the proto-Arikara, Huron, and Tuscarora, failed to protect their populations due to in-progress construction or insufficient defense by the existing palisades. In others, fortifications proved successful in providing defense and safety (Bridges et al. 2000), but in some cases they may have contributed to a detrimental and diminished way of life for the fearful, sequestered inhabitants under attack, siege, or impending threat of attack. Poor health may have resulted in hardship and malnutrition from warfare due to restricted subsistence activities in the face of aggressive threats (Milner 1999, 2000; Milner et al. 1991a; Steadman 2011). A decline in health along with increased hardship, malnutrition, privation, and undernourishment may have been the tradeoff for protection against one's aggressive and potent enemies. A historic example is provided by a French garrison of 93 who died from scurvy in the winter of 1688 at Fort Frontenac as a result of an Iroquois siege

(Bazely 2007). Precontact fortified settlements may have suffered similar fates by restricting populations within confining walls.

Eastern North American defensive enclosures and structures have been the focus of long-standing archaeological research, in part, for the information they provide concerning aggression, conflict, defense, feuding, raiding, sieges, violence, and warfare among indigenous populations (Bamforth, chapter 1, this volume; Dye 2009; Lafferty 1973; Milner 2000; Payne 1994; Schroeder 2006; Schroeder, chapter 9, this volume; Steinen 1992; Trubitt 2003; Vehik, chapter 7, this volume). Fortifications require defensive strategies, engineering skills, and logistical and tactical organization, as well as available resources for log palisades and labor for construction. In addition, the archaeological presence of fortifications provides convincing evidence that inhabitants built strong defenses because their settlements were being threatened, not simply as testaments to chiefly aggrandizement and exhibitions of authority, power, and wealth—although these may be components or factors in monumental construction projects (Earle 1997:155–158). Finally, fortifications hint at the nature and potential of offensive hostilities and violence and provide key archaeological signatures for the pattern and scale of intersocietal aggression and conflict.

Ethnohistoric descriptions of eastern North American fortifications are found in accounts stretching from the sixteenth to the nineteenth centuries (Black 1967; Hudson 1997; Keener 1999; Swanton 1946). These sources record important details of construction techniques and the political and social dynamics of fortifying a town or village and defending it against attack, but it is the archaeological record that provides time depth for changes in defensive strategies and construction and maintenance efforts and give clues as to regional political relations. When geophysical prospection is integrated with archaeological and ethnohistoric research, a more comprehensive, detailed, and robust perspective of defensive constructions and layouts may be obtained (Kvamme 2007).

By viewing fortification features as artifacts, we may explore their construction and viability using the same assumptions that apply to other elements of architectural culture, such as mounds and plazas. Following Sherwood and Kidder's (2011:69) discussion of mound building, each step of the fortification process must be identified and analyzed. For example, builders had to acquire materials; accumulate, allocate, and coordinate labor; develop and oversee construction plans; and monitor long-term maintenance throughout the use life of defensive systems. These myriad activities provide important information about a town's culture, economy, and politics. The perspective suggested here integrates construction process and resource acquisition as

"artifact." Fortification construction for these complex architectural features required advance planning, considerable engineering knowledge, impressive skill, labor coordination, and political investment and organization. In addition, a regional perspective is required if we are to investigate the development and range of fortifications as well as their durability and effectiveness in safeguarding the populations they were designed to protect.

Information regarding frequency, scale, and type of warfare may be discovered by investigating the physical features of a fortification system. Defensive walls and ditches are sensitive archaeological markers for threats of forceful and sustained external violence. Expenditure of labor, resources, and time in digging ditches, moats, and trenches; excavating postholes; fastening posts; plastering wooden palisade walls; and securing timbers demonstrate that threats were real and serious (Fontana 2007:65–66). Vencl (1999:67) notes that fortifications are "above all the materialized expression of the human fear of being attacked, and losing life, freedom or property," not to mention loss of political autonomy and social viability. People and societies do not build effective and strong fortification systems "unless there is a good reason to do so" (Lafferty 1973:4).

The construction of fortifications also reflects the capability of offensive weapons in use at the time that monumental defenses are being planned and built. People tend to do the minimum to protect themselves and so fortifications are often scaled to the level of the attacker's available resources, tactics, and technology, rather than to contemporary fortification capabilities and engineering knowledge (Arkush and Stanish 2005:7). For example, enemies of the Iroquois League abruptly incorporated flanked designs into their village defenses by the 1660s to counter Iroquois adoption of counter palisades, iron axes, massed musket fire, and wooden shields when attacking fortified positions (Keener 1998:96).

Fortifications are especially diagnostic for evaluating intercommunity conflict, particularly sites lacking skeletal trauma and trophy-taking behavior (Mitchell, chapter 11, this volume). As evidence for past intercommunity relations, and as durable and empirical remains of conflict and territoriality, fortifications are key archaeological signatures of populations who lived in fear and the community leaders who attempted to protect those populations (Dye 2009; Haas 2001; Milner 2000) and who organized and deployed military power in potentially hostile environments. Archaeological studies of indigenous fortifications are important because they provide detailed evidence of the evolution, extent, and nature of antagonistic political relations among competitive social groups and the military mechanisms of aggression, intersociety

conflict, and organized violence. Cooperation also played an important role in fortification construction and the alliances built to withstand assaults from one's enemies.

Despite the ubiquity of fortified settlements throughout much of eastern North America, few comparative regional summaries have been forthcoming (Lafferty 1973; Milner 2000; Payne 1994). As Hammerstedt (2005:218) points out, palisades have not received the same attention as mounds, but they are no less important because they require as much, if not more, effort, expertise, knowledge, labor, and skill in their planning, construction, and maintenance. In this discussion, I employ selected fortified sites from the lower Midwest-Southeast, Northeast, and northern Plains to investigate the construction, maintenance, and use of fortification systems. Information from these Mississippian, Iroquoian, and Caddoan–Siouan (Middle Missouri-Coalescent) cultures enable analysis of indigenous wooden fortifications and their development, durability, and lifespan.

While archaeological interest usually focuses on areas within or adjacent to defensive systems, few studies have compared differences among these forms in terms of fortification lifespan; a crucial component of defensive system evaluation. The factors behind the construction and maintenance of defensive systems have not received the attention they deserve. One critical area lacking in fortification studies is an assessment of when fortifications were constructed during the lifespan of a community, their durability as wooden structures, and their need for routine maintenance (Krus 2011). Evidence presented here suggests that fortifications evolved in step with defensive needs, the offensive capabilities of one's enemies, and the regional sociopolitical organization. Fortifications as a component of the built environment also have multiple layers of conceptually embedded group identities, memories of past events, and social meanings. Fortifications, as a durable and encompassing form of material culture, powerfully influence human thought and action over long time scales (Arkush 2011).

Understanding defensive systems provides insights into a community's economic, military, and political institutions, revealing how communities adapt and cope with an oftentimes hostile and violent sociopolitical environment. While fortification walls and regional war might bring about political centralization and regional consolidation through conquest, walled settlements also lead to fragmentation and inconclusive cycles of violence, and can hinder political aggregation (Arkush 2006), as the various pathways of intercommunity conflict and cooperation are both historical and multilinear (Arkush and Allen 2006) and may result in divergent political trajectories. Thus, studies

of fortifications have far-reaching implications for societies throughout the world that constructed energy-consuming, expensive, and massive projects (Martindale and Supernant 2009; Parkinson and Duffy 2007). Because wooden walls have a limited lifespan, they remain viable as defensive structures for only brief periods of time without sustained maintenance—to function properly they require an intensive and extensive maintenance program. Archaeological evidence of fortifications must be evaluated in light of the duration of defensive effectiveness and viability within the overall settlement history.

Ditches and walls served multiple purposes. Monumental defensive systems require regular attention and it might be argued that community and polity leaders could mobilize social labor to keep people busy. Or, in some instances walls might serve as snow fences or windbreaks (Reid 1975:7). Wooden barriers also function to obscure the vision of one's enemies who might wish to examine a town's interiors for signs of weakness (Keeley et al. 2007), and shield elite affairs from the non-privileged within the town. Sacred precincts might be demarcated from profane space by berms, ditches, and walls. Enterprising chiefs, especially in the face of imagined or real threats of attacks, could enhance their authority and power through massive construction projects that required considerable coordination, expertise, and supervision from an elite who possessed the requisite knowledge and skills. Unlike mounds and plazas, wooden palisades would have required almost constant attention, and therefore would be ideal sources for opportunities of labor commitment and mobilization. It is unlikely however that aggrandizing leaders could have effectively mobilized social labor without some degree of a real sense of impending violence—the sheer mass of public defensive systems and the effort, resources, and work required for their construction is a clear signature for seriousness of threats to a community's continued autonomy and viability, as fortifications are both costly and time-consuming.

Finally, wooden palisade walls had to be sufficiently sturdy to withstand not only military assaults, but also forceful, strong winds. Wind speeds vary from region to region, but within any area of North America there can be hurricanes, straight-line winds, tornados, or wind gusts. While average wind speeds might be slight, palisades had to be constructed to withstand blustery and violent winds that periodically threatened buildings, fences, and walls. Eastern North America is struck by severe winds at least once per decade, and many places are affected annually, if not several times per year. Smith et al. (2010) used a quality-controlled database of wind observations from the National Weather Service and other regional networks to document thunderstorm wind gusts at or above 93 km (58 mi) per hour, and found an average of 373 wind gusts

per year across the contiguous United States from 2003 to 2009. There is no consistent distribution of severe wind gusts across eastern North American, as winds may vary from one area to another as a function of elevation, forest cover, large-scale climate change, location, site exposure, and small-scale weather patterns (Don C. Bragg, personal communication, 2013), but any set of wooden walls would need to have the capability of withstanding strong winds to remain effective and viable. To ensure a palisade's durability and efficacy, regular maintenance and repairs would have to be carried out throughout a fortification's lifespan by a knowledgeable and supervised work force.

THE STUDY OF FORTIFICATIONS

Fortifications have been under-appreciated by archaeological and anthropological theorists over the years, but in the past two decades a substantial resurgence of interest has appeared in methodology and theory-building that focuses on ancient defensive systems, the material remains of fortification architecture, and the idea that fortifications are a form of "landscape patrimony"—a durable, physical structure expressed on the ground that profoundly shapes the unfolding histories of specific regions. Increasing interest in the archaeology and cultural anthropology of intersocietal conflict and war, and especially defensive systems and fortifications, has resulted in key archaeological signatures being identified for communities concerned with military defense and security (Arkush and Allen 2006; Earle 1997; Ferguson 2006; Keeley et al. 2007; Rice and LeBlanc 2001; Roscoe 2008; Scott and McFeaters 2011; Vencl 1999). Some of the most vexing questions facing archaeologists today include addressing why some groups are more prone to intergroup conflict than others, and how archaeology can develop accurate measures of violence using material culture, especially defensive structures.

Equally important are the causes of warfare and the role fortifications play in political aggrandizement and hegemony, as well as the ways in which fortifications hinder political centralization and regional consolidation. More nuanced and robust, archaeologically based models of political power and social identifies are crucial for understanding the complexities of fortifications. Finally, how do archaeologists go about clarifying the built defensive landscape and examining long-term defensive histories and associated multiple layers of social identities and memories of past events? An effective understanding of fortifications, polity, and warfare can be gained through archaeological investigation of macroscale patterns of defensive systems when defensive systems are seen as durable, material, and spatially extensive forms of structure. Fortified

landforms and defensive patterns are important components of landscape patrimony, political cycling, and settlement choices. Warfare and its associated material culture, especially durable fortifications, involves cyclical processes that affect society through the medium of physical defenses and the settlement choices people make based on the specific landscape within which they reside (Arkush 2011).

An enhanced understanding of the importance of fortifications and a recent renewal of fortification research and defensive systems has taken place in many parts of the world: Africa (Kusimba 2006), Asia (China) (Underhill 2006), Europe (Harding 2013; Parkinson and Duffy 2007), Mesoamerica (Connell and Silverstein 2006), the Pacific Islands (including New Zealand and Palau) (Allen 2006, 2008; Liston and Tuggle 2006; Liu and Allen 1999), and South America (Peru) (Arkush 2006, 2008, 2011; Arkush and Stanish 2005). Likewise, the last two decades have seen a fluorescence in indigenous, defensive system research in North American, including the Great Plains (Ahler and Kay 2007; Bamforth 1994, 2006; Owsley and Jantz 1994; and this volume), the Midwest and Southeast (Fontana 2007; Krus 2011; Krus et al. 2013; Milner 2000; Schroeder 2006; Trubitt 2003), the Northeast (Engelbrecht 2009; Poplawski et al. 2012), the Northwest Coast (Martindale and Supernant 2009), and the Southwest (Snead 2008; Solometo 2006, 2010). Modern battlefields have also been the focus of recent research, including fortifications and battle sites (Scott and McFeaters 2011). Ferguson (2006, 2008) provides recent global summaries of conflict and warfare, which include defensive architecture and fortifications.

One measure of intergroup conflict is the way in which the physical landscape is modified, structured, and transformed by the choices made by the people who live on it and how the archaeological evidence of violence is integrated and mapped onto the anthropogenic landscape as durable defenses (Arkush 2011). The chronology of a community's fortification construction serves to clarify the causes of warfare and violence and to point to fortification variability across space and through time under states of violence and warfare. Another measure is the changing political climate, including the cycling of polities across the region. Existing models of the causes and consequences of feuding, raiding, and warfare need to be integrated with a site's history, the adjacent landscapes, and the relationships that exist between the people and their physical and political environment. The main theoretical driver behind much of the recent research on fortifications is based on Earle's (1997) model of warfare as one component of how military power functions as the strategic use of force, where the focus is on the political economy of

fortifications. Fortifications are more than structures to defend people, they also serve numerous roles for the people who constructed and maintained them, including their ancestral claims, their material possessions, their sacra, and the regional social landscape.

Studies of fortifications should be integrated with the larger military literature on raiding and warfare, particularly on fortification design (Allen 2006, 2008; Rice and LeBlanc 2001). For example, Lafferty (1973:8) used observations from his experience in Viet Nam in 1971 and 1972 to study Mississippian fortifications from a military design perspective, noting "the general military theory of such should be applicable to all times and places within the limits imposed by the knowledge of military principles and technology possessed by the people constructing the system of fortifications."

FORTIFICATIONS IN EASTERN NORTH AMERICA

Earthen enclosures appear as early as the Middle Archaic in the Lower Mississippi Valley. The Watson Brake site in northeastern Louisiana includes 11 mounds connected by a large 1-m-high (3.3 ft) oval earthwork about 280 m (920 ft) in diameter (Saunders et al. 2005). Initial earthwork construction began at Watson Brake around 3500 BC. Enclosures are a hallmark of Middle Woodland ritual centers throughout much of eastern North America (Mainfort and Sullivan 1998). The enclosures found at sites such as Newark, Pinson, Toltec, and Watson Brake served fundamentally different functions from those of late prehistoric fortifications in eastern North America. The Archaic and Woodland earthwork centers were ritual locales for alliance formation, exchange activities, and mortuary programs that dampened conflict and promoted cooperation, while Mississippian and Protohistoric defensive systems protected populations from aggressive, offensive assaults.

The wide formal, geographic, and temporal variability of enclosures, especially those used for cosmological and mortuary rituals, has prompted considerable debate and discussion. In contrast to these pre-Mississippian ritual locales, which typically lack defensive functions, late prehistoric enclosures were clearly constructed to defend settlements that faced escalating aggression and violent confrontation among competing chiefly or tribal polities. After circa AD 1250, farming communities, especially great centers and large towns, began constructing defensive enceintes or enclosures in response to intensified warfare and threats of intercommunity violence (Krus 2013).

Throughout much of eastern North America, especially the late prehistoric lower Midwest-Southeast, Northeast, and northern Plains, fortifications

were a critical and vital component of community structure and survival. For example, Holley (1999:28) notes "nearly every Mississippian center was fortified in some manner." Likewise, for the Northeast, Snow (1994:29) remarks "most Owasco villages were palisaded by AD 1350." And for the northern Plains, Bamforth (2006:71) observes "Middle Missouri and Initial Coalescent sites show evidence for warfare in the form of ditch and palisade fortifications." For over 800 years many communities in eastern North America employed some combination of ditches, embankments, and palisades that provided defense in the face of varying degrees of massed, armed forces (Fontana 2007; Milner 2000; Schroeder 2006; Steinen 1992; Trubitt 2003). These forces appear to have been organized as chiefly militias. While a seemingly value-laden term, chiefdoms possessed better command over their forces than tribal societies, with their "kin militia," while lacking, however, the command structure of an archaic state's standing army. Thus, "chiefly militia" best describes these temporary warrior forces, led by chiefs and their retainers, of Mississippian chiefdoms (Reyna 1994). Some cultures—such as the Caddo (Perttula 1992:18), Mississippian and Plum Bayou communities in the Arkansas Western Lowlands (Rolingson 2002), Plaquemine (Kidder 2007:205), and virtually all of Florida (Ashley and White 2012:18)—generally lacked fortifications, but overall, defensive systems were an integral component of late prehistoric town and village life throughout much of eastern North America (Milner 2000, 2004).

Evidence of fortifications typically consists of barriers such as ditches, earthworks, and walls that were integral to settlement plans. Restrictions were placed on the amount of space available for future growth in residential areas enclosed by fortified walls. Perhaps the most fundamental consideration for indigenous populations centered on defending nucleated civic and residential zones and their resident populations. Sacred structures such as ancestor shrines were especially targeted for attack, desecration, and destruction by Mississippian militias (Dye and King 2007; Milner 2000:63). Thus, studying defensive structures at archaeological sites allows assessment of the levels and nature of violent conflict and cooperation, and the expense of construction and maintenance.

As surrounding barriers, defensive enceintes protected resident populations and their built features, including mounds, plazas, and a variety of buildings, both private and public (Bamforth 2006; Lafferty 1973; Mitchell 2007; Payne 1994; Snow 1994, 2007). Fortified communities often included bastions, ditches, embankments, gates, and palisades (Keeley et al. 2007). Fortifications typically leave evidence that is recoverable through excavation, geophysical prospection, and surface surveys. These indelible signatures of defense and protection,

especially when coupled with skeletal trauma, reflect varying degrees of organized violence, including feuding, raiding, and warfare. Fortifications may add weight to interpretations of the form and severity of regional violence by delineating efforts to avoid intercommunity conflict.

Simply put, fortifications protect people from attacks by their enemies by restricting physical access into a town or village while protecting essential routes of entry (Engelbrecht 2009). Fortifications may be defined as building, erecting, reinforcing, securing, or strengthening defensive structures that form physical impediments. Protective enclosures often consist of some combination of ditches, embankments, or walls, designed to defend a place by withstanding attack from an enemy, and impeding access to a refuge or settlement. An effective fortification is one that is equal to or greater than the anticipated capabilities, strength, and weaponry of an attacking force (Stout and Lewis 1998:175). Fortifications are constructed to hinder attackers from flanking maneuvers and surprise attacks (Keeley 1996:56). They often take advantage of natural landforms, such as bluffs, hilltops, islands, river meanders, and ridgelines. Some fortification features, such as V-shaped ditches and palisade bastions, are clear signs of defensive architecture (Keeley et al. 2007). Nondefensive archaeological features are sometimes misinterpreted as performing essentially defensive functions. For example, Mississippian charnel houses and chiefly residences, both typically located atop platform mounds, may include earthen embankments, surrounding ditches, or wooden fences, but these served a non-military barrier or screening function. Likewise, drainage ditches, garden barriers, or privacy walls may also lack a military function, but might be confused with defensive features (LeBeau, chapter 6, this volume).

Fortifications consist of three basic components: defended gates, enceintes, and palisade bastions (Fontana 2007:67–69; Keeley et al. 2007). Enceintes may take the form of curtains, ditches, embankments, fences, palisades, and walls. These enclosures may not have specifically defensive functions, but wooden walls with bastions, an adjoining moat, and an associated embankment are clearly defensive structures, despite possible ancillary iconographic, political, social, and symbolic associations (Engelbrecht 2003:99, 2009:180; Keeley 1996; Keeley et al. 2007). Wooden curtain walls protect a town or village from an attacker's weapons, while allowing defenders to use their most effective countermeasures against an attacking force. The primary purpose of a defending force is to deter or prevent entry of attackers into or through a defended perimeter. However, if an enemy reaches the base of the curtain wall, then "these surficial barriers themselves shield the attackers, causing defenders either to expose themselves to discharge missiles or force them to emerge from behind

the enceinte in a 'sally' counterattack" (Keeley et al. 2007:57). Curtain walls, as protective architecture for settlements, changed over time in eastern North America as the form and severity of conflict varied, but overall, such defensive works signal a level of aggression and combat organization requiring additional defense. Protective embankments usually include dirt excavated from an adjacent defensive ditch, piled up to form a berm or ridge into which posts were then placed, thus increasing palisade height and causing water to flow away from the bases of rot-prone wall supports. Ditches were often excavated parallel to and just outside curtain walls. The most effective ditches are dry and V-shaped, and when backed by a curtain wall, are particularly effective deterrents to attacking forces (Keeley et al. 2007).

The most vulnerable location for defenders along a curtain wall is the entry way. Defending a settlement's entrance may be achieved by defensive gates or towers that assume some form of baffling, flanking, or screening. Bastions may be constructed adjacent to an entrance in addition to reinforcing palisades, but they must jut out from defensive walls to be effective. They may assume many shapes and still be effective. Most bastions are circular, rectangular, or square, allowing flanking fire to be directed on any attackers who approach the palisade wall or other features such as gates or towers. Bastion intervals are thought to have been spaced at about one-half the effective range of offensive weaponry to enable overlapping fire power (Fontana 2007:174; Keeley et al. 2007:74–77).

Important considerations in palisade construction include placement (spacing and positioning) of vertical supports, post dimensions (depth, height, and width), and wood type. Additional factors include the number of rows, use of horizontal members, and location of adjacent elements such as bastions, gateways, towers, and walkways (Prezzano 1992:236). Archaeological and ethnohistorical data indicate that specific wood types were selected for palisade construction. Examples are presented in the following case studies. Wood choice was based on considerations of raw material, including decay resistance, local availability, and physical attributes. Depending on the degree of resource overexploitation and utilization, choices of wood may have been limited to considerations of convenience rather than advantageous properties.

CASE STUDIES OF INDIGENOUS EASTERN NORTH AMERICAN FORTIFICATIONS

By the middle of the thirteenth century there was a sharp increase in fortifications throughout much of eastern North America, suggesting greater violence or heightened threat of violence. Widespread interpolity conflict, prompting

the construction of defenses, is also seen in buffer zones, conflict iconography, settlement nucleation, skeletal trauma, and symbolic weaponry (Dye 2009; Milner 2000, 2007). The bow and arrow, introduced in the seventh century (Nassaney and Pyle 1999), provided the ideal assault weapon for warriors who attacked enemy settlements en masse, but the war club was the preferred killing weapon (Van Horne 1993). Increased defensive preparedness was the only practical, long-term option to maintain village autonomy and sovereignty.

Offensive posturing and intercommunity threats are clearly evident where populations begin digging ditches, erecting palisade walls, and placing towns or villages in defensive locations. These efforts arose in response to heightened levels of violence that began in the Late Woodland period (Knight and Steponaitis 1998:11; Little 1999). McElrath et al. (2000:24) note the presence of defensively located, fortified, and moated Late Woodland sites in the eastern Woodlands, and Green and Nolan (2000:349) state "abundant evidence of violent death indicates that raiding or warfare was common among Late Woodland peoples." In the Middle Ohio River Valley, between AD 400 and 700, relatively large nucleated sites, located on bluff tops, had encircling ditches, presumably for defense (Royce 2007). By the end of the Late Woodland period across the midcontinent, community life and military defense underwent additional alterations and transformations, resulting in greater defensive needs and stronger fortifications during succeeding centuries (Gramley 1988).

The Mississippian Midwest/Southeast

Although attention has been directed toward the development and nature of Mississippian defensive systems (Fontana 2007; Iseminger 1990; Lafferty 1973; Larson 1972; Stout and Lewis 1998; Milner 2000; Payne 1994; Milner and Schroeder 1999; Steinen 1992; Trubitt 2003; Vogel and Allan 1985), few archaeologists have examined the timing of fortification building relative to the overall occupancy of a community and the durability of palisade walls (Krus 2011, 2013). The problem of palisade longevity is not addressed in current discussions of Mississippian warfare, yet it holds important implications for assessment of the duration and intensity of intercommunity violence. The length of time that any particular palisade was in use is unknown for most sites. In many instances, charcoal or preserved wood is not available for dating purposes, making chronological assessments difficult if not impossible. Mississippian palisades were either refurbished on a regular basis or had brief lifespans of one to two decades, based on direct observations of reconstructed palisade decay rates in the Northeast (Prezzano 1992; Warrick 1988). Increased

frequency of woodworking tools, including adzes, axes, chisels, and mauls, may be indicative, in part, of palisade construction, maintenance, and repair (see Poplawski et al. 2012).

A new era of violence is seen in the initial, widespread rise of Mississippian fortifications and warfare around AD 1250. The intensity of attacks is reflected in the greater numbers and increased strength of fortifications with bastions, ditches, embankments, gates, palisades, and towers (Milner 2000). Prior to the mid–thirteenth century, few defenses match the scale of those that characterized later defensive efforts, with the exception of Early Mississippian towns such as the Mound Bottom (O'Brien and Kuttruff 2012) and Obion (Garland 1992) sites.

Mississippian military tactics and operations against fortified towns would have included storming defensive walls—especially those that were weakened or under construction—by warriors armed with axes, bows and arrows, clubs, fire, and knives. Palisades encircling settlements provide impressive evidence of heightened expectations for attack, severity of armed conflict, social labor to construct fortifications, and threats of increased intensity. Throughout much of the lower Midwest and Southeast, fortifications accompanied the rise of Mississippian chiefly polities (Milner 2000; Milner and Schroeder 1999:104). In some areas populations nucleated, while in others households and hamlets remained dispersed but sought refuge in fortified centers during times of increased conflict and intensified hostilities (Dye 1994; Morse and Morse 1983:266).

Palisades were built to withstand attacks from bow-and-arrow warfare and in this regard they were usually effective, but when towns were vulnerable through palisade weakness or internal strife, one's enemies would have taken advantage of the opportunity to initiate an attack. The bow and arrow, coupled with fire and war clubs, fundamentally transformed the nature of intergroup conflict (Blitz 1988:124). Restructuring both the scale and organization of warfare (Nassaney and Pyle 1999:260), militias armed with bows and arrows and war clubs brought about a significant increase in mortality, especially in lightly fortified or unfortified communities (Bridges et al. 2000:56). Massed attacks would have prompted population dispersion and settlement relocation (Seeman 1992).

The self-bow, generally crafted from a single piece of wood, was used throughout the Eastern Woodlands. Self-bows had a cast of about 160 m (525 ft) (Hamilton 1982), but the effective range may have been closer to 60 m (197 ft). The bow did not immediately necessitate construction of fortified communities, but the fortifications that arose around AD 1250 were clearly designed as a direct response to militias armed with bows and arrows: tall, plastered,

palisade walls; bastions; constricted entrances; embankments; and deep, wide ditches (Milner 2000). Plastered Mississippian palisades may have emerged to counteract fire-tipped arrows shot in unison by massed warriors (DePratter 1983:47). Closely spaced bastions, averaging around 30 m (98 ft) apart, allowed defending archers to overlap their fire power and prevent attackers from breaching the curtain wall (Fontana 2007:173; Milner 1999:120, 2000:58). This distance is comparable to what is found in other areas of the world where simple bows are used (see Keeley 1996:96; Keeley et al. 2007). John Smith wrote that the Indians of Virginia could shoot well at 40 yards (ca. 37 m) and were fairly accurate at 120 yards (ca. 110 m) (Smith 1624:132). Lafferty (1973:138) notes that "the curtain walls of all archaeologically known fortifications could have been easily defended from the bastions" and that "the bastions of the aboriginal Americans were constructed close enough together to have had the curtain wall covered by bows and arrows fired from the bastions."

A member of the Hernando de Soto entrada—a "Gentleman from Elvas"—described the fortified town of Tascaluça as seen in 1540: "the enclosure, like that in other towns seen there afterward, was of thick logs, set solidly close together in the ground, and many long poles as thick as an arm placed crosswise. The height of the enclosure was that of a good lance, and it was plastered within and without and had loopholes" (Robertson 1993:94). Vogel and Allan (1985) estimate that palisade height at Moundville was 3–4 m (9.8–13.1 ft), based on the depth of postholes. Typical of many Mississippian sites, the Annis Village fortifications were built as "screens to prevent raiders from gaining easy access to the village" (Hammerstedt 2005:261).

An increase in skeletal trauma and trophy-taking behavior is associated with the rise of Mississippian intersocietal conflict and the construction of fortifications. The types and severity of violent trauma also reflect the nature of settlement defense. Mortality rates and traumatic injuries were at their greatest levels in small to medium-sized sites (Bridges et al. 2000). Undefended hamlets exposed individuals to direct attack by warriors armed with bows and arrows, resulting in high percentages of human remains with embedded arrow points. On the other hand, mid-sized sites with defensive features, such as palisades, have high mortality from upper-body trauma and cranial injuries due to axes and war clubs, but rarely from arrow points. In contrast, the largest and best-defended Mississippian sites were formidable to invaders. Large defending forces and strong defenses made communities relatively immune from overpowering, successful attacks (Bridges et al. 2000). But to be effective, defending militias had to be coordinated and organized and defensive walls had to be constructed with skilled planning and sound engineering. Above all,

protective palisades had to be evaluated, maintained, and repaired on a regular basis to insure their durability and integrity.

There is an interpretive dilemma in assessing the occupational life history of Mississippian towns and the palisade walls that surrounded them. If wooden palisade walls have a lifespan of some 10–20 years (Cole and Albright 1983:159–162; Iseminger 1990:35; Lafferty 1973; Scarry 1995:235), then the walls that encircle a long-lived community would have to be maintained and rebuilt many times, assuming the inhabitants needed continual protection by the town's fortifications. Even this 10–20-year use-life for fortification may be inaccurate. Bragg notes, "depending on the species used, 10–20 years may be too long to maintain the structural integrity (strength) of wood buried in typical soils in eastern North America, especially in areas with termites, carpenter ants, and other wood-consuming detritivores (not to mention fungi)" (Don C. Bragg, personal communication, 2013). Blew and Kulp (1964) note that untreated fence posts typically have 3–6-year lifespans. Lafferty (1973:108) suggests that untreated poles used in palisades would have a shorter lifespan than the 15–20-year life expectancy of modern creosote-treated telephone poles.

If defensive walls were no longer needed, then presumably the town would expand beyond the walls, and debris would extend out from the palisade and associated ditches. In some cases, multiple palisade lines are exposed by archaeological excavation. In other instances, towns remained within circumscribed areas, resulting in deep middens. The majority of Mississippian towns had only one functional palisade at a time, although numerous non-defensive screen fences might be present, demarcating charnel houses, council lodges, courtyards, elite compounds, kitchen gardens, restricted plazas, or other mundane and sacred spaces. How then do we account for single palisade lines at so many Mississippian sites that were occupied for several centuries? Did they need defensive walls for a short period of time, or were walls rebuilt or refurbished over time in such a way as to leave virtually no archaeological evidence?

An example of this problem is seen in a distinctive set of late prehistoric sites in the Lower Mississippi Valley labeled the "St. Francis type" by Phillips et al. (1951). The site type has a specific configuration that embodies a large, planned community laid out in rectangular form with straight, surrounding, and wide ditches. These sites stand several meters above the surrounding floodplain, having been built up over several centuries from accumulated debris and refuse. Surrounding defensive ditches, embankments, and wooden palisades would confine the crowded town and its future growth within fixed limits for a considerable time period. Residential structures were located within the encircling ditch and palisade wall, resulting in a thick midden. A relatively large number

of people are thought to have lived at these sites based on extensive cultural deposits, midden depth, numerous structures, and overall site size.

In general, St. Francis–type sites date from approximately AD 1350 to 1650, representing some 300 years of continuous occupation (P. Morse 1990), but some sites, such as Parkin and Rose Mound, have earlier Baytown and Mississippian antecedents dating between AD 1000 to 1250 or earlier. Phillips et al. (1951:329, table 14) assigned 21 sites to the St. Francis–type settlement within an area comprising the Upper Yazoo Basin of northwestern Mississippi and the adjoining Lower St. Francis Basin of northeastern Arkansas/southeastern Missouri. Textbook examples of the St. Francis–type settlement may be found in the St. Francis and Tyronza River confluence area, including Castile Landing, Fortune, Neeley's Ferry, Parkin, Rose Mound, and Vernon Paul.

Philips's observations of the St. Francis–type sites, as he witnessed them in 1947, are noteworthy:

> As one approaches these sites across the level flood plain, the first impression is made by the unusual depth of the refuse that has accumulated. The entire area of Rose Mound . . . stands up about 10 feet [3.1 m] above the surrounding plain. Cuts into this 'mound' showed 2.5 meters [8.2 feet] of rich refuse deposit. This impression of the elevation of the entire village area is heightened by the wide ditch which surrounds most of the sites of this type. The concentration of the refuse in a rectangular area surrounded by a ditch indicates almost conclusively that these towns were fortified. A stockade as well as a ditch probably protected as well as defined the village area. (Phillips et al. 1951:329)

Sixteenth-century descriptions from the Hernando de Soto expedition of the principal town of Pacaha, located on the Mississippi River just north of present-day Memphis, Tennessee, provides striking correspondence of ethnohistoric accounts with archaeological excavations. Pacaha, encompassed around 500 large houses, and was surrounded on three sides by a moat some 12–15 m (ca. 40–50 ft) wide. The Mississippi River supplied water to the moat via an artificial canal three leagues (ca. 16.7 km) long and three fathoms (ca. 5 m) deep. The canal was so wide that two large canoes could pass one another without the oars of one canoe touching those of the other (Hudson 1997:293). The fourth side was "enclosed by a very strong palisade in the form of a wall made of thick logs set in the ground, touching one another, and other, transverse logs fastened and covered with packed mud and straw" (Shelby 1993:395). The "Gentleman from Elvas" described the town as "very large, and furnished with towers; and in the towers and stockade many loopholes" (Robertson 1993:117).

Phillips excavated test pits at Rose Mound, but unfortunately missed the palisade wall and so was unable to confirm his hypothesis that the St. Francis–type site configuration and layout resulted from a defensive ditch-and-palisade system. Recent excavations by Jeffrey Mitchem (Bragg 2012; Mitchem 2013; Mitchem and Lockhart 2012) at two St. Francis–type sites, Parkin and Neeley's Ferry, however, have confirmed Phillips's hypothesis of defensive ditches and palisades and Garcilaso's sixteenth-century descriptions. The Parkin site is a 6.9 ha (17.1 acre) occupation at the confluence of the St. Francis and Tyronza Rivers. The site is surrounded by a ditch 26 m (85 ft) wide and 1.9 m (6.2 ft) deep with an adjacent palisade and associated bastions. Palisade posts extend into sterile clay, and appeared to be holes from which posts had been removed, as opposed to post molds where the original post has burned or decayed in place (Mitchem 2013). Typical of Mississippian palisades, charcoal or wood was lacking for radiocarbon dates. Based on later superimposed houses, the site continued to be inhabited for a substantial length of time after the palisade had either been destroyed or dismantled. Members of the community may have removed the posts for fuel or building materials, or they may have been forced to eradicate the palisade if they found themselves dominated by another polity. Two human burials were found above the palisade postholes, indicating that they were buried after the palisade had been dismantled. Interestingly, one of them had a chert adz in the area of his abdomen (Jeffrey M. Mitchem, personal communication, 2013).

Neeley's Ferry is another important Parkin-phase site with a 14-m-wide and 1.1-m-deep ditch and adjacent palisade. Unlike Parkin, the Neeley's Ferry palisade posts were left in place and had rotted, perhaps because the site was abandoned with the palisade wall still standing. Overlapping features indicate some palisade rebuilding or repair (Mitchem 2013). Excavations at Parkin and Neeley's Ferry point to the need for more detailed excavations documenting the nature of fortification systems because repairs have important implications for the degree of political consolidation and violence. Parkin and Neeley's Ferry reveal differences in palisade maintenance and repair, indicating the problems archaeologists face when interpreting community protection, defensive systems, and site longevity.

Mississippian fortifications present challenges for archaeological interpretations of conflict and violence. Palisade construction and maintenance have not received sufficient attention to tackle questions of duration and levels of intercommunity raiding and warfare. The timing of fortification construction and evaluation are crucial for such assessments and archaeologists investigating Mississippian fortifications must examine palisade durability,

rebuilding, and refurbishing to answer the questions of warfare intensity and military organization. The length of time that a palisade wall is viable may be addressed through detailed excavation and chronological assessment where posts remained in the ground. Archaeological approaches to palisade maintenance in the Northeast offer innovative methods for eastern North America.

The Northeast: Iroquois

Violence in the form of small-scale raiding may date as early as AD 950 with the advent of the Medieval Maximum (AD 950–1250), and the collision of southward-moving eastern Algonquian hunter-gatherers with northward-migrating northern Iroquoian swidden farmers (Snow 2010:219–225). By the late tenth century fortified villages were being built on defendable terrain away from major transportation routes, suggesting that concerns with defense dictated settlement placement (Snow 1995). In the Upper Susquehanna Valley multifamily dwellings and fortified villages are evident between AD 1000 and 1100 (Prezzano 1992:431). Swidden farming prompted periodic, short-distance village relocation due to depleted soil, which resulted in competition over vaguely defined territorial tracts, especially hunting reserves. Proto-northern Iroquoians pursued revenge-based raids consisting of small war parties (Snow 1994), necessitating defenses to prevent counterattacks and retaliation. Evidence of violence is reflected in arrow-riddled bodies, cannibalism, protective palisades, and trophy-taking behavior (Snow 2001). Iroquois palisades evolved to become increasingly effective barriers and defensive structures (Keener 1999:782).

By approximately AD 1250, a time when many Mississippian centers were being fortified, most northern Iroquoian villages were also being palisaded, some having exterior ditches. During the fourteenth century, the frequency of well-planned, heavily palisaded sites increased throughout Iroquoia as raiding and warfare intensified (Snow 1994). Communities that had been formerly separate but allied, now begin to relocate and amalgamate for defense into fewer and larger fortified settlements (Birch 2010a, b; 2012; Williamson 2007). The sporadic violence that had been evident prior to the fifteenth century now erupted into endemic warfare, perhaps impelled by increased stresses resulting from climate change, especially droughts (Cook et al. 2007). Communities relocated to more defensible locations and coalesced with neighboring groups for mutual protection. An ideology of revenge prompted increased competition, confederacy formation, village fortification, and population fractioning. Intervillage aggression was replaced by conflict among confederacies that sought to annihilate one another through genocidal warfare (Snow 1994).

Ethnohistoric records provide documentation for postcontact Iroquoian attacks against fortified settlements (Keener 1998). Militias were organized on the village, nation, or confederacy levels in which several hundred warriors might be involved for joint enemy raids (Brandão 1997; Trigger 1990). Taking calculated tactical approaches to increase their chances of survival, and to ensure success in raids against fortified positions, war parties of five to 20 individuals relied on ambushes and surprise attacks. They avoided frontal assaults on fortified villages and, if outnumbered, refrained from engaging in combat. When threatened with attack, especially by an enemy that appeared too strong to resist effectively, they burned their own settlements, retreated behind palisades, scattered into the surrounding countryside, or sought refuge at neighboring villages with which they had previous alliances. If their defenses were sufficiently strong, on the other hand, they might remain in the village or town, protecting their possessions, resources, and themselves (Milner 1998:75).

As with Mississippian militias, Iroquois warriors used bows and arrows first when attacking an enemy, followed by hand-to-hand combat with war clubs, and finally, using knives for trophy-taking. Fighting continued until one group fled, surrendered, or was wiped out. In the first decade of the seventeenth century, Champlain noted relatively bloodless battles between massed confrontations of warriors. These assaults were quickly abandoned in favor of ambushes and small-scale raids once muskets were introduced into the existing suite of weaponry (Richter 1983:538).

Iroquois palisades evolved over time with a general increase in overall size (Keener 1999:782; Prezzano 1992:242). Palisades that surrounded Iroquoian villages often consisted of a single row of tall saplings, interlaced with bark, logs, and poles. Interwoven branches were used for fortifying temporary camps, but palisades constructed around permanent villages made use of bark sheets (Poplawski et al. 2012). Defensive construction included baffled entrances, ditches, protected gateways, scaffolds, and towers. Houses were positioned a considerable distance from the palisade wall to protect the inhabitants from ambushes (Prezzano 1992:435). Palisades often contained three rows of posts with a vertical central row; the outer rows being bent inwards and lashed at the top. Bark and withes were interwoven between the posts and small vertical poles were sometimes fitted between gaps in the uprights (Funk 1967:81; Jones and Jones 1980:66; Ritchie 1980). Logs might be piled up and then lashed behind and between the posts, to at least the "height of a man" (Coyne 1903:23). These palisades, when completed, stood between 4 and 10 m (13 and 33 ft) in height (Prezzano 1992:248; Ritchie 1980:307). A walkway or platform was created by fastening poles or logs at the top of the palisade where the

vertical members crossed (Biggar 1924:155–156; 1929, 3:122; Sagard-Théodat 1939:91), providing a sturdy, self-supporting structure several meters wide that was difficult to breach (Knight 1987:181).

At the Eaton site in western New York, an ancestral Erie village dating to approximately AD 1550, Poplawski et al. (2012) argue that the relative abundance of large used flakes and core fragments found by the palisade were used for cutting bark lashing and cordage used in its production. Ethnohistoric references indicate that bark could be removed from trees or palisade poles after a slow fire had been set under them and warm water poured over them to facilitate bark removal with the aid of antler, bone, or wooden chisels. Poles with the bark removed would last longer than those with bark, as they would not be subject to insect infestation between the wood and the bark, and they would be more resistant to decay and rot (Hamell and Rogers 2001; Poplawski et al. 2012).

Beauchamp (1905:111–112) notes, "for a triple stockade . . . but one line of post holes was required. The cross poles needed none, and for some stockades no holes at all were used . . . A shallow trench, or anything to hold the base of the pickets temporarily in position was all that was needed." Laying the auxiliary poles horizontally between the vertical supports explains why many Iroquois palisades are defined by shallow post molds and are often considered "flimsy" based on archaeological evidence. As an example of the complexity of palisade design, the Boland site (AD 1000–1100) palisade consisted of a baffled entrance, elevated scaffolds, and protected gateway (Prezzano 1992:435).

In his 1655 account, the Dutch ethnographer Adriaen van der Donck provides an early description of a Mohawk/Mohican palisade:

> First they lay a heavy log on the ground, sometimes with a lighter one on top, as wide and as broad as they intend to make the foundation. Then they set heavy oak posts diagonally in the ground on both sides to form a cross at the upper end, where they are notched to fit tighter together. Next another log is laid in there to make a very solid work. The palisades stand two deep and are strong enough to protect them from a surprise attack or sudden raid by their enemies, but they do not as yet have any knowledge of properly equipping such a work with curtains, bastions, and flanking walls, etc. (Donck 2008:83)

In 1666 a French military force observed a Mohawk village that included a 20 foot (6.1 m) tall, triple palisade, a prodigious hoard of provisions, and an "abundant supply of water they had provided, in bark receptacles, for extinguishing the fire when it should be necessary" (Le Mercier 1959:145). Water was stored in bark buckets placed along galleries or in watchtowers (Sagard-Théodat 1939:91). During Champlain's voyage made in 1615 to Canada, he describes Iroquois

palisades as "well-supplied with gutters, placed between each pair of palisades, to throw out water, which they had also under cover, in order to extinguish fire" (Champlain 1882:131). Given the flammable nature of Iroquoian villages, storing an abundance of water on platforms over wooden palisades would have been crucial for putting out fires during attacks (Poplawski et al. 2012).

The average precontact village was relocated about every 25 years as a result of depletion of agricultural soil, construction supplies, and firewood (Warrick 1988:49). Given estimates of limited village occupation for Iroquoian sites and a use-life for construction posts between five and eight years, palisades would have to be rebuilt from three to eight times during a village's lifespan (Prezzano 1992:253–256). Palisade maintenance would therefore result in removing considerable numbers of decayed posts because the average-sized Iroquoian village required approximately 20,000 poles for construction and maintenance of long houses and palisades (Finlayson 1985, 1998; Heidenreich 1971:152). Structural decay and depletion of available timber for suitable posts might also have precipitated Iroquoian village abandonment and relocation (Warrick 1988:50; 1990). Early French accounts document the transportation of house and palisade poles to new settlements upon the abandonment of old villages (Prezzano 1992:254).

Experimental archaeology reveals the limitations of Iroquois palisade longevity. Protective walls constructed of mixed hardwoods, such as beech, maple, and oak, had short use-lives. For example, the mixed-hardwood palisades at "Crawford Lake and Lawson reconstructed villages rapidly decayed and blew down in windstorms only 3 years after construction" (Warrick 1988:49). Reconstructions using cedar have much longer use-lives. Longwoods village survived for 16 years and was in an excellent state of repair because it received annual maintenance, including replacement of unsound posts. Without maintenance, cedar posts lasted 29 years at the Huronia village. A reconstructed village built of pine and cedar at Cayuga Lake, however was falling apart after 22 years (Warrick 1988). As was the case with the Lower Mississippi Valley St. Francis–type sites, there is a general lack of charred or preserved timbers in Iroquoian sites (Warrick 1988:24), suggesting that post removal was routine and that charring or other post treatments were not a component of long-term maintenance and repair.

Warrick (1988) designed a method for estimating the age of Iroquoian palisades by determining the decay rate of the wood species used in palisade construction. He employed use-life curves and tables for various wood species based on their average decay rate and postulated three key assumptions about longhouse construction that are applicable to palisades. First, the initial design

of construction was recognizable, therefore original and replacement posts could be determined. Second, when structures were repaired, the decayed posts were replaced almost immediately because all defensive components were critical for stability. Third, replacement posts were not inserted into the same holes as the original posts, suggesting that decayed post butts were left in place. The average use-life of palisade posts at the Boland site would have been between four and eight years, but the effective lifespan would have been limited, suggesting that actual palisade use-life at a particular village may be shorter than estimates based on pole decay rates. Average post use-life is measured at the point when 60 percent of posts fail due to mechanical stress, but it is doubtful that palisade walls would have been allowed to reach the point of failure (Prezzano 1992).

Fortified villages in the Northeast present different problems from those associated with Mississippian towns. Iroquois fortifications appear flimsy and weak from an archaeological perspective, compared to the deep-set and thick posts of Mississippian towns, but closer examination reveals a sturdy defense system composed of complex entrances, gateways, and scaffolds. As is the case with Mississippian fortifications, Iroquois settlements were short-lived, and they would have required continual maintenance and repair of posts and wall segments to provide protection for village inhabitants. Assessments of Northeastern fortifications reveal much about the evolving nature of Iroquoian aggression and violence. Research in the Northern Plains offers new perspectives on the ways in which eastern North American communities coped with a violent political environment.

The Northern Plains: Proto-Arikara and Proto-Mandan

Plains Village cultures appear on the Middle Missouri River as early as AD 1000 (Johnson 2007a:168), and from the outset fortified villages and skeletal trauma are evident. Village farming success at the northern margins of plant cultivation was made possible with the warmer climate regime of the Medieval Maximum. The competitive edge of Plains villagers was enhanced through their exchange with Mississippian cultures to the east; the westward expansion of crops, including beans, corn, squash, and sunflower; the adoption of the bow and arrow; and the eastward movement of bison (Gibbon 1993; Henning 2005). In the Middle Missouri region, violence and warfare can be linked to droughts on a decade-to-decade scale. Sites were fortified during large-scale or extended periods of droughts and they were not fortified during wet intervals (Bamforth 1994, 2006, chapter 1 in this volume; Blakeslee 1994;

Brooks 1994; Hollimon and Owsley 1994; Owsley 1994). A culture of aggression and violence associated with settled farming, along with templates for constructing and maintaining defensive systems, may also have accompanied a developing farming adaptation. Fortifications consisting of ditches and palisade walls were part of the community plans for these earliest Plains villagers (Bamforth 2006), and provide telling evidence for increased levels of community protection, intersocietal violence, and military organization.

Woodland-period settlements typically lack fortifications, but once Middle Missouri people began to engage in farming, village sites reveal a shift toward defensive measures. Violence apparently took the form of small-scale raids precipitated by intermittent bouts of feuding. By the eleventh century, feuding and raiding intensify, resulting in lightly fortified villages surrounded by ditches. Although these communities consisted of relatively small populations, confrontations could become severe and violent. Population clustering of these earliest village farmers is evident, perhaps representing political alliances among ethnically similar populations (Clark, chapter 12, this volume).

Almost half the sites scattered along the Middle Missouri River and dating to the period from circa AD 1000 to 1100 are fortified, suggesting that conflict and violence were central concerns. The Sommers site, for example, was initially unfortified, but in the late eleventh century the inhabitants constructed a fortification ditch and palisade around a series of houses at the north end of the site. Sommers is an "unusually large site composed of almost 100 houses within and outside of a fortification ditch, indicating a consolidation of peoples for mutual defense" (Johnson 2007a:170). Potential attackers menacing Sommers include local hunter-gatherers, Middle Missouri villagers, and resident Late Woodland groups (Clark, chapter 12, this volume). Neighboring Plains villagers probably also threatened these fortified communities because they possessed sufficient warriors as well as the organizational capability to storm defensive positions with mass assaults. Some hunter-gatherer sites to the north, however, were also fortified and their occupants may have been the assailants (Bamforth, chapter 1, this volume). In the twelfth century, the fortified Fay Tolton site was the scene of violent confrontation between occupants and attackers (Hollimon and Owsley 1994). Also at this time, local population clusters fissioned, expanded northward, and became heavily fortified, with buffer zones separating them (Clark, chapter 12, this volume).

Evidence from the thirteenth century is clear for three divisions of fortified villages consisting of ethnically different populations who occupied the same stretch of the Missouri River but who were separated by buffer zones (Clark, chapter 12, this volume). By the end of the century, all traces of the Initial

Middle Missouri villagers disappear from the archaeological record, perhaps as a result of deteriorating climatic conditions, incursions of competing proto-Arikara (Initial Coalescent) groups from the central Plains and proto-Mandan (Extended Middle Missouri) villagers from the north, and disruptions in the Cahokia exchange network (Johnson 2007a:100, 178).

The fourteenth century witnessed strong, fortified towns with large populations and massed attackers. The massacre of almost 500 Initial Coalescent (proto-Arikara) occupants of the Crow Creek site indicates a rise in violence (Hollinger, chapter 10, this volume; Willey and Emerson 1993; Zimmerman and Bradley 1993). Conflict may have been generated by outsiders, such as the Oneota who were expanding into the northern Plains from the east, or by Caddoan-speaking (Coalescent) central Plains villagers who had recently moved into the valley, or by the resident Siouan-speaking (Middle Missouri) people who were being forced to move northward, out of the Big Bend region. The escalated violence appears to have resulted in some villages becoming larger and more compact. These intrusive (Initial Coalescent) settlements were fortified by complex and elaborate defenses consisting of ditches, palisade walls, and bastions surrounding the village perimeter (Bamforth, chapter 1, this volume; Johnson 2007a:178). Bastions are designed to prevent massed attackers from breaking down or setting fire to palisades, suggesting that a fundamentally different scale of conflict and organizational basis for combat was present in the fourteenth century. Village leaders were now able to mobilize large forces and bring together multicommunity alliances.

Zimmerman and Bradley (1993) suggest that these Initial Coalescent communities may have competed with resident Middle Missouri populations for horticultural floodplain land. Linkages of an ideology of status, violence, and warfare may have brought about changes in dehumanization of the enemy, male status, and trophy-taking behavior. Patterns of socialization created an ethos of sanctioned violence (Bamforth, chapter 1, this volume). Populations throughout the region reestablished their presence as evenly distributed, paired fortified villages. Interestingly, one of these pairs consists of two different cultural traditions (Coalescent and Middle Missouri), suggesting that alliances are not always structured along cultural or ethnic lines (Clark, chapter 12, this volume).

By the early 1400s, newly established horticultural sites were open and unfortified, with substantial intersocietal interaction. But during the mid- to late 1400s, the Middle Missouri communities reaggregated into large fortified towns and witnessed reduced intervillage interaction (Bamforth, chapter 1, this volume). Two population clusters separated by a buffer zone, situated

along the Middle Missouri, apparently represent Siouan-speaking, proto-Mandan/Hidatsa to the north and Caddoan-speaking proto-Arikara to the south. Some type of interethnic rivalry apparently played out between these two groups in the form of violent conflict. However, Mitchell (2007) suggests that ancestral Mandan towns may have defended themselves from one another in the face of increasing competition for control of exchange networks. At the same time, fortified hunter-gatherer sites on the northeastern Plains, such as the Shea site, may have been involved in violent confrontations with Middle Missouri villagers. These groups may have been proto-Lakota or hunter-gatherers located to the west in the Black Hills (Bamforth, chapter 1, this volume).

By the later 1400s, community size had increased again, and fortifications had become elaborate and widespread in the south, although they appear to remain absent in the north. This pattern of fortifying permanent horticultural communities, at least in some regions, continues into the contact period. Fortifications ranged from a ditch and palisade set across the neck of a promontory, to elaborate bastioned walls incorporating *chevaux-de-frise* obstacles (Bamforth, chapter 1, this volume). Buffer zones still remained between divisions, including one that separated two fortified Initial Coalescent communities. Regionally, there was a trend for dispersal, but locally small clusters are also evident (Clark, chapter 12, this volume). Communities appear to have remained relatively large and fortified well into the sixteenth-century (Bamforth and Nepstad-Thornberry 2007b:152).

Northern Plains fortifications and warfare have been topics for discussion by a number of researchers (Bamforth 1994, 2006; Caldwell 1964; Ewers 1975; Henning 2005; Hollimon and Owsley 1994; Kay 1995, 1996, 2007; LeBeau 2010; Lehmer 1971; Owsley 1994; Robarchek 1994; Willey and Emerson 1993; Zimmerman and Bradley 1993). However, the maintenance and durability of palisades in the face of limited timber resources has rarely been discussed (Griffin 1977; Mitchell, chapter 11, this volume). Construction of a Middle Missouri earthlodge village, especially its ditch-and-palisade system, would have been an organized and planned community process, requiring the efforts of a large workforce to cut and move substantial amounts of timber (Wilson 1934). Judging from the planned nature of most villages, a settlement would have been constructed during a relatively short period, perhaps a few weeks or less, and occupied quickly by a substantial, aggregated population. The village was probably abandoned as a single event, with many of the inhabitants moving simultaneously to construct another village at a new location. It is also possible that a new fortified village was built prior to abandonment of

the previous settlement. Therefore, large numbers of lodges within a typical village may have been abandoned in one village and constructed in another in a coordinated and synchronous manner (Johnson 2007a:57).

Ethnographic reports (Will 1930; Wilson 1934; Weitzner 1979) and data obtained from modern earthlodge reconstructions (Ahler 1988) indicate that the useful life of an earthlodge is about 20 years or less, due primarily to rotting posts and beams that form the main structural support elements of such lodges (Johnson 2007a:65). If a village were in use for more than about 20 to 30 years, there should be clear evidence of repairs or replacements (Johnson 2007a:65). The norm is for a village to be occupied for a half-century or less, perhaps only for a decade or two (Johnson 2007a:66). In the Big Bend region, for example, each village was inhabited for about 30 years. The brief occupation of most Middle Missouri villages is seen as a "response to warfare, competition for bottomland suitable for horticulture, timber depletion, and the meandering effects of the Missouri River on available floodplain lands" (Johnson 2007a:100).

Timber depletion was a primary factor in Middle Missouri village locations and movements because non-domestic units, such as palisades, would have required considerable amounts of wood for initial construction and subsequent maintenance. Building and fortification repair would have continued throughout the occupancy of a village, further affecting timber resources. To utilize timber in the immediate surroundings most efficiently, villages would have been located near young stands of cottonwood and willow, whose constituent elements were dense, had relatively small boles, and were fairly straight (Griffin 1977).

Demands for timber in palisade construction may have influenced bastion construction at sites along the Middle Missouri, where they were spaced about every 54 m (177 ft), almost twice the spacing of Mississippian bastions. Keeley et al. (2007) suggest that the distances between Middle Missouri bastions resulted from the use of sinew-backed compound and/or composite bows, which had a longer cast than the eastern self-bow. "Thus, prehistoric eastern North American bastions were spaced at one half the effective range of a self-bow at the same time that the intervals between bastions on the Upper Missouri were half the effective range of the composite bow" (Keeley et al. 2007:77). Bastion spacing may have also resulted from scarcity of timber along the Missouri River, in addition to the casting abilities of Upper Missouri bows.

Cottonwood (*Populus deltoides*) and willow (*Salix* spp.) appear to have been the preferred trees used for posts in their respective habitats in the Great Plains, but there may not have been many other options in wood choice.

Buffalobird-woman (Hidatsa) noted that tobacco garden fences were made from diamond willow (*Salix* spp.) posts (Wilson 1917:126). Cottonwood and willow have short use-lifespans and would have required constant palisade inspection and repair. Given that Middle Missouri villages were occupied for some 30 years or longer, palisade post maintenance and repair would have been primary concerns. The earliest description of Middle Missouri defenses comes from Jean Baptiste Truteau. He noted in his 1795 journal (Nasatir 2002:295–296):

> The Ricaras have fortified their village by placing palisades five feet [1.5 m] high which they have reinforced with earth. The fort is constructed in the following manner: All around their village they drive into the ground heavy forked stakes, standing from four to five feet high [1.2–1.5 m] and from 15 to 20 feet [4.6–6.1 m] apart. Upon these are placed cross-pieces as thick as one's thigh; next they place poles of willow or cottonwood, as thick as one's leg, resting on the cross-pieces and very close together. Against these poles which are five feet [1.5 m] high they pile fascines of brush which they cover with an embankment of earth two feet [0.6 m] thick; in this way, the height of the poles would prevent the scaling of the fort by the enemy, while the well packed earth protects those within from their balls and arrows.

Truteau's account accords well with the archaeological evidence of fortifications in the Middle Missouri Valley, but this area too presents problems similar to those of the Iroquois, who frequently moved their villages. To what extent do heavily fortified villages reflect the degree and intensity of conflict and violence in the northern Plains? The well-documented development of short-lived, fortified village farming communities offers important opportunities for assessing palisade construction techniques and maintenance requirements. Middle Missouri Valley populations shared common ground with Iroquoian and Mississippian communities in defense of their communities, but differences in environment, history, and political organization present challenges and intriguing research questions for archaeologists.

DISCUSSION

Throughout eastern North America, the chronology of fortification construction and an appreciation of defensive structure maintenance and repair are poorly defined and understood (Bamforth, chapter 1, this volume; Clark, chapter 12, this volume; Prezzano 1992). A raft of questions may be posited. At what point in the lifespan of a site's history were fortifications built and maintained? How long do fortifications last and how much effort is expended

toward construction, maintenance, and repair? Do multiple fortifications represent contraction or expansion of village dimensions (Clark, chapter 12, this volume)? Were posts shortened and then reused in the palisade as supports? Were old posts pulled and used as building materials, employed as firewood, or simply discarded? Did conflicts erupt among groups over scarce wood resources, especially if certain preferred species were desired? Which aspects of palisade construction represent engineering compromises concerning effectiveness, expedience, and resource (post) availability? How were structurally inadequate logs inspected/tested? Would fortification builders have allowed posts to stand until they failed, would they have dug into the decaying post to look for unacceptable levels of rot, or would they have replaced posts following a predetermined interval based on their prior experiences (Don C. Bragg, personal communication, 2013)?

Palisades are often treated as long-standing, durable features, an interpretation that unfortunately results in the perspective of violence and warfare as continuing over protracted periods of time rather than as episodic and limited. Based on known durability rates of posts in eastern North America, palisades would have required frequent and routine maintenance for long-term viability, resulting in considerable effort with construction and maintenance using stone adzes, axes, and chisels. Some palisades may have been "expedient constructions meant to deter ambushes and sneak attacks in the middle of the night or early in the morning" (Hammerstedt 2005:230). Lewis and Kneberg (1946:33) suggest that the palisade at the Hiwassee Island site was used only at certain times during the site's occupancy, rather during the entire history.

Many posts, due to rotting, would have been intentionally removed on a regular basis, but this would be difficult to assess in the archaeological record (Lafferty 1973:109). Rebuilding presents a different archaeological signature. For example, the 20,000-log Cahokia palisade was built and then rebuilt four different times between AD 1170 and 1300 (Trubitt 2010). As one palisade weakened with age, a new one replaced it. During excavation it was possible for the excavators to see where portions of a new wall were erected in front of an old wall, which was subsequently removed. Thus, a continuous barrier was maintained at all times (Iseminger 1990:31). Palisades may also have been realigned due to community contractions and expansions. Hammerstedt (2005:129–138) records three nested palisades at Annis Village, representing successive enlargements of the town over time.

Researchers have attempted to quantify the labor involved in palisade construction (Bigman et al. 2011; Hammerstedt 2005; Iseminger 1990; Krus 2011; Lafferty 1973; Milner 1998). Hammerstedt (2005:226–231) calculated the labor

required to construct the palisade at Annis Village and found that labor costs were similar to those for mound construction. The third and last palisade, measuring 277 m (909 ft), required 1,385 posts and took less than 20 days to construct. Proportionally more labor was invested in moving and raising posts than to fell trees. The time involved in palisade post inspection, planning, and replacement was not calculated. Lafferty (1973:98) suggests that "it took an estimated 500 to 100,000 man-hours to build 100 linear feet of earth wall while it took 50 to 400 man-hours to build a similar section of wood wall." A wooden palisade would require between three and six hours of labor for each linear meter (Lafferty1973:93).

Not only were labor demands high, but the need for construction timbers also brought about deforestation, which had a dramatic impact on the environment (Chacon and Mendoza 2012:477). During the lifespan of the Toqua site on the Little Tennessee River, for example, over 20,000 trees were removed from the surrounding forest to build three different palisades during various phases of the village occupancy (Davis 2000:30). The Etowah palisade stretched along the Etowah River for more than three-quarters of a kilometer. The approximately 5-km palisade constructed around Moundville, located on the Black Warrior River, may had as many as 125 square-tower bastions, spaced every 35–40 m, each of which was 4 m wide and 7 m deep (Bridges et al. 2000:39–40; Dye 2006:114).

In the temperate forests of eastern North America, wood decay is caused primarily by fungi, which consume wood fiber when supplied with sufficient oxygen and a suitable moisture and temperature regime (Warrick 1988:36). Thus, wood posts placed in the earth decay first at the ground line (Krzyzewski and Spicer 1974; Krzyzewski et al. 1980:2). In many parts of North America, particularly the Southeast, termites can be a major consumer of wood with ground contact, while other insects that cause major problems with wood degradation include carpenter ants and powderpost beetles (Don C. Bragg, personal communication, 2013).

Decay rates of untreated wood are known for many North American trees (Blew and Kulp 1964) that were likely used in log palisade construction: in the Northeast, northern white cedar (*Thuja occidentalis*); in the lower Midwest-Southeast, eastern red cedar (*Juniperus virginiana*) and pine; and in the Middle Missouri, cottonwood (*Populus deltoides*) and willow (*Salix* spp.). The rate of decay in eastern North America depends on a number of circumstances. Young, fast-growing trees of many species, including bald cypress and eastern red cedar, produce sapwood that is prone to predation by insects and decay. Heartwood, the most resistant wood type, usually forms later in the

growth cycle as the tree moves protective chemical compounds into the dead tissues at the center of the stem. Moisture content, salt content, and soil acidity also give rise to increased decay. Too little oxygen, usually, from too much water, will slow wood decay, as will soils high in salt content or acidity levels. Extremely dry conditions will also slow decay (Don C. Bragg, personal communication, 2013). Soil conditions do not affect post use-life, nor does charring (Prezzano 1992:241; Warrick 1988:39), but decayed posts would have been replaced almost immediately, necessitating routine inspection and testing to relocate such posts. Most posts would begin to decay from the outer surface inward—assuming posts with existing heart rot were not being used. External decay is not necessarily indicative of what the internal condition of the wood is like. A post may be doughty, punky, or rotted on the outside, yet it may be sound in the middle, especially if it has a lot of heartwood (Don C. Bragg, personal communication, 2013). In 1973, Lafferty (1973:186) called for long-terms experiments of palisade walls to "see how they decay when exposed to different conditions" and his call is as pertinent today as it was then.

CONCLUSION

In this chapter I have suggested that archaeologists consider construction episodes, labor planning, long-term maintenance, and resource procurement in their discussions of fortifications. Palisades should be examined as artifacts, that is, they must be investigated from the perspective of the overall construction system, including the process of production and maintenance. Archaeological evidence for palisade maintenance is evident at many late prehistoric sites. Determining whether posts have been burned, pulled, or rotted in places provides compelling evidence for maintenance and rebuilding episodes. Thus, the use-life of palisades may be correlated with the lifespan of a community and the degree of labor and material costs involved in fortification construction.

Evidence presented here suggests that fortifications evolved in step with village defensive needs, the offensive capabilities of one's enemies, and sociopolitical organization. Fortifications are cultural artifacts that require actions and decisions on the part of their builders. Accumulated skills learned from trial and error would have been taught to the next generation. These learned skills involved advance planning, labor mobilization, and resources management, and were essential to construction and maintenance. The engineers who planned and built the multitude of fortifications found throughout the eastern Woodlands had to be mindful of the community's level of defensive needs and their enemies' offensive level of combat power. As military

deployment, organization, and weaponry changed, so did levels of fortification sophistication.

The more common and diverse forms of archaeological evidence for violence are circumstantial or indirect and may include exchange, fortifications, iconography, settlement patterns, and weapons. Fortifications, intentionally constructed to repel offensive attacks, remain one of the most obvious and unambiguous archaeological indicators of severe intercommunity conflict (Fontana 2007; Keeley et al. 2007; Lafferty 1973; Milner 2000; Schroeder 2006; Trubitt 2003). Unequivocal characteristics of defensive fortifications include baffle gates, bastioned palisades, and V-sectioned ditches (Keeley et al. 2007). These fortification features have been identified among many, if not most, of the late prehistoric cultures in eastern North America (Milner 2000). They indicate that, as social organization became more complex, so did the capacity for intercommunity aggression and violence. Fortifications are archaeological signatures of intersocietal conflict, or at least the potential for conflict, because structural defenses indicate elevated levels of warfare. The construction of fortifications in eastern North America required considerable knowledge, labor, and planning on the part of indigenous engineers. Only a regional perspective enables us to investigate the evolution, maintenance, and variability of well-developed defensive architecture in eastern North America.

Acknowledgments. I am grateful to Andy Clark and Doug Bamforth for their invitation to contribute to *Archaeological Perspectives on Warfare on the Great Plains*. The chapter benefited from editorial comments by an anonymous reviewer, Mark Allen, Jim Bradley, Don Bragg, Dorian Burnette, Bill Engelbrecht, Charles McNutt, Jeff Mitchem, Bryon Schroeder, Mary Beth Trubitt, and Patty Jo Watson.

6

Ditches or Earthworks

A Reexamination of Fortified Villages on the Upper Missouri River

Albert M. LeBeau III

Throughout our world's history, wars and interpersonal conflicts have been an integral part of the human evolutionary experience. There is ample evidence that such conflicts often occurred in the Old World on a large scale, and this has led to the belief that interpersonal conflict is a very human phenomenon in general. In short, where there are humans, there will be interpersonal conflicts, and populations in the New World were not immune from such conflicts that at times led to war. Indeed, there is archaeological evidence of interpersonal conflict on varying scales, including war, among the great civilizations of Central and South America (Palka 2001). Archaeological evidence of conflict is also apparent in the southwestern and eastern Woodland regions of North America (Brose and Greber 1979; Charles and Buikstra 2006; Dye 2009; LeBlanc 1999; Lee 2004; Mahon 1958; Potter 1968; Squier and Davis 1998). Logically, it would make sense to assume that there was also precontact warfare occurring on the Plains of the United States as well. There are ample tribal oral histories and anthropological reports, as well as archaeological evidence that contribute to the study of Great Plains warfare during both the precontact and postcontact periods.

My goal here is to consider what some of the specific lines of evidence that archaeologists have often used to infer war do and do not tell us about the presence of war on the Northern Plains—particularly the ditches surrounding human settlements, which are widely taken as strong evidence for war (Bamforth 1994;

DOI: 10.5876/9781607326700.c006

Bowers 1992; Caldwell 1964; Denig 1976; Dye 2009; Ewers 1975; Winham et al. 1994; Keeley et al. 2007; Lehmer 1971; Toom 1992; Wood 2001; Zimmerman and Bradley 1993). The assumption that these ditches were solely for fortification has served as the impetus for this chapter, which addresses the following question: is the presence of ditch earthworks primary evidence of prehistoric warfare within the Middle Missouri subarea of the Great Plains?

ARCHAEOLOGICAL ASSESSMENT OF PREHISTORIC WARFARE ON THE MIDDLE MISSOURI

What constitutes archaeological evidence of war? Which artifacts and associated features are indicative of warfare? On the modern battlefield these questions are answered by identifying remnant artifacts used in battle, such as armored vehicles, military planes, and high explosives craters, to name a few. This is not the case when dealing with prehistoric warfare, due to the fact that the tools and weapons used in ancient war in virtually all cases could have served dual purposes. An example of such equifinality exists in the case of projectile points, which could have been used as readily as hunting implements or weapons during interpersonal conflict. Because none of the artifact types known archaeologically from the Great Plains can be interpreted as having an exclusive function as weapons of warfare, archaeologists have been forced to rely on other kinds of evidence. This issue compels one to consider what other elements of the archaeological record may have a similar lack of clarity in terms of purpose and function. For the purposes of this discussion I will look at three criteria for identifying prehistoric warfare:

1. Design and frequency of possibly defensive structures
2. Artifact association/distribution
3. Ostological/Ossuary evidence

Design and Frequency of Ditches

Landscape modification through construction of fortifications has been a time-honored indicator of warfare in historical and archaeological contexts from the Old World. Keeley et al. (2007) suggest that landscape modification that appears defensive in nature was intended to protect the inhabitants from attack. In addition, Dye (2009:7) lists ditches as one of the most important indirect pieces of evidence for warfare. However, ditches *by themselves* are not necessarily fortifications—in many areas, people dug ditches for practical purposes like irrigation or to mark off ceremonial areas. Defensive ditches typically have U- or V-shaped cross-sections, with the earth from the ditch piled on the

inside of the ditch and a palisade constructed along the high point formed by this earth. More complex fortifications have bastions and most fortified sites have some means of restricting access to the site's interior, often, but not always, a baffle gate. (Keeley et al. [2007] discuss all of these features of fortifications in detail.) Even when some combination of these features is present, though, we need to look to the other criteria for warfare mentioned above—fortifications tell us about the potential for violence, not about actual violence.

And even defensive fortifications might possibly reflect reasons for excluding people from a residential area other than war. This is not to say that during the contact period, when early explorers and researchers came to the area, these ditch earthworks were not being used as fortification or at least being used as barriers to mark a separation between the populations inside and outside of the village. It is well-known that trade networks existed before the first non-Native explores came to the area and long before Euroamerican settlers moved into the area. The Middle Missouri was a trade center because of the access to the river and to rare and isolated stone resources such as Knife River flint (Winham and Calabrese 1998:285). Like trade goods, ideas and pathogens may also have traveled along those routes. Depending on their nature, these new ideas or pathogens, rather than physical conflict, may have led to the development and redesign of some walled earthworks.

To explain the causes of warfare, Ember and Ember (1992) found that the fear of unpredictable future natural disasters (e.g., floods, prolonged droughts, and shortened procurement times) in association with population growth will generally lead to war. In this view, the fear of nature and the fear of "Others" play a key role in understanding the beginnings of warfare (Ember and Ember 1992:256). Along these lines, Bamforth (2006) also looks to environmental conditions as contributing factors in the development and construction of fortified villages within the Middle Missouri between AD 900 and 1700, arguing that radiocarbon dates can link the construction of fortifications to climatic conditions; his analysis suggests that walled earthworks were more prevalent in the Middle Missouri region during times of sustained drought (Bamforth 2006). Based on these results, Bamforth suggest a direct correlation between the prevailing climate and the possibility of warfare. The variations of climatic episodes on the Plains are not as dramatic as some other worldwide episodes; however, as we have recently witnessed in the Great Plains, there were drought cycles that lasted a decade (Bamforth 2006). These cycles correlate with the ebb and flow in the construction of walled earthworks.

In the American Southwest, LeBlanc (1999:55–56) attributes these changes to the possibility of warfare. Similar changes can be seen at numerous sites

along the Missouri River, more notably the Sommers site, Fire Heart Creek site, Crow Creek village, and Cattle Oiler site. These sites show evidence of possible decline in use and reoccupation from AD 900 to 1700. In addition to evidence of new earthlodges, the walled earthworks at some sites also show evidence of movement. The latter is most evident at the Double Ditch site. Through the use of geophysical techniques, two additional concentric ditches, found outside of the previously known ditches, have recently been identified. There are two possible explanations for the "quadruple ditch" features. First, the ditches may show contraction (Kvamme 2007:215–216). This does not appear to be due to warfare but was perhaps a reaction to depopulation caused by European-borne diseases, such as smallpox. Alternatively, the multiple ditches at Double Ditch may indicate repeated construction episodes linked to the growth of the village. As more people came to the village site, the old barricade had to be moved and enlarged to accommodate the new arrivals. Again, if we look to the Southwest as an example, this type of population movement may be the result of climatic change and/or conflict (LeBlanc 1999:56–68).

Keeley and his colleagues suggest that the presence of a fortification ditch with bastions is proof positive of warfare and argues further that ditches with V- or U-shaped cross-sections are very strong evidence of war (Keeley et al. 2007). Keeley's research on Old World and New World archaeological sites has led him and his colleagues to classify certain construction characteristics as clear indicators of defensive fortification. Bastions are fairly widespread in the Dakotas (Lehmer 1971), but they are far from universal: many ditches lack them and they are often absent in postcontact sites, a period when we know that conflict was very common.

Keeley et al. also suggest that the shape of the defensive trenches is a calculated engineering choice designed to prevent penetration of the village, and that by looking to the cross-sections of these ditches, a researcher can distinguish the function as fortification. For example, Keeley suggests if a ditch's cross-section shows a deep V-shape (> 1 m) with high-angle sidewalls it was intended for fortification, while a ditch with a shallow (< 1 m) trapezoidal profile and low-angle sidewalls is representative of a function other than fortification (Keeley et al. 2007:58). Ditch profiles can be modified by postdepositional erosion and different sediments may lend themselves more readily to a classic defensive shape, but the characteristics Keely et al. specify are important. Within my research area, ranging from the mouth of the White River to the mouth of the Yellowstone River, the ditch cross-sections show variability between V-shaped and trapezoidal profiles (figure 6.1). Many ditches are indeed V- or U-shaped, but some vary in shape from section to section

(compare, for example, Wood's [1967] ditch profiles in Maps 16 and 17). Some profiles may be altered by erosion, but the diversity of forms nevertheless could suggest multiple reasons for digging ditches.

Heaping the earth from the interior of the ditch and building a palisade in that pile of earth is also strong evidence for a concern with defense. Artificial heaps of earth are more susceptible to erosion than the natural ground surface, and such erosion can eliminate evidence for a palisade. Seeing a palisade also requires excavation sufficiently far into the interior of the site to locate it—at Huff, for example, the palisade appears to have been set a meter or more inside the trench. At this site Wood (1967:54, 57) also documents a second row of posts around a bastion that may be defensive, but notes that neither of the two long excavations of the palisade were wide enough to see if this extended around the entire circumference of the site. With this caution in mind, it remains true that there are sites in the Middle Missouri with ditches but no remaining trace of a palisade (e.g., Fay Tolton; Wood 1976).

We can also consider the frequencies of sites with and without fortifications as evidence for warfare. If ditches are evidentiary proof of conflict, then an area that is relatively densely populated should have an abundance of fortified villages. In the Middle Missouri this is simply not the case. When one looks at the number of villages with ditched earthworks through time, it becomes apparent that there are far more villages without ditch structures. A χ^2 test and a likelihood ratio test were performed, to demonstrate this statistically. Using data that represent a long span of time, it is possible to look for correlations concerning fortification patterns over time and between different traditions and Middle Missouri variants.

The dataset was compiled from an electronic database maintained by the United States Army Corps of Engineers (USACE). The database contained all known archaeological resources within the Omaha District. The Omaha District contains the six mainstem dams that run along the Missouri River. The USACE's GIS database incorporates cultural resources managment GPS data for accuracy. Included in this database are different attributes for each site. These include Cultural Affiliation (five categories), Attribute (site number), Site type (three categories), Elevation, Condition, Resource Management, Recommendations, Impact (three categories), Site Name, Project Location (lake location), Lake State, and County.

I queried the database to find all sites that had earthlodge, village, earthlodge village, fortification, fortified village, depressions, dugout, cache pits. I chose to run a query on multiple searches due to the different reporting styles archaeologists have used throughout time on the Missouri River mainstem.

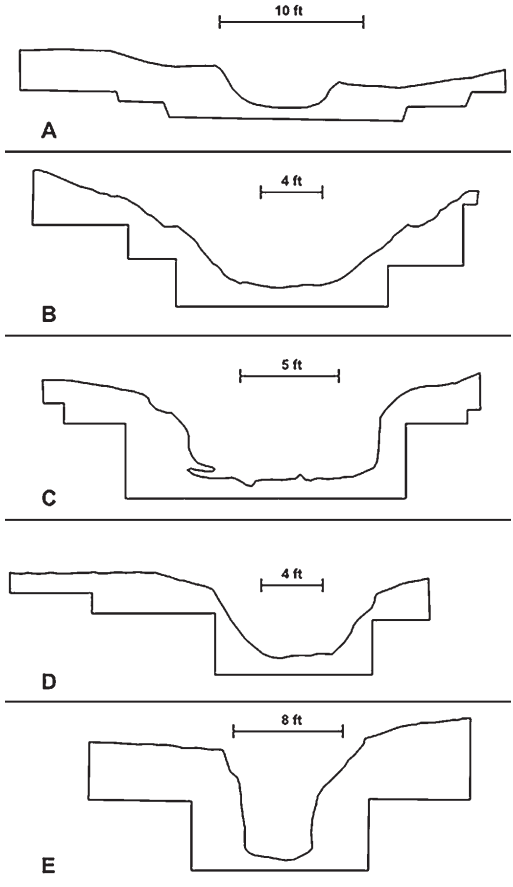

Figure 6.1. *Profiles of five ditches from villages located along the Missouri River in North and South Dakota: (A) Huff village (after Wood 1961:Map 11); (B) Crow Creek village inner ditch (after Kivett and Jensen 1976:17); (C) Fay Tolton (after Cottier and Cottier 1976:4); (D) Crow Creek village outer ditch (after Kivett and Jensen 1976:17); and ∈ Dodd site (after Lehmer 1954:7).*

I tried to be all encompassing in my query in order to gain the most data. I copied the results of the query into SPSS.

The null hypothesis for this test states that there is no difference between time period and fortification patterns in the Middle Missouri region (or H_0: *Vg* = *Ft,* where *Vg* = Village and *Ft* = Fortification). In order determine what statistical test would be the most appropriate, I ran a crosstabs to check the validity of my data with a chi-square and likelihood ratio test.

With a total number of 579 cases, which were separated into nine categories, the results of the chi-square test show that with a chi-square value of 54.63, degrees of freedom of 8, and the probability value of less than 0.001 (p = < .001), it is extremely unlikely that the differences noticed are due

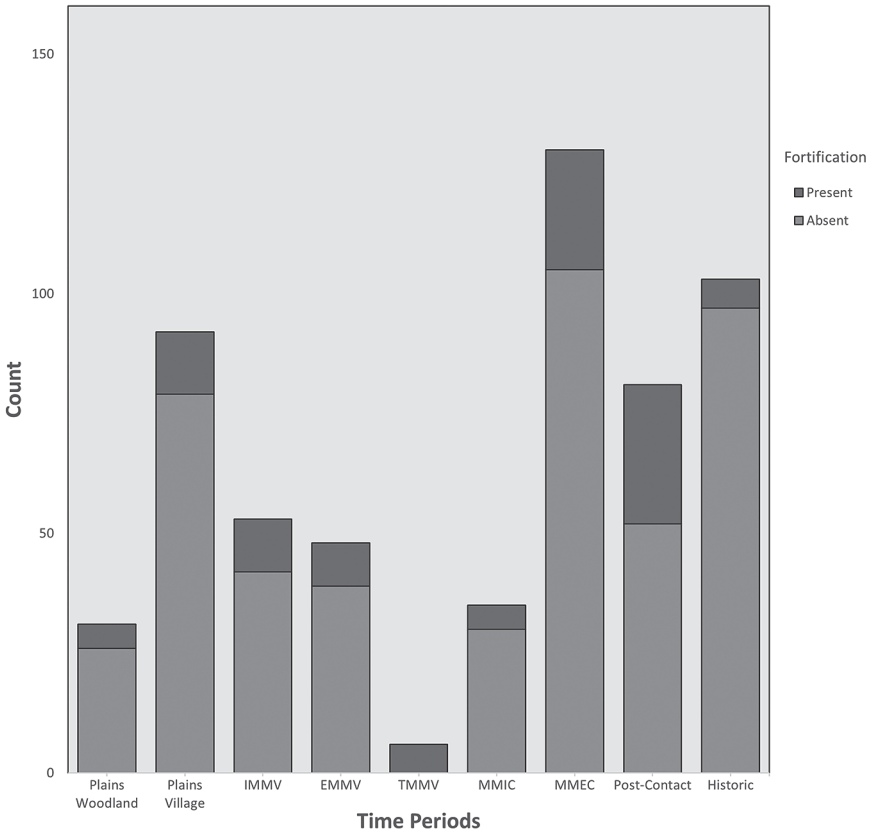

Figure 6.2. *Number of sites with and without fortifications by taxonomic unit. IMMV, Initial Middle Missouri Variant; EMMV, Extended Middle Missouri Variant; TMMV, Terminal Middle Missouri Variant; MMIC, Middle Missouri Coalescent; MMEC, Middle Missouri Extended Coalescent.*

the vagaries of sampling. As the graph in figure 6.2 illustrates, there is a disparity between the number of fortified and unfortified villages. When viewing these results one must keep in mind the issues with the dataset as well as the fact that more testing should be done and more analyses using data sources other than the USACE are needed to cross-check the results. But for an archaeologist on the ground, the fact of the matter is there are far more village sites without ditch structures than there are with ditches. Which leads back to the fundamental question: what is the use and function of these earthworks?

Perhaps the answer lies in oral tradition. One of the central figures in Mandan oral tradition is the Lone Man. In one of the stories, Lone Man built a corral made of cedar to protect a village from an oncoming flood. This later turned into a symbol of the village, in which a planked wall made of cottonwoods surrounded a red cedar that symbolized Lone Man (Bowers 2004:113, 161–163). It is possible that this symbol of the village also served as a fortification to protect the village from water and attackers, while symbolizing Mandan oral tradition.

Artifact Association/Distribution

Artifact association and distribution are obvious and important indicators of all types of behavioral patterns in the archaeological record, including patterns of conflict. Because prehistoric populations did not make weapons solely for interpersonal conflict per se, the distribution and association of common artifact types should play a relevant role in any interpretation of conflict. For example, if there are numerous projectile points on either side of a ditch, an interpretation of conflict may be warranted (see Keeley [1996:18–19] for an example of this). Conversely, if one finds an abundance of household refuse, such as broken pottery, butchered animal bones, charred seeds, and other broken utensils, this could indicate the ditch was used as a landfill for unwanted refuse.

To test for prehistoric warfare, artifact distribution research was conducted to compare the types of artifacts found within the ditch versus those located inside a house structure. The test was intended to identify a distinction between projectile-point deposition versus other types of chipped-stone artifacts, specifically end scrapers. In general, if one sees a much greater number of projectile points within and around the ditch earthworks than within the house context, one can assume that there may have been some activity requiring the use of projectile points occurring around the ditch. Such a disparity could be considered as evidence of prehistoric warfare.

The first site in this analysis is the Molstad Village (39DW234), which is located on the T2 terrace just above the floodplain of the Missouri River in north-central South Dakota. The site has been dated to AD 1400–1500 (Johnson 2007a:178–181) and is the earliest village within the northern tier of the Middle Missouri to have rectangular rather than circular earthlodges (Hoffman 1967:46). This village has a ditch structure that surrounds the entire settlement, with evidence that a palisade was erected on the village side of the ditch. This analysis focuses on four test units from the original excavations. These are XU 4, which bisects the northern portion of the ditch; XU 1, which

bisects the ditch and palisade at the southern end of the site; Feature 7, which excavated the bastion feature; and house 2, which lies near the center of the village. A comparison of artifact distribution is drawn by looking at these excavations within four key areas of the site (Hoffman 1967).

The second site analyzed is the Fay Tolton site (39ST11). Fay Tolton is located on a T2 terrace ridge overlooking the Missouri River floodplain in the central part of South Dakota. Unlike the Molstad site, the ditch structure does not encompass the entire site. This is most likely due to the location of the site on a toe ridge surrounded by deep drainages on three sides. Therefore, only a single linear ditch was constructed across the toe ridge, perpendicular to the drainages. Also unlike the Molstad site, Fay Tolton does not have a palisade. This analysis focuses on two excavation areas, including the ditch earthwork and House 2 (Wood 1976).

Table 6.1 shows the results of the testing for artifact distribution at Molstad and Fay Tolton. Based on the results of this analysis it is apparent that the ditches contained fewer artifacts, compared to the house contexts. More important, few projectile points were found within or near the ditch structures, which does not support the idea that conflict took place at these locations. Feature 7 at the Molstad site is interesting because the excavation is specifically of the bastion feature. Normally bastions are strongholds within a fortification for defenders to protect the outer side of the wall (Keeley et al. 2007). Feature 7 did have one projectile point but it also contained two end scrapers. One would expect that if the bastion were built for a defensive purpose there would be more projectile points or chipped-stone debitage recovered at the location. Though a formal analysis of debitage was not made, a preliminary look at the data showed limited amounts of chipped-stone debris.

Osteology

Osteological and ossuary evidence present a more direct indicator of interpersonal conflict than landscape modification. If the skeletal remains show evidence of blunt-force and/or sharp-force trauma, then it could be more confidently assumed that interpersonal conflict did take place. Once again, researchers have to be cautious of wholesale assumptions relating all evidence of trauma with warfare. There are other explanations for the existence of such evidence, such as human sacrifice, cannibalism, and ancestor worship (Ewers 1975; Bowers 1992 and 2004).

Skeletal evidence of violent death is the most dramatic evidence of warfare, and it is present in the Middle Missouri. However, although it is dramatic, it

Table 6.1. Molstad (39DW234) and Fay Tolton (39ST11) artifacts by location

Excavation	*Projectile Points*	*End Scrapers*	*Total*
Molstad (39DW234)			
XU 1 (Ditch)	0	0	0
XU 2 (Ditch)	6	16	22
XU 4 (Ditch)	0	0	0
Feature 7 (Ditch)	1	2	3
House 1	10	22	32
House 2	7	6	13
House 4	1	2	3
House 6	1	2	3
House 7	13	32	45
Total	39	82	121
Fay Tolton (39ST11)			
Ditch	0	0	0
House 1	6	3	9
House 2	7	4	11
Total	13	7	20

is not widespread. Many communities in this region seem to have disposed of the dead in archaeologically invisible ways, making it difficult to search for osteological data. However, two sites in particular illustrate notable osteological evidence of warfare. The most famous is site 39BF11 (Crow Creek), which contained a mass burial with human remains showing evidence of sharp-force and blunt-force trauma, scalping or trophy-taking, and nutritional deficiencies (Gregg and Gregg 1987; Willey 1990). Human remains deposited within a ditch show clear osteological evidence for interpersonal conflict (Bamforth 1994; Kivett and Jensen 1976; Willey 1990; Zimmerman and Bradley 1993).

The second site is Fay Tolton (39ST11), where bodies on the floor and in open-cache pits of burned houses imply a similar successful attack (Hollimon and Owsley 1994:346–347; Wood 1976; Lehmer 1971). At Fay Tolton, evidence that has been attributed to warfare is based on the discovery of recently deceased individuals lying unburied on the floor of a burned house (one of them with a projectile point embedded in her lower leg) and an individual missing his head and several cervical vertebra who was slumped in an empty cache pit in another house. Past violence at this site is suggested by infected

scalping marks on a child and healed cranial fractures on an adult male (Hollimon and Owsley 1994).

Despite this evidence, the presence of trophy-taking at the site may be overstated. One individual (burial 3) was mostly intact, except that the skull and mandible were missing, which has traditionally been attributed to trophy-taking (Lehmer 1971:101; Butler 1976:29). However, there is an alternative explanation to warfare found in ethnographic sources that may explain the missing skull. The Mandan have clan bundles and these bundles contain fetishes that sometimes include human remains, most notably skulls (Bowers 2004, 1992). Another individual (Burial 1C), was found with both hands missing, once again with an interpretation that suggests that these were trophies. But the lack of butchering marks on the remaining extremities is inconsistent with identified hand removal from other sites. The missing appendages may be the result of postdepositional processes (Hollimon and Owsley 1994:348), although the analysts who identified this pattern think this is unlikely.

DISCUSSIONS AND CONCLUSIONS

The criteria discussed in this chapter were developed to determine what archaeological evidence for prehistoric warfare exists within the Middle Missouri region. There is no doubt that there was war in that region, but considering the multiple lines of evidence examined here shows the limitations on our ability to understand when, where, and why Middle Missouri communities fought one another. The multifunctionality of many of the artifacts that can cause blunt-force and sharp-force trauma, and therefore can be interpreted as weapons of war, precludes the simple reliance on the presence of these items as proof positive of interpersonal conflict. This is true to a lesser extent about the existence of the ditch earthworks, as well as any of the other criteria discussed above. However, when we can see multiple criteria together, it becomes far more reasonable to investigate the possibility further that prehistoric warfare did occur at a particular location. I have shown that there are very few cases where we can do this.

Despite the abundance of land on the Plains, preindustrialized farming is limited to floodplains; consequently, resource limitations and periods of reduced crop yields forced villages to relocate. But the question follows as to what happens when a new population comes into the area? Historically, conflict ensues as competition for resources escalates and this combined with a fear of "Others" can play a significant role in the development of conflict (see Ember and Ember 1992). We know that new populations have moved into the

Middle Missouri repeatedly, including farmers from the central Plains in the 1300s, hunter-gatherers from the Midwest in the 1700s, and Euroamericans from the 1600s onward. In an environment of limited resources, migrations like these can set the stage for conflict. However, we need to look closely at the evidence to see if and when conflict actually occurred, and to keep in mind other kinds of interactions and other ways of solving human problems.

The goal of this chapter is not to dispute the notion that the ditches surrounding some Great Plains villages could have been used for defensive purposes. Instead, the purpose is to assess whether or not the ditches themselves can function as stand-alone evidence to prove that prehistoric warfare took place. Generally speaking, people have always participated in some sort of interpersonal conflict and Ember and Ember (1992), along with Bamforth (2006), may be correct in that the environment often plays a major role in the development of such conflicts. Ditches encircling settled villages are the most obvious evidence that archaeologists have linked to war, but they do not by themselves tell us much about war. People dug ditches for more than one reason, and, even when they dug them for defense, ditch-and-palisade perimeters could take on meanings that went far beyond the simple prospect of violence. Building defenses in anticipation of being attacked is also very different from actually being attacked, and I have shown that there are very few sites in the Middle Missouri where we know attacks occurred. Furthermore, the majority of settled communities in the Middle Missouri do *not* show evidence of fortification, and it is just as important to understand this as to understand sites that do show this evidence.

As with many research problems, the goal is not to answer the question unequivocally but to add to the discussion of the topic. I do think that calling these ditched earthworks "fortifications" is an error in our vocabulary with associated assumptions that archaeologists need to address. Ultimately, we do not know if these ditches were used solely for fortification or if there were other uses, nor what those alternative uses may have been. Based on the study presented herein, if one looks to the artifact distribution the ditches could be interpreted as communal middens. The existing data are skewed due to archaeological techniques used during Smithsonian Institution River Basin Surveys and the fact that research questions beyond simply working out regional culture history were not well developed. At the time that many of these villages were excavated, archaeologists simply felt that there was a need to gather as much information as possible, with the hope that they would be analyzed at a later date. Unfortunately, this is still a work in progress and there are numerous collections awaiting analysis. Going forward, a primary goal needs to be

to conduct this research addressing the kinds of issues discussed in this study.

Ditches could have served a multitude of purposes and I have developed two functional categories that these ditched earthworks could possibly fit. The first is a "social" function. The category encompasses social and ceremonial activities that could be associated with the construction of a group project. We can see these types of social and ceremonial projects occurring in the Scioto River valley of Ohio with Hopewell culture and also with the platform mounds of the Mississippian culture (Neusius and Gross 2007). The second category is "functional" in the utilitarian sense. This category encompasses the practical purposes for having a ditch that surrounds the village. Examples of this could include serving as a borrow pit for earth to construct earthlodges, a drainage system to channel water and/or waste away from the village, a midden to dispose of material waste, or a constructed landscape that would promote growth of certain plants in order to promote the domestication of these types of plants (Neusius and Gross 2007; Bleed 2006).

Perhaps the answers are found in native oral tradition. The Lone Man stories point to one possibility. Of course this is speculative and, in the end, more research is needed to answer the question: What are these ditched earthworks and why did people build them?

7

Why Fortify?

Force-to-Force Ratios and Fortification on the Southern Plains

Susan C. Vehik

Constructions interpreted as fortifications are rare, if not nonexistent, on the Plains until the Late Prehistoric period, after AD 900/1000 (see Schroeder, chapter 9, this volume). Even so, fortification is predominantly a northern Plains phenomenon, being quite rare on the central and southern Plains as far as we presently know. Reasons for why sites are fortified are numerous. Explanations for northern Plains fortification include climatic deterioration that decreased food supplies and increased conflict (Bamforth 2006). Limited arable land, combined with a growing population, is another proposed explanation (Zimmerman and Bradley 1993). Ethnic conflict though is perhaps the more common reason given for northern Plains conflict and hence for the need to fortify as well. This conflict may occur between hunter-gatherers and Middle Missouri–, Coalescent-, and Oneota-tradition farmers. But, more often conflict is posited to be between the farming groups (Caldwell 1964:2–3; Hollinger 2005; Johnson 2007a:218; Keeley 1996:56–57). Regardless, all of these problems also were occurring on the central and southern Plains, but fortification seldom was used.

Outside the Plains, fortification is seen as occurring for all of the reasons cited for the northern Plains as well as for yet other reasons (Allen and Arkush 2006:14; Emerson 2007:130; Keeley 1996:56–57; Milner 2007:197–198; Topic and Topic 2009:52–54; Trubitt 2003). Cross-culturally, frequent internal

DOI: 10.5876/9781607326700.c007

(same cultural group) conflict correlates with village fortification (Otterbein 2004:192). The basic logic for construction of fortifications, which is often implied but only occasionally explicitly stated, is that conflict intensified to some point where fortification became necessary (i.e., Arkush 2009:198–200; Dye 2009:11, 146–148; Dye and King 2007:162; Emerson 2007:135–137; Inomata and Triadan 2009:66–69; Jones 2004:7; Keeley 1996:55–56; Lambert 2007:211; Lovisek 2007:63, 72; Maschner and Reedy-Maschner 1998:25, 32–36; Otterbein 2004:192–193; Solometo 2006:30–31, 33–34, 36–37, 51–52; Topic and Topic 2009:52–53). The degree of social complexity is sometimes suggested to affect fortification decisions, with less-complex societies having less-intense warfare and therefore resorting less often to fortification. At the other end of the social scale, political centers may be fortified, or fortification may be entirely unnecessary because of military size and distribution. Exceptions would be outposts and frontiers (Arkush 2011:63–66). Fortification also is sometimes attributed to attacks that are not predictable (Solometo 2006:53). The question addressed below is why people come to a decision that conflict has reached the point that it is necessary for them to fortify.

DEFINING FORTIFICATION FOR THIS STUDY

There are lots of different types of fortifications. These include walls that run for substantial distances, like Hadrian's Wall and the Great Wall of China. Substantially built walls and towers once surrounded many European cities. Trench systems and discontinuous lines of military weaponry and facilities (such as the Maginot Line) played important roles in World Wars I and II. Military forts are common features of most state-level societies. Apart from large, state-level projects there are smaller fortifications. Many fortifications around the world were designed to protect single small settlements or to provide refuge for people in several such settlements. What a fortification defends can include a group of soldiers, a resident population or the population within a general area, elites, noncombatants, and property, including stored foods, livestock, and symbols of identity and/or authority (Dye 2009:101, 145–146; Ingram 2012; Keeley 1996:56; Klingelhofer 2010; Milner 2007:187–189).

The discussion that follows refers specifically to fortifications involving a system of walls, usually surrounded by a trench, following Keeley et al.'s (2007) discussion. This system of walls and trenches encloses either wholly or partially a settlement or village and/or provides refuge to people residing in an area during conflict. If a wall-and-trench system is only a partial enclosure, the remaining perimeter is usually a natural feature involving a steep drop-off,

like a riverbank or bluff. While these fortifications usually involve one or more stockades or palisades, they can also consist of just a series of trenches. The main feature is that they provide loci around which conflict can center.

Obviously, construction of walls can occur for more reasons than just conflict with outsiders. Social differences within a resident group can involve walls that separate such groups from one another. Elites not uncommonly wall themselves off from some section of the populace. A walled enclosure can also serve as a corral into which to drive bison or pen horses (Halsall 2003:215; Keeley et al. 2007). In addition, I have tried to select examples where it is known, either from written documents or material remains, that external conflict was occurring.

FUNCTIONS AND COSTS OF FORTIFICATION

Fortification is primarily a defensive weapon, reflecting a perception of threat by the leadership of a political entity and/or the population as a whole (Allen and Arkush 2006:7; Dye 2009:11; Keeley 1996:56; Pauketat 2009:255; Topic and Topic 2009:52). That is not to deny that fortification also has an offensive element—essentially an intimidation value. However, its intimidation value must come from the presence of conflict, as otherwise building a fortification seems more likely to be viewed as an odd activity with little inherent meaning (Allen 2006:198; Dye 2009:148; Eames 2011:65; Keeley 1996:57; Pauketat 2009:255).

Assuming that defenders are within a fortification, the fortification protects defenders as well as others and provides defenders an advantage. It causes attackers to focus on one or only a few locations, such as gates or entryways. The offense is then massed and more accessible to the defense. In addition the fortification is an obstacle to the offense and they must attempt to overcome it. In trying to breach a fortification the attacker's combat power is dissipated and their chance for success is lessened. Fortification further aids the defense by obscuring details on defensive numbers and positions. All of these things maximize defensive efforts and make it easier for defenders to inflict casualties on attackers. In effect, fortification reduces the number of defenders needed for successful protection (Eames 2011:65–67; Keeley 1996:56; Mearsheimer 1989:57–58; Pauketat 2009:255).

At the same time, there are downsides to fortification. Fortification concentrates the defender population, too. Should the fortification be breached or compromised in some way or the defending population somehow be weakened, those inside can suffer higher losses because of limited escape options (Eames 2011:65; Solometo 2006:45; Topic and Topic 2009:52). A population

that must stay near its fortified location can suffer from limited opportunities to forage, hunt, or farm. Internal and external social relations may suffer from consequences of stress and social inequality may increase (Dye 2009:12, and chapter 5 in this volume; Solometo 2006:36–37; Vehik 2002).

Fortification is also an expensive undertaking (Dye 2009:11; Keeley 1996:55–56; Solometo 2006:36–37, 52; see also Schroeder, chapter 9, this volume). Construction and maintenance requires investment of time, labor, and resources (Topic and Topic 2009:52 and Dye, chapter 5, this volume). Plains fortifications involved trenches or ditches that were greater than a meter deep and wide. The interior edge of a trench usually had, or is assumed to have had, a palisade constructed of wooden posts. These posts had to be cut, transported, and set into the ground. On the Plains, wood can be a limited and quickly exhausted resource. Additional construction features such as bastions and mud plaster expand the construction effort, as do the pits excavated at many sites in association with trenches (see Drass et al., chapter 8, this volume). The greater the length of a fortification, the more the construction effort and some Plains fortifications ran for more than a kilometer (Caldwell 1964). Many fortifications also were not a one-time effort as at least some on the northern Plains were allowed to lapse and then were built again. Multiple fortifications at a site are not uncommon; prominent examples include Double Ditch (32BL8) in North Dakota with at least four fortification events and Bryson-Paddock (34KA5) in Oklahoma with a minimum of four (see Drass et al., chapter 8, this volume and chapters in this volume discussing Crow Creek). While some facilities with multiple fortifications may reflect the expansion or contraction of fortification, it is possible all were in use at the same time. Finally, fortification takes labor away from other tasks or, more exactly, increases the amount of labor in which people have to engage.

In sum, fortification is an expensive defensive weapon. Substantial labor and materials are required. The more elaborate the fortification, the greater the engineering required. For instance, the value of bastions is to provide overlapping fire lest the attacker dig under or go through locations where fire does not overlap. Engineering must take that into account. Decisions that a location needed fortification and needed certain kinds of fortification were likely products of careful consideration.

FORTIFICATIONS AND POWER RELATIONS

As noted above, one of the proposed functions of fortification is to reduce the number of defenders needed for a successful defense. Some anthropologists

see fortifications as "tipping the balance of regional power relations" (Pauketat 2009:255 see also Allen and Arkush 2006:7). That is, fortification increases the chance for a successful defense by increasing defensive numbers. Regardless of whether the view is one of being able to get by with fewer defenders or to increase the number of defenders, the point is that fortification increases the chance of a successful defense by altering defensive strength relative to that of the offense or attacker. While ratios of defenders to attackers are not directly addressed in anthropological discussions of fortification, generalizations can sometimes be found (Dye 2009:145). New Zealand *pa* fortifications were occasionally sacked by "direct and overwhelming" assault (Allen 2006:198). LeBlanc (2006:443) suggests that in tribal and chiefdom societies the attacking group will leave part of their force at home for defensive purposes. In consequence, the attacking group typically will be smaller than the defensive group, thereby favoring the defense.

So, if a fortification shows evidence of being breached, the general assumption is that an overwhelming force was involved. The discussion that follows tries to quantify generally what "overwhelming" might involve and then to look at what that could say about sociopolitical relations at the time. The emphasis here is on "could." That is, quantifying the notion of "overwhelming" expands and directs the kinds of questions we can ask about the nature of conflict and the associated sociopolitical dynamics. It is not an answer to anything in and of itself. The basic argument is that fortifications were actually built to keep power relations between the defender and attacker below a certain level. It is proposed that fortifications will be constructed when the ratio of attackers to defenders reaches the point at which defenders perceive the possibility of being overwhelmed, not as a rare event, but as a likely to highly likely event.

Possibly the earliest written source on what it takes to overwhelm or defeat an enemy dates from 403 to 221 BC, the Warring States period, in China. The author(s) of that document note an attacking force should do different things, depending on the ratio of attackers to defenders, beginning with 10:1 and moving down. It concludes with: "If you are in no way your enemy's match, avoid contact. A small force tenaciously resisting will be captured by a large force" (Tzu 2011:19). While the last two sentences do not state a ratio, the first implies less than 1:1 and the last simply a much greater number of attackers. In the early nineteenth century, Napoleon considered an army supported by a fortress or river to be unconquerable if the ratio of offense to defense was 2:1 or less (Phillips 1940:435). Other military strategists from the early nineteenth century also stressed the importance of numerical superiority (Handel 2001:157–163).

There are many modern approaches or theories about what is needed to defeat an enemy. One approach is numerical preponderance: that is, the side with the greatest numbers will commonly win. A second argues that the side with the more advanced technologies will prevail. Other approaches address multiple factors, including the preceding but also many other things, such as tactics and morale. Some try to model the entire dynamics of a conflict (Biddle 2004:2–3, 5, 14–19, 27; Epstein 1989). However, without extensive written records it is almost impossible to address such things as leadership, tactics, and dynamics with any accuracy. For the most part, the discussion below involves conditions of more-or-less technological parity, although inequalities are considered in some of the discussion. So, for these reasons the following discussion centers on the issue of numerical preponderance.

Numerical preponderance advocates commonly use a 3:1 ratio of attackers to defenders. While the ratio often refers to personnel, it can be of weapons or other things instead. Discussion from this point on refers to numbers of people. The basic idea is that the number of attackers to defenders should approach and usually exceed 3:1 in favor of attackers for a defending group to be overwhelmed, captured, or massacred. This is known as the 3:1 Rule, or Rule of Thumb. The rule is used in modern military planning (Robertson 1987:138–139). However, there is definitely debate on its utility and accuracy as well (Biddle 2004:14–17; Dupuy 1979:13; Epstein 1989:91–93; Glaser and Kaufmann 1998:75 and n91; Kress and Talmor 1999; Luttwak 2001:142; Mearsheimer 1989:65; Robertson 1987:138–139).

The origin of the rule is not clear. It seems to come out of military experiences in the late nineteenth and early twentieth centuries (Epstein 1989:97n20; Mearsheimer 1989:59n14). At this point, one can argue about the difference between relatively modern warfare and that associated with Native peoples of the Great Plains. However, the ratio has been used to discuss early medieval warfare that, while it still involves technological differences, is more similar to Native American conflict (Bachrach 2002:80). The ratio also may have been a known norm in medieval times (Bachrach 2002:82).

Regardless of the origin of this rule or its association with modern warfare, it is evident from the last 2,000+ years of written documents that people have long had concerns about the size of opposing forces and what it takes for an offense to overwhelm and defeat a defense, and that seems to involve an offense-to-defense ratio of 3:1 or greater. Since the rule is not a universal, it could be questioned whether sufficient knowledge existed of opposing-force strengths for the ratio to be of use to Native peoples of the Great Plains. Certainly Native North Americans were aware that numerical superiority was desirable to win

conflicts (Handel 2001:115, 155, 159, 363, 411; Heuser 2010:93, 96). Equally, being outnumbered prompted concern for defense (Heuser 2010:96–97, 150). Native Americans scouted their enemies and traded with them as well. The calumet ceremony is a perfect example of an opportunity to assess another's strength (Fletcher 1996). Native peoples certainly assessed strength relations while conducting ceremonies and trading, to say nothing of conducting scouting expeditions. Ceremonies and socializing among men, particularly within the context of war or military societies, often focused on planning attacks and assessing outcomes (Murie and Parks 1981). Thus, successes and failures were repeatedly reviewed. Middle Missouri–, Coalescent-, and Oneota-tradition sites demonstrate that fortifications were built, allowed to lapse, and then rebuilt. This cannot be a random event. Something prompted such activities. People had to be aware of numerical strengths and any potential differences that might result in their being overwhelmed. Was that relationship exactly 3:1 or greater always? No, human behavior is too complex to be determined by only one thing all the time, if ever (Biddle 2004:69–72, 86–89, 227–228; 2007; Davis 1995:16; Dupuy 1979:11–13, 108–109, 123, figure 3–1; Handel 2001:163–164). But the 3:1 ratio or something very close to it has a long history cross-cutting different technologies and provides a useful guideline by which to explore the sociopolitical framework for fortification on the Plains and by small-scale societies elsewhere.

The 3:1 rule most directly refers to local superiority and to frontal or head-on attacks against entrenched defenders (Biddle 2004:15; Davis 1995:4–5, 16–17; Luttwak 2001:142; Mearsheimer 1989:54, 62). The defender is expected to do the bulk of fighting from prepared positions, including fortifications, and to make little use of counterattack (Davis 1995:25; Mearsheimer 1989:63, 65). This situation for the Plains is most similar to fortified villages and refuges.

An attacker requires a large numerical superiority to break through a defense that is comparable in quality (Mearsheimer 1989:58). As the principal Plains weapons were bows and arrows with similar sizes and shapes of arrowheads, it seems unlikely that differences in technology were present. For the Plains, differences in the possession of the horse and gun (not readily quantifiable) potentially could alter outcomes. These are considered below in some of the examples. For this analysis these other factors that make up "quality" will be considered equal, so the standard caveat "all other things being equal" is relevant.

PLAINS WARFARE AND FORTIFICATION

Peace and conflict are sometimes seen as flip sides of a coin. Following that logic, some researchers argue that the lack of fortifications reflects the

presence of peace (Dye 2009:16; Pauketat 2009:257). However, such is not the case (Otterbein 2004:18, 192–193), as will be demonstrated below. While fortification appears to be lacking until the Late Prehistoric period on the Plains, conflict does not just suddenly begin after AD 900. It was clearly taking place long before that (Lambert 2007:212–214; Miller 2008:206–209; Scheiber 2006:605; Vehik 2002:41–43 and references cited therein). There is instead a continuum between peace and conflict. Somewhere along that continuum, moving increasingly toward conflict and either winning or losing, people make decisions that they need to fortify their location. It is in that context that the 3:1 rule becomes useful for analyzing warfare on the Plains and elsewhere.

It is important to reiterate that fortifications are generally meant to defend against frontal assaults on a location. It is unlikely, because of costs, that a fortification would be constructed without a threat (real or imagined) of substantial population loss. Although Plains warfare is commonly seen as having been more about raids and counting coup based on historic descriptions, it is clearly the case from the Crow Creek site in South Dakota (Zimmerman and Bradley 1993) and the discussion below, that Plains warfare also included overwhelming settlements and massacring and/or capturing their occupants. Crow Creek is not likely an anomaly—given the number of other fortified and aggregated occupations (see Sundstrom, chapter 4, this volume).

Early Southern Plains Warfare

Documents from Coronado's 1541 expedition onto the southern Plains note that various societies were enemies of one another (Flint and Flint 2005). Unfortunately there are no further details, but none of the expedition accounts describes fortified sites.

No fortified sites are described by the Oñate expedition of 1601 either. The expedition encountered a group of Escanjaque who were hunting bison west of the Arkansas River in north-central Oklahoma. The Escanjaque encouraged the expedition to attack their enemies, the people of the Great Settlement or Etzanoa (figure 7.1). The people of Etzanoa lived in a large, aggregated farming settlement on both sides of the Walnut River near where it joins the Arkansas River in south-central Kansas (Hammond and Rey 1953:751–756, 841, 854; Vehik 1986).

Expedition accounts describe the sizes of both groups. We can debate endlessly how accurate early historic population counts are. The point to the subsequent discussion is not the absolute counts, but the relative sizes (ratios) of the two groups. The Etzanoan settlement consisted of 1,200+ houses at the low

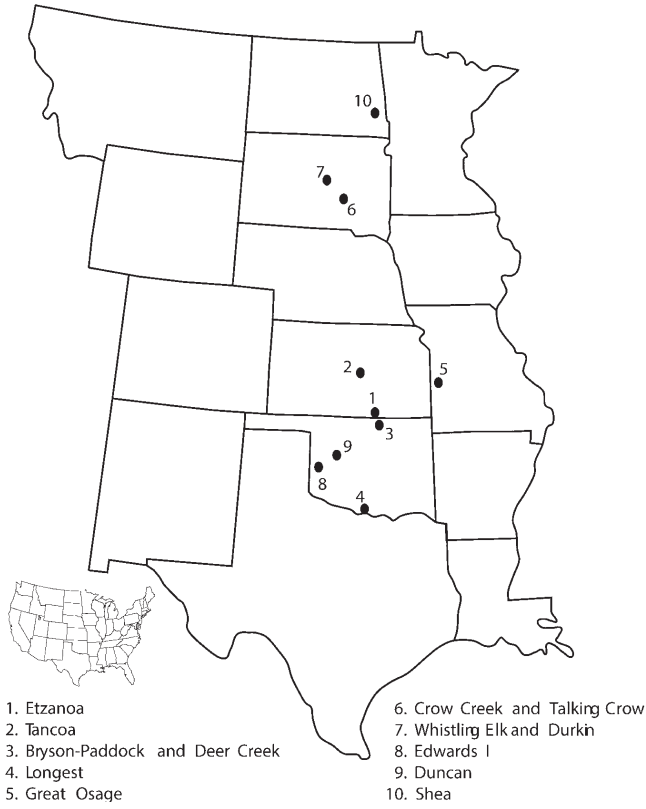

Figure 7.1. *Sites and locations discussed in text.*

end and "close to" 2,000 at the upper end. Several different people counted the houses (Hammond and Rey 1953:754, 846, 867–868). The population of a house was estimated at between eight and 10 people (Hammond and Rey 1953:754). Etzanoans were a Wichita group, specifically ancestral to the Wichita subdivision of the modern Wichita tribe, and eight to 10 people per house is fairly consistent historically (Perkins et al. 2008:table 2; Vehik 1986, see Vehik 2006 for a discussion of Wichita subdivisions). With 1,200 houses and eight people per house a population of 9,600 is indicated. At the upper end of houses and numbers of people per house, around 20,000 people may have resided in the settlement. Population of the Escanjaque camp was estimated at 5,000–6,000 people or, in two cases, warriors. Descriptions indicate the Escanjaque were out bison hunting with men, women, and children all present (Hammond and Rey 1953:751–752, 759, 841, 854, 865).

For purposes of discussion, because the Etzanoans lived in an aggregated and not a dispersed settlement, they provide a locus that the Escanjaque could attack. Assuming counts were of people, not warriors, the Etzanoan population was double or more that of the Escanjaque group. A 1:1.6 or greater ratio in favor of Etzanoa suggests a direct Escanjaque attack on the Etzanoan village would be unlikely. That does not mean that advantage would not be taken of opportunities where awareness was lax or a substantial number of people were away from the village, just that under normal conditions an attack would be unlikely.

Historically when only a count of warriors was available, a multiplier was used to estimate the total population. This multiplier was most commonly five (see discussion in Perkins et al. 2008:441–442 for attendant problems). In this case, the Escanjaque population would be 25,000 to 30,000. The ratios then range between 2.6 and 1.5 to 1. This time the ratio is in favor of the Escanjaque. A frontal attack on Etzanoa still seems unlikely to marginal.

During the time Oñate's expedition was in the area, the Escanjaque did not attack Etzanoa, at least while its residents were there. However, once Etzanoa was abandoned the Escanjaque did burn many houses and steal corn (Hammond and Rey 1953:848). Escanjaque failure to attack Etzanoa in this instance, however, does not mean they never attacked farmers on the eastern edge of the southern Plains. One member of the Escanjaque party, whom the Spanish named Miguel, originally resided in a similar village, Tancoa, farther to the north in central Kansas. He was captured in an Escanjaque attack on that village (Hammond and Rey 1953:874–875). Unfortunately, there are no other details about the nature of that attack.

As the Escanjaque and people of Etzanoa were frequently at war (Hammond and Rey 1953:875), it seems likely that opportunities did arise for one or the other to attack, as the Escanjaque did to Tancoa. Frontal assaults on the Etzanoan village are unlikely, but attacks on Etzanoan special-task groups operating away from the settlement are another matter.

Even though Etzanoa likely had a much larger population than the Escanjaque group, evidence suggests the people of Etzanoa were concerned about being attacked. Etzanoans not only lived in a large group, known archaeologically as the Lower Walnut focus, but most of their settlement was on the floodplain and low terraces of the Walnut River near where it joins the Arkansas River (Hoard and Schoen 2012; Wedel 1959:344–379). This setting involves large patches of highly fertile soil likely frequently renewed through flooding (Horsch 1980). Oñate expedition accounts describe the settlement pattern as consisting of clusters of houses with the houses surrounded by farm fields. The fields were never out of sight of the village (Hammond and Rey

1953:755, 844, 846, 858, 867). Small parties therefore would not range far to work the fields, limiting their susceptibility to attack. Etzanoa's settlement strategy represents a major change from that used no more than 200 years earlier when settlements involved a few houses scattered along stream valleys. Although warfare had altered settlement strategies significantly, attacks had not reached the point where Etzanoans believed they might be overwhelmed and therefore needed to fortify their settlement.

At least at the beginning of the seventeenth century, written records suggest farming people on the eastern edge of the southern Plains could live in large-enough aggregations that the chance of a settlement being overwhelmed was small (compare to Bamforth, chapter 1, this volume). However, this strategy had brought with it a substantial reorganization of sociopolitical systems (Vehik 2002). Subsistence production was likely restructured as well, since storage facilities almost double in size and tend to occur in clusters at this time. Sociopolitical ceremonies and organizations designed to organize the disparate cultural entities that were coalescing into these large communities were no doubt developed. Had Oñate's expedition decided to help the Escanjaque, their firearms and horses would have increased the possibility that the Etzanoans would be overwhelmed through technological advantage. Indeed, Etzanoans abandoned their settlement when they perceived the Spanish to have hostile intentions. As things stood at the beginning of the seventeenth century, large farming settlements on the eastern edge of the southern Plains did not need fortification to cope with conflict, they did it instead through aggregation and substantial sociopolitical and subsistence reorganization. An interesting question that cannot be addressed here is at what point aggregation was viewed as less costly or more desirable than fortifying smaller villages.

BRYSON-PADDOCK SITE

Around a century after Oñate visited Etzanoa, the descendants of Etzanoa, along with another Wichita subdivision, established two fortified locations about seven miles to the south of the Walnut River juncture with the Arkansas River. These villages, represented by the Bryson-Paddock (34KA5) and Deer Creek (34KA3) sites are on the west bank of the Arkansas River about 3.2 km apart. Bryson-Paddock quite likely was established earlier than Deer Creek, possibly in the late seventeenth century, while Deer Creek's occupation may begin around 1735 (Vehik 1992:325). Both sites were abandoned by 1757 (Weddle 2007:31, 55). Bryson-Paddock is about 40 acres in size and has as its east boundary a 70-foot vertical limestone bluff. This is almost the

only such setting on the Arkansas River between Wichita, Kansas, and Tulsa, Oklahoma, and the only one that gives way to a broad, gently sloping upland where something more than a small settlement could be placed. This location no doubt was selected for the steep bluff and adjacent sloping upland. Deer Creek occupies a slight knoll on a low terrace overlooking the river and surrounding terrain (USGS Kaw City NW, Okla.-Kans. 7.5 minute quadrangle map). By 1740 these two villages most likely were the only Wichita villages left on the Arkansas River, although it is possible a village remained at the juncture of the Walnut and Arkansas Rivers (Vehik 2012).

According to Felipe de Sandoval, in 1750 these two villages consisted of houses made of poles and grass (standard Wichita circular, conically shaped, grass-covered houses). "All were fortified with poles and earth" that had openings (Wedel 1981:72). Similar openings for musket fire existed at the slightly later and related Longest site (34JF1) on the Red River (Weddle 2007:27, 31, 55). Deer Creek was likely a village of the Taovaya subdivision of the Wichita, while Bryson-Paddock was occupied by the Wichita subdivision. Both groups traded hides, meat, and fat/oil of bison and other animals to the French (Vehik et al. 2010).

Of the two sites, Bryson-Paddock has a long history of research while Deer Creek has seen almost no research. Excavations began in 1926 at Bryson-Paddock and took place again in the 1970s. Research during the past decade at Bryson-Paddock includes remote sensing and excavation (see Drass et al., chapter 8, this volume). Remote sensing detected none of the houses described by Sandoval. Wichita houses were built on the original ground surface. Because they did not penetrate the ground surface, these houses may have been plowed and eroded away. This is a common problem on Wichita sites. Four trenches, some with large-diameter inset posts, have been defined, though. One trench includes semi-subterranean structures possibly representing hiding places into which noncombatants retreated, such as is described for the Longest site (Weddle 2007:10, 55). Regardless, Sandoval does not describe any such structures nor does he note any fortifications beyond a palisade. His description implies the whole village was fortified, although our work does not necessarily support that. There are at least two surface structures along with many storage pits and trash mounds that are outside the fortified area as we have reconstructed it. Whether the areas outside the fortification, especially the cache pits and surface structures, are contemporaneous with the area inside the fortifications is unknown. Possibly, when initially established, Bryson-Paddock was unfortified but that as time passed fortification became increasingly necessary. As well, some features were constructed after at least some trenches were abandoned.

Deer Creek and Bryson-Paddock in the late 1740s and 1750s were transit points for people wanting to make connections with New Mexico. Interrogation of three Frenchmen in 1749 and Felipe de Sandoval in 1750 who all made it to New Mexico provided the Spanish with warrior estimates for the two villages: 300, more than 300, and 500 warriors in total (Wedel 1981:69, 70–71, 73). At five people per warrior, there are about 1,500 to 2,500 people in the two villages. Thus, there are likely between 750 to 1,250 people in each village. In addition, when the residents of Bryson-Paddock and Deer Creek moved south to the Longest site in the late 1750s the number of warriors was given as more than 500. This number comes from Antonio Treviño, who spent two years as a captive in the village represented by Longest, and so his count is likely to be reasonably accurate (Weddle 2007:51, 55). This estimate is for the Taovaya and Wichita as well as Iscani subdivisions. How many warriors the Iscani contributed is unknown. Subsequent discussion will use both 300 and 500 warriors.

Excavations indicate intensive burning in two areas of the innermost trench/subterranean structures at Bryson-Paddock while other areas are unburned, suggesting that the fortifications could have been breached at some point. According to the Wichita, it was the Osage who drove them from the Arkansas River valley (Flores 1985:48). A prelude to Wichita abandonment of the valley involves Great Osage destruction, around 1750, of a Wichita village already decimated by measles and smallpox (Pease and Jenison 1940:357). While this village might be the one represented by Bryson-Paddock, there is no way to determine that at present.

With the Osage attack on the Wichita it is possible only Osage warriors were involved, as Great Osage villages were in west-central Missouri at the time. In 1749 the number of Great Osage warriors is said to be 700 (Din and Nasatir 1983:49). The warrior-to-warrior ratio would have been between 1.4 and 2.3 to 1 in favor of the Great Osage, if they were attacking both villages. If attacking only one village, the ratio would have been between 2.8 and 4.7 to 1 in favor of the Great Osage. Assuming non-warriors (women, children, old men) also need to be overwhelmed, the ratio ranges between a little over 1:1 to 1:1.8 in favor of the Wichita. All but one of these ratios are marginal for overcoming a fortified village without the aid of a smallpox/measles epidemic that either decreased the fighting population or left it physically very weak. Without the epidemic, the Osage would have faced a more rigorous defense, and with a force ratio mostly below 3:1, the Osage would likely not have been successful. There is no evidence that the Wichita village was totally annihilated, however, as both Bryson-Paddock and Deer Creek were occupied into the mid- to late 1750s. If there was another village to the north of these two,

there is no evidence as to whether it continued to be occupied into the later 1750s or not. Regardless, it seems very likely the breaching of village fortifications was aided by an epidemic that affected the force-to-force ratio.

The Wichita exacted revenge for this attack. They waited until the Great Osage moved out of their wooded western Missouri home to hunt (Nasatir 1990:44). The Osage were likely hunting bison to the north and northwest of Bryson-Paddock and, being in the open, they were more exposed to attack. Still, quite likely because of low force-to-force ratios, the Wichita had to enlist help from the Comanche in order to attack the Osage. Both sides suffered losses, with the Osage losses probably being more severe (Din and Nasatir 1983:47). The Osage, of course, then desired revenge. This time, not having the advantage of a preceding episode of epidemic disease, the Osage, too, needed help, as their force-to-force ratios were likely still below 3:1. Their prospective allies, the Illinois, were dissuaded from participating by the French (Nasatir 1990:45).

The Wichita had many enemies in the early eighteenth century and it is not clear exactly against whom the people of Deer Creek and Bryson-Paddock were fortifying. Conflict between the two villages is unlikely. They were actively trading together with the French, and the occupants of both villages resided near one another upon removal to the Red River. Other Wichita were between the Red River and central Texas and seem unlikely enemies. Certainly the Osage are one possibility, especially when the Wichita response force is split between two villages. Other possibilities include the Comanche and Apache. The Wichita and Comanche made peace sometime in the first half of the 1740s (Wedel 1981:69–71) and so at some point earlier in time the Comanche were in conflict with the Wichita. The Comanche in the early eighteenth century had only recently moved from the Rocky Mountains onto the Plains, displacing the Apache southward. Prior to 1730 the major threat was likely from the Apache (Wedel 1988:102–105). Perhaps much like the Escanjaque 100+ years earlier, fall communal bison hunts provided any or all of these three groups opportunities to attack the Wichita. The Wichita at this time were losing population to epidemic disease while more mobile groups such as the Apache, Comanche, and Osage were increasing in population.

Differences in technology could increase the likelihood of offensive success for the Osage in spite of some low force-to-force ratios. A little later in time, the Osage were feared because of their firearms skills (Weddle 2007:55). However, the Osage still needed help from epidemic disease and allies to attack the Wichita in the 1750s and so their possession of guns may have provided limited advantages against a fortified setting. The Wichita also had guns, but at least in the late 1740s they had insufficient supplies of ammunition,

although Sandoval simply noted the Wichita were not very proficient in the use of guns (Wedel 1981:69, 70, 71, 73). Apache and Comanche access to horses could lower the force ratio needed to attack the Wichita, but it is not clear that horses would provide an advantage against fortifications. In fact, if all trenches at Bryson-Paddock existed simultaneously, horses and humans would wind up in the trenches if attempts were made to jump them. The Wichita also had horses, although it is not clear how many, and they seem to have come through trade with the Comanche (Wedel 1981:73). Wichita use of horses would have required leaving the fortification and a change in fighting tactics. It would also have brought a reduction of force inside the fortifications. It does not seem likely that guns and horses would have provided attackers an advantage in this instance.

Splitting the Wichita defensive force into two groups seems a questionable strategy. It renders both villages more susceptible to attack since it increases enemy force-to-force ratios. While one Wichita village could respond to an attack on the other, to do so would bring responders out from the fortification that provides their defensive advantage. Loss of cover by the Wichita could aid the attackers, especially if those attackers have more firearms, are better at using them, and/or are mounted. It would also leave the responding village rather defenseless. Strategically, it would be better to settle in one fortified village, thereby concentrating all 500 defenders, which substantially lowers the likelihood of a frontal Osage attack.

The question is then, why were two villages rather than one established? Potentially the fortified area at Bryson-Paddock could not accommodate the Taovaya without doubling its size. Though doubling the size seems feasible, it is possible that after 50+ years of living at Bryson-Paddock the resources to enlarge the fortification were not available. Unfortunately we do not have enough data on construction-post sizes over time to see if they decrease. Still, Deer Creek is fortified and so the only problem seems to be the distance over which posts would have to be moved in order to enlarge the Bryson-Paddock fortifications.

Although it might seem feasible to simply cut down on the spacing between houses and add Deer Creek residents to the Bryson-Paddock village without doubling its size, there is a potential downside. Grass houses easily catch fire. Historically the Wichita spaced them about 100 feet apart to prevent the spread of fire. So adding more houses without increasing village size seems unlikely.

Potentially, ethnic differences were significant enough that separate residences were desirable. In 1765 at the Longest site, separate settlements were maintained by the three Wichita subdivisions (Weddle 2007:55). In 1808

the Wichita and Taovaya resided in one village but did so in separate areas (Flores 1985:50). Potentially the two subdivisions may have preferred to live apart, even though that affected force-to-force ratios. Still, that introduces the question of why, with 300 years of experience welding different groups together through coalescence, the Wichita and Taovaya at this point would not simply continue the process.

It is also possible that there was not enough fertile land within safe walking distance of Bryson-Paddock to support 2,500 people. In 1808 the Wichita establishment on the Red River had about 2,000 people supported by farming a total of 450 acres (Flores 1985:48, 50, 56). This is 0.225 acres per person. For 2,500 people to live in one village at Bryson-Paddock just under 563 acres of land would be needed. Although the upland soils surrounding the Bryson-Paddock and Deer Creek sites are fertile and potentially tillable, most fields were likely on the more easily worked terraces and floodplains of the Arkansas River (the type of setting farmed in 1601). Sandoval describes the Wichita as living in their villages year round and growing corn, beans, and squash. He does not say where the fields were. As he arrived at the villages by boat, the fields were possibly in the floodplain/terrace setting (Wedel 1981:59). Around 1,000 acres are available from the Arkansas River valley terraces and floodplain within a mile upstream and downstream of Bryson-Paddock. However, within half a mile upstream and downstream of Bryson-Paddock, the Arkansas River valley is narrower than either above or below. Only about 480 acres of terrace and floodplain soil is available between those constrictions. Thus some of the acreage for farming would require a greater travel distance, thereby increasing opportunities for raiders. It may be, then, that separate residences were established, not primarily to maintain distinct ethnic identities, but to ensure adequate amounts of farmland within close and safe proximity to each village.

In sum, between 1601 and 1680–1700, epidemic disease and warfare decreased the numerical advantage the Wichita subdivision once enjoyed over its enemies. Their numbers continued to decrease through the eighteenth century. Their village was moved from the wide and fertile floodplain and terraces of the Walnut River valley and placed in a setting that was naturally defensive and the Wichita then proceeded to increase their defensive capability by fortifying all or parts of it. In the process of settling the Bryson-Paddock location, Wichita fields were no longer in immediate proximity to their houses but instead were likely placed on terraces and a floodplain below a 70-foot vertical drop-off. With a loss in population, certain tradeoffs became necessary to maintain security, and the proximity of fields was that tradeoff. The Wichita and Taovaya subdivisions clearly anticipated the possibility of being

overwhelmed and so they fortified. Nonetheless, even with fortification, force-to-force ratios become such that the Wichita could not maintain their hold over the Arkansas River valley, so they moved south in closer proximity to other Wichita (and the Comanche) and away from the Osage.

In their new location on the Red River, the Taovaya fortified their village while the Wichita lived adjacent to them but did not construct a fortification. The Iscani subdivision of the Wichita also lived nearby. Both went into the Taovaya fortification when threatened. Documents imply that not only is the Taovaya village fortified but so are fields and corrals (Weddle 2007:30, 32–33, 55, 126–127). Ortiz Parilla in 1759 attacks this grouping of Wichita and especially the Taovaya fortification. This attack fares badly. Afterwards, Ortiz Parilla admits he was outmanned and deficient in weaponry and resolve when faced by the Wichita along with their Comanche and other allies (Weddle 2007:127). In this case the offense was not remotely capable of overwhelming or even competing with the defense and Ortiz Parilla quickly made a retreat.

DISCUSSION

The southern Plains analyses incorporate written documentation but such records are not necessary to use the 3:1 rule to explore issues surrounding fortification and conflict. Crow Creek is an example (details are in several other chapters in this volume). Crow Creek village belongs to the Initial variant of the Coalescent tradition. It overlooks the Missouri River in southern South Dakota. The site dates to the fourteenth century (Johnson 2007a:122). People of uncertain identity massacre approximately 500 people at Crow Creek. Commonly the attackers are considered to be people of the Middle Missouri tradition but some suggest other Initial Coalescent groups, an Oneota-tradition complex, or yet others (Caldwell 1964:2–3; Hollinger 2005; Johnson 2007a:218; Zimmerman and Bradley 1993). There are two fortifications at the site and Zimmerman and Bradley (1993:220) believe the outer and most recent was unfinished at the time of attack. The outer ditch is 4.6 m wide in general and between 1.8 and 3.7 m deep. Two very limited test excavations did not detect a palisade (Kivett and Jensen 1976:8, 70). The ditch in and of itself would have been a formidable obstacle, with or without a palisade. Nonetheless, if the Crow Creek fortification is unfinished, then much like the Osage attack on the Wichita, a nearby village might be able to take advantage of an opportunity and annihilate Crow Creek to gain its land or for some other reason.

The question is how feasible such action is, and that is where the 3:1 rule is useful. At least 50 houses are in the Initial Coalescent occupation at Crow

Creek (Kivett and Jensen 1976:68). The nearest known, contemporaneous Initial Coalescent site is Talking Crow (39BF3) (Johnson 2007a:figure 29). It is possibly the attacking village, as it is relatively close by (Zimmerman and Bradley 1993:220), although others suggest Talking Crow is an ancestor or descendant of Crow Creek (Johnson 2007a:178). The number of Initial Coalescent houses at Talking Crow is unclear but seems to be around 32 (Smith 1977:1, 14). Assuming the same number of people and warriors per house at both villages, the difference in house numbers suggests that if Talking Crow was the attacker, the force-to-force ratio was not in their favor and they likely would not have been able to overwhelm and annihilate Crow Creek—probably not even with surprise.

The next nearest contemporaneous Initial Coalescent site, Whistling Elk (39HU242), is around 64 km upstream (Johnson 2007a:figure 29). It consists of somewhere between 33 and 67 possible houses (Toom and Kvamme 2002:8). Whistling Elk alone could not generate a force-to-force ratio large enough to overwhelm Crow Creek and only at the highest end of possible house numbers could it, in concert with Talking Crow, potentially overwhelm Crow Creek. But, gaining control over land is not likely a motivation for Whistling Elk's participation. It is a long distance to travel just for the use of farmland, unless they planned to move there. However, no Coalescent-tradition site occurs in the area of Crow Creek or Talking Crow until after 1650 (Johnson 2007a:figures 29–39). An attack on Crow Creek by another Initial Coalescent village alone seems unlikely. If two or more villages united to make an attack, farmland seems an unlikely motivator.

The nearest Extended variant of the Middle Missouri–tradition site, Durkin, is near Whistling Elk. It probably was not occupied contemporaneously with Whistling Elk, although Clark (chapter 12, this volume) suggests they are contemporaneous. Other Extended Middle Missouri villages are farther on up the Missouri River (Johnson 2007a:figure 29). There is no information on the size of these villages or the number of houses. In general villages of the Initial and Extended variants of the Middle Missouri tradition have 15–30 houses, with villages in more southern areas being larger, generally having between 20 and 30 houses. Average house size is 875 square feet (Lehmer 1971:66, 69; Winham and Calabrese 1998:287). Initial Coalescent villages have an average house size of 642 square feet (Johnson 1998:313). Crow Creek had a total of 32,100 square feet of housing while a Middle Missouri–tradition village with 30 houses had only 26,250 square feet. Assuming similar per person space requirements, Crow Creek is unlikely to have suffered an attack by a single Extended Middle Missouri–tradition village. An attack by multiple

villages would require movement over a substantial distance and through an area where there were other Coalescent-tradition villages. If more than one Extended Middle Missouri village attacked Crow Creek, the motivation is unclear, as gaining control of that location increases the distance to other Extended Middle Missouri villages. Not only were there no subsequent Extended Middle Missouri occupations of the Crow Creek location but also later Middle Missouri–tradition villages and most Coalescent villages are farther up the Missouri River (Johnson 2007a:figures 29, 30, 34). Coalescent-tradition villages return to the Crow Creek area around 1550, but Middle Missouri–tradition villages continue a northward move. An attack by Middle Missouri–tradition villages on Crow Creek seems unlikely.

It is difficult to assess Hollinger's argument that the attackers were from the Oneota tradition. There is no information on numbers or sizes of houses in Oneota villages. The only comparative information is site size, with Initial Coalescent at an average of 25.6 acres (Johnson 1998:313) and Oneota with between 15 and 21 acres for three sites most likely contemporaneous with Crow Creek (Hollinger 2005:190, 192, 213). All three traditions likely used village space much differently and so site size is not a very good comparison. Nonetheless, site size is comparable, suggesting Oneota likely needed more than one village to overcome Crow Creek.

Clearly the occupants of Crow Creek expected an attack by a force that could overwhelm them or they would not have been in the process of fortifying themselves, but that force likely numbered closer to 1,500 than the 200 suggested to have lived at Talking Crow (Smith 1977:152). Use of the 3:1 rule does not provide a definitive answer to who essentially annihilated Crow Creek but it does suggest that whoever did it likely involved an alliance of two or more other villages, either of the same or different traditions: the best guess is an alliance of Oneota villages. Crow Creek was the nearest Coalescent-tradition village to Oneota occupations in extreme southeastern South Dakota. In the century following Crow Creek most Coalescent-tradition occupations are farther up the Missouri River (Johnson 2007a:figure 30). But, with the collapse of Oneota that begins in the late sixteenth or early seventeenth century (see Hollinger, chapter 10, this volume), there is a southward shift of Coalescent villages back into the region once occupied by Crow Creek (Johnson 2007a:figures 34 and 36).

Lest it be thought that only sedentary people fortify, there are fortified fall bison-hunting locales, represented by the Edwards I (34BK2) and Duncan (34WA2) sites of western Oklahoma. The Shea site and other similar ones in North Dakota also likely were fortified seasonal camps (Michlovic and Schneider

1993). These fortified areas are possibly refuges. Nonetheless, their analysis could be accomplished based on considerations of the amount of space that was fortified. People generally do not construct fortifications with more perimeter than can be defended. To do so results in weak areas that can be breached.

The issue remains as to why the northern Plains fortification history differs so much from that of the southern and central Plains. Briefly, the answer may lay in the wider and more continuously distributed floodplains of the central and southern Plains. Southern Plains soils at least were also potentially more productive. From the early soil survey reports (1920s–1950s), when corn was commonly grown on both the northern and southern Plains, the per acre corn productivity was greater on the southern Plains. The southern Plains also has a longer growing season. As a result, Late Prehistoric–period farmers could generally deal with conflict by forming larger residential groups on the southern Plains, such as is reflected by the Lower Walnut focus. Because the northern Plains has narrow, discontinuously distributed floodplains that are less fertile, farming people could not make as great a use of aggregation as a defensive tactic. Consequently, they adopted fortification earlier.

CONCLUSIONS

It is not really the intensity of conflict nor its unpredictability that is the cause of fortification. Rather it is the belief that an overwhelming attack is possible. People either know this from direct experience or perhaps can be led to believe such is possible. An overwhelming attack can occur when the force-to-force ratio reaches 3:1 or greater in favor of the attacker. Fortification is an attempt on the part of the defense to keep the force-to-force ratio below that value. Because fortification is an expensive defensive undertaking, no doubt other solutions will be attempted first, if possible. Occupying points on the landscape offering defensive advantage and aggregating into larger groups are potential options—if they are feasible. The ratio of potential attackers to defenders also may be such that fortification will not help. Abandonment in such a case may take place as opposed to suffering a Crow Creek level of annihilation. The Wichita who lived at Bryson-Paddock and Deer Creek ultimately opted for abandonment.

Use of the 3:1 rule helps frame issues and questions surrounding conflict and use of fortification in a more precise manner. Use of the rule gives direction to questions about why people decide to fortify, why fortifications are allowed to lapse, and why they fail. With further consideration we should be able to refine our understanding of why people decide to fortify and define the factors that are important to that decision.

ACKNOWLEDGMENTS

Jesse Ballenger introduced me to the 3:1 rule many years ago in a graduate seminar where we were discussing Crow Creek. I thought the rule might be useful but never had time to explore it. The SAA symposium provided that opportunity. I would like to thank Linea Sundstrum and Andy Clark for inviting me. In addition, I would like to thank Peter Bleed, Scott Brosowske, Richard Drass, Steve Perkins, Donna Roper, Sheila Savage, Doug Scott, Fred and Mary Jane Schneider, and Dennis Toom for information, comments, and corrections. I also appreciate the comments from Mark Allen and another unidentified reviewer. We are not all in agreement but their ideas were thought-provoking and I appreciate their help.

8

Digging Ditches

Archaeological Investigations of Historically Reported Fortifications at Bryson-Paddock (34KA5) and Other Southern Plains Village Sites

Richard R. Drass,
Stephen M. Perkins,
and Susan C. Vehik

In 1759 Spanish forces attacked a Wichita village on the Red River in south-central Oklahoma. This expedition provided the first description of a Wichita fortification, a roughly circular rampart and stockade surrounded by a ditch. Wichita groups, however, erected similar structures as early as AD 1500. Magnetic surveys and excavations at an early eighteenth-century Wichita village, Bryson-Paddock, revealed at least four concentric ditches representing portions of fortifications. The efforts expended to excavate ditches and build extensive fortifications at large villages reflect intensification of intertribal conflict in the southern Plains by 1700, probably arising from increased mobility with the arrival of horses and competition over access to the European market economy. This is a period of increasing social complexity, regional trade and economic development, and coalescence marked by increasing village size, territorialism, and construction of extensive defensive features.

Relative to the numerous investigations of fortified indigenous village sites on the northern Great Plains (Bamforth 1994; Caldwell 1964; Jones 2004), we know much less about southern Plains fortifications (Bell 1984; Drass 1998). Increasingly, however, archaeologists use geophysical analyses and excavations to investigate suspected fortifications in southern Kansas, Oklahoma, and Texas, some dating to as early as AD 1500 (Drass and Baugh 1997). In this chapter, we present new archaeological evidence emanating from a decade-long

DOI: 10.5876/9781607326700.c008

investigation of the Bryson-Paddock site (34KA5), located in north-central Oklahoma along the banks of the Arkansas River. As described below, between approximately 1680 and 1755, one subdivision of the Wichita occupied Bryson-Paddock while another subdivision occupied its nearby sister site Deer Creek (34KA3). Both sites contain abundant French trade goods and large numbers of indigenous hide-scrapers produced from local chert (Vehik et. al. 2010). Artifacts and faunal remains demonstrate the intensification of hide tanning by Wichita women. Households exchanged these bison robes with French traders for European commodities (Wedel 1981).

Archaeologists have long hypothesized that both Bryson-Paddock and Deer Creek included fortifications, but until 2004 neither site had been systematically excavated to examine this hypothesis. In fact, with the exception of several trenches dug to cross-section suspected ditches, no indigenous fortification on the southern Plains had ever been extensively excavated prior to our work.

The purpose of this chapter is to discuss our findings, specifically, the structure and function of numerous linear ditches that have been discovered. To better interpret these ditches, we begin by first reviewing the observations of contemporary eyewitnesses concerning Wichita fortifications and their construction. We then compare historical descriptions with archaeological data from Bryson-Paddock and other fortified sites in Oklahoma and Kansas. We argue that different types of entrenchments existed simultaneously, constituting a fortification complex that included dry moats, palisade ramparts, and interior semi-subterranean shelters. Combining historical and archaeological data provides a rare opportunity on the southern Plains to critically evaluate historical descriptions with the archaeological record. While written accounts provide valuable momentary descriptions of structures, archaeological investigations permit us to examine the temporal development of fortifications across the entire region and within particular sites.

HISTORICALLY REPORTED FORTIFICATIONS ON THE SOUTHERN PLAINS

Spanish, French, American, and Native American observers noted native fortifications at different times and places on the southern Plains. Significantly, every known account comes from villages attributed to a subdivision of the Wichita. Five or more affiliated groups historically composed the Wichita-speaking Caddoan people, including Taovaya, Tawakoni, Waco, Iscani, and Wichita (proper). In the words of the perceptive French chronicler, Jean

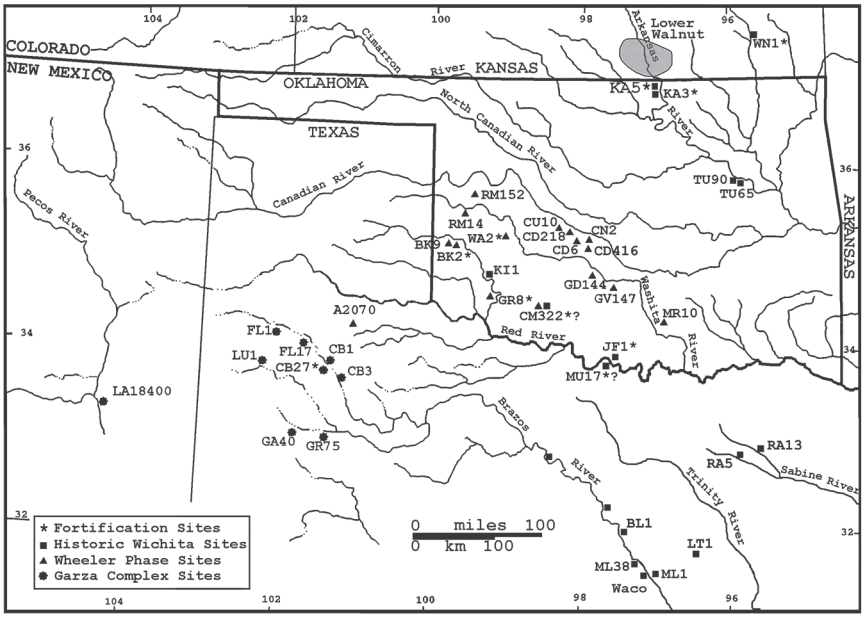

Figure 8.1. *Protohistoric and historic Wichita sites and fortifications on the southern Plains.*

Louis Berlandier, in 1830: "Fortifications are rare among the Texas Indians. They are found in only three tribes of the same nation, in the villages of the Huecos [Wacos], Tahuacanos [Tawakonis], and Tahuaiasses [Taovayas]" (Berlandier 1969:55n47).

Some of the earliest, and certainly the most detailed, descriptions of a fortification come from the Red River village inhabited by the Taovaya from roughly 1757 to 1811. Known today as the Longest site (34JF1), it is located in Jefferson County, Oklahoma (figure 8.1) (Bell and Bastian 1967; Duffield 1965; John 1975; Newcomb and Fields 1967). On October 7, 1759, a large Spanish expedition attacked this village in retaliation for the sacking of the San Sabá mission in central Texas the previous year by Taovaya and Comanche raiders (John 1992; Weddle 2007). Arriving at the Red River, the expedition's Spanish officers briefly glimpsed the Taovaya's defenses before being driven off by mounted Comanche and Wichita warriors. Captain Juan Ángel de Oyarzún later wrote how he saw "at the short distance of a gunshot, a village consisting of oval-shaped huts enclosed by a stockade and moat, and that its entrance road is enclosed in the same manner" (Weddle 2007:124). Within the enclosure, Taovaya warriors with French muskets fired across the river at the Spanish.

Six years later, another Spanish soldier—this one captured and held for six months by the Taovaya—had a much better opportunity to inspect the same fortress inside and out. The soldier, Antonio Treviño, described the fortress as "made of split logs, which the Indians have placed separate one from the other in order to make use of muskets, the weapons they use, through them." Elaborating further, he said that it was

> completely surrounded on the outside by an earthen rampart, close to more than a vara and a third [approximately 1.13 m] in height, which serves them as an entrenchment, and, about four paces to the east and west, a very deep trench made so that no one can come close to the fortress, on horseback. Inside there are four subterranean apartments occupying all of its circumference, into which all of the people who cannot help with the defense of the said settlement retreat in time of invasion.[1]

As Treviño's account makes clear, three different structural features comprised the Taovaya fortification: (1) a rampart and palisade; (2) a trench or "dry moat" outside the fortification to impede approach; and (3) four subterranean structures entrenched along the interior circumference of the fortification. Treviño believed the Taovaya built the entire structure to resist the Spanish attack in 1759. It remained in use at the time of his captivity in 1765.

Although archaeologists conducted limited test excavations on the fortification ditch at Longest in 1967, until 2013 no work had been done to identify the "subterranean apartments" mentioned by Treviño. An oval-shaped feature (labeled structure 8 on the 1967 excavation map) just inside the fortification may represent part of one of these subterranean structures (see Bell and Bastian 1967:figure 30).

Elsewhere, other accounts from Texas provide similar information regarding Wichita fortifications and subterranean structures likely built between the late eighteenth and early nineteenth centuries. In 1836 John Ridge recorded John Smith's recollection of a Cherokee expedition against a Tawakoni village near Waco, Texas, in 1830 (Foreman 1931; also see Jackson 2005 and Watt 1969). Smith describes how Tawakoni warriors hid in a long lodge partially underground:

> In the middle of the village we found Gah wah na nah [a Cherokee Chief and accomplished warrior] standing, watching the mouth of a large & long lodge which stood over a hole in the ground . . . He said a great many have gone in that hole & most of them are warriors . . . The Big lodge where Gah wah na nah stood proved to be the arsenal of the tribe & a place of refuge. It was about

> forty five feet long & twelve feet wide. Posts were stuck in the ground in the centre of the hole which was dug about waist deep. A ridge pole extended horizontally across the posts, & ribs of poles extending from it down to the ground on each side which was covered with corn stalks covered over with dirt. Close to the mouth of this singular place of refuge & defence, stood a lodge which was unoccupied, which we used as a screen from the enemies shot. (Foreman 1931:256)

Smith's description of the assault on the Wichita village in 1830 focuses entirely on the semi-subterranean shelter without mention of a parapet, stockade, or ditches.

In the same year, Berlandier (1969:54–55, 144–145) describes Wichita fortifications as consisting of "square or rounded ditches, surrounded by breastworks," (Berlandier 1969:54) and these "circular embankments and trenches [are built] within their villages" (Berlandier 1969:145). One village occupied by the Tahuacono [Tawakoni] reportedly had a "double ring of fortifications around their town" in 1829 (Berlandier 1969:144). He goes on to describe Wichita semi-subterranean shelters as ditches "covered with a roof of wood strong enough to resist gunfire" (Berlandier 1969:54), adding that these are "subterranean forts with only one door, big enough and deep enough to hold families and warriors" (Berlandier 1969:55). Unfortunately, no evidence exists that Berlandier actually visited Wichita villages; his descriptions were probably obtained from local settlers (Berlandier 1969:126n174).

In 1858, Chickasaw Indians led by Indian agent Douglas Cooper conducted an expedition in southwestern Oklahoma (Foreman 1927). In his journal, Cooper describes several abandoned Wichita villages including one in the area of Fort Sill, Oklahoma. He notes how they arrived "at the old Kechi or Wichita Village on Cache creek [Fort Sill area] and encamped to recruit the men and horses . . . This place was last occupied by the Wichitas and the remaining of their fortifications are easily traced" (Foreman 1927:386). Later on the same trip he describes another old camp: "Visited the old Waco village about 5 miles from camp also the ancient Wichita village say 10 miles higher up Cache creek. Here we found traces of the same kind of fortifications as found at the village lower down" (Foreman 1927:386–387). However, Cooper provides no information on these "fortifications." He later passes an occupied Wichita village on Rush Creek and estimates 150 lodges are present but he says nothing about fortifications. A Comanche camp next to the Rush Creek village was later attacked by US Cavalry, but the troopers also make no comment on fortifications. In 1834 the US Dragoons (accompanied by the artist George Catlin) visited a village at Devil's Canyon, again without mention of

fortifications or subterranean structures. So it seems that with the Wichita's movement north from Texas to Oklahoma, they initially built fortifications but soon after abandoned the practice. As their population continued to decline in the 1830s and beyond, the loss of a labor force may have prevented construction. By the 1850s they were relying on the US government for protection on their reservation near Anadarko, Oklahoma.

Historical accounts provide ample information about the presence of fortifications in particular Wichita villages. The palisades did not encircle villages, but served as a redoubt and refuge within villages during attacks, as illustrated in the Spanish attack in 1759 and the Cherokee assault in 1830. Moreover, a variety of observers over time report semicircular and semi-subterranean "lodges" or "apartments" as a standard type of refuge, either within stockades or in the absence of stockades. Until the recent excavations at Bryson-Paddock, however, such structures had never been definitively identified or excavated in the southern Plains.

FORTIFICATION FEATURES AT BRYSON-PADDOCK (34KA5) AND RELATED SITES

Archaeologists, ethnohistorians, and artifact collectors long suspected the presence of fortifications at the eighteenth-century sites, Bryson-Paddock (34KA5) and Deer Creek (34KA3), located on the west side of the Arkansas River approximately 2 km apart from one another in far northern Kay County, Oklahoma (figure 8.1). Based on maps and French accounts, members of the Taovaya subdivision apparently occupied Deer Creek, in contrast to Bryson-Paddock's Wichita subdivision inhabitants (Vehik 1992:327). Bryson-Paddock is north of Deer Creek on a high bluff overlooking the west side of the river. In one historical account, French traders passed through the villages on their way from Louisiana to Santa Fe. Arrested and interrogated by suspicious Spanish officials in Santa Fe, the traders described the villages, mentioning fortifications, but provided no details (Wedel 1981).

A third eighteenth-century site, Neodesha Fort (14WN1), is located on the Verdigris River in southeastern Kansas. Like Bryson-Paddock and Deer Creek, Neodesha Fort was one of a pair of Wichita villages occupied simultaneously. One of the Neodesha sites may have been visited by Claude Charles Dutisné in 1719. But, he made no mention of a fortification at the time of this visit. Today, the Neodesha Fort site has been mostly destroyed by modern activities and the location of the second village is not known. Visitors to the Neodesha site beginning in the 1870s through the 1930s, however, recorded evidence of ditches and

Figure 8.2. *Aerial photo (1938) of the possible fortification at the Deer Creek site, 34KA3.*

ramparts. The earliest descriptions indicate embankments 0.6 m high by 3.7 m wide laid out in a U-shape over an area estimated at 117 m by 146 m (Weston and Lees 1994). One or two ditches were present just outside of the embankments and these are estimated at 1.2 m deep and about 3 m wide at the top.

Like Neodesha Fort, no excavations have occurred at Deer Creek. Surface collections, however, suggest an early eighteenth-century occupation (Sudbury 1976). A large portion of Deer Creek has never been plowed and a possible fortification ring is very visible (figure 8.2). Early maps of the fortification indicate a U-shaped ditch about 76.2 m in diameter with adjacent earthen embankments around the head of a draw (Corbyn 1976). The draw may be an entryway allowing protected access to a spring on the edge of the nearby

creek. A second ditch is reported on the west side of this feature. Corbyn (1976) also suggests a possible bastion and various interior features (including a large rectangular area) based on aerial photographs. Magnetic, electrical resistivity and radar surveys in the 1980s confirm many of these features, but, without excavation, the function of the suggested bastion remains untested. Little information can be ascertained about features and activities within the structure. Trash mounds and features are present over a considerable area outside of the possible fortification, indicating that most residences were not protected by the structure.

Initial excavations at Bryson-Paddock took place in 1926, resumed in the 1970s, and have occurred there almost annually since 2003 as a joint project involving the Oklahoma Archeological Survey, the University of Oklahoma, Oklahoma State University, and the Oklahoma Anthropological Society. The site may have been occupied as early as the late 1600s. Artifacts, Spanish and French descriptions, and a thermoluminescence date all indicate a definite occupation in the early eighteenth century and extending until mid-century. Unfortunately, radiocarbon dates from the site are inconclusive, ranging from AD 1490 to 1959 calibrated (Drass et al. 2004). The available historical documentation (Wedel 1981) indicates the occupants of Bryson-Paddock and Deer Creek migrated south in the mid-1750s to locations along the Red River, including the Longest site (34JF1), where the Spanish attacked the Taovaya fortress in 1759.

Joseph Thoburn (1930) organized the 1926 excavations at Bryson-Paddock overseen by his foreman, Otto Spring. Excavations focused on mounds that they believed were collapsed earthen houses but are now understood to be trash deposits. The excavators also mentioned a possible ditch segment in an unplowed field (figure 8.3). Limited work on the ditch revealed little information, but Thoburn (1930:77) suspected a larger U-shaped trench was present. Archaeological work almost 50 years later continued to test additional trash mounds and to expose house patterns (Hartley and Miller 1977).

Beginning in 2003, our research has employed magnetic and resistivity survey technology to examine the distribution and extent of features across the site. Magnetometers/gradiometers, especially, have successfully identified small anomalies that, when tested, reveal storage pits and hearths. Large blocks of magnetic data have also led to the identification of long linear anomalies resembling ditches or similar features (figure 8.4). Subsequent groundtruthing through excavation resulted in the classification of these features as either fortification ditches or covered semi-subterranean trenches. We discuss each type of ditch in turn.

Figure 8.3. *Visible ditch segment in pasture at Bryson-Paddock site, looking north. Photo taken November 2005.*

Fortification or Rampart Ditches

The excavation of several large magnetic anomalies at Bryson-Paddock revealed cross-sections of ditch features. Initially two parallel, linear magnetic anomalies about 30 m apart in the plowed field were tested, revealing ditches about 60–80 cm deep and 3–4 m wide (figure 8.5). Subsequent magnetic surveys and excavations revealed the presence of four ditches (numbers 1–4, from inner to outer ditch) that encircle the head of a small dry draw that runs northwest to southeast across the middle of this site (figure 8.6). The now-dry draw may have had a spring in the eighteenth century, or the Wichita may have caught water in a basin at the head of this creek. Maps of the nearby Deer Creek fort tentatively indicate similar protected access to a spring. Later evidence from the Longest site suggests the fortification protected access to water from a spring and the Red River.

Excavations indicate that three of these linear features (#2–4) are ditches representing dry moat trenches. As the Wichita dug these trenches they apparently deposited the excavated soil to the inside of the fortification to

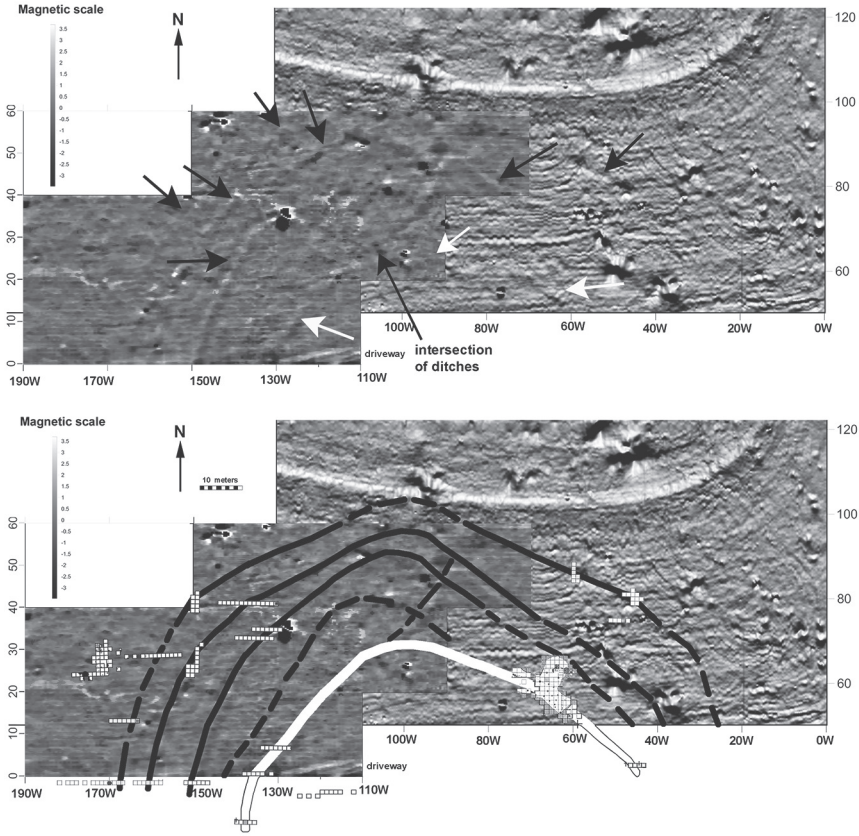

Figure 8.4. *Bryson-Paddock Site. (A) Magnetic map exhibiting linear features that are portions of fortification and structure ditches in the north plowed field at Bryson-Paddock. Arrows indicate ditches. Note that lighter areas are higher magnetic values representing ditch fill and these occur outside darker linear anomalies of low magnetic values that are thought to represent remnants of parapets that have been plowed down. (B) Magnetic map with fortification ditches and potential ditches marked in black and the semi-subterranean shelter ditch, the innermost ditch, marked in white. Dashed lines indicate the possible but unconfirmed ditch locations. Two instruments were used: a cesium magnetometer and a gradiometer. The instruments covered some of the same areas.*

form ramparts. At the Longest site, the Spaniard, Antonio Treviño (discussed earlier), described a similar embankment as an "earthen rampart, close to more than a vara and a third [approximately 1.13 m] in height, which serves them

Figure 8.5. *Cross-section of the north ditch (#4) in the eastern part of the plowed field at Bryson-Paddock (34KA5). Arrows indicate the edges of the ditch.*

as an entrenchment." Although no embankments or ramparts remain visible in the plowed field at Bryson-Paddock, slight rises are evident on the interior sides (west sides in this location) of the ditches identified in the unplowed portion of the site. The magnetic surveys provide some evidence for embankments. The highest magnetic readings at Bryson-Paddock occur within filled ditches, and lower readings occur on the original interior surface adjacent to the ditch where soil was piled as inhabitants dug it (figure 8.4). The relatively high magnetic readings are therefore likely caused by deposition of highly organic trash and soils in the ditches (see Kvamme 2006:218–219). The lower magnetic readings reflect how native soils were removed and piled to the interior side as the ditch was dug. These geophysical readings at Bryson-Paddock reinforce the idea that Wichita excavators deposited soil on the inside of the three ditches to form embankments for a palisade. Evidence also suggests that all three fortification trenches had been filled in during occupation of the site. Excavations revealed pits and a hearth that had been dug into the filled fortification ditches. The ditch fill included trash such as broken pottery, burned

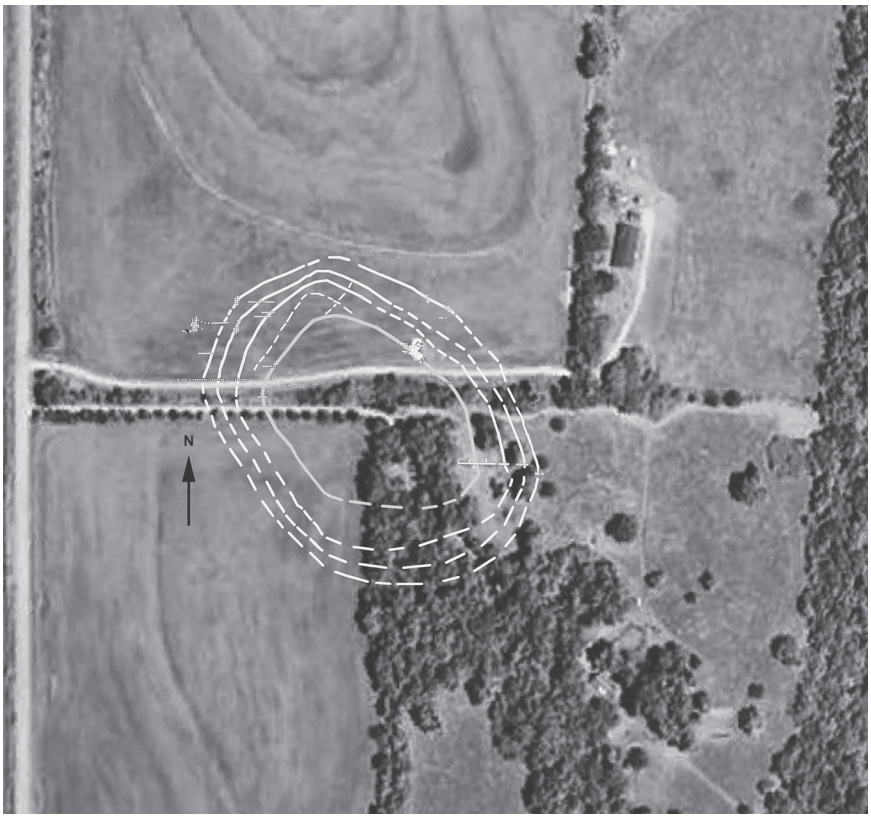

Figure 8.6. *Aerial view of the Bryson-Paddock site, indicating probable fortification ditches and subterranean structure. (Map made with Google Earth 2006 image.)*

clay pieces, lithic tools and debris, and charcoal in a brown to dark-brown organic soil. Thus, ditches were filled and the Wichita occupation extended long enough that activity such as pit construction impinged on filled ditches. At least some of the soil from the embankments may have been used to cover trash thrown into the fortification trenches.

The Bryson-Paddock fortification ditches are U-shaped or a rounded V-shape in cross-section; they narrow from over 3 m across at the top to 2 m or less at the bottom (figure 8.7). In the least-eroded areas, the fortification ditches were dug 110–120 cm below the surface at the time of occupation. Although these ditches do not have the sharp V-shape that Keeley et al. (2007) consider characteristic of most historic fortifications, they do contract toward the bottom. The top width and depth dimensions also fit the model

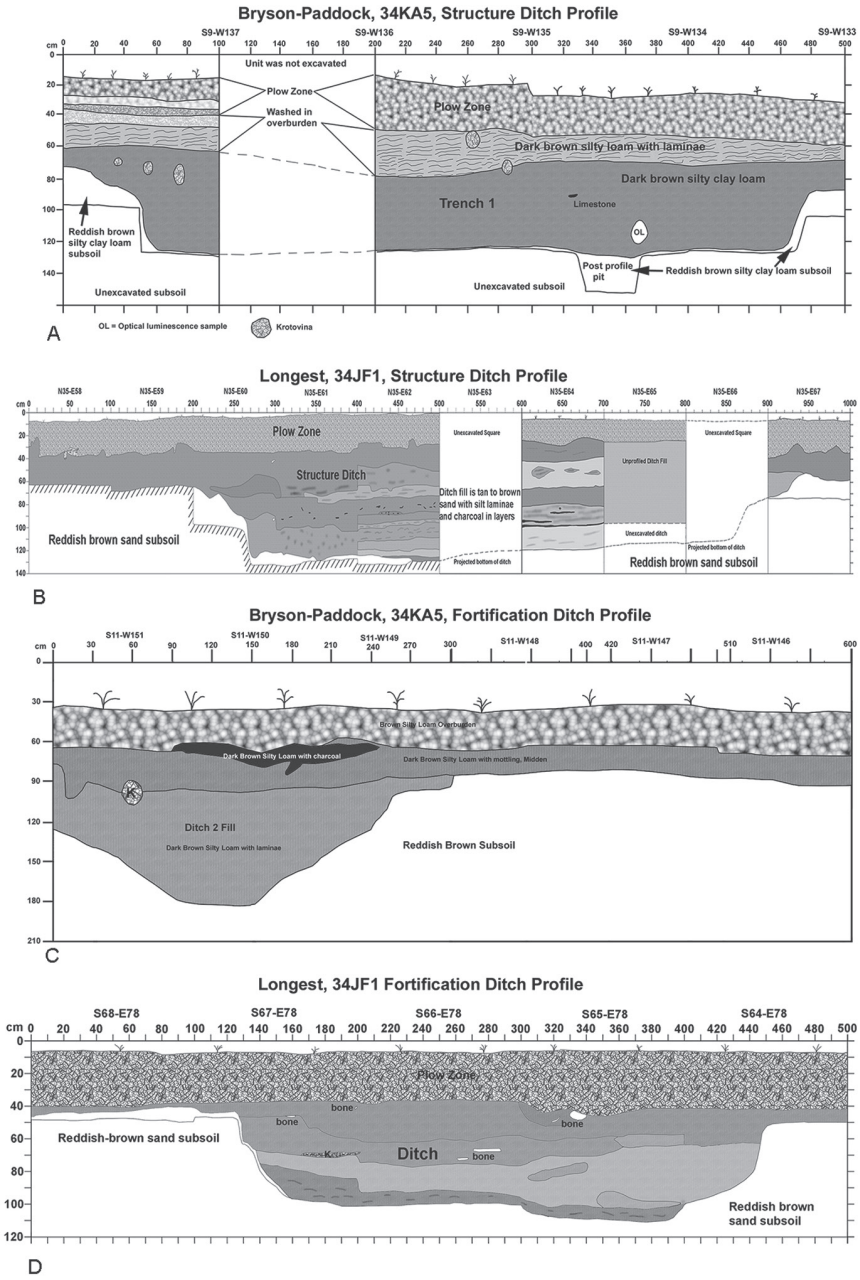

Figure 8.7. *Profiles of semi-subterranean structures (A–B) and fortification ditches (C–D) at the Bryson-Paddock (A, C) and Longest (B, D) sites.*

for defensive ditches (Keeley et al. 2007:58). In addition, the small excavation into the Longest fortification ditch revealed a profile (Bell and Bastian 1967) resembling the fortification ditches at Bryson-Paddock. The Longest ditch is 120 cm deep and about 4 m wide at the top, narrowing to 2.25 m at the bottom. More recent excavations in another portion of the Longest ditch exposed similar width dimensions (3.3 m at top and 2.3 m at bottom), but ditch depth extended only 1 m.

The Bryson-Paddock fortification ditches run along a fairly good slope on the south side of a ridge down to a gently sloping area at the south end. Irregularities appear in the visible magnetic distribution of these features, but the three ditches generally parallel each other and are 6–10 m apart at the closest points. The ditches appear to be continuous but metal and deeper soil deposits at the base of the slope along a road and modern fence line obstruct the magnetic readings for certain sections. In addition, a modern farm terrace on the north end of the fortification complex truncates the outer or fourth ditch, which would otherwise encircle an area about 140–150 m east–west and over 160 m north–south. The inner fortification ditch (second ditch) is 120–125 m east–west and over 140 m north–south.

Covered Semi-Subterranean Structure

The most distinctive and extensively excavated linear feature at Bryson-Paddock is visible in the unplowed pasture as an 8–10-m-wide depression running downslope, south, and making an almost right-angle turn to the west (figure 8.3). This is the innermost linear feature (ditch #1) seen on the magnetics in the plowed field and occurs in an area of only slight slope. It also encircles the head of the draw and extends across an area of 100 m east–west and over 95 m north–south. Excavations tested the feature in four different locations. Numerous soil cores confirmed its position in other areas. Excavations included a trench to cross-section the feature in the unplowed area, and a large excavation block in the southeast end of the plowed field, located north of the unplowed portion.

Initially, the feature appeared to represent another fortification ditch. However, excavations revealed significant differences. It was wider than other fortification ditches extending from 4 m to almost 5 m across. In cross-section its walls were vertical near the bottom and expanded only slightly toward the top. The floor of the feature was flat at 70–80 cm beneath the modern plowed surface and unplowed pasture (although the surface in the pasture is in a depression about 40 cm deeper than surrounding areas). It was also

filled with organic soil and trash from occupation, although few artifacts were found in the floor area. Two pits overlapped one edge of the ditch, obviously dug after the ditch had been filled. The trench had evidence of burning on the floor and intensive burning was apparent in some of the excavated units. In addition, excavators encountered burned post or beam sections near the floor, and post molds in the floor in all four excavated sections of the ditch. These postholes extended down to 70 or 80 cm below the floor. In the unplowed pasture section of the ditch, soil appeared to have been thrown to the west or inside portion of the ditch to form a low, now-eroded embankment. Initially, we presumed this embankment to be a remnant of a rampart supporting a stockade for defense. However, no evidence of post molds was found in the small area of embankment that was excavated.

Obviously, it would be highly unusual to have post molds and burned post sections on the floor of a dry moat, especially if it were located at the foot of an embankment and stockade. Indeed, the other three ditches at Bryson-Paddock lack these features. We therefore expanded excavations in one section of the ditch to further evaluate the structure. The feature in this area has a southeast end marked by an abrupt rise to a shallow depth (30–40 cm). This shallow area extends less than a meter to the southeast before a ditch feature resumes and apparently extends south into the pasture, where it would tie into the unplowed portion of the ditch. The main excavations followed the ditch feature northwest in the plowed field in an attempt to identify a northwestern edge. Over 14 m of the ditch were exposed but no end was encountered (figure 8.8). To further complicate matters, another ditch was discovered intersecting the main ditch from the north. This intersecting ditch was excavated and extended 6 m to the north and was 5.5 m wide. In the center of this short ditch feature we encountered an ash-filled basin hearth about a meter in diameter that was dug into the floor (at 70 cm below the current surface). Four post molds surround this hearth, forming center posts for a roof that covered it (figure 8.8).

In light of the historical accounts of Wichita fortifications, our excavations provide strong evidence that the innermost ditch—found in the plowed fields as well as the unplowed pasture—served as a covered semi-subterranean structure with a room built as an extension off the larger structure. The nearly straight walls and over 4-m-wide flat floors of this inner trench are distinct from other fortification ditches at the site. The large, deep, post molds in the floor and evidence of burned wood elements (post or beam pieces) as well as clinkers from burned grass suggest that this ditch and the northern room were covered by a grass-thatch roof. The structure burned, leaving small charred post or beam sections, burned floors, and an abundance of charcoal in the floor

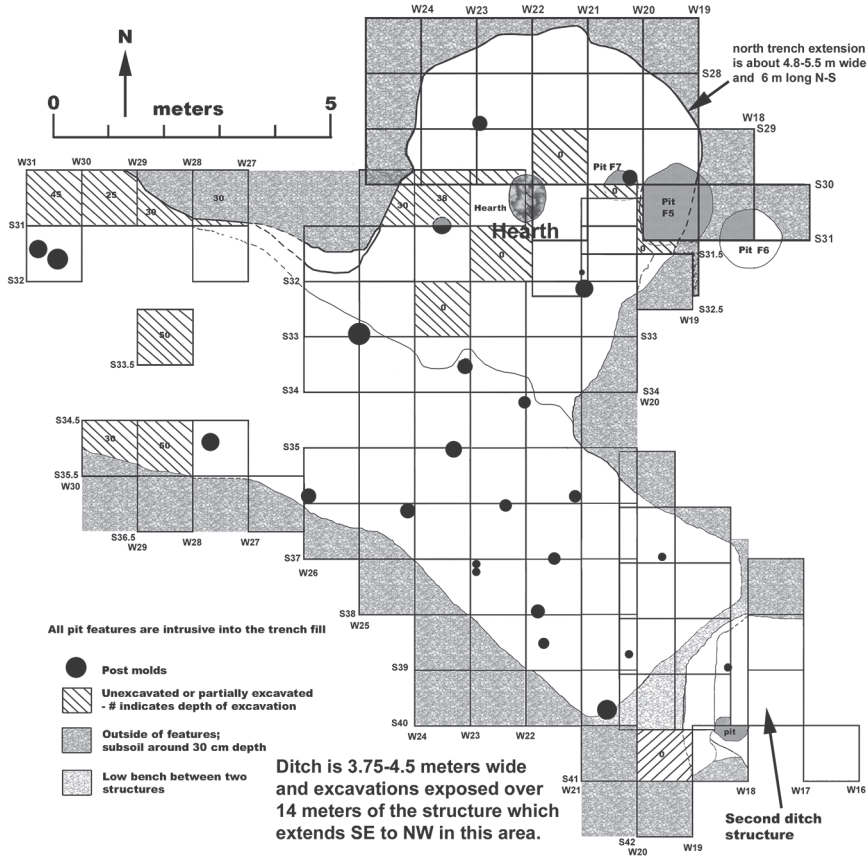

Figure 8.8. *Map of excavations in ditch #1, the semi-subterranean structure, on the southeast side of the plowed field. Posts had been dug from the floor level, starting about 70–80 cm beneath the surface.*

area. Few artifacts are found in the floor area, indicating the structure was either abandoned before burning or few activities took place in it. Based on the visible extent of this feature, as well as magnetic data, the semi-subterranean structure parallels the fortification ditches, but it is 12–25 m inside the nearest fortification ditch (ditch #2).

Although the descriptions are brief, the subterranean shelters reported by Treviño at what is today the Longest site, or in Smith's account of the "Big lodge" at the Waco village, appear to be represented archaeologically by the innermost ditch structure at Bryson-Paddock. As mentioned, post molds, burned beam or

post fragments, a hearth, and a flat floor all fit with our expectations for what we would see archaeologically in a roofed semi-subterranean structure. None of these features has been found in the three other fortification ditches at the site. The depth and width dimensions of the Bryson-Paddock subterranean structure also roughly match those of the underground "lodge" described at the Waco village (Foreman 1931). The presence of a shallow divide in one part of the trench at Bryson-Paddock suggests that we may have excavated into portions of two of these subterranean shelters. The Bryson-Paddock subterranean structure encircles the inside of the fortification much as Treviño described for the Longest site fortification. Based on geophysical data, we suspect that four or more such shelters may be identifiable within the Bryson-Paddock fortification.

Magnetics indicate that some of the northern and western ditch sections may intersect or at least include extensions similar to the one excavated off the innermost trench on the east side (figure 8.4). One of these possible extensions is on the northwest corner of the inner ditch but it appears on the magnetics to intersect with a moat-type ditch to the north. Excavations have not been conducted on this section of the feature, but extensive soil coring has been done in an attempt to confirm the presence of an intersecting ditch. The coring revealed a large, roughly rectangular feature 30–40 cm deep, but continued coring outside this feature indicated that a trench or ditch about 60 cm deep is present and likely crosses beneath the shallower rectangular feature. Based on the magnetics and coring, this linear anomaly is a section of ditch that ties into other ditches on the north end of the fortification. A possible ditch section may be present between ditches 1 and 2 on the northwest side of the fortification, but there have been no excavations to confirm this structure and it does not appear to continue in other areas of the fortification.

The fill of every ditch contained artifacts but they provided no clue to the order of construction or whether the ditches were all in use at the same time. Excavations across the site have noted numerous examples of overlapping features, suggesting a relatively long occupation or, less likely, repeated occupations during the early to mid-1700s time period. The few historic records seem to indicate an occupation of at least 30 years but likely longer. Given that the site was occupied for a considerable time, the fortification ditches may have been dug at different times. The filling of the subterranean structure inside the fort suggests that the fort was not abandoned at the time this structure was burned; it may have been intentionally burned by the occupants. Storage pits dug into the three outer, moat-like ditches show that they also were abandoned and filled during occupation. Filling of the fortification ditches may suggest that another fort was built at the site. Magnetics to the west, outside

the fourth ditch, have not revealed clear evidence of other ditch features nor is another ditch visible in magnetics on the southeast side. There is also no clear evidence that a second covered subterranean structure was built after the inner one burned. In the unplowed field, ditch #3 is about 4 m wide and has relatively straight walls, similar to the roofed ditch (ditch #1). However, the small cross-section excavation of ditch #3 did not encounter post molds. Thus, we are not confident that this wide ditch is a second roofed subterranean structure. More work is needed to determine if the fort was enlarged outside of the fourth ditch, or if there is another fort structure elsewhere on this large site.

Summary of Fortification Features

Investigations at Bryson-Paddock have identified a series of ditches that were parts of fortifications resembling forts described at later historic Wichita sites. At least four ditches were built near the center of Bryson-Paddock on a south-sloping ridge (figure 8.9). The ditches extend in a roughly circular pattern around the head of a dry draw or creek that may have been a source of water in the eighteenth century. The pattern of some ditches is irregular based on the magnetics, and there are indications that ditch segments may join or intersect other ditches. The outer three ditches appear to be dry-moat-type features used in conjunction with earthen ramparts and probably a stockade for defense. The innermost ditch constitutes the remains of a specialized semi-subterranean structure. Ramparts or embankments are not clearly visible at Bryson-Paddock but magnetic data suggest that earth from the ditches was piled to the inside. No posts for a stockade have been encountered at the site but plowing, erosion, or use of the earth from embankments to fill ditches may have removed enough soil to destroy any post molds formerly found in the embankments. Even the largest of these ditches and embankments would only encircle part of this large village; many houses, pits, and trash mounds are not enclosed by the fort (figure 8.9). However, the filling of all the identified fortification ditches while the site was still occupied may indicate that another ditch with ramparts and a wooden stockade could have encircled a much larger area of the village.

The inner ditch at Bryson-Paddock served as a semi-subterranean structure that lined the inside of the fortification. The excavations at Bryson-Paddock represent the first archaeological research on one of these specialized structures. The structure is similar to Treviño's description of them at the Longest site on the Red River and to later historical descriptions of shelters at Wichita villages in Texas. Treviño's limited description noted how they were used to store supplies and as safe shelters for noncombatants during attacks, thereby

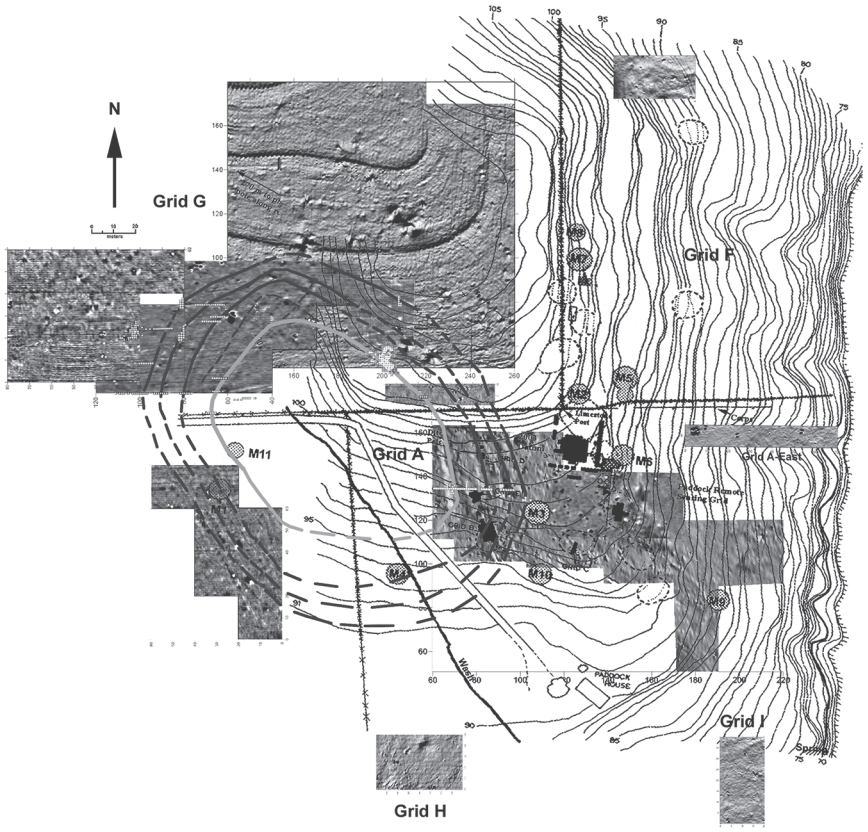

Figure 8.9. *Map of Bryson-Paddock magnetic surveys with identified and projected fortification ditches (three black outer rings) and semi-subterranean shelter (inner gray ring). Dashed lines indicate unconfirmed ditch locations.*

constituting an important part of Wichita defenses. The size and shape of one large excavated segment of the semi-subterranean structure matches these historic descriptions. Evidence from Bryson-Paddock suggests that large posts scattered throughout the ditch supported a roof of wooden beams covered by grass thatch. Soil may have been placed over the thatch but there is very little burned clay in the fill. No entryway is apparent in the excavated portions of the structure; entry may have been through the roof. The short ditch extension with a central hearth and four center posts at Bryson-Paddock, however, has not been described at later Wichita villages. This extension resembles the footprint of a small Wichita house, but this structure is semi-subterranean

and connected to the larger semi-subterranean structure that appears as a ditch in the magnetic surveys. More recently, test excavations at Longest in 2013 uncovered a small section of one of the four subterranean "apartments" witnessed by Treviño. In cross-section (figure 8.7) this feature closely matches the inner ditch at Bryson-Paddock, although the Longest subterranean structure is wider (7.4 m wide at the top and 5.9 m at the bottom) and deeper (1.3 m). Like the excavated ditch at Bryson-Paddock, the Longest ditch had a flat floor, post molds extending down from the floor, and burned roof supports in the fill.

Finally, no indications of bastions, baffled gates, or similar defensive structures have been recovered at Bryson-Paddock. The draw may have been used as a southeast entryway into the fortification. The magnetics do indicate an apparent break in the fourth, outer ditch on the east side of the fort (figure 8.10). Testing of this area revealed no ditch here although there are clear indications of the ditch within a few meters to the north and south. Similar breaks are evident in the second and third ditches in the same area although there have been no excavations of these possible entryways. Other entryways may be present. An eastern entry could have been easier to defend since access from the east is limited by the high, steep bluff to the river that is within 150 m of the fort. The inner semi-subterranean structure does not appear to have a gap in the area of the possible east entryway.

Sites such as Bryson-Paddock, Deer Creek, and Neodesha Fort provide evidence of the intensified defensive efforts undertaken by the Wichita in the early eighteenth century. The organization of large, often paired, villages, spaced within a few kilometers of each other, and the labor needed to construct massive features such as fortifications and underground shelters may be an indication of increasing social complexity at this time. Unfortunately, few burials have been identified from protohistoric sites and evidence of social differentiation is minimal. Further investigations will be needed to document the timing and location of fortifications across the southern Plains, and to identify the factors leading to their construction. To further explore these issues, albeit tentatively, we turn to archaeological evidence of fortifications predating the structures just described.

OTHER ARCHAEOLOGICAL EVIDENCE OF WICHITA FORTIFICATIONS

Just as more research is needed for the eighteenth- and nineteenth-century forts, investigations need to be undertaken to create an accurate chronology of the earliest fortifications on the southern Plains. At this time, we do know

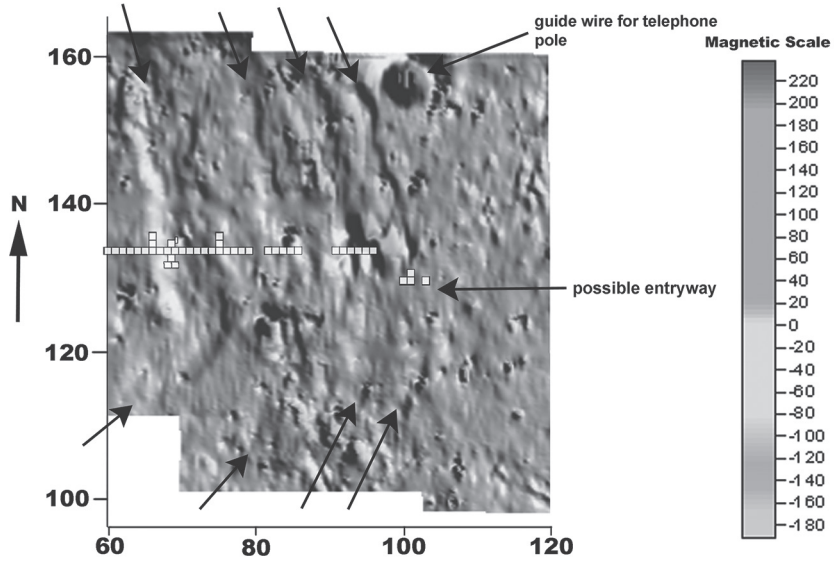

Figure 8.10. *Magnetics on the southeast side of the Bryson-Paddock fortification. Arrows point to ditches and possible entryway.*

that relatively small fortified sites in the sixteenth century preceded the larger and more complex eighteenth-century structures discussed above. The earliest fortifications in the southern Plains appear before European contact, about 200 years prior to the occupation of Bryson-Paddock and Deer Creek. Circular ditches are found at certain sixteenth-century Wheeler and Garza phase sites in western Oklahoma and northwest Texas (figure 8.1) (Drass and Baugh 1997). Interpreted as the remains of fortifications, they have been identified at the Edwards I (34BK2), Duncan (34WA2), and Bridwell (41CB27) sites. Edwards I and Duncan are today located in plowed fields in western Oklahoma. Before plowing leveled the fields, the ditches had embankments on their inner side. Limited excavation indicates the ditches are about 1 m deep, 2–3 m wide at the top, and encircle an area about 50 m across, a relatively small portion of each site. At Bridwell in the Texas Panhandle, an embankment remains to this day, measuring approximately 60 cm high (Drass and Baugh 1997).

Little is yet known of the activities that occurred within these early fortifications—only limited test excavations have been undertaken and magnetic surveys indicate some anomalies but none has been thoroughly excavated. No

semi-subterranean shelters have been identified. The Duncan and Edwards sites contain significant amounts of nonlocal trade materials, particularly items from the Southwest such as pottery, obsidian, turquoise, and *Olivella*-shell beads.

By the mid-sixteenth to seventeenth centuries, the Spanish expeditions of Coronado (1541) and Oñate (1601) reported large populations of people now believed to be Wichita living in villages along drainages in southern Kansas. These sites are today collectively known as the Great Bend aspect, consisting of two foci, the Little River and Lower Walnut (Wedel 1959). Numerous Great Bend sites exist, but no fortifications have been identified. Fortifications in southern Kansas only appear with the later eighteenth-century site, Neodesha Fort (14WN1).

Recently, Baugh (2007) has suggested that previous interpretations of "council circles" (Vehik 2002; Wedel 1967) within seventeenth-century villages in south central Kansas may actually be remnants of fortifications. In fact, Wedel's 1940 and 1965 excavations at the Tobias site (14RC8) revealed a circular pattern of semi-subterranean structures and Baugh suggests that "rings" visible around the structures may be ditches. Wedel (1967:57) tentatively termed the semi-subterranean structures "pithouses," but in their shape and construction they seem reminiscent of semi-subterranean shelters described historically, as well as the semi-subterranean structure found at Bryson-Paddock. Without testing to identify ditches or a circular pattern of post molds indicative of a palisade, doubts persist concerning the function of these council circles.

THE IMPETUS TO FORTIFY

Anthropologists and archaeologists use various types of evidence to document or infer warfare on the Plains, including oral history, historical documentation, human osteology, settlement patterns, weaponry, iconography, and the construction of fortifications (Bamforth 1994; Ewers 1975; Lambert 2002; Lowie 1935; Newcomb 1950; Robarchek 1994; Willey 1990). Until recently evidence of conflict on the southern Plains before European contact primarily depended on human osteological studies, although defensive site locations in west Texas have been noted for the Late Prehistoric period (Brooks 1994; Lintz 1986). Early evidence of violence in the southern Plains has been proposed (Baugh 2007; Boyd 1996; Dial and Black 2010; Lambert 2002). However, before AD 1200 or 1300 warfare seems to have been predominantly small-scale and low-intensity raiding, probably resulting in few deaths. After about AD 1300, consolidation of populations into large but dispersed sites along the Arkansas River in central and southern Kansas may represent increased

emphasis on defense (Baugh 2007; Blakeslee and Hawley 2006; see Jordan 2010 for a discussion on concentrated populations and defense). A similar change in settlement pattern may have occurred in western Oklahoma and west Texas after AD 1450. In addition, the appearance of fortifications at this time represents the clearest evidence for the rise of warfare at the end of the Late Prehistoric period.

Archaeologists speculate as to why fortifications initially appear in the southern Plains after AD 1450, and why they continue to be used into the historic era (Brooks 1994; Drass 1998; Drass and Baugh 1997; Drass and Savage 1992). Construction of fortifications is generally seen as symptomatic of intensified conflict (Arkush and Allen 2006; Dye 2006). Warfare on the Plains has frequently been explained by applying ecological/economic or sociocultural models (Bamforth 1994, 2006; Biolsi 1984; Ferguson 1984). Concerning the latter model, factors such as prestige, social stratification, revenge, and/or competition have been posited as causing conflict among historic groups. Archaeologists frequently assume similar motivations for earlier conflicts. Ecological/economic explanations, on the other hand, center on environmental changes impacting subsistence. Subsequent population movements led groups to compete, sometimes violently, for access to resources. Other scholars envision the arrival of Europeans as further impacting native warfare: the horse expanded group territories, increasing intergroup conflict, and the acquisition of guns affected the technology of warfare and defense (Dye 2006; Newcomb 1950).

In the case of the Wichita, however, other consequential immigrants arrived prior to Europeans, perhaps contributing to the development of fortifications. By 1500, frontier areas formed as Apache groups moved south into the High Plains of the Texas and Oklahoma panhandles. Wichita villagers lived just to the east on the rolling prairies where archaeological evidence suggests population consolidation (coalescence) occurred during the late fifteenth and early sixteenth centuries. Contemporaneous faunal evidence indicates bison hunting intensified among Wichita groups at this time (Drass 1997; Savage 1995). Conflicts over hunting territory likely developed as the Apache moved into the Wichita's western hunting grounds. Significantly, our earliest evidence of southern Plains fortifications appears in this western frontier area.

Long-distance trade also became significant at this time. With coalescing populations, social stratification and the search for prestige would further contribute to inter- and intratribal conflicts (Vehik 2002). Struggle over the control of Plains–Southwest trade routes may also have stimulated conflict and defensive measures. Alternatively, fortified sites such as Duncan near

the western frontier may have served as trade centers. Defensive structures could have discouraged conflict and protected valuable goods during fall trading fairs.

During the next two centuries, Wichita populations concentrated into large, often paired, villages in the eastern Plains, and these villages were typically fortified. Wichita groups remained in the short- and mixed-grass prairies to the west, but to date archaeologists have not found any western fortifications after approximately 1600. Increasing mobility associated with greater specialization in hunting dispersed bison populations in the western prairies could have rendered fortifications impractical.

By the early eighteenth century, conflict may have intensified as evidenced by the larger fortification complexes present at Bryson-Paddock, Deer Creek, and Neodesha Fort. This intensification probably resulted from a variety of ecological, economic, and social factors. The historic record documents the presence of horses at this time and trade with Europeans was escalating. The arrival of horses expanded the ranges of tribes and the potential for increased raiding, especially for the coveted horses, which were probably more abundant for southern Plains tribes than for other Plains peoples. Greater mobility also brought tribes such as the Comanche and Cheyenne south into the southern Plains, heightening the potential for conflict and also possibly disrupting some of the Wichita trade with the Southwest. At the same time, the Osage were intensifying pressure on the Wichita from the northeast. Uneven distribution of guns may also have changed the balance between some eastern and western tribes' defenses, and epidemics from European diseases would have impacted populations, encouraging coalescence of groups into larger and/or closely spaced villages as a means to improve defenses. Considerable labor and organization would be necessary for construction of defensive structures, and social stratification among the Wichita may have increased at this time.

The Wichita of the southern Plains occupied one of the last areas in the region to receive significant European trade. This changed rapidly between the seventeenth and eighteenth centuries as French traders moved up the Arkansas River to obtain bison hides, meat, horses, Apache slaves (Barr 2005), and other items from the Wichita in exchange for a variety of European goods (Vehik et al. 2010). At this time, conflict mounted with eastern tribes, especially the Osage, as they attempted to control the Wichita's access to trade (Morris 1970; Vehik 2006). Historic documents also indicate Wichita groups raided and probably traded with Apache (Newcomb 1950:324) and later Comanche groups to the west to obtain more horses and bison products for trade with the French. Thus, by the latter part of the eighteenth century, the Wichita had

moved from the extreme periphery of the European market to a position as middle men in an intensifying trade in bison products as well as other goods. Conditions that once favored increasing conflict prior to European contact accelerated in the eighteenth century. Opportunities to broker trade between the French and the Comanche grew, as did hostilities against the Apache. Hostilities eventually culminated in the Wichita and Comanche raid on the Lipan Apache at the mission of San Sabá in 1758, followed by the Spaniards' retaliatory strike on the Red River site in 1759. With these hostilities, Wichita fortifications firmly entered the historic record.

SUMMARY

Unlike northern Plains fortifications, which encircled entire villages, southern Plains forts functioned as places of refuge within villages. Most houses and activity areas remained external to a smaller circular fort situated in the center of the village. These forts were constructed with ditches and ramparts that held wooden-pole stockades. In addition, the presence of substantial semi-subterranean structures ringing the inside of some of the palisades (possibly as early as the seventeenth century) suggests further protection for noncombatants as well as a storage place for valuable goods and supplies. The shelters encircled the interior of the entire Bryson-Paddock fortification, an area 90–100 m in diameter. Evidence from the Longest site reveals that the fortification protected access to water from a spring and the river. Maps of the Deer Creek fort show similar protected access to a spring. At Bryson-Paddock, a now-dry creek may have had a spring in the eighteenth century, or the Wichita may have caught water in a basin at the head of this creek.

Data from fortified southern Plains sites indicate that the size and complexity of Wichita fortifications changed significantly between the sixteenth to eighteenth centuries. Yet, only the early eighteenth-century Bryson-Paddock site has been extensively excavated. We now recognize not simply a fortification "ring" but a true fortification complex of multiple ditches and embankments in a circular pattern with one ditch serving as an interior semi-subterranean shelter. This fortification complex resembles those noted historically by a number of eighteenth- and nineteenth-century eyewitnesses on the southern Plains. That the Wichita spent so much time digging ditches to construct, rebuild, and expand their defensive complex over time demonstrates the urgent salience of defense at Bryson-Paddock and related villages between the seventeenth to nineteenth centuries.

ACKNOWLEDGMENTS

Dave Maki from Archaeo-Physics provided an initial gradiometer and electrical resistivity survey of a small area of Bryson-Paddock. We are grateful to Jim Bruseth and Bill Pierson with the Texas Historical Commission for conducting an extensive magnetometer survey of Bryson-Paddock, and Scott Hammerstedt of the Oklahoma Archeological Survey assisted with further gradiometer surveys. We thank Peter Bleed for helpful comments on a draft of this chapter. Timothy Baugh kindly provided information on the Waco village attacked by the Cherokee in 1830. The information on the semi-subterranean lodge at this village provides rare historic documentation of the shelters built by Wichita groups within their fortifications. Finally, we appreciate the patience and generosity of Bryson-Paddock's landowners in permitting us to intrude on their properties for over a decade and the support of the Wichita and Affiliated Tribes.

NOTE

1. The original documents and English transcriptions of Treviño's account are available online through the Béxar Archives, Briscoe Center for American History, The University of Texas at Austin, under catalog number E.3/20/1765–8/26/1765, pp. 11r–6v. Treviño's testimony is found on folios 5r.–5v. of the document. All quotes come from the English translation of these folios provided by the Briscoe Center. Approximations of distances and measurements have been added in brackets.

9

The Alcova Redoubt

A Refuge Fortification in Central Wyoming

Bryon Schroeder

The goal of this chapter is to interpret and to a lesser degree contextualize a site known as the Alcova Redoubt (hereafter the Redoubt). The architectural remains and cultural materials found on this site are highly suggestive of a planned fortification. Currently, the designations of fortifications as a site type have been only lightly considered in the Wyoming literature (Hoxie and Rzeczkowski n.d.; Keyser and Poetschat 2005; Keyser 2007b; Loendorf and Good 1977) and arbitrarily assigned to sites better described as defensive locations (Adams 1994; Frison 1988; Loendorf and Good 1977). This chapter therefore establishes a solid definition of a fortification and its relationship to other hunter-gatherer archaeology sites of the Wyoming region. Fortifications sites found in the Wyoming region do not directly correlate with the complexity of fortifications described throughout this book. However, several key features appear throughout all fortifications sites globally and are considered in a broader discussion of defense-related sites focusing on the social and temporal conditions that may have led to the development of planned fortification in a region synonymous with hunter-gatherer peoples.

The prehistory of the northwestern Great Plains is typified by egalitarian hunting-gathering groups (Frison 1991). The groups are broadly defined as "societies in which there is a short time between the acquisition and the consumption of food, where individuals have equal access to resource and methods of resource

DOI: 10.5876/9781607326700.c009

extraction, and use mobility as a method of dispute resolution" (Kelly 1995:295). "Dispute resolution" is of prime importance because egalitarian hunter-gatherers generally move to avoid outer group violence, a factor (among many) that keeps their personal possessions low (Kelly 1995:296). Mobility as a form of conflict mediation seems to preclude fortification use and leaves open the question: when do hunter-gatherers build defensive structures?

Hunter-Gatherer Violence

The presence or absence of violence in egalitarian hunting and gathering groups spans a theoretical range between two extremes: at one end, egalitarian groups are more violent than modern western civilizations' deadliest wars (Keeley 1996), and at the other extreme the rarity of interpersonal violence makes hunter-gatherers among the greatest peace negotiators the world has known (Fry 2006). I would like to circumnavigate the theoretical allegiances latent in these two extremes and focus instead on the violence prevalent in hunter-gatherer populations (Keeley 1996; Fry 2006). There are both peaceful and aggressive foragers (Kelly 1995). So the question becomes not whether egalitarian groups are violent, but what form does their violence take? Interpersonal group violence should have a different archaeological signature than organized warfare.

"Warfare" here is defined as "potentially lethal fighting among separate communities that is viewed as a legitimate, even desirable, means of advancing a group's position relative to that of its neighbors. "*Warfare involves collective rather than individual parts*" (emphasis added, Milner 2007:182–183). This differs from violence defined as "a severe form of physical aggression, violence entails forceful attacks, usually with weapons that can result in serious injuries or death" (Fry 2006:11). Warfare has to be organized at a group level, whereas violence involves the physical aggression of any person who does harm with no specific benefit to a group. Violence, such as feuding and revenge killings, does not have to lead to warfare. Many egalitarian band-level groups often do have episodes of intergroup or interpersonal violence (Fry 2006; Kelly 2000; Otterbein 2004). However, there are often accepted limits to which levels of violence can reach within groups (Kelly 2000:11–38). This is because the violence is typically "specific and not generalized and does not escalate beyond a sequence of events that encompass homicide followed by the execution of the killer" (Kelly 2000:42–43). The cross-cultural ethnographic evidence from band-level societies reinforces the lack of war (Fry 2006; Keeley 1996; Kelly 2000; Otterbein 2004).

The incidence of violence among the Semai, for example, shows they have a "homicide rate of 30.3 per 100,000 population per annum" or about two

homicides every 22 years for a group of 300 (Knauft et al. 1987:458). A similar figure is suggested for the !Kung, the Hadza of Northern Tanzania, the Mbuti, and the Gebusi (Knauft et al. 1987:458–459). Studies of these groups suggest egalitarian groups fluctuate between periods of low violence and periods of frequent violence with relatively high violence rates per capita (Knauft et al. 1987; Keeley 1996). However, when hunter-gatherer groups are viewed at long intervals, low aggression marks the ethnographic record more than do high levels of violence (see Fry 2006:box 5.1 and 5.2; 63–64; 66–67). This has led to the conclusion that "no peaceful society is expected to be absolutely devoid of all forms of aggression at all times" (Fry 2006:63). Hunter-gatherers seem to fluctuate between violent periods but as a whole have low incidences of violence with no systematic warfare as defined in this chapter (Fry 2006).

Drawing upon ethnographic cross-cultural studies of conflict, Keeley maintains some "90 to 95 percent" of all human societies engage in warfare (Keeley 1996:29). Examining frequency of war, Keeley (1996:32) suggests greater political complexity increases the frequency of war. A similar conclusion is reached by Fry (2006:100–113, 2007:69–80). However, Keeley (1996:32) also suggests "70 to 90 percent" of prestate societies engaged in warfare at least once every five years and the archaeological evidence of "well-studied regions" (Keeley 1996:39) reflects this pattern—stretching warfare back some 10,000 years. For some researchers, the ethnographic signature of war informs and reinforces the archaeological signature of war (Keeley 1996). However, the coarse resolution of the archaeological record makes it difficult to elucidate differences between war and violence, although iconographic studies may suggest otherwise (see Keyser, chapter 3, this volume).

There is no doubt violence is indicated in the archaeological record (Martindale and Gill 1983; Scheiber 2008; see discussion of Roper 1969 in Fry 2006:134–135), but warfare is less clear. Cases like the 12,000–14,000-year-old cemetery known as Jebel Sahaba in Sudanese Nubia are often used to argue for both the antiquity and existence of early warfare (Keeley 1996; Otterbein 2004:74). Excavations at Jebel Sahaba uncovered the remains of 59 skeletons, with 24 showing direct evidence of violent trauma (Thorpe 2003; Wendorf 1968). The contemporaneity of the burials has never been established, leading to a justifiable critique of the site as only containing reoccurring acts of homicide, execution, or a burial for the murder victims (Fry 2006; Thorpe 2003:152–153). The often-cited human bone bed at the Crow Creek site in south-central South Dakota with some 500 individuals, an associated palisade, and burned lodges is a much clearer indicator of warfare (Willey 1990; Zimmerman and Bradley 1993). This suggests archaeologists cannot interpret warfare from any

one line of data (Solometo 2010). We know violence exists in the record of egalitarian groups, but what both Keeley (1996) and Fry (2006) have demonstrated is that warfare seems to hinge on political complexity.

The Wyoming Region

The ephemeral architecture and small size of archaeological sites found in the Wyoming region argue for more, small, highly mobile groups (Frison 1991; Kelly 1995:124). As aforementioned, mobile groups tend to move if neighboring groups become hostile (Kelly 1995:294; Fry 2006). In an area where low group sizes and high mobility were prevalent, low incidences of violence and fortifications should be the norm. The latter is simply because non-residential defensive structures (i.e., fortifications) are a costly endeavor that hunter-gatherer groups cannot easily offset without sustainable resource patches or food storage. It is unjustifiable for a mobile group to invest labor into an elaborate structure that does not have an immediate economic benefit (Kelly 1995). Fortifications are more typically built and maintained by large groups of people (see Mitchell, chapter 11, this volume). To argue fortification use is to argue for either a decrease in mobility or an increase in group size, or both. This very signature is evident in the archaeological record during the transition from the Late Prehistoric to the Protohistoric period (1500 BP to ~200 BP) of the Wyoming region (Sutton 2004).

The residential-site size and the radiocarbon data serve as a proxy for a population size that peaked between AD 1000 and AD 1500 in the Wyoming region (Surovell et al. 2009; Sutton 2004). During this increase in settlement size there was a presumed change in social structure to account for larger group cohesion (Sutton 2004). Both the iconographic and skeletal evidence are suggestive of violence prior to the horse (see Keyser, chapter 3, this volume). But a shift in the intensity and incidence of violence to full-blown warfare seems to coincide with the influx of European goods into indigenous communities (Sutton 2004; Wolf 1997). Three independent lines of evidence support this position. First is an increased use of stone structures for defense (i.e., in fortifications) in the Protohistoric period (Conner et al. 1977; Hoxie and Rzeczkowski n.d.). Second is an increase in violent rock art depictions with European trade goods (Keyser and Poetschat 2005). Finally, the skeletal record indicates higher levels of violence in the Protohistoric than in any of the preceding periods.

In a sample of 93 individuals dating to the Late Prehistoric period (AD 1500–1700) one-third show some evidence of violence (Scheiber 2008). This

is demonstrated by injuries on skeletal remains that include "projectile points embedded in bone, parrying fractures, and the presence or absence of projectile points found in the graves" (Scheiber 2008:35). The Scheiber (2008) skeletal overview does not parse out violent death in the Protohistoric period but does show a decrease in the average age of death.

The average age of death for 257 individuals dating to the Protohistoric-period assemblage is 25 years. According to Scheiber (2008:37), "many more people were dying at a young age, and very few older adults are found" in the Protohistoric period. In fact, Scheiber notes the mean age of death reaches an all-time high in the Protohistoric period, with 63 percent of the sample labeled as "young-adults" from 20 to 39 years old (Scheiber 2008:39). This is an increase of young adult deaths of nearly 41 percent over the preceding Late Prehistoric and Archaic periods (a timespan covering at least three millennia). It is important to note the violence and young ages of death recorded in these samples may not necessarily be representative for the escalation of warfare. The violence could be seen as a simple increase in interpersonal conflict as a result of expanding group size in the Protohistoric period (Scheiber 2008:39; Sutton 2004), but the presence of a site like the Redoubt makes it appealing to argue for the presence of warfare during this period.

According to Keeley (1996:55), fortifications are the "costliest and largest pieces of preindustrial military technology that prehistoric peoples utilized to defend against assailants." As such, the construction of defensive structure required organized labor focused on a planned design. Therefore, the construction of fortifications is a practice egalitarian societies seldom if ever embarked upon (Keeley 1996). Otterbein (2004:189) states, "hunters and gatherers did not build walls around their camps." Jones (2004:161) also echoes Otterbein's position by stating that "nomadic hunting bands did not build complex fortifications." It may then be argued that if a fortification is present in the Wyoming region, there were also levels of social differentiation (O'Brien 2013; Vanpool and O'Brien 2013). The importance of this, however, is not to argue for the increasing social change of the inhabitants that built the Alcova Redoubt; more work is needed to test the link between social differentiation and fortification construction. The remainder of this chapter is dedicated to justifying how this site qualifies as a planned fortified structure.

FORTIFICATIONS

The use of architecture to defend a location is a practice that stretches back possibly over 10,000 years with the site of Jericho (Bar-Yosef 1986; Fry 2006;

Keegan 1994). Certainly by 7000 BP defensive architectural elements were in use in the Old World (Keeley 1996). The characterization of architecture as defensive in the archaeological record is dependent on agreeable definitions. In a recent review of fortifications Schaepe (2006:674) determined the National Park Service's (2005) definition of "works erected to defend a place" best characterized defensive architecture (Schaepe 2006:674). To qualify as defensive, the erected architecture must refer to features including walls, bastions, and locations on the landscape that have a purely military function (Kelly 2000; Keeley et al. 2007; Schaepe 2006). Several examples of such locations can be found in the Missouri Trench area and are reviewed in this book (Bamforth 1994,; chapter 1, this volume; Clark, chapter 12, this volume; Jones 2004; Keeley 1996; Kvamme and Ahler 2007; Kvamme 2008; Mitchell, chapter 11, this volume; Zimmerman and Bradley 1993).

By definition, a fortification must have architecture and this architecture must include a wall system. A "wall system" is defined as the "surrounding barriers or enclosures that prevent access to and, almost always, obscure vision of a particular location" (Keeley et al. 2007:57). Individual components together comprise an "enceinte," or wall. These include the wall (sometimes referred to as a "curtain"), any gates, bastions, and associated ditches (Keeley et al. 2007). Sites not meeting these criteria are considered "defensive sites" (Schaepe 2006:674). Defensive sites contain little or no architecture and are defendable "through means of position in a landscape that restricts access to a place, thereby serving to protect it from attack" (Schaepe 2006:674). Defensive sites are primarily located in a "naturally defensive or strategic location" (Keeley et al. 2007:56). A butte-top occupation with short wall segments or no walls is a defensive site. Fortifications, on the other hand, have architecture, incorporate the use of weapons into wall construction, and concentrate those weapon systems on specific locations (e.g., entry points). Fortifications are major undertakings, whereas defensive locations are not. But not all fortifications are built the same.

Fortifications can be seen on a continuum with refuge fortifications at the more ephemeral end of the scale, and strongholds at the permanent end. Strongholds can best be considered castle-like. "A stronghold is a place not merely of safety from attack but also of active defense, and also a base from which they [the occupants] may sally forth to hold predators at bay and to impose military control over the area in which their interests lie" (Keegan 1994:139). A refuge fortification, on the other hand, "is a place of short-term safety, of value only against an enemy who lacks the means to linger in the vicinity or who operates a crude strategy of raiding" (Keegan 1994:139). Generally, nomadic groups protect themselves from spontaneous

attacks via refuge building (Jones 2004:162). The Grapevine Creek account is one such account of refuge fortification use (Hoxie and Rzeczkowski n.d.). Secoy (1992:54) and McGinnis (1990:33) both talk of a Blackfoot attack on a Flathead village: "Instantly down went the tents and the tent poles, which, with the baggage formed a rude rampart . . . a steady charge of cavalry . . . but the horses did not break through the rampart of pointed poles (Keyser and Poetschat 2005:130; Secoy 1992:54).

The two types of fortifications—refuges and strongholds—would have had similarities and differences in terms of architecture and location on the landscape (Jones 2004; Keegan 1994; Keyser 2005:127–130). A refuge fortification is constructed in a very quick fashion and will usually contain no more than a simplistic wall, or one of the additional characteristics: "location at high elevations and on steep landforms characterized by elevation differences in altitude, such as hilltops or mountains; concealment of site interiors from outsiders; presence of large viewsheds, prominent lookout points, and/or settlement surveillance" (Sakaguchi et al. 2010:1172). A refuge-style fortification site will include both landscape and (at least) hastily built architecture.

A stronghold fortification, on the other hand will contain almost all of the following: "a curtain which shields defenders from the attackers by blocking the vision (of what's happening behind the curtain), provides a raised position to both fire and view attackers from, and slows down the advancement of attackers into the defended position" (Keeley et al. 2007:57. Stronghold fortifications are much larger in scale than refuge fortifications.

Components of a Wall System

A fortification must have a wall "curtain or surrounding wall deterring passage over or through a defended perimeter . . . which provides a screen of maneuver for defenders" (Keeley et al. 2007:57–58). Examples of curtains in an archaeological context can be found in the North American Great Plains in sites like Huff (Bamforth 1994), Jiggs-Thompson (Jones 2004) and Crow Creek (Zimmerman and Bradley 1993). These curtains or walls were constructed by placing large timbers on end at regular intervals (Jones 2004). Obviously, the curtain is one of the major, if not the major, component of a fortification. The remaining features of wall systems can be seen as building off of or reinforcing the defensibility of a curtain.

In some cases, the entry points of curtains are designed to expose, trap, or hinder attackers (Keeley et al. 2007). These locations are "defended gates" working in conjunction with the curtain to expose the attackers to the defenders.

The simplest form of a defended gate is a baffled gate. This type of gate overlaps the wall segments so an attacker moving through the gate is exposed to many persons on the inside of a fortification wall (Keeley et al. 2007). Gate construction can be quite complex (Keeley et al. 2007:63–65). The purpose, however, is to lure in attackers into the curtain (Keeley et al. 2007).

Ditches are commonly placed in front of curtains. The purpose of a ditch is rather straightforward and is (excluding the manual labor) relatively easy to construct before a wall (curtain) is erected. It works effectively to slow down or prevent attackers from reaching or scaling the walls (see Keeley et al. 2007:59). The material removed from the ditch can aid in reinforcing the wall thus strengthening the fortification. Many examples of North American ditched archaeological sites backed by a wall or palisade can be found in the Middle Missouri–tradition sites of the northern Great Plains of North America (Clark, chapter 12, this volume; Zimmerman and Bradley 1993). Well-placed ditches can keep attackers from gaining entry to the wall but are considerably more useful when bastions are incorporated into the wall.

"Bastions are external projections of a barrier [that is, they are protrusions from the curtain] large enough to hold several defenders and their firing weapons" (see Keeley et al. 2007:69 for a diagram). Bastions "inflict flanking fire on any attackers closely approaching the enceinte and adjacent bastions" (Keeley et al. 2007:67). All bastions have in common an intended weapon system using some type of projectiles. By using projectile weapons, there is an overlapping line of fire for any individuals stationed in the bastions that approximates a 180-degree arc. Bastions are evenly spaced, taking into account the weapon system to be used by people stationed in the bastions (Keeley et al. 2007). Commonly this spacing is between "one half and one third the effective range of the principal defensive projectile weapons" (Keeley et al. 2007:70), allowing the adjacent bastions to lend mutual support in defending the wall between them. However, immediately in front of any rectangular bastion, for example, is an area of "dead ground," where attackers are protected from missiles from the curtain and the other bastions (Keeley et al. 2007: 69). When all of the features are combined, whether a group builds a fortification with a wall system incorporating some or all of the features listed above, it is an incredible undertaking (illustrations in Keeley et al. 2007:69).

A defensive site does not require the labor, planning, or resources a fortification does. Groups can easily move on top of or into an area with a commanding viewshed with practically no investment. A fortification, however, requires something much different, as Mitchell (2010:3) states:

> fortifications effectively measure social perceptions of war. That is, they are sensitive barometers of a community's expectation or anticipation of collective violence. This is so because they are costly: building them requires the coordinated labor of a significant fraction of the community and they consume large amounts of [material] . . . They create a need for community-level leadership, to settle on an appropriate and cost-effective design and to manage construction. And because any fortification is only as effective as its weakest section, they require sustained and coordinated maintenance . . . In short, fortifications can be seen as a form of monumental architecture, which only were built when the community collectively deemed them necessary. And because they took time to build and had to be designed and put up prior to the onset of active hostilities, they indicate trends in community sentiment over a period of time.

The "community sentiment" then has to be one of self-preservation to build a fortification. A group has to know it can offset the cost of construction required for a fortification. Moreover, a group has to know who is attacking, where the likeliest places of attack would be concentrated, and the size(s) of the group(s) attacking. A miscalculation in any of these variables and the likelihood of death increases. Self-preservation is an incredible motivator.

Otterbein (2004) argues the use of fortifications is limited to chiefdoms or state-level societies, as these are the only groups able to offset building costs (Otterbein 2004). Gat (2006:168) argues fortification use was a product of sedentary agriculturalist societies. Because of their fixed resources, these groups had to have a heightened sense of security. Agriculture does not make groups build fortifications but sedentism may result in fortification (Gat 2006:172), especially in situations like the Great Plains, where nomadic tribes co-occurred with sedentary groups (Keeley 1996). These are typically stronghold fortifications, which besides helping protect crops, also secure specific industries or areas of specialized crafts (Gat 2006:169).

Fortifications can also mark the edge of frontiers or territorial boundaries. Keeley (1996:132) has suggested that the "vulnerability and volatility of frontiers explain why they have been buffered by . . . fortifications." Fortifications on frontiers are often placed between different social organizations such as "civilized/tribal; pastoral nomad/village farmer; and farmer/forager" (Keeley 1996:132). Typically, frontier fortifications are refuge style because groups with large territories defend their territory and not specific locations (Jones 2004:162). Fortifications located on territorial boundaries should be simpler than ones designed to protect specific economies or trade.

Fortifications are costly and require a specific set of social and economic conditions for construction. These conditions vary widely as demonstrated

Figure 9.1. *Overview of the Alcova Redoubt, looking northwest. The bracket frames the site boundary.*

here but the constant variable has to be one of perceived attack. The fortifications of the Coastal Salish are argued to be a response to a widespread prestige economy based on "the acquisition and exchange of goods and people as slaves" (Schaepe 2006:677). The variable of constant threat in this example is obvious. The Salish, faced with such a threat, built wooden palisades, cantilevered platforms, and ladders to deter attack (Schaepe 2006). They built a wall system: a fortification. The existence of a fortification in the Wyoming region suggests that at least in one case the community sentiment toward the perception of attack justified the construction of a fortification.

THE ALCOVA REDOUBT

The Redoubt is located on an isolated sandstone butte in central Wyoming. More specifically, the site is situated on the northeast edge on the tallest, most isolated, sandstone-capped feature in the local drainage basin (figure 9.1).

It is a small site, measuring 53 m north–south by 120 m east–west. The most striking features on the site are three juniper and sandstone walls (known individually as the East Wall, West Wall and Inner Wall), two of which define the eastern and western boundaries (East Wall and West Wall). The third

wall (Inner Wall) runs north–south through the interior of the site. A small bench west of the Inner wall measuring 53 m north–south by 22.5 m east–west contains almost all of the occupational debris (figure 9.2). Small amounts of residential material (i.e., lithic debitage and burned rock) are located near the West Wall but do not approach the frequency recorded around the Inner Wall (figure 9.3).

The East, Inner, and West Walls

A location of the wall system around the site is dictated by a sandstone caprock that varies from 5 m in the western, south-central, and north-central portions of the site to nonexistent in the eastern portion. The vertical height of the caprock cliff fortifies close to 75 m of the northern portion of the site and 60 m of the southern portion. Any cracks or easily scalable areas in the caprock are blocked with short juniper-and-sandstone wall segments. The remaining portions of the butte with no caprock have long lengths of interwoven juniper and sandstone wall.

These three distinct wall segments measure 223 m long. The East Wall is the largest of the three wall segments, being 100 m long. It has several distinct construction methods, including vertical juniper poles with woven rock and wood, coursed sandstone slabs (dry-masonry), horizontal wooden beams reinforcing vertical sandstone slabs, and stacked wood. This wall terminates in the northeast and southern area of the site where it intersects the caprock cliffs.

The East Wall is the tallest and most representative of the three wall segments, measuring 1.5 m at its tallest point; it also has the most material left of the three wall segments (figure 9.4). The amount of juniper and sandstone in the East Wall suggests it was the tallest of the three wall segments. The Inner Wall bisects the East Wall in the south-central portion of the site. The Inner Wall measures 63 m long. This wall segment is not as continuous as the East or West Walls. The tallest portion at present measures half a meter high. There are two different construction methods apparent in the Inner Wall, including angled sandstone slabs and stacked wood. This Inner Wall may have been the original East Wall. For some reason, the walls were expanded east, and materials from the Inner Wall were robbed for this proposed expansion (figure 9.5). Almost all of the occupational debris on the site is located behind (i.e., west of) the Inner Wall. It is also possible the Inner Wall served as a secondary defense in case the East Wall was breached.

The West Wall, measuring 60 m north–south, is the shortest of the three wall segments. This wall segment has the same construction method as the

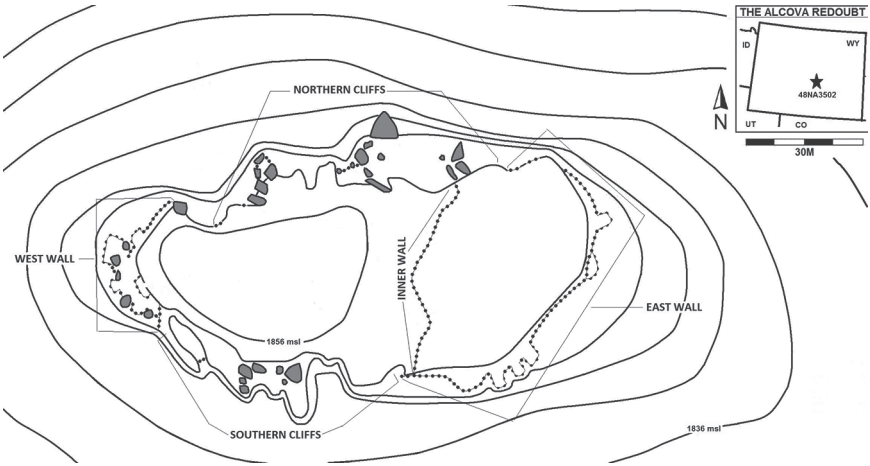

Figure 9.2. *Overview of the Alcova Redoubt. Labels correspond to the wall and cliff segments described in text. Each number corresponds to the bastions described in the text. The shaded shapes are large pieces of the detached butte caprock.*

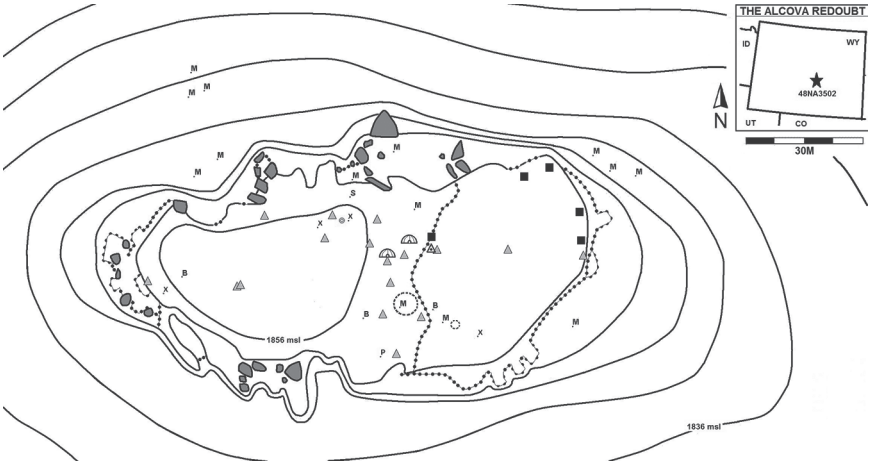

Figure 9.3. *The Alcova Redoubt artifact-distribution map. Dashed lines are ceramic scatters. Triangles are projectile points. Ringed circle is a glass bead, and shaded areas represent large pieces of detached butte caprock. Half-circles are wickiups. Squares are manuport piles. M, individual manuports; X, obsidian flakes; P, steatite pipe; B, bifaces; S, scraper.*

Figure 9.4. *Overview of the East Wall, looking north.*

East Wall, including vertical juniper poles with woven rock and wood, coursed sandstone slabs (dry-masonry), horizontal wooden beams reinforcing vertical sandstone slabs, and stacked wood. This wall segment is not a continuous wall. Instead wall segments were constructed around large slump blocks, producing a terraced wall system. The result is a wall with six vertical meters of difference between its upper and lower portions (figure 9.6).

Small wall remnants are present in both the northern and the southern cliff areas (figure 9.7). These small wall portions block vertical cracks in the sandstone caprock. The method of construction of these small wall segments differs from the main wall. Vertical juniper posts were placed in the ground and large horizontally placed logs were woven around the post to form a short wall. There are nine of these short wall segments on the site. All building material incorporated into the walls is readily available around the site. The sandstone outcrops in the west portion of the site are probably where most of the rock was gathered (John Albanese, personal communication, 2006). There are no axe or cut marks on any of the juniper poles. Deadfall juniper is abundant throughout the immediate area and was the likely source of the material for the walls.

Figure 9.5. *Overview of the Inner Wall, looking north. Arrows designate large sandstone slabs incorporated into the wall.*

The Date of the Redoubt

The Redoubt has only been surface inventoried and mapped with no recovery of datable materials; therefore no absolute date can presently be assigned to the site. However, certain components of the current surface artifact assemblage are highly suggestive of a Protohistoric date for the site. These artifacts include a single blue glass bead, or "seed bead," a highly carved steatite pipe fragment, two separate ceramic scatters, and the high amount of wood found in the wall system (figure 9.8).

The 17 surface projectile points alone suggest the site typologically dates to the Late Prehistoric period. Fifty-three percent of the projectile-point assemblage are tri-notched projectile points; 18 percent are side-notched; 12 percent are corner-notched; and another 12 percent are unnotched Cottonwood Triangular points. A single point fragment with notch remnants completes the current assemblage. The points strongly resemble specimens found at the

Figure 9.6. *Portion of the West Wall. The dashed line (beneath the feet of the person in the photo) denotes the wall portion.*

Mummy Cave layer 38 (Husted and Edgar 2002:plate 60), the River Bend site (Buff 1983:figure 6; McKee 1988), and the High Rise Village, all of which suggest a very late occupation for the site (Koenig 2010).

The ceramics on the site come from two separate concentrations and represent two vessels. Both vessels do not resemble Intermountain Ware often associated with Shoshonean groups (Frison 1991:116–117; Larson and Kornfeld 1994; Mulloy 1954). Both vessels have fingernail impressions on the exterior surfaces. This style of decoration is described throughout northern Colorado and eastern Utah (Cassells 1997:246, figure 10–10; Janetski 1994:164–165; Loendorf 2002:79; Middleton et al. 2007).

Figure 9.7. *Example of a blocked portion of a vertical crack in the caprock of the northern and southern cliffs.*

There are two Protohistoric diagnostic artifacts on the Redoubt. The first is a blue glass seed bead. The second is a steatite pipe fragment manufactured with the use of metal tools (Richard Adams, personal communication, 2007). Unfortunately neither artifact provides a calendar age. Torus beads are relatively time transgressive and such a small sample makes it difficult to assign dates (von Wedell 2011). The steatite pipe was carved with trade goods but metal detector surveys on site failed to locate any associated metal.

The wall portions complicate any assigned date. The 223 m (over a tenth of a mile) of continuous wall include at least 45 (US) tons (90,000 pounds) of stacked juniper and sandstone material. There is no one preferred construction method evident in the design of any wall that could be interpreted as multiple building episodes. This is most evident in the Inner Wall, which was likely dismantled completely to serve as a secondary wall or originally stood as the outer wall. The likelihood of multiple occupations during a technologically similar period then is very real for this site and needs to be dealt with in a different study that has the expressed goal of dating the site.

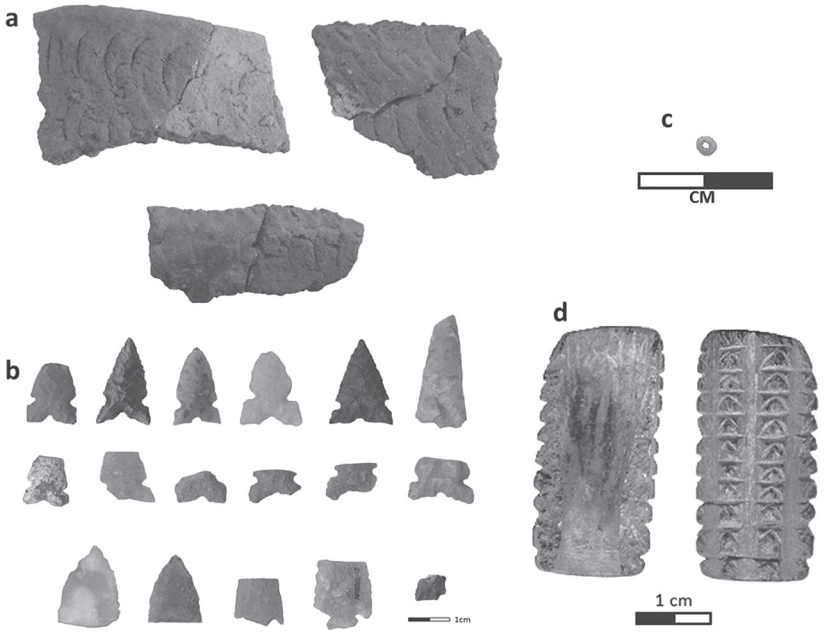

Figure 9.8. *Overview of artifacts discovered on the Alcova Redoubt: (a) example of the Uncompahgre pottery vessel, (b) all projectile points discovered on site, (c) blue glass bead, (d) steatite pipe fragment.*

Diagnostic surface artifacts discovered on the Redoubt date to both the Late Prehistoric and Protohistoric periods. The amount of stone debitage, stone projectile points, wooden features, ceramics, and a solitary glass bead all coupled with a lack of metal artifacts is highly suggestive of a late Late Prehistoric or an early Protohistoric date hovering around AD 1600 to AD 1700. Assignment to this age bracket is bolstered by the lack of military trade paraphernalia and other metal artifacts, the incidence of which would be expected to be higher if the site were closer to the nineteenth century.

The description of the individual artifacts, as well as the architectural features on site now, make it possible to illustrate how they come together as evidence of a well-planned fortification site.

The Alcova Redoubt as a Fortification

Several lines of evidence can be used to demonstrate the Redoubt is a planned fortification. The first is the location and design of the three wall

segments. The second focuses on the bastion features incorporated into the wall design. The final line of evidence comes from the location and types of weapon systems discovered on site that integrate with the wall system.

The site is located on an isolated sandstone butte top. This is the first feature making it a good defensive location. However, to move the site out of a "defensive location" categorization and into that of a "fortification" requires more. The Redoubt has only six entry points due to the steep talus slopes surrounding the conical butte. The builders of the site focused the wall segments on these six entry points. The easiest access points have the tallest and longest wall segments (e.g., the entire 80-m length of the East Wall). The Inner Wall further serves to thwart an attack from the east as it acts as a secondary defense against a breach of the East Wall (in addition to being the possible original East Wall). The West Wall is terraced, on and around, large slump blocks of caprock acting as a lure for attackers. The natural terracing provides 6 m of fall from the highest to lowest wall segments in the West Wall, making it ideal for the use of projectile weaponry against climbing attackers. This and the presence of bastions in the remaining wall segments lead to the interpretation that all the walls were manufactured with projectile weaponry in mind.

The Bastions

Incorporated into the design of both the East and West Walls are at least eight (and possibly as many as 12) bastions; all what Keeley et al. (2007:69) identify as rectangular bastions. Two of these are incorporated into the main wall, which is used as a rear wall to the protrusion, while six others are simply U-shaped protrusions with no 'backing' wall. All of the bastions on site are large enough to hold two full-size adults and their weaponry (figure 9.9). The eight features can also be defined as rectangular bastions, the most common in prehistory, as this style is easy to build and holds multiple individuals (Keeley et al. 2007:68–69). Bastions typically have heavier foundations due to the extra height and weight constraints these features place on walls (Keeley et al. 2007). This situation does not directly correlate to the Redoubt because the bastions were built on sandstone bedrock rather than on a wall. However, there are more sandstone slabs incorporated into bastion construction than in the main wall segments. Presumably this was to protect defenders stationed in the bastions from incoming projectiles, as they would have been the most susceptible to an attack.

Bastions are only effective when accompanied with a projectile weapon system. The distance between each bastion should concentrate the weaponry on the areas of perceived attack, but also allow for overlapping areas of fire. This

Figure 9.9. *Overview of Bastion 1. The East Wall boundaries are emphasized with dashed lines.*

is evident in the design of the site. The East Wall contains five of the eight bastions (B1–B5), all of which have a line of sight on the approximate 80 m of easily accessible terrain barricaded by the wall. These five bastions also provide an overlapping field of fire covering this entire wall segment. The West Wall is created by the remaining three bastions (B6–B8), all of which provide an overlapping field of fire on the western apex (see figure 9.2).

Without the incorporation of the bastions into the wall, the site would be relatively easy to breach. The bastions made it possible for defenders to use projectile weaponry while protecting the wall. However, defense of the wall was only possible with the aid of this projectile weaponry. Currently there are two projectile weapons systems evident on the site, both associated with the bastions.

Weapons Systems

The most prevalent weapons on site are softball-sized river cobbles. These were carried from base of the butte (approximately one mile southeast) and

Figure 9.10. *Example of stones in a manuport pile near the East Wall, presumably to have been used as projectile weaponry.*

placed around the Inner and East Wall segments. There are five distinct manuport piles, containing 133 stones, at an average of 26 stones per pile (figure 9.10). The mean stone size is 11 cm by 5 cm, with an average weight of 0.920 kg (2 lbs). All five piles are found in direct association with wall segments. Survey around the Redoubt has found manuports in three of the six entry points. Currently the best interpretation of the five manuport piles is as cached rocks to be used as potentially lethal throwing stones.

Keeley and colleagues suggest that thrown rocks could kill at 30 m, but they do not mention the rock's size (Keeley et al. 2007:73). Therefore, the Redoubt manuports were likely for a close-combat scenario, or used as the primary weapon, during periods of high wind (common at this site). One of the manuport piles is located inside Bastion 1, and with manuports discovered in three of the six entry points, it is easy to suggest they were to be used in a battle scenario.

The second weapons system present on the Redoubt is the bow and arrow, which has an effective killing range varying from 70 to 90 m (Keeley 1996:53).

Historic accounts of bow use from the Pawnee suggest accuracy at 80 paces (Mead 1986:210–211), and a demonstration of bow use by Sioux men suggest surprising accuracy at 60 feet (19 m) (Ambrose 2000:209–210). Using 70 m as an absolute maximum, overlapping fire from all of the bastions would easily be possible with a bow and arrow. Six of the 17 projectile points found during this study were near wall segments. However, no projectile points have been found embedded in the wooden walls or on the steep slopes surrounding the butte. Despite this, the bow was likely the primary weapon used by defenders.

Summary

The Redoubt is located on an isolated landform. It has 223 m (over a tenth of a mile) of continuous wall. This wall overlooks or blocks all entry points to interior and occupied portions of the site. Spaced throughout the wall are bastions providing overlapping fields of fire to protect breachable segments of the wall. Though there are two weapon systems on the site, only one, the bow, provides this overlapping fire. When combined, these individual elements create an "erected work" that incorporated both a weapon and a wall system, making this site a fortification (Schaepe 2006).

An estimate of the defensive force required to use this fortification can be extracted through several sources. Beginning with the defensive features, bastions provide protection for "one or more defenders and their gear," making two people the maximum number posited for each bastion on site, for a maximum of 16 stationed in bastions alone (Keeley et al. 2007:68). Because the East Wall bisects the easiest area to breach, 10 additional defenders are estimated to be stationed along it to reinforce those in the bastions. Single defenders stationed at the nine short wall segments in the caprock of the North and South Cliff would add an additional nine defenders and round out the defensive force. The total protecting force is estimated at around 35 individuals for the site. This number assumes a siege scenario for the site and requires a group to be on (a reasonable assumption given the amount of domestic debris) or near the site.

Ethnohistoric and historic accounts help to further corroborate this number. The Grapevine Creek site has 23 individual U-shaped structures erected by the Piegan. These structures are essentially bastions, which means as few as 23 and as many as 46 Piegan defenders were present at this battle (Hoxie and Rzeczkowski n.d:39). Peter Koch recorded a breastwork built on an isolated butte during a failed horse raid by 32 River Crow near the Dry Fork of the Missouri River (Koch 1896:300–301). The Pierre's Hole battle described by Zenas Leonard suggests an indigenous fortification "large enough to contain

500 warriors" (Leonard 2001:53). Although no fortifications were recorded, a similar number of Piegan and Shoshone warriors were described by the Cree Saukamapee (Sahkomaupee) during a single battle (Tyrell 1916:328–330 in Bamforth 1994:99). Rock art representations suggest smaller groups ranging from 10 to 20 individuals were likely associated with individual feuding or raiding events (Keyser, chapter 3, this volume). The Redoubt then is seen as the collaboration of individual raiding or family groups, at least some of which had militaristic experience, and who occupied the site possibly while building it.

DISCUSSION

The use of fortifications like the Redoubt in the Wyoming region is particularly interesting when the specific demographic and economic conditions are considered (Sutton 2004). Focusing on a population-based explanation for the escalation of conflict, it is evident violence intensifies and increases from the Late Prehistoric to the Protohistoric period for the Wyoming region. New archaeological cultures such as Avonlea and Rose Spring do appear in the Late Prehistoric of the Wyoming region, and are found in association with violent deaths and possible simple defensive locations (Davis et al. 1994; Delacorte 1994; Dyck and Morlan 2001; Francis and Loendorf 2002; Frison 1988; Garfinkel 2007; Husted and Edgar 2002; Martindale and Gill 1983; Scheiber 2008). The dating of topographically isolated (i.e., defensive) sites suffers from a lack of absolute dates, but relative surface dates suggest an increasing use of defensive architecture culminating with fortifications use for the region. The construction of fortifications in the region may then be the result of a complex and protracted demographic shift that incorporated new technologies and changed social structures by the Protohistoric period (O'Brien 2013; Sutton 2004).

The Late Prehistoric Period (AD 150–1600)

The Late Prehistoric period in the Wyoming region is marked by a shift in projectile-point technology, presumably coinciding with a shift in technology from the atlatl dart system to the bow and arrow (Mulloy 1958; Frison 1991). Distinct projectile-point styles denote this shift, such as Avonlea, found from Wyoming north to the Canadian Plains of Alberta, and Rose Springs (Rosegate), found in Wyoming west to California and northwest to Oregon (Deis 2004; Garfinkel 2007; Husted and Edgar 2002; Thomas 1981), as well as the Desert Side-Notch (DSN) series and Cottonwood triangular projectile point (Pigniolo 2004; Thomas 1981). Avonlea projectile points were once thought to

represent Athabaskan-speaking groups migrating south from Canadian grasslands into the Wyoming region (Dyck and Morlan 2001), but this position now seems untenable (Matson and Magne 2007:143–145). Projectile points morphologically defined as Rosegate, of the DSN series, or as Cottonwood Triangular, suggest influence from human groups in the larger Great Basin culture area. The latter two in particular may represent the expansion of Numic speaking groups out of the Great Basin into the Wyoming region (Garfinkel 2007). The origins of the both DSN and Cottonwood Triangular projectile points in the Wyoming region are split into two camps. One side suggests linguistic patterns and material culture place the homeland of the Numic-speaking peoples somewhere in the Great Basin, migrating east around 1300 BP (AD 650; see Sutton and Rhode 1994 for a discussion of the problem). The other suggests the point styles were the youngest styles associated with an indigenous Shoshonean population in the Wyoming region for as long as 5,000 years, (Francis and Loendorf 2002; Husted 1995a, 1995b, 2002; Husted and Edgar 2002; Husted and Mallory 1967; Morgan 2010). This problem is unresolved but the later migration narrative is preferred for this discussion.

Radiocarbon dates collected from the Avonlea type-site in Saskatchewan place the date of Avonlea in Canada around 1500 BP (AD 450), while dated Avonlea sites south of Saskatchewan cluster around 1300 BP (AD 650; Klimko and Hanna 1988). Dyck and Morlan (2001:126) suggest an Avonlea homeland in the Saskatchewan–Montana area. Stylistic similarities in projectile points predating Avonlea that were found in Saskatchewan–Montana suggest cultural continuity (Dyck and Morlan 2001). These point types have been found in association with butte-top occupations (Frison 1988), leading some to speculate they may have clashed with groups in the region still using the atlatl (Francis and Loendorf 2002).

The Rose Springs or Rosegate archaeological culture, first identified in Owens Valley, California, has a distribution over much of the Great Basin culture area and its periphery (Husted and Edgar 2002; Thomas 1981). The Rosegate complex dates from 1400 BP to 700 BP (AD 550 to AD 1250), with a more intensive occupation beginning around 1300 BP (AD 650) in the Great Basin (Dies 2004). These point styles are found in the Wyoming region and date to 1260 BP (AD 690) (Husted and Edgar 2002). They have also been found embedded in human skeletal remains in what is now southwest Wyoming (Martindale and Gill 1983; Scheiber 2008).

The entry of new archaeological cultures into the Wyoming region, during the Late Prehistoric, is further indicated by different ceramic traditions. In southeastern Wyoming sites belonging to the Upper Republican and Loup

River/Itskari ceramic phases of the Central Plains tradition are indicative of a westerly expansion of maize horticulturalists around AD 1000–1400 (Michael Page, personal communication, 2010; Charles Reher, personal communication, 2005; Scheiber and Reher 2007; Steinacher and Carlson 1998). Ceramics from these traditions have been found on butte-top occupations in southeastern Wyoming (Charles Reher, personal communication, 2005).

Ceramics found at the Medicine Lodge Creek, Piney Creek, and Big Goose Creek sites in northeastern Wyoming bracket a nearly identical date of AD 1200–1450 (Frison 1967a, 1967b; Page 2007). These ceramics may indicate a proto-Crow presence (a relative of Mandan/Hidatsa horticulturalists from the Great Plains) and have also been found in association with butte-top occupations (Frison 1967a; Page 2007).

Material from these archaeological material cultures are found on probable defensive locations with very simple or no architecture (Adams 1994; Frison 1988). Currently it appears that defensive sites in the Wyoming region are older than fortifications with extensive architecture. This could be directly correlated to both limited violence and the smaller size of groups in the Late Prehistoric (Keeley 1996; Miller 1999, 2008; Scheiber 2008; Scheiber and Gill 1997). Certainly, violence levels were high in the Late Prehistoric but they do not seem high enough to justify the construction of a fortification such as the Redoubt; that is to say, the community sentiment was not tilted toward such a large community effort (Mitchell 2010). The groups occupying the region must not have been large enough or deemed it important enough to build fortifications. However, by the Protohistoric period it seems both group size and sentiment toward fortification construction changed (Sutton 2004).

The Protohistoric Period (AD 1600–1800)

A short list of the indigenous groups occupying the Wyoming region during the Protohistoric period include the Blackfeet, Crow, Comanche, Cheyenne, Nez Perce, Apache, Kiowa, Arapaho, and Shoshone (Frison 1991; Sutton 2004). Many of these groups either directly or indirectly contacted Euroamerican groups for the first time in the Protohistoric period. Contact with Euroamericans groups caused rapid social reorganization, resulting in larger tribal configurations (Sutton 2004: 39–47; Wolf 1997:176–181). This reorganization was partly from the introduction of new technologies like the horse and (later) the gun (Wolf 1997). The introduction of the horse had a dramatic effect in the Wyoming region (Secoy 1992), as "it endowed owners with enhanced military capabilities, transportation, hunting capacity, and mobility" (Wolf 1997:176). An example of

this includes the Comanche (a division of Shoshone hunter-gatherers), who became "the Spartans of the prairies" after the acquisition of the horse (Hoebel 2006:129). The Shoshone illustrate what happened to many of these groups and are of interest here as their historically recorded territories and probable items of material culture best explain the Redoubt:

> By circa 1825, the Eastern or Wind River Shoshone occupied a region stretching . . . from the northern slope of the Uintah Mountains to the Red Desert and the Green Mountains, thence across the Sweetwater divide to the southern tip of the Big Horn Mountains. Then having cut diagonally to Thermopolis, it went down the Big Horn River as far north as the Shoshone River. It followed this stream over the Absaroka Range, then went to Yellowstone Lake and the Tetons. From here it ran almost due south to its starting point. (Shimkin 1947:247)

This group was "one big group, a 'tribe' with a central chief, an advisory council, and a warrior sodality" (Hultkrantz 1961:38). As a large group they occasionally hunted "among the buffalo grounds at the Sweetwater and North Platte" (Hultkrantz 1961:38). Local Shoshone place names (e.g., [*kï yatïwener*] or [*tu' iwiĉanti'wënër*]) reinforce this described boundary (Shimkin 1947:252). They had a later expansion northward to the Bighorn Valley and eastward to the Laramie Range as bison herds diminished (Hultkrantz 1961). The Shoshone base, however, "was still the land around the Green River" (Hultkrantz 1961:37). The Redoubt is situated on the east edge of this territorial boundary and has material objects consistent with other sites suggested to be of Shoshone origin (Adams 2010; Buff 1983; Frison 1991; Zeimens 1975). While mindful of the pitfalls inherent in arguing for Shoshone ethnicity from material objects (Larson and Kornfeld 1994; Jones 1997), there are a number of sites with similar artifact classes found inside the aforementioned Shoshone territory.

Material culture associated with Shoshone groups has long been interpreted in the Wyoming archaeological record, and perpetuating this trait list is rife with pitfalls (Barth; 1998[1969]; Hodder 1982; Jones 1997). However, new work on high-altitude villages in the Greater Yellowstone Ecosystem (GYE) has discovered materials consistent with known Shoshone occupations (Adams 2010; Koenig 2010; Hultkrantz 1974; Scheiber and Finley 2011; Scheiber and Finley 2010; Shimkin 1947). Sites located along the east edge of known Shoshone territory have a similar suite of artifacts, including subsistence practices and lithic materials (Zeimens 1975; Schroeder 2010a, 2010b). This includes the presence of lithic materials from the Green River Basin, Yellowstone, and Absaroka Mountains, similar chipped-stone tools, and the use of steatite, wickiups, and pottery (Adams 2006, 2010; Schroeder 2010a,

2010b; Zeimens 1975). The Redoubt has most of the materials matching several proposed Shoshonean sites (Adams 2010; Husted 1995a, 1995b, 2002; Husted and Edgar 2002; Husted and Mallory 1967; Newton 2011; Scheiber and Finley 2010). The exceptions are the lack of bifacial Shoshone knives (Frison 1991:134) and the presence of a possible Uncompahgre Brown Ware vessel. There are several bifacial tools outside of projectile points and preforms found at the Redoubt, but these are too fragmentary to be classified. The Uncompahgre Brown Ware is associated with Ute groups linguistically linked to Shoshone, suggesting at the very least a linguistic affiliation (Loendorf 2002). Seasonality might account for the difference in artifact assemblages as well. Regardless, the similarities between items of material across sites suggest some links, and when historic territories (applicable in the case of the Redoubt) are considered, a Shoshone affiliation for the Redoubt is worth considering.

If the site was built by a Shoshone group on their eastern territorial boundary, the following scenario may apply: the site served as a frontier fortification used by the Eastern Shoshone and established the eastern edge of their territory. It would have allowed them to move into hostile territory like the North Platte River area or further north into the Powder River Basin to hunt large herds of bison and to retreat to a protected point if encountered by hostile groups. It would have provided peace of mind for expeditions but also asserted ownership in the territory. This speculative scenario draws from the site's location and construction, which indicate that whoever was involved with it had a sense of ownership of the land, or at the very least a sense of a static territorially boundary consistent with that described for the Shoshone.

Summary

The transition from the Late Prehistoric to the Protohistoric was a time of tremendous change in the Wyoming region. New technologies began to emerge, and with the technology, butte-top occupations and violence rise (Davis et al. 1994; Delacorte 1994; Dyck and Morlan 2001; Francis and Loendorf 2002; Frison 1988; Garfinkel 2007; Husted and Edgar 2002; Martindale and Gill 1983; Scheiber 1993). Future studies need to elucidate whether these technologies represent actual population increases or diffusion. Scheiber (2008:39) has suggested that the violence levels recorded in the Late Prehistoric were an "outgrowth of population increase, territory circumspection, and resource depletion." Initial studies focused on understanding demographic sizes suggest this same pattern for the Late Prehistoric (Surovell et al. 2009). The conditions leading to an intensification of conflict then have roots

in the Late Prehistoric period. The cumulative effect of this violence, coupled with an introduction of new groups and technologies, only increased this warfare to include fortification use (as defined here) by the Protohistoic period.

CONCLUSIONS AND FUTURE RESEARCH

Warfare and violence by themselves are not something to be romanticized. They are destructive processes that ruin lives on multiple levels. However, we need to be aware of the shaping force these events would have in the lives of prehistoric peoples (Keeley 1996, 2001). If our goal as archaeologists is to reconstruct the lives of past peoples, then we must reconstruct all parts of their lives (Keeley 2001). In the archaeology dealing with nomadic groups, this can become virtually impossible. These groups' mortuary practices did not involve cemeteries or other interment methods that preserve bone, and they built few or no defensive sites (Bamforth, chapter 1, this volume).

The argument here is that the construction and use of a single fortification in the Wyoming region marks a shift toward more elaborate defensive architecture that also marks a shift in the frequency of warfare. I do not approximate these frequencies or argue the conditions leading to an increase of warfare. However, I do suggest the construction of the fortification is a late phenomenon associated within a period of demographic and technological transformation (Sutton 2004). This idea is suggested in the ethnographic literature from all hunter-gatherers wherein groups defined as complex hunter-gatherer groups are more likely to go to war than small egalitarian groups (Keeley 1996: 38; Fry 2006:100–113; 2007). This social shift is also reinforced in the construction of a fortification, which would require coordination and planning on a large-group level. Certainly the suggested numbers for defenders on the Redoubt signal a larger group.

Currently the pattern of warfare in the Wyoming region does not seem endemic or even persistent. The archaeological record simply does not reinforce a trend consistent with this view. If warfare were a constant, why is the Redoubt the first-described large-scale fortification? There should be more fortifications in a period of warfare. I do not think we can say more than that *violence* levels rose in the Late Prehistoric and possibly escalated to war very late in the prehistory of the region. I do not want the Late Prehistoric/Protohistoric transition to be viewed as an extension of the historic Indian wars. Warfare is not an inherent part of humanity; it is a choice. Considering the record of the region at length, it appears Native groups chose not to go to war for almost all of the prehistoric record.

Warfare studies in the Wyoming region are still in their infancy. Finer resolution of the dated sites could reaffirm that hunter-gatherers did in fact respond in ever-increasing ways to save lives and protect their land. The usage of fortifications could be checked with tribal boundaries to see if the two coincide. Bioarchaeological studies could separate violence from warfare if the intensity and scope of fortification use was better understood. Currently we do not know much. We know that the Redoubt is a Protohistoric fortification, that there are probably defensive sites throughout the region (a major undertaking is for someone to find just how many there are), and that there is violence in the skeletal record. Wherever warfare studies in the Wyoming region lead researchers, I hope they will not forget warfare is a hellish topic and affects lives in profound ways. Most important, the people who occupied these defensive sites and fortification (especially in the Protohistoric period) are related to groups still occupying the region today. We need to be aware of this when interpreting the evidence of war.

Part 4

Warfare in Society and Plains History

10

Conflict and Culture Change on the Plains

The Oneota Example

R. Eric Hollinger

The great Prussian military philosopher Carl von Clausewitz (1984:87) wrote that "war is merely the continuation of politics by other means." However one chooses to define it, with the possible exception of a catastrophic natural disaster, war is the most traumatic agent of change likely to affect a society or group. It has the power to change everything. For people engaged in intergroup conflict, changes may be forced upon them, ranging from where they live, to the technology they use, to the ways in which they hunt, farm, or trade, to their political alliances, to their ideology, to their physical and mental health. The significance of war's effect on a people is hard to overemphasize and so it must be given its due recognition as a force for change in the past.

If we underestimate war as a force for change we are likely to misinterpret a myriad of cultural phenomena impacted directly or indirectly by war. As archaeologists we typically work with the mundane material residues of the archaeological record—such as lithics, ceramics, and faunal and floral remains—and from these traces we make inferences about more complex, more ephemeral, human behaviors. We inevitably draw conclusions about settlement patterns, trade relations, technology, subsistence practices, and sometimes religion. Now take an average site report that emphasizes these lines of evidence and approaches of inquiry and reread it with an eye to war. If the people being studied were living under the constant threat of war, or were regularly participating in long-distance raiding, or were

DOI: 10.5876/9781607326700.c010

assimilating captives taken from a group very different from their own, or were training their young boys to become warriors through overcoming an enemy, then how accurate would our interpretations really be? Would the choice of where they lived have been based more on defensibility than on proximity to the nearby chert outcropping? Would the decorations on their pottery have been a result of the potter simply mimicking her mother's work or would it be an expression of an ideology invoking the protection of a deity responsible for war? Would the animal protein they consumed have been a result of dietary and cultural preferences, or would it simply have been a consequence of the only species available in a territory constrained by pressure from a persistent enemy? How we interpret the archaeological record and reconstruct culture history is impacted by whether past peoples were engaged in warfare, and, if so, the nature and intensity of the associated conflict.

Evidence of war can vary greatly (Dye 2009; Hollinger 2005). Obvious signs are the traces of interpersonal violence exhibited on human remains like axe wounds, decapitations, and arrow points embedded in bones, which are typically underrepresented (Milner 2005:150). Yet even these are open to challenge as evidence of feuding or domestic violence if one seeks reasons to doubt explanations of war. Somewhat less-certain lines of evidence of conflict can be found in the archaeological record as defensive fortifications, as settlement patterns reflecting concerns for defense (e.g., LeBlanc 1999), as weapons, as artistic renderings of weapons (e.g., in this volume, Greer and Greer, chapter 2; Keyser, chapter 3; and Sundstrom, chapter 4), as well as captives and victims, and as evidence of intentional burning of houses (Roper 2001) and whole villages (Ewen 1990:84–85; Tanner 1987:30). Even more open to debate is indirect evidence of war, such as the sudden truncation of trade patterns or the existence of no man's lands between territories.

The ethnohistoric studies make it clear that war was a fact of life for Native Americans. One might argue that historic accounts and oral traditions from the time of early contact show extraordinary violence and conflict due to destabilizing disease, firearms, and colonial competition resulting from European encroachments. But the preponderance of the evidence, much of which comes from the Plains and Midwest, reveals that interpersonal violence, scalping, stabbing, shootings, decapitations, mutilations, raiding, and even massacres were happening thousands of years before European contact. There is no question that warfare was occurring in the prehistoric American midcontinent. The questions now surround the nature, intensity, and consequences of that warfare and, of particular interest to me, the question of who was fighting whom (Hollinger 2005).

In the midcontinent during the late prehistoric period, I think the people responsible for the Oneota tradition were heavily involved in war. From the time the Oneota archaeological manifestation first appeared in Wisconsin and the Red Wing area of Minnesota as early as the eleventh century AD, there is evidence of conflict with non-Oneota groups. There are a number of Late Woodland villages in the area that exhibit traits suggesting a positive relationship with intrusive Mississippian populations. Many of these sites were fortified with palisades (Salkin 2000). The best-known of these was the heavily fortified temple mound complex of Aztalan in southeastern Wisconsin (Barrett 1933). The ceramics at this site are around 75 percent Late Woodland types and 25 percent Middle Mississippian, mixed in a way that suggests a site-unit intrusion of Mississippians living with cooperating Late Woodland populations (Overstreet and Clark 1995). Who did they fear? No Oneota pottery was found at Aztalan, although contemporary Oneota populations were nearby. A charnel house, a number of houses, and the palisades at Aztalan were burned and human remains found inside the walls included trophy heads, and victims of blunt-force trauma, scalping, mutilation, and burning (Barrett 1933; Holcomb 1952; Sullivan 1990a, 1990b). Burning of charnel houses was a major objective in Mississippian warfare in the Southeast (Dye and King 2007). By AD 1200 Aztalan and the related Late Woodland communities of the region were no more and Oneota populations controlled the region for the next 400 years.

This story of conflict and culture change played out again and again in interactions between Oneota and non-Oneota populations as the Oneota people and/or culture spread throughout the Midwest and eastern Plains. Oneota violence is probably best documented in the central Illinois River valley. In this region between AD 1200 and 1300, Mississippian towns like Orendorf and Larson were palisaded and then partially burned (Conrad 1991; Emerson 1986:15; Harn 1978) and skeletal remains there showed increasing levels of violence (Conrad 1993; Emerson 1999; Goodman et al. 1984:293). Around AD 1300 an Oneota population, known as the Bold Counselor phase, intruded into the region. Bold Counselor villages were located on defendable bluff-tops and some were probably palisaded, and skeletal evidence of violence is common. At the Norris Farms 36 cemetery, one of the earliest Bold Counselor phase sites, 21.6 percent of the 264 individuals excavated exhibited skeletal or contextual evidence of violence, probably the result of intermittent raiding. Men, women, and children suffered scalpings, decapitations, celt and arrow wounds, and mutilations (Milner 1992a, 1992b; Milner and Smith 1990; Milner et al. 1991a; Milner et al. 1991b; Santure 1990). The remains were exceptionally well

preserved. Poorer preservation would have caused much of the evidence of violence to go unrecognized.

Despite moving into a region where they suffered frequent attacks, they did not move away and they apparently began to merge with one of the two regional Mississippian traditions. They began cohabitating and their ceramic traditions began blending (Esarey and Conrad 1998:46). I interpret this as evidence that the Bold Counselor phase people had been invited into the central Illinois River valley by a Mississippian people with whom they had formed alliances and ties through kinship and trade (Hollinger 2005:160). They may have joined their hosts and allies in conflict against other Mississippians farther to the south (La Moine River) with whom their hosts were already fighting.

Even the great town of Cahokia and surrounding towns exhibited a concern for defense during this period. A palisade with defensive bastions enclosing 205 acres of the central precinct was built late in the twelfth-century Stirling phase and was rebuilt three more times over the next century into the Moorehead phase (Anderson 1969; Holley et al. 1990; Iseminger et al. 1990). At the same time, mound construction in the region decreased, the population decreased, and storage huts and houses at Cahokia and the East St. Louis site were burned (Trubitt 2003). By the early fourteenth century, the population at Cahokia, represented by the Sand Prairie phase, had dwindled to a fraction of its former size and Oneota of the Groves phase and the Bold Counselor phase intruded into the American Bottom region (Jackson 1998). Soon thereafter, Cahokia was completely abandoned by Middle Mississippians, probably seeking refuge among relatives in fortified towns of southeastern Missouri and Arkansas, where populations increased (Morse and Morse 1983:262–266; Morse 1990:169) as Cahokia was vacated in the face of Oneota expansion (Hollinger 2005:174–176).

Many other regions of the Midwest and Plains experienced Oneota expansion between AD 1200 and 1300 and many sites of this period have produced evidence of conflict. During the thirteenth century, the populations of the Central Plains tradition living along the Missouri River in small unfortified earthlodge hamlets in Kansas, Nebraska, Iowa, and Missouri began to be attacked. Burned lodges (Roper 2001) and skeletal remains, such as were found at the Nebraska phase Cannibal House site, provide evidence of family massacres (Gilder 1913; Hollinger 2005:193). By AD 1300, they had abandoned their homes in these regions and consolidated as the Initial Coalescent tradition in southeastern South Dakota, along the Missouri River in small villages fortified with ditches and bastioned palisades. Oneota people quickly occupied the abandoned homelands of the Central Plains tradition peoples.

Even after fleeing the central Plains, the Initial Coalescent tradition people were not safe, as demonstrated by the massacre of the Crow Creek villagers. Crow Creek was one of the southernmost villages and was nearest the frontier with Oneota populations that had expanded into northwestern Iowa, southeastern South Dakota, and southwestern Minnesota. Excavations at Crow Creek revealed that the village population was massacred while the village and palisade were being rebuilt (Willey and Emerson 1993). Bodies were found inside burned houses and a mass of skeletal remains containing at least 486 individuals was found eroding from the fortification ditch. The bodies of these people had been mutilated, disarticulated, and scavenged by carnivores, and then were collected and deposited in the ditch (Gregg et al. 1981; Willey 1990; Willey and Emerson 1993; Zimmerman and Bradley 1993; Zimmerman and Whitten 1980). As many as 95.4 percent of the 415 observable crania, including men, women, and children, exhibited evidence of scalping (Willey 1990:106). Observed traumas also included arrow and celt wounds, bludgeoning, decapitation, tooth evulsion, and the removal of hands and feet, probably as trophies. I do not think that this massacre was perpetrated by a nearby and closely related Coalescent tradition village in competition for local farmland. Although Initial Coalescent villagers were probably in conflict with their Middle Missouri tradition neighbors to the north (Bamforth 1994; Kay 1996; Lehmer 1971; Winham and Calabrese 1998:316) as they were driven farther into that group's historic territory, the Crow Creek village was on the opposite side of Initial Coalescent tradition territory—the only potential enemies to the south and east of the village at that time were Oneota (Hollinger 2005:212).

By AD 1300, Oneota territories reached their maximum expansion. Oneota sites were found from central Kansas, to central Indiana, and from northern Michigan to central Missouri (Hollinger 2005). Other groups that had previously inhabited these areas abandoned the territories or disappeared completely, either exterminated or assimilated by Oneota.

CONSOLIDATION AND STABILIZATION

By circa AD 1400 the Oneota expansion had ended and populations began to withdraw from many of the recently occupied territories (Hollinger 2005). Oneota groups consolidated into large communities at strategic locales along major rivers and important transportation routes. Areas abandoned by the Oneota included central Indiana, the central Illinois River valley, the Apple River locality, the central Des Moines River valley, the central Plains west of the Missouri River trench, most of southeastern South Dakota, and

southern Minnesota including the Blue Earth and Red Wing areas. Lingering Mississippian populations also abandoned the central Illinois River valley and the American Bottom regions by AD 1400.

At the same time, Oneota populations aggregated at locations of strategic importance around the southern end of Lake Michigan and along the west side of Lake Winnebago in eastern Wisconsin, from which they controlled trade and travel between the western Great Lakes and the west. Along the Upper Mississippi River, the Oneota concentrated in the La Crosse region of southwestern Wisconsin, northeastern Iowa, and southeastern Minnesota. Farther south, the Oneota consolidated in the Mississippi alluvial-plain region of southeastern Iowa and western Illinois, with only small, temporary settlements in the American Bottom and lower Illinois River valley. Along the Missouri River, the Oneota were centered in central Missouri at the 300-acre Utz site complex, with its associated earthwork fortification, and at the Leary site in southeastern Nebraska. In the northwest, the Blood Run site complex, covering as much as 1,200 acres on either side of the Big Sioux River, dominated the region and probably controlled the exchange of red pipestone from the nearby pipestone quarries.

The sprawling Oneota villages of this period were probably composed of longhouses as much as 65 m in length (Hollinger 1993, 1995). Fortifications were rare during the previous period of expansion and when they did occur they were usually palisades lacking earthworks. Defensive earthworks and palisades during the fifteenth and sixteenth centuries have been identified in association with the large population centers and may represent an increased investment in defending the locality. The sheer numbers of people at these centers would have been a considerable deterrent to any possible aggressors, so fortifications may have served as redoubts in the event of a potential raid during times when more warriors were away.

A period of relative stasis ensued for the next 200 years in which no new territories were acquired and none were lost. Trade with non-Oneota groups was almost nonexistent during the period of Oneota expansion but then peaked during this period of consolidation. Although never in great quantities, exchange goods included copper, marine shell, bison and other animal parts, pottery, and lithics such as obsidian, turquoise, and especially red pipestone (Hollinger 2005:265–266). This macroscale pattern of aggregation was repeated among neighboring non-Oneota groups who also concentrated in large villages and increased investment in defense of strategic locales. Wide buffer zones such as the "vacant quarter" of the central Mississippi River valley, formed between Oneota centers and their non-Oneota neighbors (Hollinger

2005:281). In the northeastern Plains among the Extended Coalescent tradition for instance, Caldwell (1964:3) referred to this period as the "Pax La Roche," and it was characterized by a decreased emphasis on defense in those areas not bordering the territory of the Middle Missouri tradition.

The fifteenth and sixteenth centuries mark a Pax Oneota for the midcontinent (Hollinger 2005:253, 299). Conflict did not stop but changes occurred in how it happened. The wholesale invasions of the previous period were replaced by occasional long-distance raids into contested no man's lands and beyond to enemy territory. Portable art among Oneota sites of this period, including decorated pottery, incised bone, shell, and pipestone tablets and pipes continued to reinforce an ideology centered on war and war-related symbolism (Benn 1989; Hollinger 2000, 2005). Oneota iconography included images of weapons, warriors, bodies of victims, and raptors, commonly associated with warfare in ethnohistoric mythology.

DISINTEGRATION

Beginning no later than the early seventeenth century, European-introduced pandemics began to sweep through the densely populated Oneota longhouse villages. Disease at least minimally destabilized and possibly completely decimated the Oneota centers. Central Algonkian-speaking groups, some armed with guns, were pushed out of the Ohio Valley and Michigan by Iroquois raiders (Hunt 1967) and expanded into the eastern territories of the weakened Oneota. By AD 1640 the Oneota abandoned the La Crosse terrace of southwestern Wisconsin, the southern Lake Michigan area, southeastern Iowa, and western Illinois, and the remaining centers were considerably reduced in strength. By 1690 the historic Oneota in the form of the Ioway Tribe fled the Mississippi River for northwestern Iowa. Other Oneota descendents—the Missouria, Otoe, and Winnebago tribes—were similarly reduced by warfare and disease. Some of the earliest accounts of the Missouria noted that they had once been the most powerful tribe along the Missouri River but were "almost reduced to nothing" (Nasatir 1952:I:6) by disease and war. The fur trade and the global economy forced changes in subsistence and settlement patterns, and social and political organization. Out of necessity, remnants of the Oneota formed new alliances with Caddoan, Siouan, and Algonkian descendents of what were once their enemies. In much the same way that Oneota had probably absorbed other peoples three to four centuries earlier, Oneota merged with more powerful groups and contributed to their ethnogenesis in the early historic period.

CONCLUSION

Conflict was an important process in the history of Oneota and other groups of the Late Prehistoric and Early Historic American midcontinent. Conflict was both a context and a cause of cultural change. Patterns of conflict are identifiable at the macroscale of the midcontinent and over periods of hundreds of years. The challenge then for the archaeologist is to identify the material traces of conflict and contextualize it in efforts to understand its origins, directionality, and consequences. Violence and lesser forms of conflict had commonalities among the prehistoric people of the Plains and midcontinent just as it had and has among all humanity. The questions of how those commonalities manifested among various past populations and how they dealt with them or failed to deal with them is where we need to be careful in our interpretations. The simple acts of farming, hunting, and tool-making were not so simple with fear of war looming, so it is crucial to identify conflict in the past and understand its nature.

11

Modeling Middle Missouri Warfare

Mark D. Mitchell

War—in contrast to interpersonal violence—depends on domains of cultural representation that define enemies and delimit the bounds of acceptable conduct. Organized, armed conflict between communities or societies requires social institutions to sanction combat and to marshal the resources necessary to sustain it. War's costs and benefits are tallied in social terms, not only for combatants but also for their families and communities. War, in short, has a cultural and social context (Ferguson 1984; Kelly 2000; Pauketat 2009).

Anthropologists and historians studying nineteenth-century warfare in the Plains understand this. Though they disagree on the factors that triggered conflict (Albers 1993; Biolsi 1984; Robarchek 1994), their most compelling accounts recognize that warfare was a collective enterprise requiring the consent, planning, and participation of noncombatants as well as combatants (Mishkin 1940). They also recognize that the cultural schemas and social institutions that made war possible were historical constructs (Robarchek 1994). For these scholars, accounting for collective violence is not only a matter of identifying causes but also of understanding war's place in the social fabric of particular times and places.

This chapter applies that sociohistorical insight to archaeological cases by considering the relationships among war, trade, and economic productivity in the Middle Missouri subarea of the Plains, a stretch of the Missouri River valley running from the mouth of the

DOI: 10.5876/9781607326700.c011

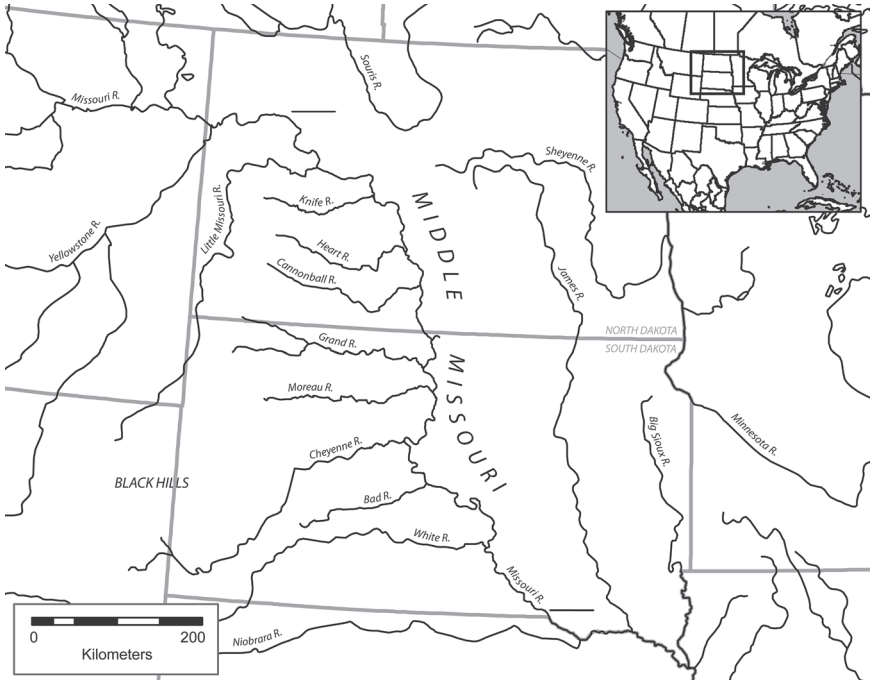

Figure 11.1. *Location of the Middle Missouri subarea.*

Yellowstone River in western North Dakota downstream nearly to the mouth of the Niobrara River in northern Nebraska (Johnson 2007a:3) (figure 11.1). The archaeology of the Middle Missouri is well suited to a sociohistorical analysis of war because the frequency and intensity of armed conflict varied there and because those variations can be linked to changes in settlement patterns and demographics, subsistence productivity, trade patterns, migration, and other economic, social, and cultural factors.

EVIDENCE FOR WARFARE

Signs of collective violence are conspicuous in the Middle Missouri. War has left its mark in the details of settlement design and location (Lippincott 2007); in occurrences of catastrophic structure fires (Wood 1976); in images painted or carved on stone or drawn in ledgers (Afton et al. 1997; Keyser 1987a); in trophies made from human body parts (Owsley et al. 2007); and in community demographic profiles (Bowers 1950; Owsley et al. 1977). Each

of these signs yields a unique perspective on war. Osteological evidence of traumatic injuries documents the intensity of particular conflicts as well as the nature of battle tactics (Willey 1990). Depictions of battles or of individual combatants in rock art illustrate weapons, troop configurations, and the cultural significance of warfare (Keyser 1977a, 1987a; chapter 3, this volume).

However, the predominant testaments to war in the Middle Missouri are ditch-and-palisade fortifications. Owing to their depth and extent, defensive ditches even today are the most prominent features of many villages and towns in the Middle Missouri (Ahler 2005; Lehmer 1971; Swenson 2007; Tiffany 1982; Wood 2001). In a few cases, the presence or specific form of a ditch has been revealed only through excavation or geophysical survey (Ahler 2005; Kvamme and Ahler 2007). However, fortifications are on the whole less affected by sampling or recovery biases than are other types of evidence.

The character of organized conflict can be described by multiple variables, such as the sizes of opposing forces; the types of combat formations or weapons used; the nature of the social or cultural relationships between contending groups; the aims of the conflict; or the frequency, duration, or predictability of attacks (Solometo 2006). Many of those variables can be measured by the ubiquity, distribution, or design of defensive works (Arkush 2011; Mitchell 2007). Fortifications are effective proxies because they are costly. A decision to invest in a fortification, as well as the selection of a particular design, reflects a community's assessment of risk based on their perceptions of the prevailing character of war, including its frequency and predictability, the relative sizes of warring groups or communities, the technology of combat, and the zeal with which it is pursued (Arkush 2011; Mitchell 2007; Solometo 2006). Building a fortification requires the coordinated labor of many people and consumes resources that could otherwise be conserved or put to other uses. Middle Missouri fortifications nearly always featured continuous, 1–2-m-deep ditches backed by wooden palisades. Those palisades used up hundreds or thousands of trees, which also were needed for building timber-frame houses. To maintain a fortification's effectiveness, ditches had to be cleaned periodically and palisade posts had to be replaced. Data from Middle Missouri sites with lengthy occupation histories show that fortifications were repeatedly reconstructed on new alignments, necessitating excavation of a new ditch and relocation and replacement of palisade posts (Ahler 2005; Mitchell 2008). The addition of specialized features, such as bastions, further increases costs (Keeley et al. 2007). Fortifications also can levy indirect costs. Excavation has revealed gates in some Middle Missouri defensive works, but a 1738 description of one fortified town indicates that access was

gained by what only can be considered a staggeringly inconvenient arrangement of retractable ladders (Smith 1980).

A community's decision about whether, and how, to build a fortification also reflects the prevailing technology of warfare. Fortifications are designed to defend against particular kinds of weapons deployed in particular ways. Thus, offensive and defensive strategies develop in tandem, with changes in offensive weapons and tactics generating cognate changes in the design of defensive works (Jones 2004). For example, the fortifications surrounding seventeenth-century villages in northeastern North America became more complex and more massive as the Iroquois adopted new weapons and battle tactics, and as the intensity of combat escalated (Keener 1999). Similarly, European and American military engineering manuals written in the late eighteenth and early nineteenth centuries testify to the close correspondence between the design of fortified positions and the battle tactics deployed against them. As Mahan (1968:7) observes, "the attack and defence of intrenchments, bear a necessary relation to each other; and it is upon a knowledge of the course pursued by the assailant, that the principles regulating the defence should be founded."

Thus, a fortification is a sensitive barometer of a community's expectations of war and of their understanding of how it was waged. Because defensive works took time to build and had to be designed and put up prior to the onset of active hostilities, they reflect medium- to long-term trends in community sentiment. For the Middle Missouri, data on settlement plans and construction sequences indicate that fortifications mostly were integral to the initial size and layout of towns and villages, rather than post facto responses to immediate or transient threats (Lehmer 1971; Mitchell 2013). However, a community's expectations about the likelihood or intensity of war cannot be considered unmediated: leaders have a stake in peoples' perceptions and may use a heightened sense of danger to further their own political purposes.

VARIATIONS IN THE FREQUENCY AND INTENSITY OF MIDDLE MISSOURI WARFARE

Warfare was endemic in the Middle Missouri: fortified settlements occur in every section of the river valley (Clark, chapter 12, this volume) and at any given moment from the 1000s through the late 1800s at least some of the region's farming communities anticipated war. But if collective violence was recurring and widespread, it was not ever-present. Fortified towns and villages are unevenly distributed, both spatially and temporally, indicating that the focus of combat shifted and that conflict waxed and waned. For instance, in the southern Middle

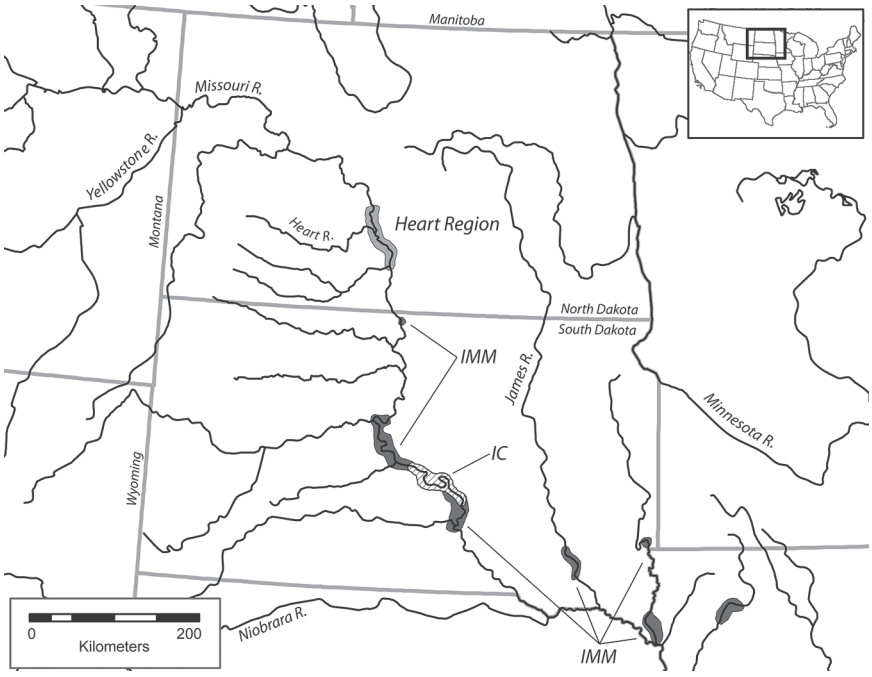

Figure 11.2. *Locations of three conflict zones marked by high frequencies of fortified settlements. IMM, Initial Middle Missouri; IC, Initial Coalescent.*

Missouri during the 1500s, many communities were sprawling and undefended (Krause 2001). There also were times and places, marked by frequent and complex fortifications, when people regularly anticipated large-scale attacks.

Warfare was especially prevalent in the Middle Missouri during three periods (figure 11.2). The earliest occurred on the Plains–Prairie border in eastern South Dakota and northwestern Iowa beginning in the 1000s. The communities involved, which are assigned to the Initial variant of the Middle Missouri tradition, were the first aggregated village settlements in the northern Plains (Johnson 2007a; Mitchell 2012; Toom 1992). The second case of prevalent warfare occurred along a short stretch of the Missouri in central South Dakota during the fourteenth and fifteenth centuries, coincident with the arrival and establishment of a distinct cultural group, called the Initial variant of the Coalescent tradition (Johnson 1998; Steinacher and Carlson 1998). The third period of frequent conflict occurred in the northern Middle Missouri, in central North Dakota above and below the mouth of the Heart River, beginning in the 1400s and continuing into the mid-1700s (Mitchell 2013; Wood 1967).

The model developed in this chapter omits the second of these three cases, the Initial Coalescent in central South Dakota, primarily because its origins and early development are not well understood. Initial Coalescent people were immigrants to the Middle Missouri, but debate continues on the nature of their interactions with contemporaneous groups both on the Missouri and in the central Plains to the south. It also seems likely that the political economic context of Initial Coalescent warfare differed from that of the other two cases, both of which were indigenous developments. Whether Initial Coalescent warfare was an internecine conflict, as Zimmerman and Bradley (1993) argue, or whether it was a conflict between different cultural groups, it may have been sparked by resource competition among adjacent farming communities (Bamforth 1994). Direct competition among clustered communities could have been a factor in earlier Initial Middle Missouri warfare (Lensink 2005), but was not a factor in Heart River warfare (Mitchell 2013).

Thus, the remainder of the chapter focuses on two Middle Missouri contexts where warfare was especially widespread and intense: Initial Middle Missouri villages on the Plains–Prairie border dating from the 1000s through the mid- to late 1200s, and towns and villages in the Heart River region dating from the early to mid-1400s through the mid-1700s.

THE SOCIAL AND ECONOMIC CONTEXT OF TWO CASES OF CHRONIC WARFARE IN THE MIDDLE MISSOURI

The conflicts that Initial Middle Missouri communities experienced differed in some respects from those experienced later by Heart River communities. One key difference was the overall prevalence of warfare. Only about half of the known Initial-variant villages are fortified (Tiffany 1982; Toom 1992), whereas virtually every post-1400 settlement in the Heart region was stoutly defended (Swenson 2007; Wood 2001). Another difference lies in the labor and resources expended on fortifications. Many western Initial-variant settlements are protected only by a short ditch-and-palisade system spanning the narrow neck of the bluff or terrace on which they were built, a type of fortification known as a "promontory fort" (Keeley et al. 2007) (figure 11.3). A number of eastern Initial-variant settlements did feature an encircling fortification (figure 11.4). However, only a few Initial Middle Missouri fortifications incorporate projecting strong points known as bastions, which allowed defenders to direct crossing fire at a massed attacking force (Keeley et al. 2007).

By comparison, Heart-region fortifications were far larger and far more elaborate. The best-documented Heart-region fortification surrounds the

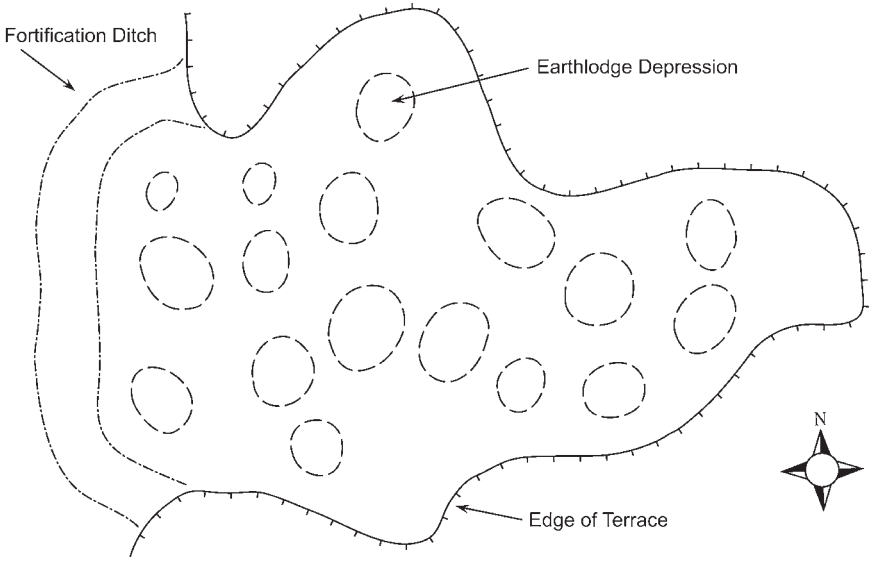

Figure 11.3. *The Initial Middle Missouri Jiggs Thompson site. Dashed ovals indicate the locations of houses. Redrawn from Caldwell and Jensen (1969:figure 18).*

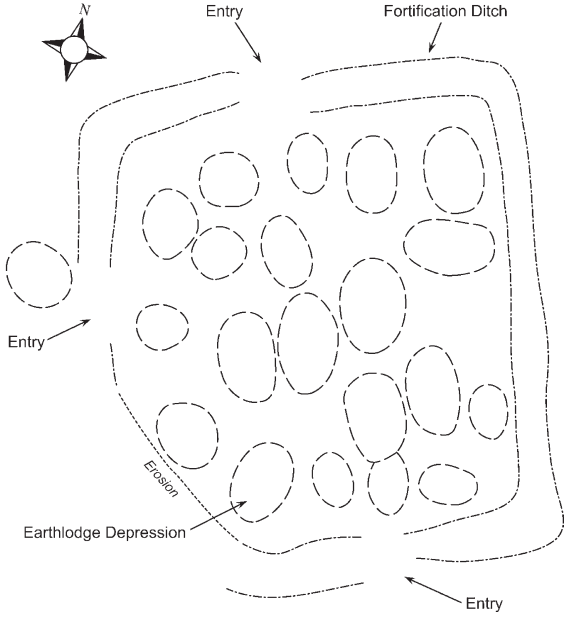

Figure 11.4. *The Initial Middle Missouri Wittrock site. Dashed ovals indicate the locations of houses. Redrawn from Anderson (1986).*

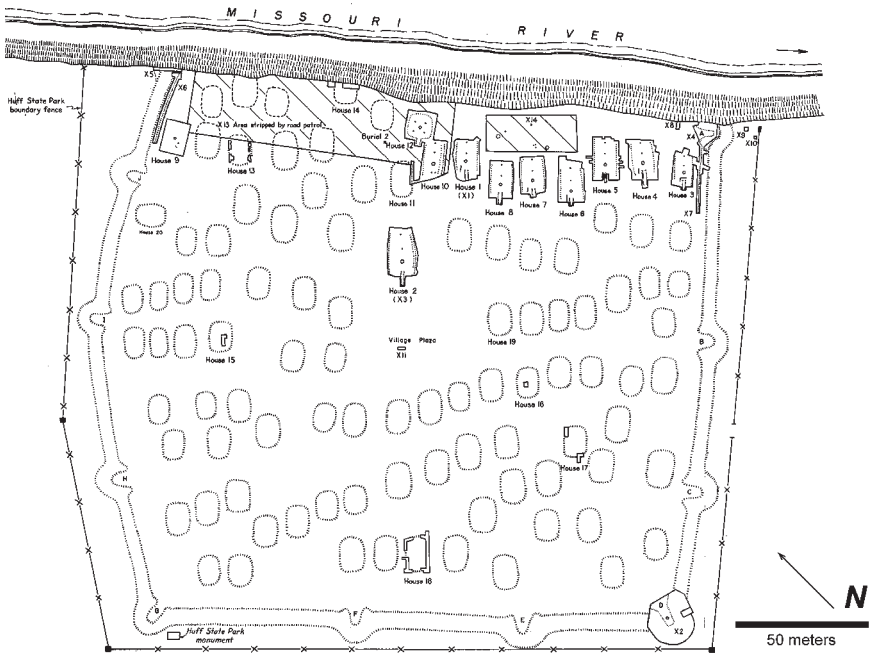

Figure 11.5. *The fifteenth-century Huff site. Reproduced from Wood (1967).*

mid-fifteenth-century Huff site (figure 11.5) (Ahler and Kvamme 2000; Kvamme et al. 2009; Wood 1967). At Huff, the community built a massive, carefully engineered system more than 600 m (2,000 ft) long that incorporated 10 prominent, regularly spaced bastions. The fortification also featured angled and presumably sharpened poles known as *chevaux-de-frise* that projected upward and outward from the base of the palisade. Later, in the 1600s, massive earthen ramparts that increased the height of defensive positions were incorporated into the fortifications encircling other Heart-region communities (Ahler 2005). Such costly and carefully designed defenses represent a clear response to direct, large-scale assaults mounted by well-organized infantry (Keener 1999; Mitchell 2007; Toy 1955).

These differences in the frequency and design of village fortifications indicate that war in the Heart region in the 1400s, 1500s, and 1600s was more frequent, and was waged on a larger scale, than it was during Initial Middle Missouri times (Mitchell 2007). In fact, the labor and material resources that Heart-region communities expended on defense likely were matched in North

America only by Mississippian communities in the Midwest and Southeast and by Iroquoian communities in the Northeast.

Despite these differences, though, Initial Middle Missouri and Heart River communities shared a remarkable number of social and economic characteristics, which also set them apart from other Middle Missouri village groups. Both experienced active population aggregation that made their settlements among the most prominent features of the regional cultural landscape (Mitchell 2012, 2013; Tiffany 2007). In both cases, aggregation occurred rapidly through an amalgamation of related but previously separate communities, rather than through an increase in total population, although the total population of the Heart region was much higher than that of the Plains–Prairie border region. Initial Middle Missouri communities each housed about 250 people and only a small number were occupied concurrently (Tiffany 2007; Toom 1992). The average Heart River town of the 1400s and 1500s housed about 900 people, a threefold increase over the mean size of the communities their direct ancestors built in the 1200s and 1300s (Mitchell 2013).

In both the Initial Middle Missouri and Heart River cases, the distances between contemporaneous communities decreased as population concentrated into a smaller number of larger settlements. For instance, in the Heart region at the turn of the sixteenth century, one well-studied settlement housed more than 2,000 people, while another 1,400 people lived in a second settlement just 3.5 km to the north (Mitchell 2008). The result was an unprecedented peak in population density.

Long-distance exchange was critical to both Initial Middle Missouri and Heart River economies. Trade was a crucial catalyst for the formation of aggregated Initial Middle Missouri settlements (Lensink 2005; Tiffany 2007). Initial-variant villagers living in the Prairie Peninsula in northwest Iowa have been called the "preeminent traders" of the day, owing to abundant evidence for their interactions with stratified Mississippian societies located to the south and east (Henning 2007:71). Trade likely included prosaic perishables, but the most conspicuous imports were symbols of Mississippian influence and ideology (Tiffany 2003, 2007). Local Initial Middle Missouri potters also produced ceramic containers inspired by distinctive Mississippian forms, additional evidence for the deep social significance of their trade relationships.

In the Plains to the west, Initial Middle Missouri communities imported copper and marine shell and produced local versions of Mississippian-inspired pottery. But they were more heavily involved in another trade network, one that ferried Knife River flint, a high-quality toolstone found mainly in west-central North Dakota, southward to their villages on the Missouri (Johnson

1984, 2007b). This network brought them into contact with Late Woodland bison hunters living near the quarries. Evidence for technological acculturation in pottery and other items among the bison hunters shows that the social contacts engendered by the Knife River flint trade were both sustained and intimate (Ahler 2007; Krause 2007).

As a share of the total economy, trade was even more important for the residents of the Heart River towns. The settlements at the Heart were the hub of a far-flung, multilateral trade network that incorporated downriver village communities occupied by Coalescent-tradition groups as well as mobile hunters living throughout the northern Plains, from the Red River valley westward to the Rocky Mountain Front and as far north as southwest Manitoba and southern Alberta (Mitchell 2013). Trade items included copper, marine shell, catlinite (red pipestone), Knife River flint, and pottery, almost certainly accompanied by maize and bison meat and hides. The widespread occurrence of technologically and morphologically hybrid ceramic assemblages throughout the Heart River interaction zone indicates that this system, like the earlier Initial Middle Missouri network, involved not only material exchange, but also the movement of people and the adoption of new cultural practices (Ahler 1984; Michlovic 2008; Nicholson 1991).

In both Initial Middle Missouri and Heart River contexts, long-distance trade was embedded in a broader process of economic intensification. On the Plains–Prairie border, Late Woodland groups had taken up maize horticulture before AD 1000, but Initial Middle Missouri communities were the first to successfully establish a subsistence economy combining intensive maize farming with frequent bison hunting, a dynamic strategy that Plains Village groups would continue to pursue for almost 900 years. Initial-variant settlements also represent the first true villages—aggregated settlements housing at least 100 people—in the northern Plains, the coalescence of which represents a crucial intensification of social relationships (Lensink 2005).

In the Heart region, fifteenth- and sixteenth-century economic intensification entailed major transformations in the organization of pottery and stone-tool production that featured the appearance of both individual and community craft specialization (Mitchell 2013). This was coupled with efforts to increase the productivity of agriculture, hunting, and other subsistence activities. In concert with community aggregation and settlement clustering, these changes reinforced the Heart River towns' role as ports of long-distance trade and stimulated the formation of local and regional markets. Both of these trends in turn provided additional incentives for the expansion of specialized craft production.

Thus, for both Initial Middle Missouri and Heart River communities, warfare accompanied a common set of demographic and economic changes. Those changes, although transformative and surely disruptive to prior practices, were not sources of societal stress. Rather, they stimulated economic expansion and material abundance. In both contexts, trade relationships afforded access to the produce of enormous regions. The abundance of storage features in both Initial Middle Missouri and Heart River contexts testifies to the strength of their economic systems. The positive effects of this abundance are visible in people's bodies: limited osteological data suggest that the both Initial-variant and Heart River groups enjoyed reasonably good health (Bass and Berryman 1976; Williams 2002).

These were also periods of social and political reorganization. For both Initial Middle Missouri and Heart River communities, intensified production and expanded participation in long-distance trade networks engendered a growing web of social relationships that offered leading citizens new opportunities to accumulate prestige and exercise power. The economic spiral driven by intensification and trade also boosted those communities' regional political influence (Mitchell 2013).

One could argue that these villages and towns were forced to defend themselves simply because they were wealthy. But at least three factors argue against the view that the fortifications surrounding them were designed merely to prevent raiding inspired by economic jealousy. First, many ditch-and-palisade systems clearly were engineered to defend against large-scale, organized assaults, the intent of which may well have been the annihilation of the settlement's inhabitants. The view that extreme enmity motivated at least some of the farmers' adversaries is confirmed by evidence of horrific violence from the Initial Middle Missouri Fay Tolton site (Wood 1976). Second, because their settlements were comparatively large, Initial Middle Missouri and Heart River groups were better able to field effective military forces than either scattered bands of bison hunters or residents of the smaller, often undefended settlements located in adjacent regions (Mitchell 2007). Third, the abundant evidence for hunter-gatherer acculturation during both periods suggests that regular, face-to-face interaction, rather than isolation, was the social norm of the times.

The recognition that trade and warfare sometimes went hand-in-hand in the Middle Missouri is by no means new. Wood (1967) drew attention to this seeming paradox for the Heart River towns more than 40 years ago. Just as Heart River farmers' contacts with hunter-gatherers and with downriver farmers intensified in the 1400s, the predictability of warfare also increased. The fact that a strikingly similar pattern characterizes Initial-variant communities

suggests that, in the Middle Missouri generally, widespread and often intense war was bound up with population aggregation, expanding long-distance trade, and economic intensification.

Neither cultural nor ecological factors in isolation adequately account for war in either of these two cases. Although both Initial Middle Missouri and Heart River communities represent elements of the long-lasting Middle Missouri tradition, which is defined by shared architectural styles, ceramic technology, and subsistence practices, the direct cultural connection between them is tenuous at best (Wood 2001). In addition, the direct ancestors of the Heart River communities of the 1400s, who are assigned to the Extended variant of the Middle Missouri tradition, enjoyed a two-century period of relative peace following the disappearance of Initial Middle Missouri communities. Thus, Middle Missouri–tradition warfare cannot be attributed directly to a deeply held martial philosophy.

Subsistence shortages triggered by drought may have been a factor in some cases of Middle Missouri conflict (Bamforth 1994, 2006), but they do not explain Initial Middle Missouri or Heart River warfare. Initial-variant communities first came together during a relatively warm, dry period but later fortified settlements were built and occupied during a wetter period (Fritz et al. 2000; Moberg et al. 2005). In the Heart region, major population reorganization began during a period of relatively favorable climatic conditions. Megadroughts hit the Middle Missouri in the mid-1400s and again in the mid-1500s, but the Heart River towns remained fortified before, during, and after these events (Stahle et al. 2007). Northern Hemisphere temperatures were declining during the Heart River coalescence of the fifteenth century, reaching their lowest point during the last 2,000 years around AD 1600 (Moberg et al. 2005). However, aggregate storage capacity appears to have increased during this period (Mitchell 2013).

MODELING MIDDLE MISSOURI WARFARE

One starting point for building a model of Initial Middle Missouri and Heart River warfare is the rich documentary and ethnographic records of the northern Plains. Narratives dating to the late 1700s and early 1800s note the pervasiveness and intensity of warfare, speculate on the causes, course, and consequences of particular conflicts, and even provide details of specific engagements. Many early-twentieth-century ethnographies include first-person narratives of battle, in which combatants spell out their motivations to war along with its social rewards and costs.

But there is ample reason to be skeptical about direct historical research. Too often archaeologists use specific historic analogies as "ready-made" interpretations of their data, rather than as sources of testable models or hypotheses (Roper 2007). Building workable models from ethnographic or historic data requires archaeologists to evaluate the goodness-of-fit between the details of the source and the archaeological subject of interest (Stahl 1993; Wylie 2002). This subject-side or comparative analysis inevitably exposes both similarities and differences between an analogy and an archaeological case. No analogy will make a perfect fit and so tracing points of commonality as well as divergence is crucial for identifying the domains over which a model does and does not function.

How, then, does the context of nineteenth-century warfare compare to the two archaeological cases from the Middle Missouri? One crucial difference is the dramatic effects horses and guns had on warfare in the eighteenth and nineteenth centuries. Both of those imports altered military tactics and technology (Secoy 1953), but their effects extended far beyond the battlefield. Horses increased people's mobility and transport capacity. Both horses and guns ignited a quest for military superiority that put a premium on the economic and political relationships through which those items were obtained. The changes horses and guns wrought occurred quickly: both of those things arrived in the northern Plains in the mid-1700s, but were ubiquitous within a half-century.

Another difference between the context of nineteenth-century war and that of the two Middle Missouri archaeological cases lies in the roster of societies living in the northern Plains during those periods. The eighteenth century witnessed migrations of many new groups into the region, migrations that prompted new alliances and as well as new enmities. Moreover, the political economies of many long-term residents, including the Mandans at the Heart River, were changing during this period. Those migrations and economic adjustments were accompanied by disease-induced population declines beginning in the 1600s (Fenn 2001; Ramenofsky 1987).

However, significant similarities also exist between the political economic context of Plains warfare in the late 1700s and 1800s and that of the two Middle Missouri cases. As was true for Initial-variant and Heart River communities, a massive, multilateral trade network stitched together the nineteenth-century Plains. Many groups depended on exchange and a few even made their living principally as traders, brokering European goods, native-made crafts, and subsistence products. That network produced a complex web of interdependencies among culturally and socially disparate tribal groups, interdependencies encouraged by differing modes of production and by spatial and temporal ecological variation across the Plains (Albers 1993). That intense connectivity

is rightly considered a basic feature of the northern Plains fur and robe trades of the 1700s and 1800s (Swagerty 1988), but Middle Missouri communities were no less connected in the 1100s or the 1500s.

The 1800s also was a period of economic expansion and, for some groups, of nearly unprecedented wealth. Increases in economic productivity began well before European traders entered the region (Mitchell 2013; Vehik 2002), but the availability of European trade goods, especially horses and guns after 1750, spurred many more groups to intensify production and to expand their participation in the trade network. This economic expansion conferred material benefits on individuals, lineages, and communities. Some Plains groups had long recognized hereditary class distinctions (Holder 1970), but colonial trade presented new opportunities for ambitious men of low station to control surpluses and thereby increase their status (Lewis 1942). Some groups used their unique access to critical items to amass tremendous capital in the form of horse herds.

Thus, the conduct of war on the battlefield—defined by the size and composition of military units and by the weapons used—was evolving rapidly during the nineteenth century. However, in both the Middle Missouri cases and in the nineteenth-century case, warfare was accompanied by demographic reorganization, large-scale multilateral trade, economic expansion, and material abundance. In view of these structural commonalities, it is reasonable to use patterns evident in the nineteenth-century record of intense warfare to develop models for exploring earlier episodes of similarly intense conflict in the Middle Missouri.

Warfare in the Nineteenth Century

No single factor or circumstance provoked combat in the nineteenth century. But a persistent theme in the historical and ethnographic records is the complex articulation between warfare and economic relationships, especially trade. Collective violence was woven into the material and cultural fabric of Plains exchange. The widespread calumet ceremony, which facilitated trade by establishing fictive kinships between trading partners, commonly began with mock skirmishes (Blakeslee 1975). The calumet may also have been used in some contexts to forge political alliances for military purposes (Blakeslee 1981). The intimate connections between war and exchange are also embodied in the architecture of nineteenth-century trading posts, which were at once hubs of commerce and stockaded enclosures, deservedly dubbed "forts." Both the form of the calumet and the architecture of the trading posts reminded buyers and sellers that conflict was never far away.

One particularly widespread connection between war and exchange was the use of violence—or the threat of violence—by nearly every group to restrict and channel the flow of trade. Control of trade routes enabled both mobile groups and farmers to set themselves up as profit-taking brokers. Jablow (1951:37) summarizes the abundant documentary evidence for what he calls "restraint of trade." In 1794, for instance, the Omaha waylaid Jean Baptiste Truteau on his way up the Missouri to prevent him from trading with the Ponca, even though the Omaha and the Ponca were allies at the time. Two years later, the Arikaras attempted to stop John T. Evans for similar reasons. In the north, the Assiniboines sought to interpose themselves between North West Company traders and the Mandans and Hidatsas. For their part, the Mandans opposed North West Company traders' attempts to directly contact groups living west of the Missouri.

The specific methods groups used to affect their blockades varied and guile frequently preceded violence. In some cases, the hosts of a trading event sought simply to prolong it by spreading rumors about their rival's treachery. But blockades were not merely based on bluster: for example, violence was only narrowly averted in the tense standoff between Lewis and Clark and the Tetons at the mouth of the Bad River in 1804, a conflict prompted by the Tetons' efforts to control trade on the Missouri (Ronda 2002).

Jablow (1951:52–56) also describes a rather different kind of connection between war and trade, one exemplified by what he calls the "peculiar" relationship between the Tetons and the Arikaras. The Tetons obtained horses, mules, and agricultural products from the Arikaras, for which they offered European trade goods, including guns, in return. But the Tetons attempted to dictate the terms of trade by simultaneously harassing the Arikaras, stealing what they could, and by abducting or killing Arikaras caught away from the protection of their villages. The Arikaras rightly feared the Tetons, but nevertheless were obliged to endure their abuse, depending as they did on the Tetons for the goods they supplied. Citing Lewis and Clark's view of the situation, Jablow argues that the Tetons were free to mistreat the Arikaras, and other village-dwelling groups, because they did not need the Missouri River trade to supply them with critical items. But this seems little more than an uncritically accepted boast: the Tetons clearly did need the Arikaras, or another similarly positioned group, to supply them with horses and agricultural products. A more realistic explanation is that the Tetons' Arikara policy reflected an attempt to maximize their profits by appropriating Arikara labor. This was a risky strategy that demanded a delicate balance between commerce and violence. Violence, and the threat of violence, discouraged competition

and effectively lowered the price they had to pay for horses. But destroying the Arikaras ran the risk of triggering a realignment that could cut off the flow of horses. Thus, Jablow (1951:53) appropriately describes the Teton–Arikara relationship as an example of "colonial exploitation."

Patricia Albers (1993) identifies two other processes linking war and trade in the eighteenth and nineteenth centuries. One was the competition between rivals occupying similar political economic positions in opposing "trade chains" (Albers 1993:122). For instance, allied groups obtaining goods from French traders came into conflict with similarly positioned groups obtaining goods from English traders. Europeans encouraged client relationships and promoted war between their clients and those of competing powers (Jablow 1951:51).

Albers's second process linking war and trade was regional political economic realignment. Europeans' efforts early in the nineteenth century to trade directly with Plains groups upset relations among native peoples who previously had been allies, prompting new conflicts as each sought to carve out a new position within the realigned trade network (Albers 1993:123). Groups who pursued similar economic strategies were most likely to come into conflict. In some cases, local economic changes fostered emerging hostilities among former allies. For instance, Missouri River farmers' increasing involvement in the horse trade in the mid-1700s put them at odds with mobile groups who previously had been their allies.

Albers also points to even smaller-scale tensions between war and trade. In addition to warfare between economic rivals, conflicts also arose between steadfast allies and trading partners, commonly to "adjust temporary imbalances in the flow of resources" (Albers 1993:125). Conversely, sporadic trade between staunch enemies—generally facilitated by intermediaries with kin in both of the warring groups—was a catalyst for the emergence of new strategic alliances. There was, Albers (1993:126) concludes, a fine "line between relationships built on symbiosis and those resting on war." Put another way, war was one component of "an ongoing relationship between peoples" (DeMallie and Parks 2003:75).

Apart from these strategic connections between war and trade, historic and ethnographic sources also point to a tactical or situational connection. Such situational connections are is well illustrated in a historical account provided to Gilbert L. Wilson, a Presbyterian minister and ethnographer, by a Hidatsa named Wolf Chief (Wilson 1918). Wolf Chief's account is set at Star Village, a settlement the Arikaras briefly occupied in 1862 (Metcalf 1963). In August of 1862 about 2,000 Sioux from one or more bands camped near the village for a trading visit. During the visit a Sioux man, hoping to make a trade for cotton cloth, brought a bison robe to an Ojibwa trader who had built a small post in

the village. When the Sioux objected to the terms of the exchange, the trader shot at two nearby Sioux women. In turn, the man offering the robe attacked the trader's cabin, at which point the trader's Arikara assistant returned fire. A general fight then broke out, with the Arikaras seizing Sioux women in the village and the Sioux seizing Arikara women in their camp. Men caught on both sides were killed.

However, Wolf Chief's account makes it clear that the action precipitated by this incident of failed reciprocity flowed directly from larger strategic relationships. As the battle developed, the Arikaras asked the Hidatsas, who were living across the Missouri at Like-A-Fishhook Village, for assistance. The Hidatsas at first refused, primarily because the Arikaras had previously rebuffed an attempt by a Hidatsa chief to establish a peace treaty with them. Instead, the Hidatsas came to the aid of the Sioux, with whom the Hidatsas had successfully arranged such a treaty. In the end the Hidatsas brokered a truce, in the process agreeing to admit the Arikaras into Like-A-Fishhook. But their initial reluctance to do so was guided by broader strategic relationships.

Documentary accounts illustrate the fluidity of these strategic relationships. Truteau, for instance, reports that in 1792 a confederated Sioux, Cheyenne, and Arikara force of some 2,000 attacked one of the Hidatsa towns on the Knife River (DeMallie and Parks 2003:69). The Hidatsas withstood a nine-day siege, during which the attackers suffered heavy casualties. But only a decade later, the trader Le Raye learned that the Sioux and Cheyenne were themselves at war (Jablow 1951:56), and in 1806 Charles Mackenzie encountered a delegation of Cheyenne peace ambassadors to the Hidatsas (Jablow 1951:38). Maximilian (Witte and Gallagher 2012:52) reported a similar realignment between the Mandans and the Yanktonais: in the summer of 1833 the farmers refused the Yanktonais' offer of a peace treaty but in September changed their minds and hosted a trade fair at Mitu'tahakto's (Fort Clark) attended by 200 Yanktonai households. Thus, despite combatants' claims of relentless enmity for their opponents, it is clear that patterns of alliance and conflict shifted rapidly, an indication that political economic relations were at least as important to patterns of warfare as were cultural differences.

DISCUSSION AND DIRECTIONS FOR FUTURE RESEARCH

Warfare during the 1800s was different than it had been during the 1400s and 1500s in the Heart region or during the 1100s and 1200s in the Plains–Prairie border. Nevertheless, the clear association in all three of these cases between frequent, intense fighting on the one hand and economic intensification and

large-scale, multilateral trade on the other suggests that warfare did not erupt over competition for scarce resources, but rather over control of the trade system. What was at stake was not the possession of specific resources but rather power over the principal engine of wealth, status, and political influence during periods of expansion and abundance.

Nineteenth-century historical data identify a variety of specific connections between war and trade, including appropriation of labor, restraint of trade, competition among trade-chain rivals, and political economic shifts. Determining which of these processes best explains Heart-region or Initial Middle Missouri warfare will require new archaeological analyses. However, it seems unlikely that some of the processes observed in the nineteenth-century also operated during earlier periods. The unusual character of the Teton–Arikara relationship was a function of the contrasting source areas for horses, in the northern Southwest and southern Rockies, and guns, in the upper Mississippi region and on Hudson's Bay. It is likely that key resources were more widely distributed in the past and so the kind of labor appropriation the Tetons practiced may have been uncommon during earlier periods. In addition, nineteenth-century trade-chain rivalries emerged primarily from competition among colonial powers. If such parallel alliances existed in the Middle Missouri they must have been organized rather differently than those documented in the nineteenth century.

Other documented connections between war and trade fit better with the archaeological data now in hand. Evidence for rapid demographic change and economic intensification among both Initial Middle Missouri and Heart River communities suggests that regional political economic shifts, coupled with consequently altered trade relationships and shifting alliances, was a principal cause of conflict. For example, the Heart-region farmer-hunters' documented efforts to increase the productivity of bison hunting may have altered their relationships with mobile groups who previously had supplied meat and hides (Mitchell 2013). Finally, the incentives that both farmers and hunters had to control the flow of goods and the terms of trade gave all parties equally good reasons to restrain selected vectors of trade, a major factor prompting conflict in the nineteenth century.

A sociohistorical approach to war highlights the fact that the causes and consequences of collective violence vary tremendously in different contexts (Allen and Arkush 2006; Arkush 2011). For example, Allen (2008) argues that, among the Maori, fortifications were a product of chiefly power but, once in place, were impediments to further political integration. Arkush (2011) makes a similar case for some Late Intermediate–period Andean groups. Little is

known about the political connections, if any, among Initial Middle Missouri communities, but at the Heart River regional economic and political integration clearly took place after nearly every settlement was fortified (Mitchell 2013). The evidence suggests that settlement clustering initially was prompted by a defensive alliance but that it was the subsequent expansion of household and community craft specialization and the development of local marketplaces that primarily led to the formation of a multicommunity confederacy.

The distribution of sixteenth-century settlements in the northern Middle Missouri is superficially similar to a simplified or idealized pattern that Arkush (2011:table 3.1, figure 3.1) presents for tribal confederations or weakly centralized chiefdoms, which consists of a cluster of fortified settlements separated by buffer zones from other clusters of settlements. However, closer inspection reveals a distinctive, and so far unexplained, feature of the Middle Missouri distribution (Mitchell 2007). The Heart region, at the center of the northern Middle Missouri, contained a cluster of a dozen or more settlements, virtually all of which were stoutly fortified and that ranged in population from around 200 to 2,000 people. To the northwest along the Missouri, an approximately 40-km-long buffer zone separated these settlements from a cluster of similarly sized but largely undefended communities. To the south, a 100-km buffer zone separated the Heart-region cluster from a cluster of mostly smaller, undefended or only weakly defended villages. Why the communities of the Heart region, the most densely settled cluster and therefore the one most able to field a large number of soldiers, would also be the most heavily fortified is not clear. Equally unclear are the reasons for the lack of parity in the frequency or design of fortifications across the northern Middle Missouri. If attacks by the residents of adjacent settlement clusters prompted the construction of defensive works in the Heart region, why would those adjacent settlements be undefended or weakly defended? Mobile bands—the only other groups living in the region—may have targeted the Heart-region towns owing to their control of the trade network. In any case, this asymmetrical settlement pattern was stable, persisting for roughly two centuries from the late 1400s to the late 1600s.

A sociohistorical approach also points up the fact that no single model is likely to account for all occurrences of warfare in a particular region or a particular cultural setting. For example, the model developed in this chapter likely does not account for the intense conflict that arose when Coalescent-tradition groups entered the southern Middle Missouri in the fourteenth century, which may instead have been a product of economic stress triggered by local subsistence shortfalls (Bamforth 1994, 2006). Nor does the model likely

apply to the sporadic and smaller-scale warfare that occurred in the northern Middle Missouri during the late 1200s and 1300s.

No analysis should forget that, like any other cultural practice, warfare has its own history. Nineteenth-century combatants frequently voiced a desire for revenge to redress acts of violence or theft perpetrated by their enemies. Because those desires commonly were expressed in terms of ethnic enmity, the antagonisms that carried conflict forward could linger, even as regional political economic relationships were shifting. Fortifications themselves also perpetuated the conditions for war (Allen 2008; Arkush 2011; Pauketat 2009). Regardless of how complete or well-maintained they may have been, ditches and palisades defined both literally and figuratively who was an insider and who was an outsider and reminded residents and visitors alike that war loomed over their transactions. Nevertheless, the fact that the context of conflict documented for the nineteenth century is foreshadowed in the archaeological record of the region demonstrates the power of putting war in sociohistorical context.

12

Alliances, Clusters, and Spatial Analysis

A Multiscalar Approach to Studying Warfare in the Middle Missouri

Andrew J. Clark

The term "ethnic warfare" has been frequently applied to explanations of group conflict worldwide (Horowitz 1985) and archaeological interpretations have been no exception, favoring this model to explain warfare in the Middle Missouri (Hollimon and Owsley 1994; Kay 1995; Johnson 1998; Johnson 2007a; Lehmer 1971). Two models of ethnic warfare exist: internecine warfare between resident Initial Middle Missouri and Extended Middle Missouri populations (Lehmer 1971), and external warfare between invading Coalescent and resident Middle Missouri groups. The former scenario of intercommunity conflict either occurred between different Middle Missouri populations occupying similar territory or was generated from a political split between the two Middle Missouri variants. The latter hypothesis postulates an "invasion" by central Plains villagers, as seen in the Initial variant of the Coalescent tradition, into the homeland of the Middle Missouri–tradition villagers. This influx of people created territorial battles between the Middle Missouri–tradition and the Coalescent-tradition villagers. This interpretation follows the more prevalent view of group conflict as "ethnic" and provides a tidy and attractive explanation of the archaeological evidence for violent conflict.

For some, the discovery of the Crow Creek massacre in 1977 has reinforced the model of ethnic warfare. But what if this does not fully explain violent conflict in the Middle Missouri? What if relationships between

DOI: 10.5876/9781607326700.c012

and among the Middle Missouri and Coalescent villagers are more complex than the traditional model implies? What if Middle Missouri warfare is not adequately explained by an "us versus them" model? Though Great Plains archaeologists have challenged these assumptions (Hollinger 2005; chapter 10, this volume; Mitchell 2007; Stewart and Zimmerman 1989; Zimmerman and Bradley 1993) many researchers adhere to the traditional model.

Settlement studies, specifically site cluster analysis, may not yet be able to identify the Crow Creek attackers, but they can help describe the dynamic and intricate relationships among the village horticulturalists of the Missouri River trench. Clustering studies have had important implications for the study of warfare ranging from simply identifying warfare to identifying state formation (LeBlanc 1999, 2006). In the case of the Middle Missouri, clustering can be used to identify locations of potential political alliances.

BRIEF CHRONOLOGY AND CULTURAL INTERACTION

Any discussion of cultural interaction must be preceded by an exanimation of the taxonomic framework of the archaeological region in question. The taxonomy of the Middle Missouri was first proposed by Lehmer (1954) and further refined by Lehmer and Caldwell (1966) and Lehmer (1971). The intent here is not to rehash a detailed description of Middle Missouri taxonomy but to provide a basic framework for the archaeologically defined cultures. Lehmer's modified taxonomy defines two major cultural traditions in the Middle Missouri geographical division, with each divided into three variants: the Initial (IMM), Extended (EMM), and Terminal (TMM) Middle Missouri as well as the Initial (IC), Extended (EC), and Post-Contact Coalescent (PCC). The Initial Middle Missouri is further broken into two subvariants: Initial Middle Missouri east (IMMe) and west (IMMw). The majority of sites in the Missouri River valley in South Dakota are assigned to the IMMw and the debate concerning the origins of the IMM are centered on two models. The first argues that the IMM is the result of migrant populations from northwestern Iowa and southeastern Minnesota mixing with local Late Woodland populations (Toom 1992). More recently, archaeologists have argued that there is continuity between indigenous Late Woodland and IMM populations with local development (Tiffany 2007; Henning and Toom 2003). Similarly there is some debate regarding the origin of the EMM. While some contend the EMM is not a direct outgrowth of the IMM (Lehmer 1971), Ahler (2007) argues that the EMM is result of the interaction of the northern expression of the IMM with northern Late Woodland groups. Regardless of

its origination, the EMM is first identified in North Dakota and later expands into South Dakota (Johnson 2007a). As far as the TMM is concerned, there is little argument that these populations are descended from the EMM groups (Johnson 2007a; Toom 1992).

The emergence of the Coalescent tradition is attributed to the influx of village horticulturalists from the central Plains. While the origin of the Coalescent tradition needs additional clarification, it is clear that each subsequent variant within the Coalescent is an outgrowth of the previous. By definition, the Coalescent shows traits of both central Plains and Middle Missouri groups, indicating some sort of positive material and cultural trade between the two groups. This is evident in the IC, the earliest Coalescent variant, where ceramic analysis indicates that IC pottery derives from Loup River/Itskari, St. Helena, and Anoka phases of the central Plains while settlement patterns and fortifications are similar to Middle Missouri styles (Johnson 2007a). To what extent the Middle Missouri and central Plains migrants coalesced is still up for some debate. Steinacher and Carlson (1998) and Tiffany et al. (2011) argue that the IC is better viewed through the Central Plains–tradition Anoka phase rather than a Middle Missouri variant. It is fairly clear that the EC are descendent from the IC but Steinacher and Carlson question to what extent the EC mingled with the Middle Missouri–tradition villagers. Settlement patterns in the EC shift from larger nucleated sites to smaller, more-dispersed sites, perhaps as a result of warring during the occupation of IC sites (Zimmerman and Bradley 1993). Finally, the PCC is marked by the appearance of a change in pottery styles and introduction of European trade goods (Johnson 2007a).

Contemporaneity between variants of both the Middle Missouri and Coalescent traditions poses some confounding issues for a regional-scale study with considerable temporal depth within the Missouri area. Johnson (2007a) helped to alleviate this problem by organizing sites into 13 time periods, each spanning from 35 to 100 years in length, that encompass the period between AD 1000 and 1850. Assignment to each period was identified by chronometric dating and ceramic typologies. Though the inherent nature of chronologies dictates continued verification and refinement, this work allows village locations to be interpreted within a regional framework with a relatively tight chronological control for the first time. Table 12.1 shows the potential intervillage cultural interaction within the chronological framework presented by Johnson (2007a).

Table 12.1. Aggregation of Chronology and Taxonomy presented by Johnson (2007a)

Period	*Dates (AD)*	*Tradition/Variant Present*
1	1000–1100	IMM
2	1100–1200	IMM; Charred Body Complex (North Dakota only)
3	1200–1300	IMM; EMM
4	1300–1400	EMM; TMM (North Dakota only); IC
5	1400–1500	TMM (North Dakota only); IC ; EC
6	1500–1550	IC; EC
7	1550–1600	EC
8	1600–1650	EC; PCC
9	1650–1700	PCC
10	1700–1750	PCC
11	1750–1785	PCC
12	1785–1830	PCC
13	1830–1886	PCC

CLUSTERING AND WARFARE STUDIES

Site clustering has been used in several forms in the study of warfare. Archaeologists often cite the practice of clustering as a causal factor in sociopolitical development related to the formation of chiefdoms and states (LeBlanc 2006). Under this model, a centralized sociopolitical organization can derive from an initial condition of geographic isolation among allied villages, thus forming a functional need for political groups to perform the increased roles of a central, coordinating leadership. Some archaeologists working from an evolutionary perspective are beginning to study warfare beyond the confines of developing complexity. For example, Allen (2008) suggests warfare as a contributing factor in sociopolitical collapse and disorganization, and Arkush (2011) examines clustering and buffers in a non-centralized society, using Sahlins's (1961) segmentary lineage as a model to explain warfare in the Titicaca Basin.

The importance of geographic buffers has been noted in the Middle Missouri region as well. First discussed by Lehmer (1971) and expanded by Kay (2007), buffers have been used to show social distance and frontier expansion in the Cannonball subdivision that has been interpreted as evidence for a separation of TMM villages from Coalescent-tradition villages. In any region, this clustering and separation would have been a tactical move that created protection for villages through physical proximity with friendly neighbors. At

the same time there were significant expanses of land, referred to as no man's lands, which were sacrificed as uninhabited territories to maintain these protective alliances. These sacrifices included the losses of arable land and access to wood resources for both construction and fuel, and were amplified during times of drought (LeBlanc 1999). The extant studies of Middle Missouri subdivision buffering can be enhanced twofold. First, archaeologists can look at alliance building beyond the strict confines of ethnic boundaries as defined by the taxonomic framework. Second, researchers can utilize a suite of statistically derived locational information to understand the function of clustering beyond the mere visual identification of buffers.

Similar to Arkush (2011), I find it useful to return to Sahlins and the concept of segmentary societies in order to understand alliances. While the "segmentary lineage" concept may not perfectly fit the villagers of the Middle Missouri, the segementary aspect of tribal organization does provide a good foundation from which to address intergroup social relations. Acknowledging the caveats of stringent labels, the Band-Tribe-Chiefdom-State model is used herein as a convenient framework for comparison and not as a doctrine concerning evolutionary trajectories. Sahlins describes a tribe as a "segmental organization" (Sahlins 1961: 325) with an organization based upon multiple family groups or bands. Each band is a self-sufficient unit and is the smallest family group that occupies a specific territory. While bands may meet at seasonally appropriate times, and are bound through social rules and intermarriage, the tribe is not a strongly unified political organization. More so, the tribe may be better described in terms of ethnic identity instead of political consolidation (Sahlins 1961:325). Sahlins suggests three "facts" of tribal life. First, because of the segmentation, there is an inherent disunity within the tribe and no permanent confederation. Second, despite this loose political structure, the tribal units will ally when faced with an external enemy. Third, after the competition is resolved the bands will return to the relative political independence of the segmental organization (Sahlins 1961:326). While the Tiv and Nuer of Sahlins's original study were patrilineal, matrilineal kinship systems can be segmented as well (see Schwimmer 2003): the kinship system of the historic Mandan, Hidatsa, and Arikara was matrilineal. The important factor is that segmented societies are loose confederations of hierarchical political groups. In the Middle Missouri subregion, these political unit—families, clans, or bands—were organized into villages, with related villages loosely tied politically together (Bowers 1992:26; 2004:26). In fact, among the Hidatsa, the intervillage confederation was so loose that there was no unifying tribal council prior to the smallpox epidemic of 1780s (Bowers 1992:26–27).

This fluid model can become more complex through relationship-building practices. Generally speaking, Plains groups depended on their neighbors in a symbiotic relationship based around both kinship relationships and sodalities (Albers 1993). Ethnographic evidence throughout the Great Plains and the greater Midwest shows a broad trend of solidifying existing ties between communities and creating new relationships through encounters with external groups. Formal rites such as the Calumet of the Captain Ceremony (Blakeslee 1981; Albers 1993; Hall 1997) and the Making of Relations among the Ogallala (Brown and Steltenkamp 1993) served to initiate kinship ties between previously unrelated people. Not only do these kinship mechanisms reduce warfare, but they also create trading relations. No direct application of these particular ceremonies to the prehistoric past is intended here, but it is important to note that, at least during historic times, mechanisms were in place to create peace within potentially hostile relationships. While these sodalities did not prevent war, it did serve to reduce raiding between symbiotic groups (Albers 1993).

Archaeologically identifying the sociopolitical unit of the band may be difficult, but one could treat each village as an autonomous political unit. Bamforth and Nepstad-Thornberry (2007b) show that there are interactions between Middle Missouri and Coalescent villages, as shown through ceramic styles. Mitchell (2007) sees an interplay between trade and war in the late Plains Village–pattern sites in North Dakota. These studies show that while the taxonomies serve as useful tools to describe who, when, and where, they do not aid archaeologists in defining base political units. That is, each village makes its own decisions based on social and economic justifications. Genetic and linguistic relationships play a role in decisions, but are not the defining reason for being an ally or enemy. Simply put, archaeological taxonomies do not define cooperative or competing relationships—interactions between villages do.

If intervillage alliances were complex during historic times, it is reasonable to believe that these relationships were equally complicated throughout the prehistoric past. The nature of alliances is dynamic and, while it may be common for alliances to be forged, many are broken and few persist unchanged for very long durations. However, it is these long-term relationships that are most identifiable in the archaeological record. Though it may be difficult to identify the mechanisms for alliance building, settlement patterns can be used to infer when and where these alliances may have occurred. Specifically, cluster analyses, informed by fortification strategies, can indicate where and when these complex relationships existed.

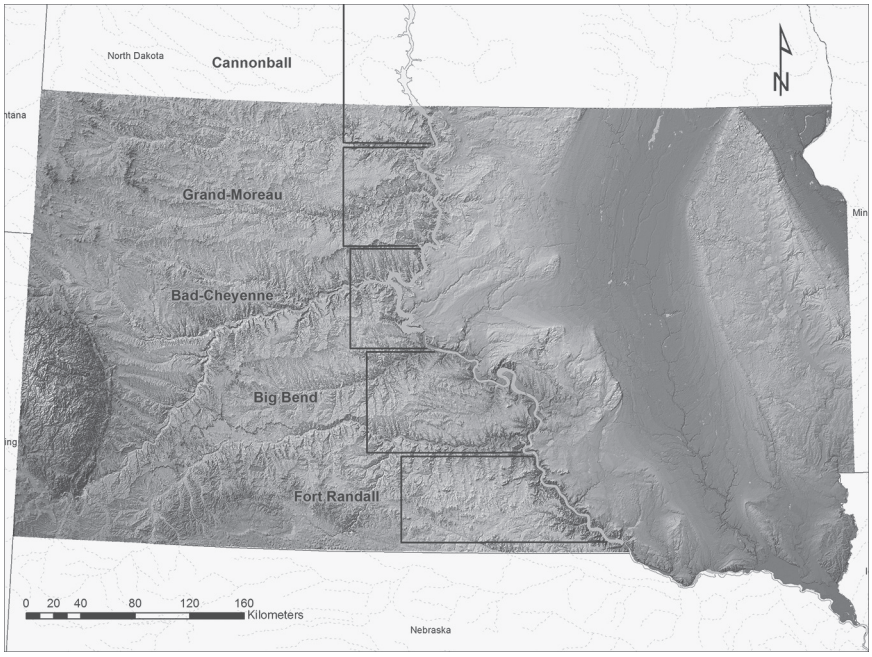

Figure 12.1. *Study area overview, South Dakota. Shaded relief map courtesy of the South Dakota Department of Environment & Natural Resources (SD DENR).*

VILLAGE LOCATIONS AND CHRONOLOGY

In order to investigate the presence of alliances in the Middle Missouri and how these relationships may have changed across time, cluster analyses are performed here using locational data from Plains Village–pattern sites located along the Missouri River in South Dakota (figure 12.1). These sites occupy, in order from north to south, the Cannonball, Grand–Moreau, Bad–Cheyenne, Big Bend, and Fort Randall geographical divisions of the Middle Missouri, as defined by Lehmer (1971). Sites located outside the trench along major tributaries, as well as sites located in the James River floodplain, were excluded from the study. The sites within each of the 13 time periods defined by Johnson (2007a) are treated as contemporaneous villages, with the understanding that this assumption may not hold true as more data are analyzed. In total, a population of 141 site locations is included in the study group and individual time-period populations varied from one site location (Period 13) to 29 locations (Period 9).

METHODOLOGICAL APPROACH

To conduct the analysis, I used a series of geographical statistical techniques that fall under the category of point pattern analysis. Therefore, the data included in the analysis comprise geographical site centroids for each of the village locations. Two of the techniques utilize measures of randomness while the third is a non-parametric density analysis. Inherent in many geographical analyses is the Modifiable Areal Unit Problem (MAUP). Simply stated, the MAUP refers to changes in the results due to the changes in the size and location of the study area. One way to visualize this is to think of election results. When the results are tallied at the state level there is one result. When broken down by county, there is a different result, and yet another result when aggregated by voting district. This does not mean that any one of these results is inherently flawed, but that it is important to understand results within the scale of analysis.

With point pattern analysis, issues arise with the size and shape of the study. Study areas can be arbitrary. That is, the area can be defined by a shape (rectangle, ellipse, envelope, etc.) that encloses all of the points. Study areas can also be bounded naturally, as in the case of a river basin, plateau, or terrace. Each of these methods has both benefits and limitations. In the case of archaeological point patterns, natural study areas are defined by the landscape. They attempt to replicate a livable area as defined by the environment, but they explicitly eliminate areas that may have been the focus of some human activity. Arbitrary areas are defined by the parameters of the technique, but they can include multiple environments that natural areas exclude. I took several steps in order to reduce the effects of the MAUP. First, I used multiple analyses, including nearest neighbor analysis, Ripley's *K* statistic, and kernel density estimates. Second, the analyses were conducted at different scales and with different areas. Lastly, one technique (Ripley's *K*) utilizes a multiscalar approach to show the variability in the size of clustering.

Nearest neighbor (NN) analysis has been used in archaeology for many years and, in the past, has been a primary tool for identifying cluster patterning at both the regional and the site scale (Hodder and Orton 1976; Whallon 1974). The use of NN statistics may have become prevalent because it is simple to calculate and interpret (Conolly and Lake 2006:164). Its detractors claim that the use of the NN statistic is not multiscalar and its use allows for assumption violations as well as errors due to edge effects (Durand and Pippin 1992:264; Conolly and Lake 2006:164).

The most common NN equation was developed by Clark and Evans (1954). The results of this equation can interpret the data in terms of clustered,

random, or regular distributions. The concept behind the statistic is that, in a random distribution of points, the estimated mean NN distance is related to density. Restated, it is "the expected mean distance between nearest neighbors in a random distribution is equal to the reciprocal of twice the square root of points in that given space" (Durand and Pippin 1992:264). The coefficient is simply calculated as the ratio of the observed mean distance of nearest neighbors divided by the expected mean distance of nearest neighbors. The results will produce a value between 0 and 2.1491. A value of 1 equates to a random distribution, a value less than 1 identifies clustering, and a value greater than 1 is evidence of uniform distribution (Durand and Pippin 1992:265).

Ripley's *K* statistic is an index of non-randomness for differing scale values used to identify clusters. It creates a random distribution of points, from a Monte Carlo simulation, and compares the highest and lowest values, or the "envelope," to the sample value. The statistic is calculated from a value of point intensity, or λ. The formula $\lambda K(r)$ is the expected number of points within the radius (r). The *K*-distribution is an aggregate of frequency of λ at different intervals of r. Using 1,000 to 5,000 iterations of the simulation can usually obtain 95 percent confidence (Bevan and Conolly 2006:221). Clustering can then be identified by comparing the actual population to the random population.

Kernel density estimates (KDEs) are a well-discussed statistical method that has seen minimal use in archaeology (Baxter et al. 1997:347; Wheatley and Gillings 2002). A KDE is a form of histogram that is represented in a smoothed fashion and allows for the presentation of multiple datasets in one figure. It can be used for either univariate or multivariate statistics (Beardah and Baxter 1996; Baxter et al. 1997:347) but bivariate statistical analysis (x and y coordinates) is generally used for spatial studies.

Univariate KDE can be thought of as a number of points (x_1 to x_n) located on a line. At each variable on the line a bump is placed and the shape of the bump is a result of the weighting function (kernel), or $K(x)$, while the spread is determined by the bandwidth (h). The value of h can be defined through a priori knowledge of the data, either through an equation or other knowledge of the data. Alternatively, h can be defined by "plugging-in" techniques where different values are tested in order to find the best fit. A value that is too large will "over-smooth" the results; while underestimating h will yield results that are too coarse (Baxter et al. 1997:348).

Bivariate KDEs have a similar principle except that, instead of points on a line, variables x and y are displayed as points on a plane. Each point is again represented by a "bump." Choices of bandwidth are performed in a similar fashion as univariate decisions for h, but tend to be more subjective. With an

individual point, the results appear as a "bull's eye." If there are overlapping results they are displayed as contour lines (Baxter et al. 1997:348–349). Most examples of KDE have been performed to show clustering of artifacts at the site level (e.g., Beardah and Baxter 1996; Baxter et al. 1997), but KDEs can also be used at the much larger regional level (Wheatley and Gillings 2002:187).

The use of these three techniques in concert alleviates the issues of any one of the methods individually. The NN analysis, while showing clustering at the global scale, does not show clustering at the local scale. The Ripley's *K* statistic addresses the multiscalar issue but is affected by the MAUP. The KDE helps to visualize the location of the clustering, while comparing scalar issues through calculating the statistic multiple times with different parameters.

RESULTS

Nearest Neighbor Analysis

The NN analysis was conducted using an area defined by a combination of the Missouri River Trench and the extent of all the sites located within the trench with the calculations made using ArcGIS 10. One study area was used for all of the time periods and I calculated the NN for seven out of the 13 periods identified by Johnson (2007a). Periods 1–3 and 13 were excluded due to an extremely low population ($n < 10$). The results are presented in table 12.2.

Periods 5 through 7 show a dispersed settlement pattern, while Periods 8, 9, and 11 fall within a normal distribution. Only Period 10 indicates a clustered patterning. The average NN ranged from roughly 8 to16 km for the dispersed settlement pattern and roughly 5.75–9.80 km for the random pattern. The average NN for the clustered settlement pattern was 4.5 km.

Ripley's *K* Statistic

To test the potential for and significance of clustering, I first ran the Ripley's *K* statistic using Crimestate III (Levine 2010). There were four time periods—Period 5 (AD 1400–1500), Period 6 (AD 1500–1550), Period 9 (AD 1650–1700), and Period 10 (AD 1700–1750)—that had large enough populations ($N = 19, 22, 29$, and 28, respectively) to garner significant results. For comparison, 1,000 random populations were calculated for each time period. The bounding study area was defined by a minimum enclosing rectangle. A new rectangle was calculated for each time period, resulting in study areas that were defined by the centroids of village locations and the sample relevant only to each individual time-frame.

Table 12.2. Results of the Nearest Neighbor Analysis

Period (AD)	N	*Result*	*Ratio*	*Z-Score*	*Expected (m)*	*Observed (m)*
5 (1400–1500)	19	Dispersed	1.601229	5.013573	6,674.74	10,687.79
6 (1500–1550)	22	Dispersed	1.279397	2.507055	6,202.97	7,936.07
7 (1550–1600)	13	Dispersed	1.96265	6.640047	8,069.37	15,837.36
8 (1600–1650)	12	Random	1.163473	1.083346	8,398.87	9,771.86
9 (1650–1700)	29	Random	1.073497	0.757178	5,402.72	5,799.80
10 (1700–1750)	28	Clustered	0.819657	−1.82562	5,498.35	4,506.76
11 (1750–1785)	11	Random	1.031614	0.200586	8,772.33	9,049.66

Figure 12.2 shows the results of Ripley's *K* analysis. It charts a square root of *k* [*L(t)*] by distance in kilometers. The solid line charts *L(t)* for the actual population, while the dashed lines indicate the maximum and minimum *L(t)* for the random populations. The latter two create the random "envelope" indicating the boundaries for non-random significance. For Period 5, the population falls outside of the random envelope between 2 and 25 km (represented by the dotted lines). This indicates that clustering occurs non-randomly (intentionally) at scales ranging from 2 to 25 km. The results from Period 6 show similar results, but clustering is significant at smaller scales (2–16 km), while Periods 9 and 10 show significant clustering at much larger scales (0–60 km and 0–45 km, respectively). Overall, these results indicate that village clustering is evident and significant during these four time periods and that clustering shifts from relatively smaller to relatively larger scales over time.

Kernal Density Estimates

Although the KDE analysis does not show statistically significant clusters, it allows one to visualize clusters and identify patterns. The analysis is not inherently temporal or multiscalar but, when calculated for multiple periods and at different scales, it can be used in those capacities. This analysis shows intensity of occupation during each of the defined chronological periods. To tie in the results of the Ripley's *K* statistic, the KDE search was conducted at two scales—16 km and 25 km—the results of the two smallest significant cluster groups. This allows for a relatively localized analysis (16 km) and a more regional scale analysis (25 km). I calculated KDEs for Periods 1–10, excluding Periods 11–13 because of the relatively small number of sites and the random results for the NN statistic in Period 11.

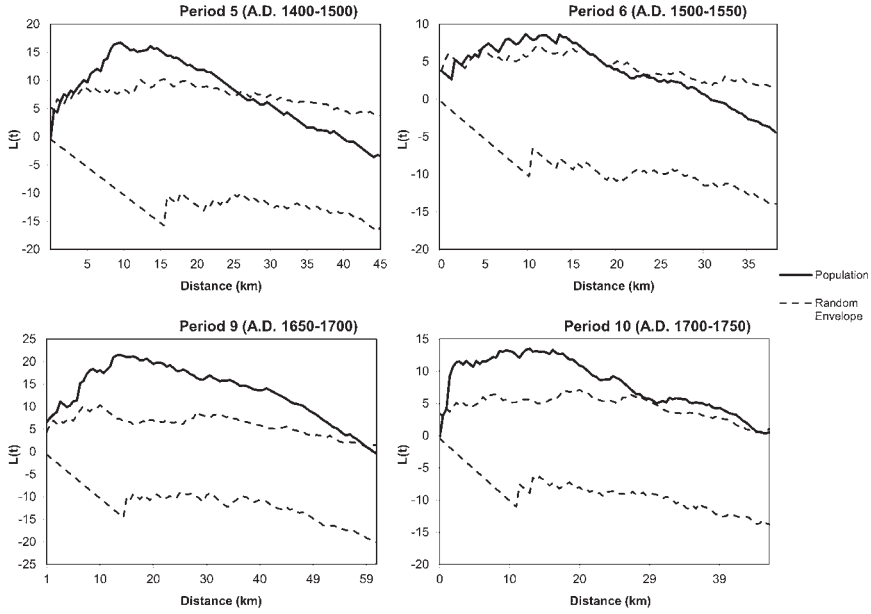

Figure 12.2. *Ripley's K results for Periods 5, 6, 9, and 10.*

While one must be careful not to equate ditches with warfare (LeBeau, chapter 6, this volume), the structures can still be viewed as one line of evidence for defensive strategies and I will mention their locations. The chronology of fortification building is poorly defined with current data. It is difficult to estimate at what point the fortifications were built, and in the case of villages with multiple fortifications it can be difficult to identify the order of construction. The presence of fortification needs to be understood within this context, but patterns do exist and these data are used anecdotally.

Some interesting patterns emerge during the analysis of Johnson's (2007a) Period 1 (AD 1000–1100). The earliest, and the most intense, occupations occur in the Big Bend and Bad–Cheyenne geographical divisions. At the regional (25 km) scale there is one cluster that lies mostly in the Big Bend and two outlying isolated sites, one each in the Cannonball and Fort Randall divisions (figure 12.3). Throughout time, settlements aggregate around the Big Bend clusters and the outliers in the Cannonball and Fort Randall division. This sets up the major clustering groups and unoccupied zones. At the local scale, two concentrations are exhibited within the Big Bend cluster. Fortifications are present at three of the seven villages in the

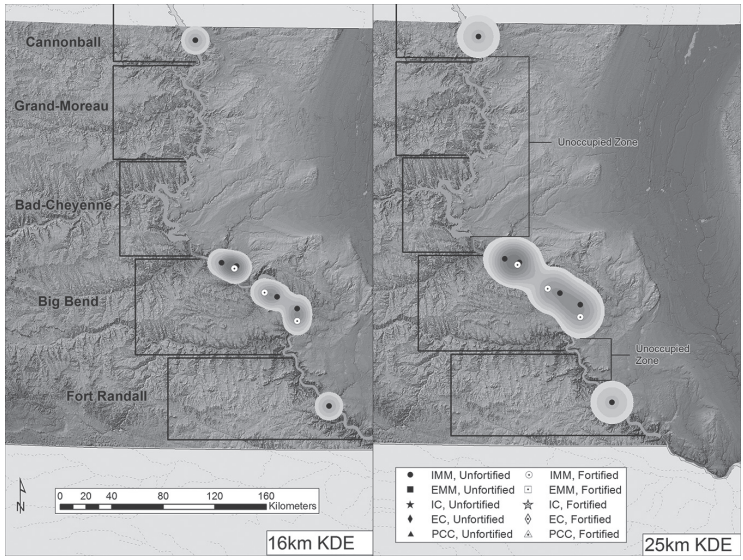

Figure 12.3. *Results of the 16-km (left) and 25-km (right) KDEs for Period 1 (AD 1000–1100). Shaded relief map courtesy of the SD DENR.*

region during this first period, which at this point is only occupied by Initial Middle Missouri villagers.

During Period 2 (AD 1100–1200) the local clusters expand well into the Bad–Cheyenne division (figure 12.4). The Grand–Moreau division remains unoccupied, but the unoccupied zone decreases in size while the Fort Randall unoccupied region remains approximately the same size. Four of the nine villages are fortified. Interestingly, within the Big Bend and Bad–Cheyenne regions an additional unoccupied zone is introduced.

Period 3 (AD 1200–1300) marks the end of the Initial Middle Missouri, the beginning of the Extended Middle Missouri, and the beginning of occupation in the Grand–Moreau region. Following the split in the Bad–Cheyenne and Big Bend settlement clusters during Period 2, the buffer zones between these groups decrease in size at the regional scale during Period 3 (figure 12.5), but local clustering is still present. Despite the additional population living in the Grand–Moreau area, there is still a significant separation between the Grand–Moreau and Bad–Cheyenne regions, with a smaller separation between the Big Bend and Fort Randall regions. While fortifications are now present in all three regions, they are most abundant within the Bad–Cheyenne and Big Bend clusters.

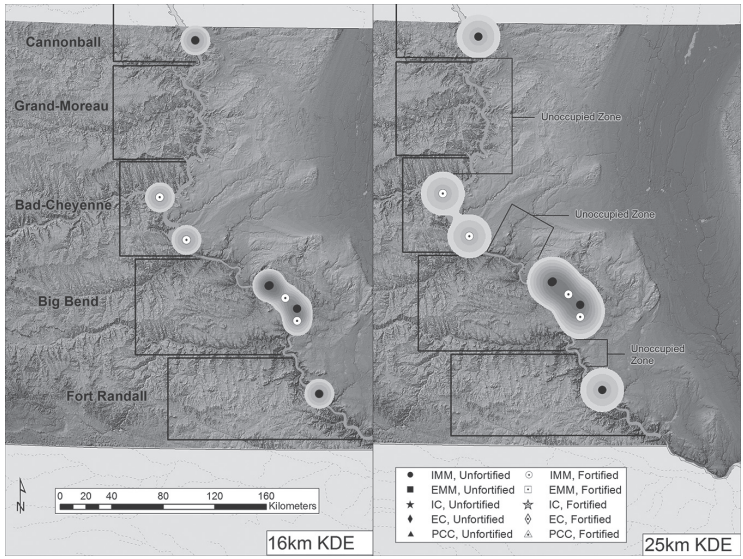

Figure 12.4. *Results of the 16-km (left) and 25-km (right) KDEs for Period 2 (AD 1100–1200). Shaded relief map courtesy of the SD DENR.*

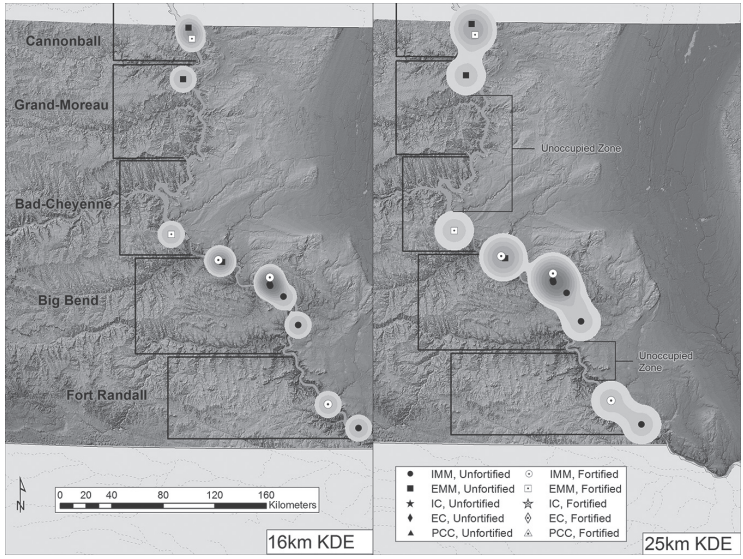

Figure 12.5. *Results of the 16-km (left) and 25-km (right) KDEs for Period 3 (AD 1200–1300). Shaded relief map courtesy of the SD DENR.*

Overall, Period 4 (AD 1300–1400) shows less-intense occupation of the region and a more dispersed settlement pattern. There is a separation, both regionally (figure 12.6) and locally, into paired villages, which are relatively evenly distributed regionally. The unoccupied area of the Grand–Moreau is significantly reduced and the Bad–Cheyenne to Big Bend empty area reemerges. The settlements of this period are also heavily fortified with all but two of the villages possessing fortifications and each pair having at least one fortification. It is within this period that we see the first appearance of the Initial Coalescent villagers. Contrary to expectations of initial ethnic-group separation, one of the site pairs includes both cultural traditions.

Period 5 (AD 1400–1500) marks the beginning of the Extended variant of the Coalescent tradition. During this time there is a further reduction in the unoccupied buffer of the Grand–Moreau. The buffer between the Big Bend and Bad–Cheyenne divisions remains the same and serves to separate two fortified Initial Coalescent communities (figure 12.7). At the regional scale there appears to be a general trend for dispersal, while at the local scale, smaller clusters are evident within Bad–Cheyenne, Grand–Moreau, and Cannonball divisions. Five of the 19 villages are fortified, including the two southernmost villages.

During Period 6 (AD 1500–1550) the unoccupied zones are not significantly present at the regional scale (figure 12.8), but the local clustering trend continues. Fortifications are present at northern sites in the Grand–Moreau subdivision and southern sites in the Big Bend. This period marks the end of the Initial Coalescent.

The border of the Fort Randall geographical division is reoccupied during Period 7 (AD 1550–1600), ending the general northward settlement trend. Coupled with this southern expansion is another increase in the Grand–Moreau/Bad–Cheyenne buffer zone (figure 12.9). At both the regional and local scales there is a dispersed settlement pattern in the Bad–Cheyenne and Big Bend geographical divisions, but an intense local cluster on the Cannonball/Grand–Moreau border. There is also a dramatic shift in fortification strategy with only two walled sites (one at the northern periphery) in the Bad–Cheyenne region but palisades present at three of the four of the Cannonball/Grand–Moreau sites. It is noteworthy that there is a large unoccupied zone north of the Cannonball/Grand–Moreau cluster, spanning the territory up to the Heart River in North Dakota.

During Period 8 (AD 1600–1650) there is an overall decrease in occupation intensity throughout the region. The most intense area of occupation is located at the southern boundary of the Big Bend division near the mouth of the White River. The largest unoccupied zone is between the White River group and the

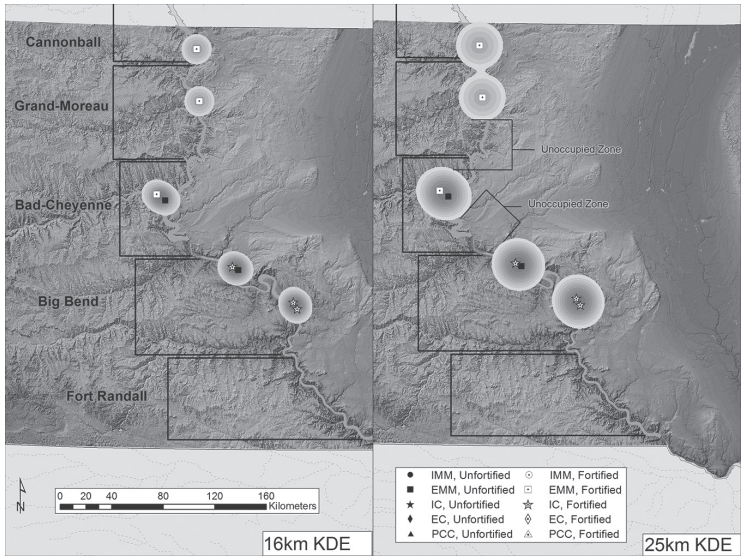

Figure 12.6. *Results of the 16-km (left) and 25-km (right) KDEs for Period 4 (AD 1300–1400). Shaded relief map courtesy of the SD DENR.*

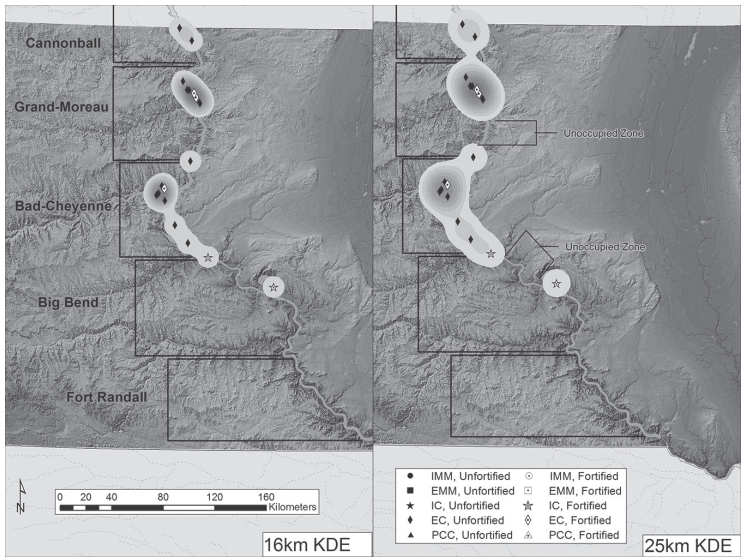

Figure 12.7. *Results of the 16-km (left) and 25-km (right) KDEs for Period 5 (AD 1400–1500). Shaded relief map courtesy of the SD DENR.*

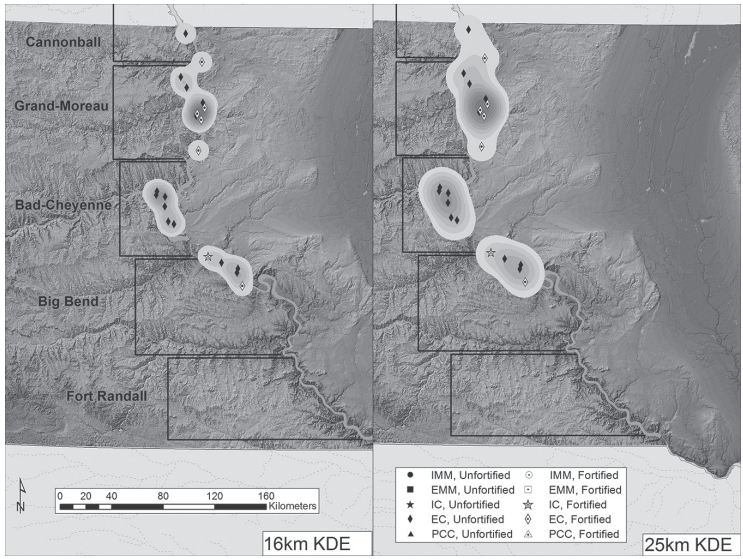

Figure 12.8. *Results of the 16-km (left) and 25-km (right) KDEs for Period 6 (AD 1500–1550). Shaded relief map courtesy of the SD DENR.*

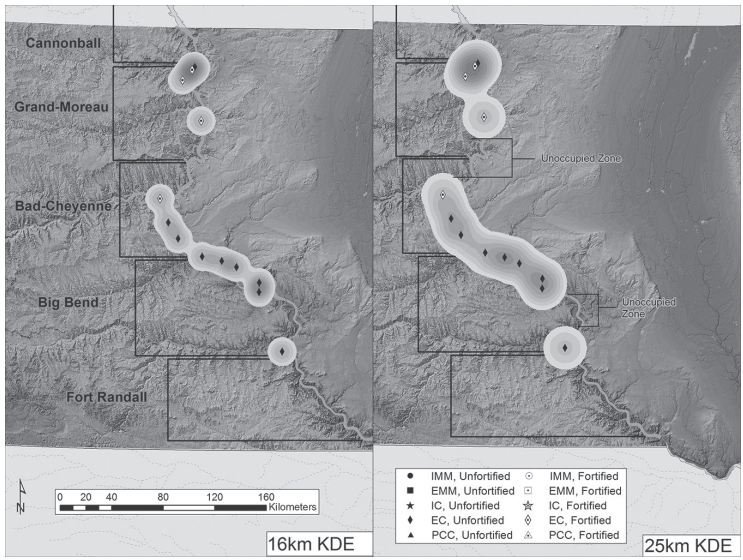

Figure 12.9. *Results of the 16-km (left) and 25-km (right) KDEs for Period 7 (AD 1550–1600). Shaded relief map courtesy of the SD DENR.*

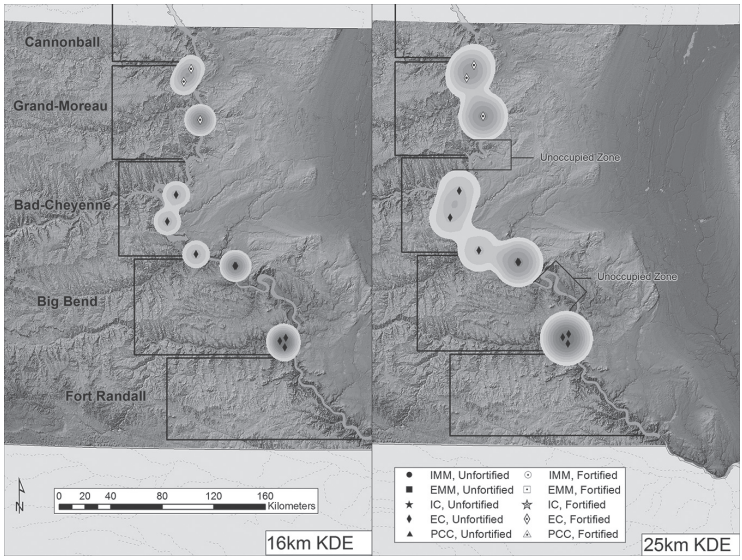

Figure 12.10. *Results of the 16-km (left) and 25-km (right) KDE for Period 8 (AD 1600–1650). Shaded relief map courtesy of the SD DENR.*

Big Bend/Bad–Cheyenne group (figure 12.10). Local clustering is evident within the northern Grand–Moreau/Cannonball area and the only fortified villages are located within these northern groups. Period 8 marks the end of the Extended Coalescent and the beginning of the Post-Contact Coalescent in North Dakota.

Marking the beginning of the Post-Contact Coalescent in South Dakota, there is a florescence of occupation during Period 9 (AD 1650–1700) throughout all geographic divisions of the Missouri River. Clustering is evident locally (figure 12.11) and regionally, and unoccupied areas are present in the Grand–Moreau, Bad–Cheyenne, Big Bend, and Fort Randall areas. All of the northern villages of the Grand–Moreau and Cannonball divisions remain fortified, while fortifications in the other divisions are centrally located within the clusters.

Settlement patterns in Period 10 (AD 1700–1750) exhibit regional dispersion with local clustering (figure 12.12). The unoccupied zone in the Grand–Moreau division is maintained while the Fort Randall division is abandoned and site locations move northward, beginning a trend of movement out of South Dakota. Fortifications are spread broadly throughout the region, except at the southern cluster of sites.

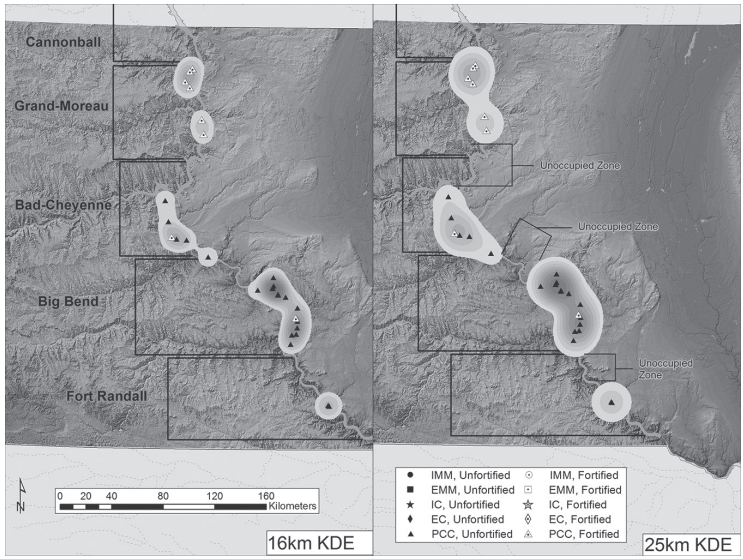

Figure 12.11. *Results of the 16-km (left) and 25-km (right) KDEs for Period 9 (AD 1650–1700). Shaded relief map courtesy of the SD DENR.*

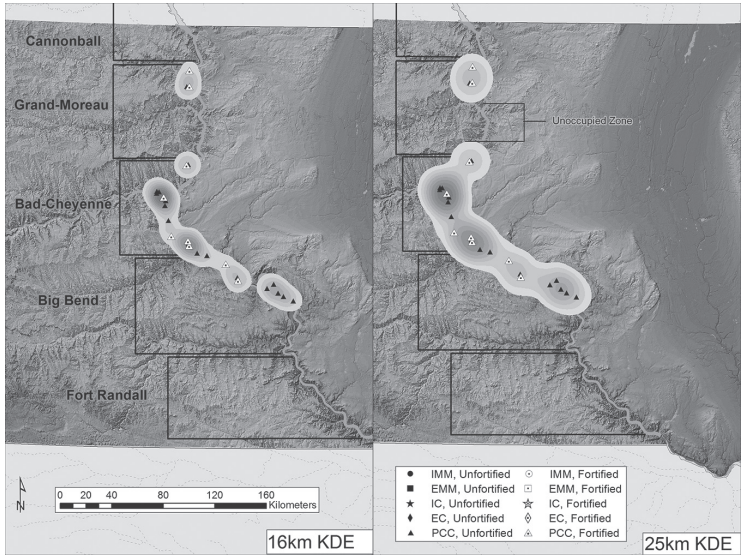

Figure 12.12. *Results of the 16-km (left) and 25-km (right) KDEs for Period 10 (AD 1700–1750). Shaded relief map courtesy of the SD DENR.*

Discussion

Though the results of the Ripley's *K* and NN analysis seem to be conflicting at points, this can be attributed to scalar issues. Ripley's *K* is inherently multiscalar, but it relies heavily on the definition of the study area. With the study area defined by the minimum enclosing rectangle, clustering has a simple cause, the location along the Missouri River. But, upon closer inspection, other patterns exist that are significant at different scales (see Periods 5, 6, 9, and 10). Alternatively, the reduced study area of the NN analysis shows a pattern of more-dispersed settlement. But even within the NN analysis, the results shift through time. Taking both analyses into account, the results show dispersal at the regional scale, with clustering locally, and the intensity of this pattern shifts throughout time. The upper and lower scalar limits of the Ripley's *K* results indicate that the upper limit of clustering (i.e., distance where the populations fall back into the random envelope) ranges from 16 km (Period 5) to 60 km (Period 10). These upper limits may indicate the geographical extent of the political alliances during those periods.

The results of the KDE visualize when and where the alliances were located. While KDE results, in general, are influenced by researcher-defined parameters, in this case we reduced this influence by using scales informed by the Ripley's *K* results. The larger-scale KDE (25-km parameters) may be overly inclusive; the smaller-scale results (16-km parameters) may be overly exclusive. Using the two scales, comparing the results to each other and comparing the result to the NN and Ripley's *K* results is the best way to understand the nature of the clusters. Generally, clusters are located in each of the predefined geographical subdivisions in South Dakota. Throughout time these clusters expand and contract and, at some points, are defined by a northern group (Cannonball and Grand–Moreau divisions) and a southern group (Bad–Cheyenne and Big Bend) group. For instance, in Period 3 at the 16-km and 25-km scales (figure 12.5), there are clusters in four of the geographical divisions while in Period 7 (figure 12.9) the clusters consolidate and there are no longer significant clusters at these scales.

Fortification strategies also vary throughout the settlement clusters. Frequently, fortifications are dispersed across the region, as they are in Periods 3, 4, 5, and 6. In Periods 7, 8, and 9 sites are fortified in northern South Dakota, but not frequently in the south. Fortified villages can be placed at the edge of clusters, as they are in the Bad–Cheyenne/Big Bend cluster in Period 5, whereas the Bad–Cheyenne and Big Bend clusters of Period 9 show a centralized fortified village with unfortified neighboring villages.

When not associated with a larger cluster, a village may pair with another village, with at least one being fortified (see Periods 3 and 4). An interesting

example of this strategy can be found during Period 4 (figure 12.6) with the Durkin Village, an unfortified Extended Middle Missouri village, and Whistling Elk, a fortified Initial Coalescent village. This may indicate an alliance between communities belonging to different taxonomic variants, which have sometimes been interpreted as representative of different ethnic groups. Even if there were no formal alliance, the lack of fortification at Durkin Village indicates that the Extended Middle Missouri village did not fear attack from their potentially ethnically different neighbors, at least in this instance. This type of relationship may contradict the traditional view of a hostile relationship between Middle Missouri and Coalescent villagers. While the exact timing of the Crow Creek massacre cannot be identified (Bamforth and Nepstad-Thornberry 2007a), this unorthodox pairing is contemporaneous with the Initial Coalescent component of the Crow Creek village. This does not disprove that the massacre was perpetrated by Middle Missouri villagers; however it does call into question assumptions concerning pan-regional hostilities between Middle Missouri and Coalescent peoples.

A similar situation occurs during Period 3 (figure 12.5) with Stony Point, a fortified Initial Middle Missouri village, in close proximity to Ketchen Village, an unfortified Extended Middle Missouri village. Depending on the unresolved ancestral origins of the Extended Middle Missouri, this potential alliance has significant implications for intergroup warfare. If the Extended variant is directly related to the Initial, then the pairing may simply be the result of continuity between the variants during a transitional period. If the Extended Variant does indeed represent an incursion of ethnically similar yet distinct immigrants from North Dakota, then the potential alliance suggests greater complexity of intergroup social relations. Again, while it is difficult to say that these two villages were definitively allied, the fact that the Ketchen villagers traveled into IMM territory and did not feel the need to fortify indicates that the EMM people did not fear attack.

Conversely, just as there are intertradition and variant pairings and clusters, there are unoccupied zones, or no man's lands, separating villages of the same tradition and variant. The unoccupied zones are between IMM sites present in Period 1 (figure 12.3) and this pattern persists until Period 3 (figure 12.5), when the IMM abandon the Cannonball and Grand–Moreau and the northern no man's land separates EMM villages. These unoccupied zones are present at times when there is only one tradition throughout the Missouri River in South Dakota, suggesting internecine warfare, while less-dramatic, unoccupied zones are present in Period 4 (AD 1300–1400; figure 12.6) during the first appearance of the IC. If ethnic warfare was the only applicable

model, the no man's land would be found between EMM and IC clusters. In reality, there is no clear division between EMM and IC sites and, when there is separation, the unoccupied zones occur between EMM sites or between an EMM cluster and a mixed EMM/IC pairing. It is obvious that the nature of these relationships can be better understood with more precise chronological data. However, the settlement patterns within the currently established village chronology show territorial clustering and dispersal within these 100-year time frames.

The pattern of fortification building is also informative as it pertains to the nature of warfare. Frequently, where no man's lands are present, Middle Missouri–tradition villagers fortify the frontiers. All of the IC sites included in this study are fortified. While the Middle Missouri–tradition villagers were enhancing some of the unoccupied zones with palisades, IC villagers protected all sites, or at least all sites included within Johnson's (2007a) chronology.

Ultimately, archaeologists need to consider four scenarios while discussing the combatants of Missouri River warfare: (1) Plains Village versus Late Woodland and/or nomadic hunters, (2) external village warfare, (3) internecine village warfare, and (4) interregional warfare. While external village warfare is the most commonly argued scenario, there is growing evidence for other scenarios as well. For instance, at the fortified Fay Tolton village there are indications of site burning and osteological evidence for interpersonal conflict (Hollimon and Owsley 1994). Also, Fay Tolton is occupied during the same period (Period 2) as the Late Woodland Charred Body Complex occupations, suggesting the possibility of conflict between Late Woodland and IMM along with the cooperative interaction that Ahler (2007) shows. Others have noted that the personal conflict at Fay Tolton may indicate internecine warfare (Krause 2012:130). There is similar debate concerning the Crow Creek massacre with some hypothesizing that it may have been the result of internecine war (Zimmerman and Bradley 1993; Zimmerman and Stewart 1991) and others arguing that the massacre may be the result of Oneota expansion (Hollinger 2005; chapter 10, this volume).

CONCLUSIONS

Archaeologists may discover that every scenario will not be present at all times, but it is likely that they are not mutually exclusive. This study shows the importance of understanding warfare at different scales, in both the methodological and interpretive frameworks. The relationship of settlement, landscape, and warfare will also be furthered by addressing some key issues.

In the Middle Missouri, the idea of ethnic warfare as the sole model of warfare among village farmers is called into question. Violent conflict certainly had an ethnic component, but looking at the Middle Missouri through a lens of a segmented society is informative to understanding village politics. That the band is the base political level has implications in both war and peace. These ties can be implied by studying the clusters and fortification strategies in the Middle Missouri.

Although there is temporal variation in fortification strategy, there is a need for better chronology of fortification building. At what point in the occupation were the fortifications built? This is important at sites like the Arzberger village, where it was occupied in parts of two centuries. For sites that have multiple concentric fortifications, such as the Stony Point village, in what order are fortifications built? Do multiple fortifications represent expansion or contraction of village size? Is this consistent in all villages with multiple fortifications? Finally, to strengthen the relationship of settlement patterns with warfare, archaeologists should attempt to identify and test other reasons for clustering and thus potentially exclude competing models.

13

The Crow Creek Massacre

The Role of Sex in Native American Scalping Practices

Ashley Kendell

The study of violence has been a central point of discussion for many social scientists, as violence appears so intimately intertwined with the rise of humanity and civilization. Some of the first records of human history, unsurprisingly, come in the form of military histories, which inevitably are records of violent human interaction (Keeley 1996:3). In fact, records of warfare span the globe from ancient Egyptian hieroglyphs, to Mayan ritual practices, to modern civil war stories (Keeley 1996). Likewise, bioarchaeological research unequivocally demonstrates that humans have been subject to interpersonal violence, especially among men (Walker 2001:573). A deeper look into the historic and archaeological record indicates that women also played an active role in warfare. Women's roles involve not only the acquisition of weapons, and celebration of victories, but also suffering the humiliation and misery of defeat.

While much literature has been devoted to the analysis of interpersonal violence in its modern form, less research has been devoted to understanding causes of violence in earlier, prehistoric societies (Milner 1995; Walker 2001). This facet of human history is worthy of exploration as the archaeological record of the Great Plains yields evidence of warfare preceding the arrival of Europeans by hundreds of years (Bamforth 1994). Evidence of violence in the Great Plains, however, is infrequent before AD 950 (Lambert 2002:224). It is not until AD 1200 that indications of violent human

DOI: 10.5876/9781607326700.c013

interaction, including increased use of fortifications and village abandonment, become more prevalent in the archaeological record of North America.

Indicators of violence can also be observed on the human skeleton. Analysis of human remains can yield data pertaining to extrinsic factors, such as environmental fluctuations, economic shifts, and resource instability, which may exacerbate violent human interaction (Walker 2001:574). In this sense, human skeletons often provide otherwise unobtainable information about the interactions of prehistoric peoples, including hostility and warfare (Milner 1995). Traumatic injuries in ancient human remains also provide a direct source of evidence for testing theories of warfare and interpersonal aggression. The evaluation of skeletal evidence of violence is made difficult, however, because interpretation is often unreliable and violent trauma is not always easily recognized (Milner 1999; Walker 2001).

In prehistoric times, weapons were often indistinguishable from everyday tools (Milner 1999). Therefore, archaeologists and anthropologists are faced with the problem of determining what forms of skeletal trauma constitute intentional violence. The location of an injury may indicate its cause (Armelagos 1977; Lahren and Berryman 1984; Lovell 1997; Merbs 1989). For example, parry fractures, fractures of the ulnar shaft, are frequently associated with victims of assault because they occur when the victim raises his or her hands in a form of defense (Walker 2001). Parry fractures, however, are not always defensive injuries, but can also result from a fall, where an individual attempts to catch him- or herself in making contact with the ground. Parry fractures are just one example of trauma that cannot be reliably distinguished as accidental or violent. Fortunately, traumatic mutilations, such as scalping, decapitation, and other trophy taking, are all manifest on skeletal remains as clearly distinguishable forms of intentional interpersonal violence (Walker 2001).

Scalping is one of the most reliable and most easily identified expressions of intergroup conflict (Olsen and Shipman 1994). Scalping is defined as "the forcible removal of all or part of the scalp" (Nadeau 1944:1677). Osteological evidence of scalping is recognized by a characteristic pattern of cut marks. Cuts, or clusters of cuts, typically encircle the superior and anterior portion of the skull (Bueschgen and Case 1996:230). Evidence of healed scalping is also suggested by the presence of periosteal reaction on the frontal and/or parietal bones from infection or by bone remodeling following the survival of a scalping (Bueschgen and Case 1996:230; Miller 1994:212; Snow 1941:55).

Because it removes only the skin of the head, scalping was not directly intended to take another's life, but the practice was an act of violence that was most often performed upon the enemy, except in certain cases of tribal

ritual (Reese 1940:9). In both prehistoric and historic times, scalping by a Native American can be interpreted as a final insult or ultimate curse upon the victim (Jacobi 2007:312). To guarantee entry into the afterlife, certain Native American tribes believed that an individual must be physically complete, and removal of an enemy's scalp precludes physical wholeness (Jacobi 2007:312). Scalping, therefore, provides a tangible token of physical and spiritual dominance and was rarely practiced upon members of one's own society (Seeman 2007:171).

Scalping has often been claimed to be of European origin. However, while Europeans may have encouraged and promoted the practice, the ethnographic and archaeological records indicate that it was present before European arrival (Allen et al. 1985:23; Owsley and Berryman 1975:44; Neumann 1940:289). Early explorers and settlers had no preexisting words to describe the practice when they first encountered it among Native American tribes (Axtell and Sturtevant 1980: 462). There was no terminology to describe scalping in English, French, or Spanish, so when the Native American tradition was first encountered, new words had to be developed or old words were used ambiguously to refer to the practice (Allen et al. 1985:23). There is also ample evidence in the archaeological record of the occurrence of scalping in North America before European contact (Owsley and Berryman 1975:44).

The Crow Creek site offers an opportunity to study the practice of scalping. Crow Creek is the site of a prehistoric massacre in which the village was raided and villagers were slaughtered and placed in a mass grave (Willey 1990; Willey and Emerson 1993). The skeletal remains of more than 486 people were excavated from two human bone beds uncovered at the site. The frequency of mutilations recorded on victims of the Crow Creek massacre approached 100 percent (Willey 1990:151). The most prevalent manifestation of interpersonal violence was the presence of cuts on the frontal bones of victims, indicative of scalping. Altogether, more than 90 percent of the frontal bones recovered from Crow Creek showed evidence of scalping (Willey 1990:105; Willey and Emerson 1993:257).

Some authors report that there is not a significant relationship between a victim's age and sex, and whether or not they were scalped (Allen et al. 1985:29). No man, woman, or child was spared from the scalping custom. In many cases, the scalps of individuals in noncombatant categories, such as women, children, the sick, and the elderly, were considered valuable because they provided evidence that a warrior had penetrated an enemy's defenses (Allen et al. 1985:29; Owsley 1994:337). Further evidence comes from the Crow Creek site, where the human bone bed contained equal numbers of scalped males and females.

It is apparent that both males and females were subject to this trophy-taking practice. Also, members of all adult age groups were scalped.

Upon initial inspection, the Crow Creek site does appear to corroborate previous speculation about the relationship between age, sex, and the likelihood of an individual being scalped. The goal of this study is to provide an in-depth assessment of the relationship between scalping and an individual's sex and age.

ARCHAEOLOGICAL BACKGROUND

Crow Creek offers a unique opportunity to study the scalping practice in great detail, as it is the site of a prehistoric massacre. The exact date of the Crow Creek massacre is unknown; however, dates have been posited from the early 1300s to the mid-1400s (Bamforth and Nepstad-Thornberry 2007a; Willey 1990:1). At the time of the massacre, Crow Creek was raided and villagers were slaughtered (Willey 1990; Willey and Emerson 1993). After a period of exposure above ground, the bodies of the victims were gathered and placed into a mass grave at the western end of an outer fortification ditch surrounding the Crow Creek site (Willey 1990:130). Surface exposure is suggested by the presence of taphonomic indicators; puncture marks and broad grooves, indicative of canid scavenging, are present on the remains (Willey 1990:131). Excavation of the outer fortification ditch revealed a mass grave containing the skeletal remains of at least 486 people.

Mutilations were observed on most of the skeletal remains from Crow Creek. Skulls and mandibles showed signs of violence, including cuts, fractures, and avulsion fractures (Willey and Emerson 1993). Cuts were observed on arms and legs that indicated the removal of hands and feet as trophies of war (Willey and Emerson 1993). The most prevalent manifestation of intergroup conflict, however, was the presence of cuts on the crania of victims indicative of scalping.

Scalping is most often performed during the perimortem interval, either at the time of death or minutes before the onset of death (Jacobi 2007:312). Therefore, while it may be argued that scalping is not a direct index of interpersonal violence, as the person is already dead in many cases, this chapter suggests that scalping is in fact a direct measure of brutality. Given the context of Crow Creek, a massacre site with a minimum of 486 people slaughtered and then buried in a mass grave, scalping must be considered in conjunction with all other evidence of violence at this location. Furthermore, two individuals at the Crow Creek site show evidence of healed scalping injuries, suggesting that scalping during the Crow Creek massacre was not a unique experience.

MATERIALS

Excavation of the Crow Creek site was performed by Larry Zimmerman acting as the principal investigator, Thomas Emerson as field director, and P. Willey and John B. Gregg acting as consulting osteologists (Willey and Emerson 1993). The skeletal collection was curated at the University of South Dakota, where data collection and skeletal analyses were performed. In May 1979, remains were repatriated to the Crow Creek Sioux Tribe and reburied in August 1981 (Willey 1990).

In all, this study consists of 77 aged and sexed crania excavated from the Crow Creek site. The dataset is composed of adult skeletal material only. The crania included in this study are those complete enough for an analysis of scalping manifestations to be performed. The author did not perform any original observations for this study because all skeletal material had been repatriated. Therefore, all data used in this study are drawn from the age and sex forms recorded by Mark Swegle in 1979 along with scalping mutilation datasheets recorded by P. Willey and an anonymous investigator at the University of South Dakota.

Of the 77 crania used in this study, 38 (49.4%) were male and 39 (50.6%) were female. No systematic bias is detected in the sample, as there are roughly equal numbers of male and female individuals. Of the 38 males, 7 individuals were classified as young adults (20–25 years), 19 as middle adults (27.5–37.5 years), and 12 as old adults (40+). For the 39 female crania, 12 were young adults, 20 were middle adults, and 7 were old adults. The sample size of each age category was balanced because age categorization was based on an interquartile split.

METHODS

This study evaluates the hypothesis that sexes, as well as members of different adult age groups, experienced differential treatment during the Crow Creek massacre. The study focuses on scalping cuts as an indicator of brutality against Crow Creek massacre victims. Three independent variables were used to indicate the level of brutality against the scalping victim: total number of cut marks per cranium, number of cut marks on the frontal bone, and breadth of cut marks across the frontal bone (this variable is based upon a measure of length from the most lateral extent of cuts on one side of the cranium to the most lateral extent of cuts on the contralateral side of the cranium). The study assesses whether or not there is a statistically significant difference in the aforementioned variables when comparing men and women and members of different adult age groups. All statistical analyses were performed using SPSS 16.0 (2007). The following statistical tests were applied to the Crow

Creek dataset: independent sample *t*-tests, ANOVA, factorial ANOVA, and regression and correlation analyses.

RESULTS

From the scalping datasheets, the total number of cuts could be determined for 70 crania. From this sample, the mean number of cuts per cranium was 18.67, standard deviation was 19.42 cuts, and variance of total cuts was 377.27. The sample had a minimum of one cut mark and a maximum of 94 cut marks with a range of 93 cuts.

Sixty-seven crania had cut marks on the frontal. Of these 67 crania, the mean number of cuts on the frontal was 11.49, standard deviation was 10.29 cuts, and the variance was 105.83. The sample had a minimum of one cut mark and a maximum of 43 cut marks with a range of 42 cuts.

Breadth of cuts across the frontal could be calculated for a total of 62 crania. Of these 62 crania, the mean breadth of cuts on the frontal was 103.90, standard deviation was 36.24 mm, and variance was 131.42. The minimum cut distance was 3.40 mm and the maximum was 157.58 mm with a range of 154.18 mm.

Inferential statistical comparisons assessed whether there were differences between male and female victims of the Crow Creek massacre. First, independent sample *t*-tests examined differences in male and female total number of cuts, number of cuts on the frontal, and the breadth of cuts on the frontal. There was a statistically significant difference between the total number of cuts on male and female crania (table 13.1; $t = -2.390$, df = 68, $p = 0.020$, Levene's Test assuming equal variance). The mean total number of cuts on female crania was nearly twice the total number of cuts on male crania.

Independent sample *t*-tests assessed the relationship between sex and number of cuts on the frontal and breadth of cuts on the frontal. No statistically significant difference between the number of cuts on the frontal bone of male and female victims existed (table 13.2; $t = -1.189$, df = 65, $p = 0.239$ Levene's Test not assuming equal variance). There was, however, a statistically significant difference in the breadth of cuts on the frontal bone of male and female scalping victims (table 13.3; $t = -2.382$, df = 60, $p = 0.020$ Levene's Test assuming equal variances). The mean frontal cut breadth was greater in females than males.

Inferential statistical comparisons also assessed if different adult age groups were subject to different scalping treatment during the Crow Creek massacre. To test the relationship between age groups (young adult, middle adult, and old adult) and number of cuts, ANOVA tests were applied. The first ANOVA evaluated the relationship between age and total number of cuts by cranium.

Table 13.1. Independent samples *t*-test results for total number of cuts on male and female crania.

Sex	*N*	*x̄*	*T-Value*	*Degrees of Freedom*	*P-Value*
Total	70		−2.390	68	0.020
Male	34	13.15			
Female	36	23.89			

Table 13.2. Independent samples *t*-test results for number of cuts on male and female frontals.

Sex	*N*	*x̄*	*T-Value*	*Degrees of Freedom*	*P-Value*
Total	67		−1.189	65	0.239
Male	32	9.94			
Female	35	12.91			

Table 13.3. Independent samples *t*-test results for breadth of cuts on male and female frontals.

Sex	*N*	*x̄*	*T-Value*	*Degrees of Freedom*	*P-Value*
Total	62		−2.382	60	0.020
Male	30	92.99			
Female	32	114.13			

The test results showed no statistically significant relationship between age and total cuts (table 13.4; $F = 1.502$, df = 2,67, $p = 0.230$).

The second ANOVA assessed the relationship between age and number of cuts on the frontal. The test results showed no statistically significant relationship between age and the number of cuts on the frontal bone (table 13.5; $F = 1.095$, df = 2, 67, $p = 0.340$).

The third ANOVA assessed the relationship between age and breadth of cuts on the frontal. The test showed that there was a statistically significant relationship between age and the breadth of frontal cuts (table 13.6; $F = 4.362$, df = 2,61, $p = 0.017$). A post hoc Bonferroni test specified that there was a statistically significant difference in the frontal breadth between young and old adults ($p = 0.032$), and also between middle and old adults ($p = 0.036$). There was, however, no significant difference in the breadth of frontal cuts between individuals classified as young adults and middle adults.

The next statistical test applied to the Crow Creek database was a Factorial ANOVA. Factorial ANOVA simultaneously evaluated the relationship

Table 13.4. ANOVA results for total number of cuts by age.

Age (years)	*N*	*F*	*P-Value*
Young (20–25)	18	1.502	0.230
Middle (27.5–37.5)	34		
Old (40+)	18		

Table 13.5. ANOVA results for frontal cuts by age.

Age (years)	*N*	*F*	*P-Value*
Young (20–25)	18	1.095	0.340
Middle (27.5–37.5)	34		
Old (40+)	18		

Table 13.6. ANOVA results for frontal breadth by age.

Age (years)	*N*	*F*	*P-Value*
Young (20–25)	16	4.362	0.017
Middle (27.5–37.5)	30		
Old (40+)	16		

between the two independent variables (age and sex) and each dependent variable (total number of cuts, number of cuts on the frontal bone, and breadth of cuts on the frontal bone). The first Factorial ANOVA examined age and sex interaction for the total number of cuts on the cranium (table 13.7). The test showed that the relationship between the total number of cuts and sex was approaching significance ($F = 3.972$, $p = 0.051$). The difference in the total number of cuts among age groups ($F = 0.949$, $p = 0.393$) was not statistically significant and the sex and age interaction was also not statistically significant ($F = 0.025$, $p = 0.975$).

The second Factorial ANOVA assessed sex, age, and their interaction for the number of frontal cuts (table 13.8). The test showed the relationship between the number of cuts on the frontal of males and females is not statistically significant ($F = 0.759$, $p = 0.387$), no difference in the number of cuts on the frontal among age groups ($F = 0.884$, $p = 0.418$), and no interaction between age, sex, and the number of cuts on the frontal ($F = 0.114$, $p = 0.892$).

The third Factorial ANOVA assessed sex, age, and their interaction for the breadth of cuts on the frontal (table 13.9). The test showed a statistically

Table 13.7. Factorial ANOVA results for sex, age, and interaction by total number of cuts.

	F-Value	*P-Value*
Sex	3.972	0.051
Age	0.949	0.393
Sex*Age Interaction	0.025	0.975

Table 13.8. Factorial ANOVA results for sex, age, and interaction by frontal cuts.

	F-Value	*P-Value*
Sex	0.759	0.387
Age	0.884	0.418
Sex*Age Interaction	0.114	0.892

Table 13.9. Factorial ANOVA results for sex, age, and interaction by breadth of cuts.

	F-Value	*P-Value*
Sex	5.374	0.024
Age	3.954	0.025
Sex*Age Interaction	3.433	0.039

significant difference in the breadth of cuts on the frontal by sex ($F = 5.374$, $p = 0.024$), among age groups ($F = 3.954$, $p = 0.025$), and the interaction between sex and age ($F = 3.433$, $p = 0.039$). Test results indicated that sex differences in the breadth of the frontal cut depended on the age of the victim. For example, when comparing old adult males to old adult females, females had a longer breadth of cuts on the frontal than males, but when comparing young adult and middle adult females to young adult and middle adult males, no significant difference in the breadth of cuts on the frontal occurred between the sexes (figure 13.1).

Factorial ANOVA suggested that a relationship existed between age and sex in relation to frontal cut breadth. Regression and correlation analysis clarified this relationship. Regression and correlation analyses were performed on frontal cut breadth alone because this variable was the only one with a significant interaction between age and sex, and analyses were calculated separately for each sex. Frontal cut breadth was the dependent variable and age was the independent variable. There was a moderate negative relationship between frontal cut breadth and age in males (table 13.10, $r = -0.498$, $p = 0.004$). This

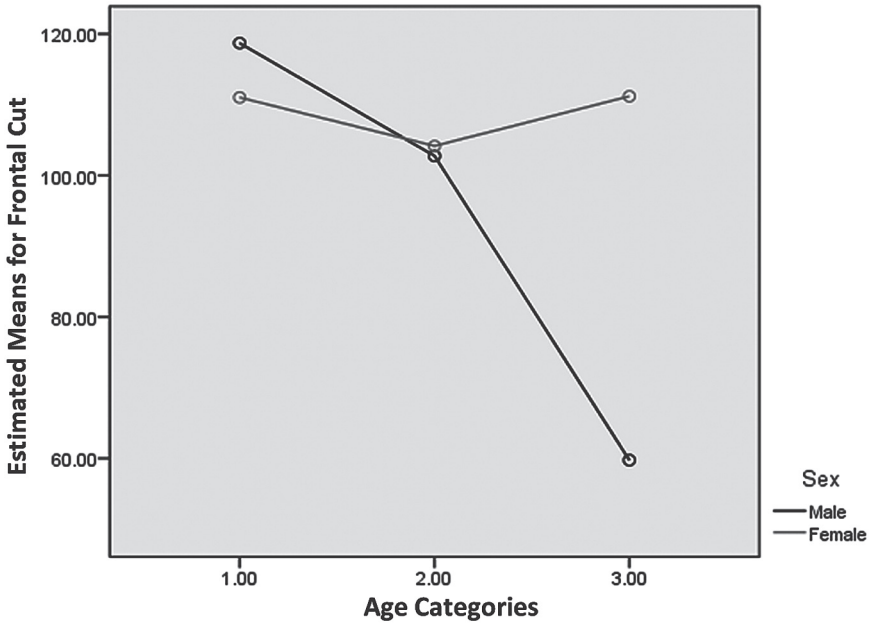

Figure 13.1. *Factorial ANOVA plot of age and sex by Crow Creek frontal cut breadths.*

relationship indicated that 24.8 percent of the variability in male frontal cut breadths was explained by age (figure 13.2, r^2 = 0.248). This relationship was statistically significant and the breadth of the frontal cut was influenced by the age of the male scalping victims.

The opposite relationship existed between frontal cut breadth and female age. A weak positive relationship was observed between frontal breadth and age in females (table 13.10, r = 0.075, p = 0.673). This relationship was not statistically significant (figure 13.3, r^2 = 0.006), so the breadth of the frontal cuts

Table 13.10. Regression and correlation of frontal breadth and age in Crow Creek massacre victims.

Sex	R	r^2	*P-Value*	*Linear Regression*
Male	–0.498	0.248	0.004	Significant
Female	0.075	0.006	0.673	Not Significant

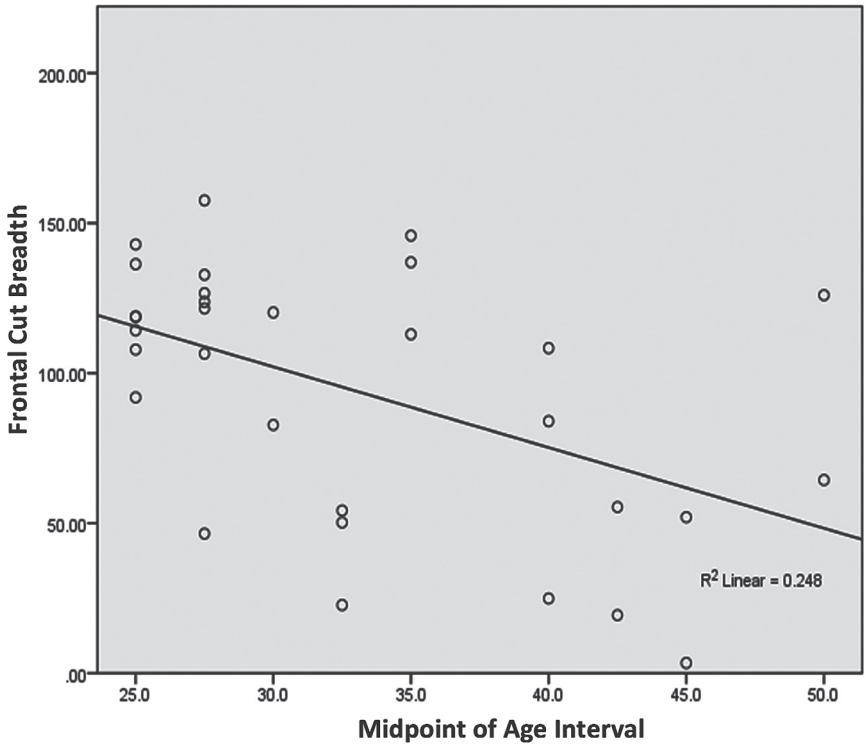

Figure 13.2. *Scatter plot of frontal cut breadths by midpoint of age intervals for male Crow Creek massacre victims.*

was not explained by female age. The relationship between frontal cut breadth and age was only significant in male victims, and age was not related to the breadth of the frontal cut in female victims of the Crow Creek massacre.

Summary

The findings presented in this section suggested that statistically significant relationships did exist between the total number of cuts on male and female crania, and age and breadth of the frontal cuts. Factorial ANOVA results indicated the interaction between age and sex by frontal cut breadth was significant ($p = 0.039$), and from this test result it was determined that sex differences in the breadth of cuts on the frontal were affected by the age of the victim. Regression and correlation were performed on the frontal cut breadth to

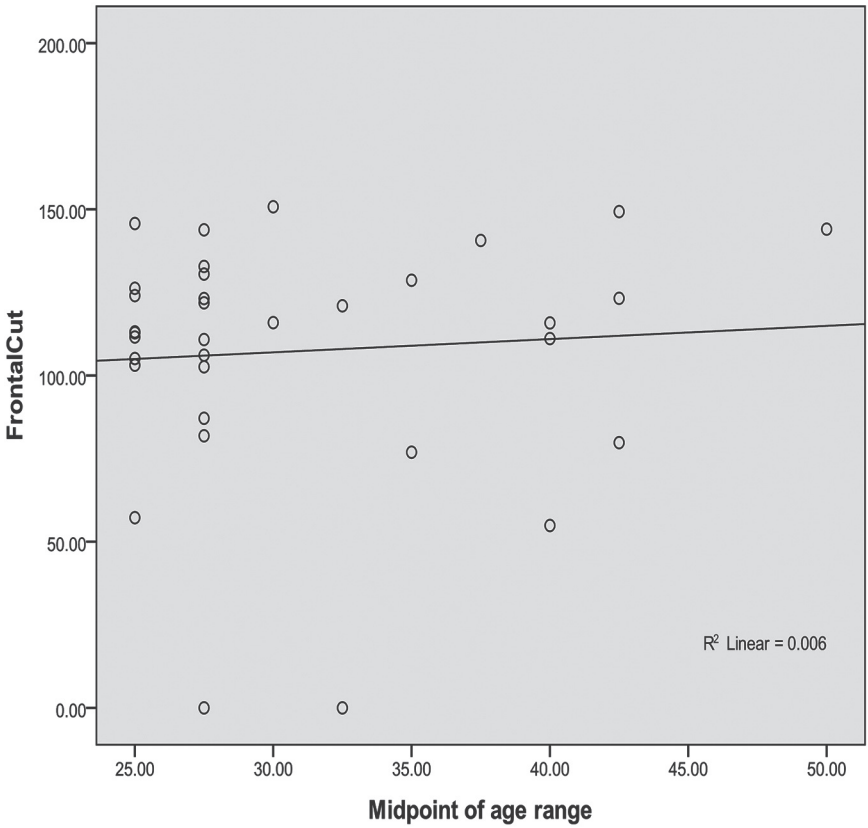

Figure 13.3. *Scatter plot of frontal cut breadths by midpoint of age intervals for female Crow Creek massacre victims.*

clarify the relationship between sex and age, and it was determined that there was a moderate negative relationship between frontal cut breadth and age in males, and a non-significant relationship between frontal cut breadth and age in females. The implications of these results are discussed and explained in the following section.

DISCUSSION

Although there was not a statistically significant difference in the number of cuts on the frontal of males and females, a statistically significant difference in the total number of cuts and breadth of cuts on male and female crania did

occur. There are five possible explanations for the differences observed in the total number of cuts and breadth of frontal cuts on male and female victims of the Crow Creek massacre.

The first explanation for female crania having a higher number and breadth of cuts was that female scalping victims experienced higher levels of brutality during the Crow Creek massacre. Historically, gender appears to have been an important organizing principle in the social stratification of early Arikara societies (Hollimon 2000:27). According to the ethnographic literature, status-climbing in protohistoric Arikara societies was observed primarily among male members of the community (Holder 1958:214). This social climbing was most often achieved by way of the war hierarchy or through a series of near-sacred associations and secular fraternities (Holder 1958:214). The highest-ranking male acted as the war chief of the community (Holder 1958:215). While social climbing was predominantly achieved by males elevating themselves through the war hierarchy, Arikara village life was constructed on a series of age-grade societies through which both men and women passed (Peters 1981:49). Age-grade societies were composed of members of the same sex and relative age (Peters 1981:49). Social-climbing, therefore, was also achieved by Arikara women.

Social stratification in Arikara societies was similarly recognized in the division of labor, which was documented in the ethnographic, linguistic, and archaeological record. The ethnographic record describes social stratification in Arikara myths as a gender-based division of labor (Gilmore 1933:74–75). Anthropological studies have also examined Arikara social structure reflected in material culture, mortuary practices, and skeletal biology (Hollimon 2000:27). Men were depicted in the ethnographic literature as smokers and gamblers with a rampant distaste for physical labor (Hollimon 2000:27). In contrast, numerous references indicated that women led extremely difficult lives, filled with hardship, privation, and backbreaking labor (Hollimon 2000:27). Authors, such as Boller, De Land, and de Trobriand, referred to Arikara women as beasts of burden, as they served the function of laborer in early Arikara society (Hollimon 2000:27). Historic accounts of Europeans reported that women were old beyond their years from working in the cornfields, carrying heavy loads, procuring and preparing food, and bearing and caring for children. These normative gender roles were most likely observable in other areas of the archaeological record, such as in the dehumanization and brutalization of women in times of war.

The intensity of trophy-taking, including scalping, can be related to the dehumanization of one's victim (Maschner and Reedy-Maschner 2007:37).

According to ethnographic references to gender roles in Arikara communities during the early Historic period, women were viewed as lesser members of society. As lesser members of society, women would have been further dehumanized by their attackers, and their death and mutilation would have been more likely to mimic the pattern of an animal being slaughtered than the conquering of an enemy warrior. The slaughtering of devalued female victims may be hypothesized to be more representative of a butchering than a ritual practice, leaving female scalping victims with a significantly greater number of cut marks than male scalping victims. While evidence for status differentiation within Arikara society was derived from ethnographic accounts during the Historic period, this pattern could be projected into the prehistoric past to gain insight into the social interactions of earlier societies (Holder 1958:213).

The second explanation for females having a higher number of total cuts and a greater breadth of cuts across the frontal was that the attacker was able to perform the task unhurriedly on female victims (Bridges 1996:71). If there was no danger of retaliation by an opposing warrior, the scalper was able to complete the task in a more thorough manner (Bridges 1996:71). A greater number of cuts signified that the attacker had more time to perform the scalping and was not forced to tear the skin from the bone and risk ripping the scalp, but instead had time to cut the scalp from the bone (Bridges 1996:72). Fear of immediate retaliation would most likely arise when a warrior was in hand-to-hand combat with a fellow warrior. Most warriors were male and when scalping a male victim, the attacker was often in close proximity to other vital enemy warriors (Bridges et al. 2000:56). With other warriors in close proximity, the threat of being attacked was greater and the scalper was rushed in the task of obtaining his trophy of war.

In contrast, when an attacker was scalping a female victim, the attacker was likely to have already penetrated the defensive forces surrounding the village and disabled defending males (Bridges 1996:72). Therefore, the attacker almost certainly had more time to scalp his victim because villagers would tend to be females and children. With sufficient time to perform the scalping, the attacker took time to obtain a larger piece of the enemy's scalp, making more cuts on the victim's cranium instead of rushing and tearing the scalp from the bone (Bridges et al. 2000:71). In a similar vein, it is also plausible that the difference in the total number of cuts observed on males and females is a measure of the experience of the person performing the scalping. If women or elderly members of the population were more likely to be captured than a young, agile warrior, it is possible that only inexperienced warriors were capturing this particular subset of the population. An inexperienced warrior may leave

more cut marks on the female crania than would an experienced scalper who was performing the act on another male warrior. Therefore, the difference in the total number of cuts represented on each of the sexes would simply be a reflection of the level of experience of the individual performing the scalping.

The third explanation for a greater number and breadth of cuts on female crania was that female scalps were more valuable, and more time was spent removing a larger piece of scalp from female victims (Bridges 1996:72). Historically, men gained honor and prestige by killing not only their male enemy, but also their enemy's wives and children. In some ways, the humiliation and killing of another man's close relatives, such as his wife or daughter, conferred a higher status upon the attacker than killing the warrior himself (Bridges 1996:72). Greater honor was associated with sneaking into an enemy village. Infiltration of an enemy village required greater bravery on the part of the warrior than killing an enemy warrior on the battlefield. When women and children were killed, the victor's actions were often based on the concepts of social substitution and collective liability (Kelly 2000:5). The concept of social substitution was based on the principle that an individual's murder was perceived as an injury to his or her group. Therefore, the murder of any group member was substitutable for another (Kelly 2000:5).

Similarly, it has been suggested that women and children were scalped for the trophy itself and death of the victim was only a secondary motive behind the attack (Bridges 1996:72). Scalping victims in prehistory included children and adults of both sexes, supporting the inference that warriors and war parties acted on the principles of social substitution (Kelly 2000:5).

The fourth explanation for the greater total number of cuts and breadth of cut marks across the frontal on female crania contradicts the hypotheses previously presented in this study and claims that females were highly valued members of Arikara society. It has been suggested that the few European and American accounts of early Historic-period Arikara societies represent biased views of women (Sundstrom 2015). As stated previously, the ethnographic literature reports that women were viewed as beasts of burden, and served the function of laborer (Hollimon 2000:27). However, there is ample evidence in the literature that Arikara societies were matrifocal and the importance of women in these societies is evident in every major aspect of village life, including hunting, warfare, and religion (Peters 1981:158; Sundstrom 2015). While social prestige and economic status depended on the reputation of the husband as a warrior, men and women in early Arikara society understood that the husband ascended and remained in good social circumstances only if the wife did her part (Peters 1981:86). Authors have suggested that the

misconception in early European and American accounts of Arikara women were based on preconceived notions of leadership and a misunderstanding of Native American culture (Peters 1981:63). Therefore, it is possible that females experienced higher levels of brutality than males during the Crow Creek massacre because they were recognized as the more valuable members of prehistoric Arikara society.

The final explanation for the greater number of cut marks on female crania was hairstyle. Some prehistoric Native American warriors wore their hair in a scalplock, a braid or lock of hair on the crown of the head (Jacobi 2007:314–315). In war, the scalplock taunted other warriors. At a number of prehistoric sites, male scalping victims show the oval/circular defect associated with scalping located on the most superior portion of the skull. This defect was hypothesized to represent the removal of the scalplock, rather than the entire scalp (Jacobi 2007:314–315). Scalping defects created by the removal of the scalplock, rather than the entire scalp, began higher on the frontal, closer to bregma (Jacobi 2007:314). The hairstyle explanation could not be adequately explored in this study. The exact location of cuts could not be determined from the scalping data recorded in 1979. However, it could be concluded that if only male scalplocks were removed at the Crow Creek site, the size of the scalp should be smaller among male victims. A smaller piece of scalp would require the attacker to make fewer cuts. If the exact location could be determined, it might have been possible to determine whether hairstyle caused the difference in number of cuts observed on male and female victims.

While a greater number of cuts were observed on female crania, the breadth of cuts across the frontal appears to have been influenced by age in male scalping victims only. According to regression and correlation analyses, a negative relationship between frontal cut breadth and age occurred in males (table 13.10, $r = -0.498$, $p = 0.004$). This relationship indicated that 24.8 percent of the variability in frontal cut breadths in males was explained by age (figure 13.2, $r^2 = 0.248$). These results could be explained by the fact that warfare was primarily a male activity (Walker 2001). Because warriors were typically young males, a distinction was made between age groups for men; warrior scalps would have been considered more valuable than the scalps of older males. This hypothesis finds support in ethnographic references to male warriors in the early Historic period. Because the life expectancy during the Prehistoric period was probably much shorter than the life expectancy observed in modern Arikara, male warriors were most likely young adults and possibly middle-aged adults (20–25 and 27.5–37.5 years, respectively). Because scalp-taking indicated bravery and

prowess in battle, a higher value would be placed upon the scalp of a young, virile individual than the scalp of an older victim.

Contrasted with male results, regression and correlation analyses performed on female scalping victims yielded different results. Because the acquisition of a scalp indicated bravery and prowess in battle, no distinction was made between females of different ages, as neither young nor old adult females were typically participating in battle. Therefore, removal of the scalp from female members of different age groups would not be an indication of greater war prowess. The relationship between female age and frontal cut breadth was not significant.

CONCLUSION

The Crow Creek site is "arguably the most famous archaeological site on the Northern Plains" (Bamforth and Nepstad-Thornberry 2007a:153). The site has played a major role in the reconstruction of Native American history, particularly historic violence on the Plains (Willey 1990). Crow Creek is unusual because it offers an extremely rare opportunity to study the skeletal remains of a population at a particular point in time: namely, the time of the massacre (Zimmerman and Alex 1981:26).

Mutilations were observed on many of the skeletal remains recovered from the human bone bed at Crow Creek. Skulls and mandibles showed signs of violence, including cuts, blunt-force trauma, and fractures (Willey 1990:95–105). Scalping was examined in this study for three reasons. First, scalping is the most easily recognizable expression of intergroup violence. Second, over 90 percent of the crania from Crow Creek showed evidence of scalping. Third, equal numbers of male and female skulls showed evidence of scalping. Because of the large sample of both male and female scalping victims, the Crow Creek site provides an opportunity to analyze whether or not there was a relationship between an individual's sex and/or age and scalping practices.

The following statistically significant results were found. There was a difference between the total number of cuts on male and female crania. The total number of cuts on female crania was greater than the total number of cuts on male crania. There was a statistically significant relationship between the three age groups and the breadth of frontal cuts. A post hoc test indicated that the difference in breadth of cuts between young adults (20–25 years) and old adults (40+) approached significance. Regression and correlation analyses were performed separately for each sex and distance of cuts across the frontal. Differences among age groups and breadth of the frontal cut were observed only in male scalping victims.

In conclusion, the Crow Creek bone bed represents one of the largest skeletal massacre series ever recovered. The importance of the Crow Creek skeletons is indisputable and the site has played a major role in understanding Native American life in prehistory. Crow Creek is important for studying not only warfare, but also prehistoric social relations and gender roles in war. Although the remains have been repatriated, the caliber and quantity of data recorded following the bone bed's excavation hold potential for future studies of the Crow Creek site.

14

Contexts for Conflict

Conceptual Tools for Interpreting Archaeological Reflections of the North Platte Campaign of February 1865

Peter Bleed
and Douglas Scott

War is a significant human activity. It molds the lives of individuals and communities. It impacted human affairs and has unquestionably shaped human history. It is also associated with distinctive material culture that easily attracts the attention of modern audiences. Given all of this, it is hardly surprising that warfare and conflict have emerged in recent years as a focus of modern archaeological research (Scott and McFeaters 2011). But the archaeological study of warfare is not easy. Whether it occurs in the North American Great Plains or anywhere else, war is complex. It involves the actions of individuals who use weapons and training to engage in combat with others. Combatants always draw on the knowledge and resources of others. They usually operate in groups and use cooperation and organization to amplify individual efforts. Such martial groups leave their traces in distributions that reflect their organization and patterned practice. They may operate from specially prepared facilities or in open country. In either case, those contexts influence their actions. Their activities are marked by distinctive assemblages that include intentionally assembled arsenals. Such traces are to be seen where combat occurred, but they are more widely distributed because they take preparation and investment that has to begin before combat. At the highest level, war is also guided by broadly shared objectives that transcend individual goals. Laying the groundwork for war, undertaking the training, the

DOI: 10.5876/9781607326700.c014

arming, and the organization it requires, and deciding how to proceed are all societal undertakings.

Archaeologists see war at all of these scales and a synthetic understanding of war requires that they all be investigated. But because they manifest themselves in very different kinds of materials records, the scale differences at which war operates present archaeologists with technical and interpretive challenges. To help archaeologists recognize combat and interpret evidence of the diverse activities that contribute to warfare, we (Bleed and Scott 2011) drew on modern military doctrine to develop a conceptual model that archaeologists can use to organize and interpret the warfare's material record. The goal of this chapter is to present that model to Plains archaeologists and to encourage the conceptual investigation of warfare and conflict on the Plains. War certainly had major impacts on the history and distribution of communities of the Great Plains. The Plains also present a rich body of information that illustrates how battlefield behavior observed in archaeological assemblages can be interpreted at higher social and political levels. In this as in so many other areas, the Great Plains provide a stimulating context for broad anthropological investigation.

BATTLES OF THE NORTH PLATTE CAMPAIGN

Fighting in the North Platte valley in 1865 followed the November 29, 1864, destruction of Black Kettle's village of Cheyenne (McDermott 1996, 2003; Greene and Scott 2004) by a regiment of Colorado Volunteers. In the wake of that assault, a large community of Cheyenne, Lakota, and Arapaho coalesced and moved toward the security of the isolated Sandhills and the Black Hills. With limited opposition, this group attacked Julesburg, Colorado, and ranches and other facilities to avenge the massacre and to gather resources. The mobile community numbered some 2,000 to 3,000. They reached the North Platte in early February, 1865, with a substantial store of captured arms and resources. By no later than February 5, they established a camp at the headwaters of the spring-fed Rush Creek, now known Cedar Creek. For a couple of days the Rush Creek camp appears to have been the operational base from which fighters attacked Mud Springs, a telegraph station and watering stop some eight miles to the east. The small US volunteer military force at Mud Springs grew as units arrived from Fort Mitchell (Nebraska) and Fort Laramie (Wyoming). By February 8 Indian warriors broke off their attack and the Native community left their secure camp to continue a northward journey. On February 8 and 9, warriors covering their community's

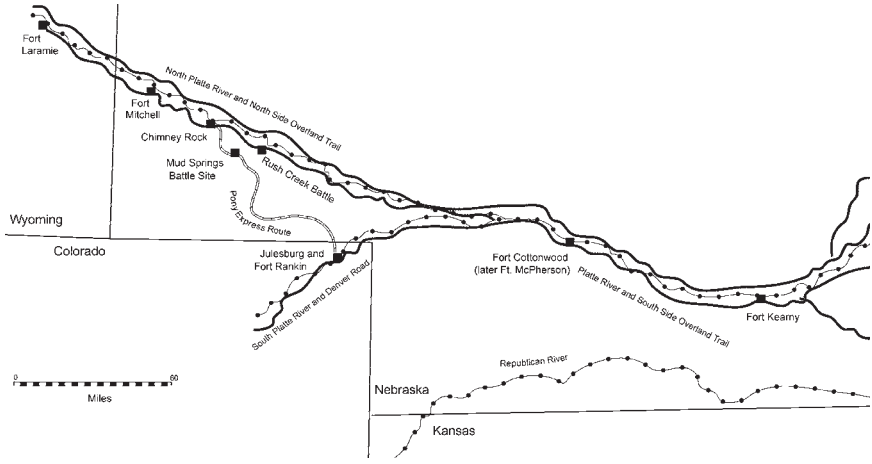

Figure 14.1. *Overland trails and military posts along the trail in 1865. Map by the authors.*

move north met US volunteer troops who had moved on from Mud Springs. This engagement, where Rush Creek meets the North Platte, has come to be called the Battle of Rush Creek (figure 14.1).

Published results of archaeological investigations at both Mud Springs (Bleed and Scott 2009) and Rush Creek (Scott et al. 2011) need only to be summarized here to show that although these engagement involved the same forces and were separated by only a short distance and a mere few days, they offer very different archaeological appearances.

The Mud Springs Station presented Cheyenne warriors with an attractive target. On February 4, 1865, it was occupied by nine troopers from the Eleventh Ohio Volunteer Cavalry, telegrapher Richard Ellsworth, and four civilian cowboys ensconced in a log structure built between a hill and the low ground of a spring. Their corral was full of horses and cattle. Indian fighters were well armed and from the outset there was considerable shooting. The station defenders shot from loopholes made in the station wall but Indian fighters were able to use the terrain to approach their position. Early in the fight, the defenders loosed their stock, hoping that would redirect the attention of the Indian attackers. This plan worked. When the corralled stock was free, most Indian attackers left the station in a melee aimed at capturing horses and cattle. Relief forces, composed of elements of the Eleventh Ohio Volunteer Cavalry and Seventh Iowa Volunteer Cavalry, arrived on February 5, first from the short-lived base known as Fort Mitchell and a few hours latter from Fort Laramie. By the 6th more than 200 troopers were holed

up in and around the station. Initially, the two sides engaged in essentially individual contests between fighters who crept close and shot at one another in "bo-peep" fighting, springing up for a quick shot before quickly retreating. The two sides were within 100 yards of one another and fought over the same ground. After US forces charged and secured the hill south of the station, they excavated a rifle pit that gave them a broad view of the approach to the surrounding area.

Archaeological residues of the Mud Springs fight were recovered in 2006 by systematic metal detection along with individual discoveries recorded with GPS technology. The battlefield has been frequently visited by relic collectors, but the 1865 fight was reflected by an assemblage of some 34 cartridges, cases, and bullets from seven different gun types, indicating both Indian and volunteer actions. These materials were found near the station and intermixed on and around the hill to its south, reflecting the fact that the two sides had crossed back and forth across the same ground.

The cavalry column that moved out of Mud Springs on February 8 included some 180 mounted soldiers, several wagons, and a single 12-pounder mountain howitzer. They located the abandoned site of the Rush Creek camp and followed the trail of the Indian community toward the north. As they approached the North Platte, warriors from the Indian party, which had been temporarily halted on the north side of the river, crossed the frozen surface and the battle was begun.

Historic accounts suggest that the two sides exchanged gunfire until late on the ninth of February, but archaeological evidence indicates that the two sides were *not* closely engaged. In fact, recovered materials, including 136 cartridges, cases, and bullets, as well as evidence of at least two cannon shots, indicate that the two sides held positions that were largely stationary and separated from one another, although not completely fixed. For most of the conflict the sides maintained a healthy distance, ranging from 200 to 1,000 m. The fight ended when Indian fighters disengaged and rejoined their home community on the north side of the river and the troopers took the opportunity to march back to their home bases.

Mud Springs and Rush Creek illustrate the potential of modern battlefield archaeology to expose the details of past conflicts. We know that they, as historic events, were closely related. That information is supported by the archaeological observation of cartridge cases from the two battle sites that were fired by the same three Spencer rifles and Ballard carbines. Archaeological distributions at the two battle sites, however, show that they were fought very differently. The challenge they present is explaining their differences.

LEVELS OF WAR

In the Plains as in other regions of the world conflict archaeologists have been drawn to both "battlefields" and other facilities that appear have been shaped by martial activities. Fortified communities and historical "forts," bases, and depots fall into these categories. At these sites, conflict archaeologists have developed techniques and methods to address how combat occurs. Archaeological consideration of the organization and management of war is beginning to be investigated, but using archaeology to assess contextual aspects of conflict and warfare are challenging, since their link to material evidence is at best indirect. Beyond that, archaeologists have not yet developed a refined vocabulary or conceptual inventory for the synthetic study of warfare.

By contrast, military leaders have carefully conceptualized the range of actions involved in undertaking combat. Military science, the discipline developed to guide military conduct, rests on long history and has deep intellectual roots. The rich and complex literature on military operations certainly should not be used simplistically, but concepts and terms army theoreticians have developed to prepare for and conduct military operations are applicable to archaeological analysis of battlefields and other military sites. The US Army maintains a regular series of training publications designed to make the conceptual basis of military activities available to new personnel. These publications describe the range of actions involved in preparing for and conducting combat in clearly defined, concrete terms. Since they are intended to guide the planning and execution of military activities, these manuals treat combat at all levels, from the specifics of individual and small-group actions to the general formation of military policy. They offer clear conceptualization of the range of activities involved in organizing and conducting combat. Since they treat both concrete realities and conceptual constructs, these manuals can address observable features and support inferential interpretations of archaeological materials.

Levels of War: Strategy, Operations, and Tactics

As laid out in Field Manual *FM 3-0, Operations* (Department of Army, February 2008), any action undertaken in support of a military mission can be described as an "operation." Obviously, this is a generic term. To help commanders visualize the wide range of operations involved in the military mission, current doctrine presents war in terms of three levels: the *strategic*, *operational*, and *tactical*. To emphasize that military actions are interconnected, *FM 3-0* presents these levels and the range of activities undertaken by the military as tiers in a graphic model composed of three hierarchical layers (figure

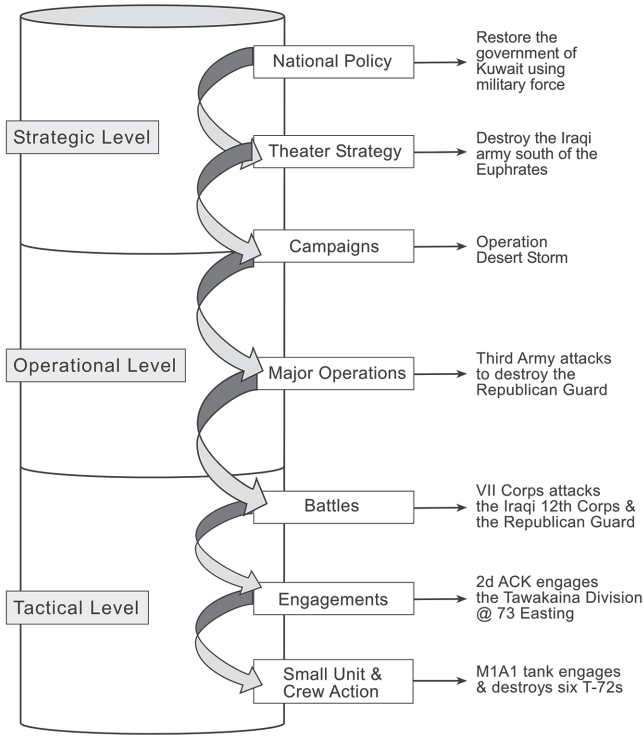

Figure 14.2. *Levels of War model adapted from US Army Field Manual (FM) 3-0. Authors' redrawing.*

14.2). This arrangement emphasizes the conceptual relationship of the range of activities undertaken by the military, but differentiates actions by their contribution to achieving objectives.

The Strategic Level

"Strategy" refers to prudently developed ideas for using power to achieve communal objectives. In military terms, the highest strategic level is formed when political groups determine objectives and develop plans for employing the power available to them to achieve those objectives. Drawing on those ideas as policy, military leaders develop strategic plans for military actions in general and, with specific adjustments, and to operations in specific times and places. In scale, then, strategy ranges continuously from the lofty goals and intentions to regionally bounded applications of those same objectives.

The Operational Level

Turning strategic policy into specific action is the operational level of war. This is the sphere of conceptual and practical work, where field activities are planned, conducted, and sustained. It is directly relevant to archaeological investigations because activities at this level are bound to specific times and spaces. Many of the terms and concepts developed to address those temporal and regional frames have potential archaeological applications.

The Tactical Level

Tactics are the employment of force in combat and the tactical level of war is the realm of direct, close fighting. This level of war deals with how opposing forces use the resources, information, and locations available to them to defeat or destroy their enemies.

The resources of modern armies are vastly different from those of past military forces, but the issues identified by the Levels of War model are general. Since they are at least implicitly part of all conflict, sensitive assessment of historical, ethnographic, and archaeological sources should bring them into focus. Doing so allows the residues of tactical actions to be viewed in operational and strategic terms.

LEVELS OF WAR AMONG THE CHEYENNE AND ALLIED TRIBES

Warfare and military traditions of Plains Indian culture have been carefully recorded and much discussed (Secoy 1953; Smith 1938, Grinnell 1910, 1956; Mishkin 1940; McGinnis 1990; McDermott 2003) because they were historically and culturally very important. In fact, a Levels of War model is rather easy to develop for Plains tribes and is interesting because it shows that military strategy and operational organization served as basic structural principles for these groups.

Unlike village-based agricultural tribes, the Cheyenne, Lakota, Arapaho, and related societies depended on mobility to hunt buffalo, trade, and make use of other widely distributed resources. Mobility, which was an essential pattern of life for groups like the Cheyenne, gave operation support to security, since communities had the wherewithal to move in directions and to areas that were removed from conflict. Their "home stations" were tent camps that could move and reorganize themselves in various forms and sizes throughout the year. A well-positioned camp would be set up to be secure. Its exposures and resources could be assessed so that threats could be understood. An organized security perimeter would also be a standard feature so a well-established

camp was hardly a precarious target. Still, security had to be a major goal for the Cheyenne and related Plains tribes, and serving as security for wives, families, and communities was a central value for warriors.

Most of the combat involved raids conducted by small groups intent on stealing horses, taking trophies, or revenging a previous affront such as the killing of a friend or kinsman. Even such small engagements could be very costly, not to mention lethal. They would be particularly threatening to mobile hunting groups like the Cheyenne, who spent much of the year in small, isolated units.

In traditional Cheyenne society, military prowess was the primary source of male achievement. Personal valor, energy, and boldness were the basis of social standing so that combat offered men opportunities to demonstrate or gain recognition. For that reason, individual gallantry that could be observed and socially celebrated in the retelling of war-honor events was a major basis for Plains Indian warfare. Trophies such as stolen horses, scalps, or captured weapons offered particularly strong demonstration of valor and ability. They also, of course, carried practical value. Dramatic individual action was, itself, a desirable military goal for Plains Native societies. Valor could be a strategy, but it would be wrong to assume that Plains warfare was foolhardy or careless. Traditionally, raiding parties that lost a member could not return home as victors, even if they had gained honors and booty. Suicidal fighting became a feature of some Plains groups such as a Cheyenne Dog Soldier Society, but it was a late development and a feature of the extremes that developed late in the Indian Wars (figure 14.3).

Beyond the search for individual valor and boldness, Cheyenne social organization provided strong and certain support for military operations. The tribe was identified and unified by language and a core of religious beliefs and practices, but practically residential groups were loosely organized and fluid. The major institutions that bound the tribe together socially were six prominent military societies. As organized groups, these societies were called on to serve a variety of social functions. Since they maintained their own discipline and internal hierarchy, members of military societies could organize activities and enforce either secular or spiritual affairs. Their social assignments meant that societies were quite used to dealing with a range of activities and "operations" in the strict military definition of that term. Raiding, intelligence, scouting, communications, and picket actions were all activities that members of warrior societies were used to undertaking in the normal course of the mobile Plains lifestyle. All of these actions were easily applied in combat situations.

Practically, the societies were groups of men organized for military operations. They recruited energetic, fearless young men from across the tribe

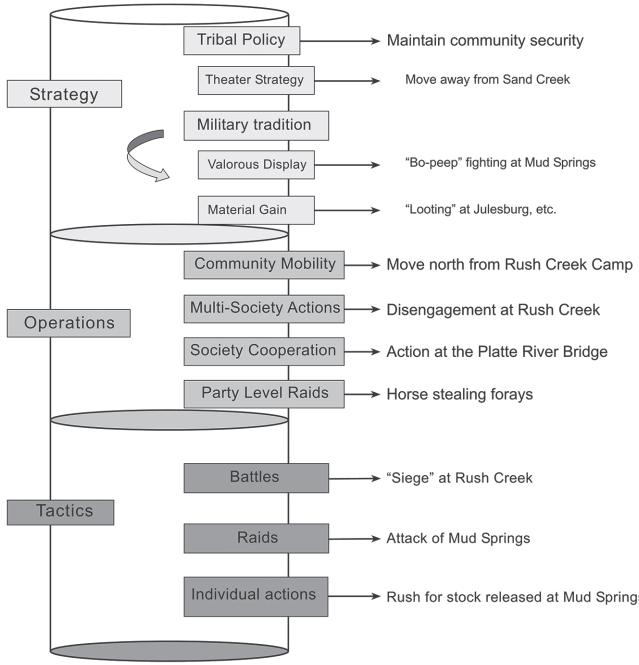

Figure 14.3. *Levels of War model presenting strategic goals, operational objectives, and tactics for the Cheyenne in 1865. Authors' original.*

and provided them with operational support. Through mock battles, small raids, other organized actions like target practice and regular recounting of laudable battle exploits, societies trained young warriors. They also placed them in a hierarchy of respect and responsibility through which a man could mature. By providing means for identifying skilled leaders at various levels, societies could organize either very small actions—raids or scouting expeditions—or large military undertakings like frontal attacks or strategic withdrawal. Composed of groups of men who knew one another well and were used to operating together, military societies supported small-group cohesion during raids and tactical engagements. By carefully maintaining residual alliances with other societies, members of military societies could rapidly coalesce into groups that could undertake large cooperative actions. The hierarchy within societies provided an equivalent to the modern military in structure for staff function and disciplined action. Once tribal leaders had

assigned a task, or key society members had accepted a responsibility, societies provided clear means for disseminating information. Individual members could be sanctioned, even seriously disciplined, if they did not follow the orders of established society leaders. This let the community as a whole expect that plans would be carried out. Finally, men's societies provided logistical support for warfare. Society members wore distinctive devices and heraldry that could support tactical activities. They also provided networks within which arms could be shared and rationally distributed among men of different abilities and social standing. Sharing a captured weapon was an important means of establishing a close relationship. In all of these senses, then, Plains tribes had strategic and operations organizations that guided their combat.

Tactically, Plains Indian warriors usually functioned as light cavalry. Virtually all men could ride well and were expert in archery and the use of other close-combat weapons like the lance or club. But demonstration of combat valor did not, however, require lethal force. Touching an enemy could count as a significant achievement. Such tactics favored individual charge and other small-group engagements. By the 1860s, however, firearms were common and familiar to Plains warriors (Secoy 1953:66ff). When they arrived in the North Platte valley, the Cheyenne and their allies were very well armed with both traditional weapons and breech- and muzzle-loading guns. Guns had been obtained through trade (Halaas and Masich 2004:162) and captured in attacks on Julesburg, Colorado, in January 1865 and in raids on civilian and military posts as the Cheyenne moved north from Sand Creek (Grinnell 1956:174ff). Modern firearms made the Plains warriors truly formidable and changed their military tactics. Guns allowed for effective ambushing and long-distance fusillades. They did not prevent the individual engagements of traditional combat, the valiant charges and daring presentations, but they had two other impacts (Secoy 1953:68). First, they encouraged warriors to work most closely with their terrain and the defensive potential it provided. In place of frontal attack in open country, warriors with guns preferred to attack from terrain that allowed safer approaches. Second, where traditional "shock" weapons favored fighting either individually or in small-group formations, warriors with guns found success in larger, scattered formations.

LEVELS OF WAR FOR THE CIVIL WAR FRONTIER ARMY

During the Civil War, the western frontier was a minor arena. Forces assigned to the frontier were guided by ideas that were not well formed. Still,

the strategic, operational, and tactical activities of the Civil War Army can be reconstructed (figure 14.4).

The Army posted units between Omaha and Denver, and Omaha and Washington state, who were there to keep peace and prevent "depredations." One strategy for dealing with Indian conflict involved establishing, enforcing, or renegotiating treaties with Native groups. The Army supported these negotiations by either offering security to Indian Agents or by having Army officers take part in the discussions.

As a more direct means of preventing conflict with Indian communities, the Army also developed a number of bases on the western frontier during the Civil War. These included existing bases, like Fort Laramie and Fort Kearney, and relatively smaller new posts, like Fort Mitchell, Cottonwood (later Fort McPherson), and Alkali Station (Barnes 2008; Hart 1967). Whatever their origins, during the war, these posts served as "home stations" where troops could be based, horses provisioned, and supplies maintained. They ensured an Army presence on the frontier and were set up to allow military forces to be deployed as needed on short notice. Their distribution was intended to allow forces to arrive quickly at any scene of trouble.

In addition to keeping the peace generally and "preventing depredations," the Army carried the special charge of ensuring communication across the Plains. Immigration across the Plains continued throughout the war. The eastern foothills of the Rockies were a focus of settlement at this time and there was growing interest in mining in Colorado and Montana. Denver was a rising urban center that needed to be supplied. All of these developments created traffic along the network of trails that formed the "Great Platte River Road." Mail that was vital to the US national interest also flowed up and down the road. By 1862 telegraph lines, supported by regularly placed relay stations, replaced the Pony Express system. Maintaining this communication net and ensuring the uninterrupted flow of people, supplies, and information was the special responsibility of the frontier Army (McChristian 2009:127–135).

Addressing these strategic goals in the West carried distinctive operational constraints for the frontier Army. The Army was supported by a series of posts that served as home stations. Some of these antedated the war and some survived into the Indian Wars era. Operationally, wartime Army posts had rather narrow goals, since they were less involved in regional administration, training, or logistics than home bases were to become during the postwar period. Major bases such as Fort Laramie did, however, serve as intelligence-gathering centers, since they tended to offer residual points of contact between the Army and Native groups. Indian communities nucleated around major

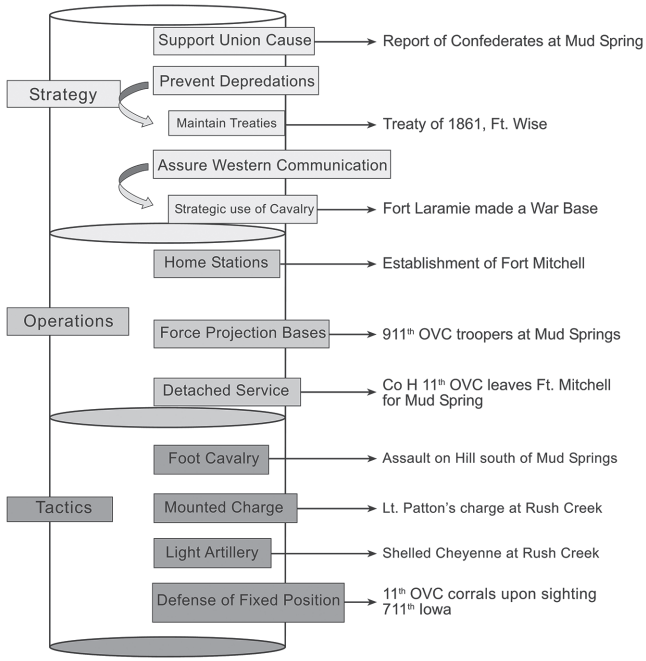

Figure 14.4. *A Levels of War model presenting strategic goals, operational objectives, and tactics for the Frontier US Army in 1865. Authors' original.*

bases because they afforded security and access to goods (McChristian 2009). Sensitive archaeological investigation should recognize a distinctive signature for this strategic focus.

In addition to posts that served as home stations, the Army also stationed very small groups of soldiers for very short periods at facilities that required special security. These included telegraph stations where groups of 5–10 soldiers could be stationed either alone or in company with civilians. Such stations functioned as "force projection bases." Most could be temporary and it appears that none of them was constructed by the Army.

Even with a network of dispersed posts and stations, the huge area served by the frontier Army made mobility a priority. The frontier Army was composed overwhelmingly of cavalry units, essentially all of them formed as volunteer regiments. In theory, a cavalry regiment was composed of 10 companies of up to 80 men each. That organization could afford considerable flexibility. In the east, companies could be amalgamated into squadrons or battalions. Certainly

cavalry officers knew how to organize and manage multicompany groups, but on the broad Plains of the frontier, regimental organization allowed for smaller units to be formed. Few bases housed more than two companies and many small posts were home to a single or even a partial company. Whatever their size, cavalry units were permanently stationed at a base so that their mounts were stabled or held in corrals, fed on forage and grain, and generally well maintained. For that reason, when a crisis occurred up or down the trail, a cavalry unit could respond quickly and with vigor by going on "detached service." Cavalry men were trained to ride intensively, but as organized units so that they could arrive fit and prepared for action. They were equipped to operate for several days without resupply. Cavalry horses were stressed when they had to survive on wild feed. Thus in addition to provisions and ammunitions carried by individual troopers, a unit on detached service had to travel with pack horses or more likely wagons carrying additional food and ammunition and stock forage. With that much capacity, the traveling kit could also include such bivouac equipment as axes, shovels, and ropes that might be needed along the way or at an engagement.

The array of arms carried by Western cavalrymen was diverse, but by 1865 most cavalry units had been equipped with revolvers and breech-loading long arms, including even modern seven-shot Spencers. Cavalry units could also travel with 12-pounder mountain howitzers. These small, brass-barreled weapons could be either drawn by a team or packed on two or three horses. The cannons traveled with an ammunition chest or limber of case shot, shell, and canister rounds. Following the recommendations of the 1861 cavalry manual of Philip Cooke, Western cavalry units traveled in a single rank with each mounted rider or horse occupying at least 20 feet (Cooke 2004; Griffith 1986:42, 1989). In gross terms, then, a moving single company could be about one-fifth of a mile long. Standard procedure also called for a scouting party to ride ahead of the main force and for flankers to be in positions of up to a quarter mile from either side of the column. A cavalry column on detached service was, in other words, a large undertaking.

Tactically, American cavalry units made use of their mobility to move toward engagement, but they usually fought on foot. That is they usually functioned as "mounted infantry" or "foot cavalry" (Griffith 1989:184ff; 1986:42). Mounted charges were part of the Civil War–era cavalry tactical repertoire, but even in eastern campaigns, mounted charges were used very selectively. Instead, once a cavalry detachment arrived at an operational area, they usually dismounted and engaged the enemy on foot. Once on foot, cavalrymen might assault an enemy, firing as they did (Griffith 1986:42). Alternatively, a dismounted

cavalry unit might begin an engagement by establishing a defensive position. This seems to have been an especially common tactic on the frontier where small, outnumbered units patrolled huge areas with incomplete intelligence. Making effective use of artillery required, if not a defensive posture, at least creation of a fixed position. Since bivouac equipment was carried by units on detached service, it would be easy to prepare a defensive position with simple earthworks or other constructions. Whichever tactic a cavalry unit adopted, dismounting meant that one rider in four had to be detailed as a horse holder. Together with wagon crews and others detailed to managing stock, something like a quarter of a cavalry detachment would not be available for combat.

Archaeological Consideration of Tactics, Operations, and Strategy

The fights at Mud Springs and Rush Creek present different archaeological appearances even though they happened within days of one another and involved the same individuals and groups. The differences between these two battles should not, perhaps, be surprising. As a complex phenomenon, combat can be expected to involve differences. Both Cheyenne warriors and the Civil War cavalrymen had diverse military skills and the ability to adjust and innovate. Still, expecting diversity does not explain the observed differences. Viewing the archaeological differences apparent at these battles in terms of the strategic, operational, and tactical issues exposed by the Levels of War model, however, offers a context for assessing the differences of these two battle records. It offers a means of linking the material evidence of battle to higher levels of war.

From the Cheyenne perspectives, Mud Springs presented a positive strategic opportunity. With their home community well provided for and securely ensconced away from threat, Mud Springs could be a fight that offered opportunities for valorous display and attractive booty shown in the archaeological record as artifact distributions (figure 14.5). The warriors' material culture, represented by artifacts found on the ground, indicate that firearms initially favored the Indians, allowing them to fire almost unimpeded into the station buildings with little fear of subsequent return fire. The small body of enemy soldiers was concentrated in one building with a herd of stock nearby. Operationally, then, this battle could be undertaken with minimal coordination by small groups or even individuals. When cavalry reinforcements arrived those strategies and operations became inoperative. The addition of over 200 new guns would have greatly increased the cost of plunder and bravado. Expanding the cavalry perimeters, demonstrated in the archaeological

Figure 14.5. *Distribution of artifacts found at Mud Springs Station site during the metal detector inventory. Authors' image.*

record by expended cartridge cases found near the station, along the base of the southern hill, and over its top, as well as by posting troopers in the rifle pit above the telegraph station, made attack difficult. More seriously, that apparently minor operational expansion by the cavalry may have exposed the location, or at least the direction, of the Cheyenne camp.

Mud Springs presented a tactical challenge for soldiers at the station, but the battle that opened there conformed to the strategies followed by the frontier Army. The station was an important transportation and communication hub and the mission of the small detachment based there was to protect the transportation network. When fighting started, they spread the necessary information and held their ground until other troops could be detached for their support. As new forces arrived, the tactic of simply holding a defensive position was replaced, but at this time the frontier Army did not have a well-formed offensive strategy for dealing with the Indian forces. In that light it may not be surprising that the major action taken by the newly arrived reinforcements to Mud Springs was a slight expansion of the defensive perimeter. While that was being done, the last of the reinforcements were arriving at Mud Springs—with a cannon!

By February 7, the strategic situation in the North Platte valley had changed for both sides. A large and well-armed cavalry detachment less than 15 miles from their community created a challenge for the Cheyenne. In terms of the Level of War model, it shifted their strategic priority from plunder and valorous action to community security. In that case, the appropriate "operation" was a community movement toward security. That move started February 7, but to move on from the camp at the head of Rush Creek, the Native community had to cross the relatively secure margins of the Platte valley and enter the flat central portion of the valley. This brought them to the route of the Overland trail and into territory that was that was familiar and accessible to the cavalry. They continued on across the frozen Platte to establish a short-term camp in the bluffs on the north side of the river.

The cavalry force that had assembled at Mud Spring left there on February 8 to "me(e)t and repulse . . . and drive of[f] into the Sand Hills north of the North Platte the combined forces of all the hostile bands of Cheyennes, Sioux and other tribes" (Lt. Colonel William O. Collins report, *Official Records of the War of the Rebellion*, in Hewett 1997:203–233). Moving faster than the Native community, they reached the south side of the Platte where they were discovered by Indian sentinels. The Indian community's warriors organized to halt the attack by surrounding the soldiers. Archaeological evidence indicates that Indian fighters did not closely engage the cavalry force. Indian forces that had operated in small groups and even individual actions at Mud Springs seem to have been able to organize and maintain a large defensive perimeter at Rush Creek (figure 14.6).

When they were stopped, the cavalry found itself on the Overland trail, terrain that was strategically and operationally very comfortable. Their mountain

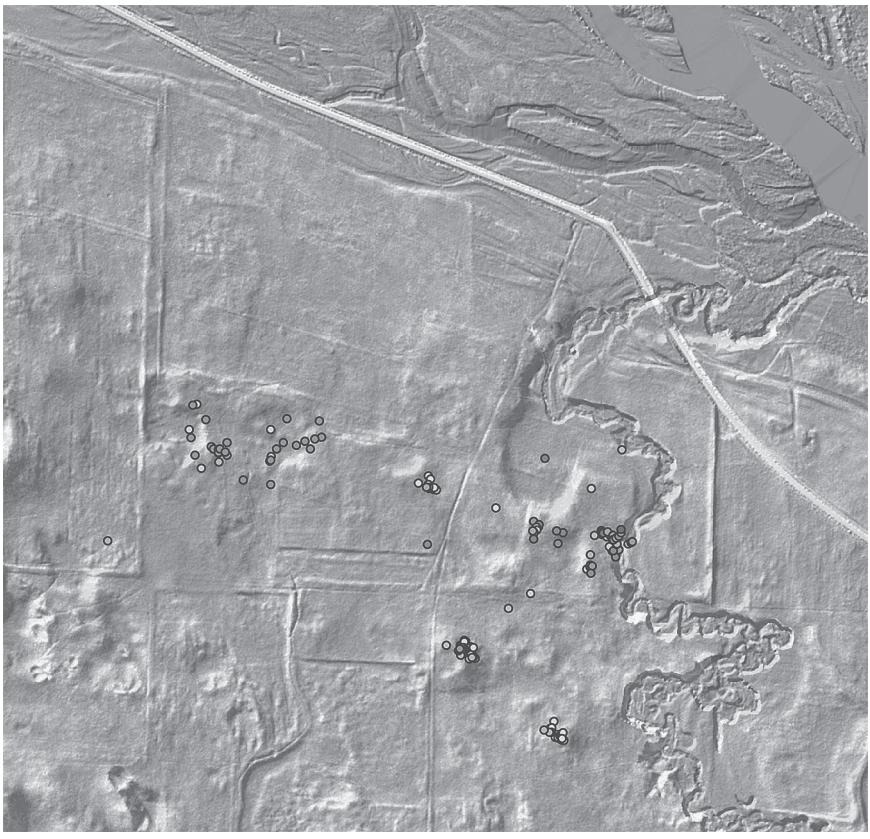

Figure 14.6. *The distribution of conflict artifacts from Rush Creek is overlain on a high-resolution LiDAR image. Note how they tend to cluster in association with small hills. Authors' original reconstruction.*

howitzer meant that the soldiers had a somewhat expanded operational capability, but when they were met by Native forces, they reacted as they had at Mud Springs. They formed a defensive position. This strategy was probably ideal for the Indian side. With several wagons the cavalry may have been able to prepare a rather substantial base and keep their adversaries at a distance. Archaeological and historical evidence indicate that the cavalry did move against the Indian attackers. When Indian forces broke off to continue their northward movement, the cavalry did not follow them. The troopers may have halted their pursuit because they were at the limits of their capabilities. It might also be the

case that by seeing the Native community move into the Sand Hills, they had achieved their strategic goal of keeping the Overland trail open.

The forces that met in the North Platte valley in 1865 were certainly ready for war. The two sides were familiar with one another and they carried many of the same arms. The reasons behind their combat, the processes that brought them to their engagements, and the organizations that directed their efforts were all quite different and those organizations are clearly reflected in the archaeological record of the Mud Springs and Rush Creek fights. Strategically, Indian and Army forces were very different, but at this point neither side seems to have aimed at total destruction of the other. Native communities sought security, materials, and war honors, while the mission of the frontier Army was occupation and protection of transportation and communication routes. Combat with neighboring societies was a standard part of life for Native communities of the Plains. Operationally, both sides of the North Platte campaign depended on mobility, but they managed their movements is different ways. Army units operated out of fixed bases, from which units were dispatched to areas of operation. They traveled as units carrying the equipment and supplies they needed to project force and protect themselves. Native communities were themselves mobile, either moving to where resources were available or carrying their supports as they moved. Community security depended on avoiding hostile forces and maintaining a security buffer. Force projection was managed by social units—primarily "military societies"—or small self-selected groups organized by capable leaders who pursued specific tactical objectives. Those objectives might be identified by community leaders for the general good or they might focus on gaining booty or war honors that would increase a meritorious individual's social standing.

Army units had small cannons they could carry to their engagements, also clearly reflected in the Rush Creek–site archaeological record. Aside from that, by 1865, and especially after the series of small raids that followed the Sand Creek massacre, Indian fighters carried weapons that were comparable to the Army's arms, again clearly reflected in the Mud Springs archaeological record. Both the Army and Indian fighters were quite capable of organized frontal attacks on opposing forces, but that does not seem to have been the preferred tactic for either side. The archaeological and historic records show that the Army units preferred to begin an engagement by establishing a defensive perimeter from which artillery fire, enfilades, or charges could be organized. An individual warrior or small group of Native fighters might make a bold charge to demonstrate valor or to rush toward valuable property. Bold individual actions could be demonstrated in other ways, such as by creeping close

to an opposing position and making a sudden attack. Groups of society members could join in organized combat, including either defense of a perimeter or a mass charge toward an opposing force.

The Levels of Warfare model presented here was developed from the current US military's operations manual and was tested and refined using the archaeological investigations at Mud Springs and Rush Creek. The model appears to hold significant promise as a middle-range model to test in other archaeological warfare and conflict sites. The model should work well with sites that have historic documentation and well-preserved archaeological evidence of conflict. The model requires rigorous testing in a variety of conflict situations to ascertain its full validity and applicability to a range of site types. The model is eminently suited to the study of historic conflict, and it appears suited for earlier warfare sites, but it requires application and testing to confirm its value to conflict studies.

15

Afterword

War, Peace, and Plains Archaeology

Douglas B. Bamforth
and Andrew Clark

> There is a story, believed to be of Cherokee origin, in which a girl is troubled by a recurring dream in which two wolves fight viciously. Seeking an explanation, she goes to her grandfather, highly regarded for his wisdom, who explains that there are two forces within each of us, struggling for supremacy, one embodying peace and the other, war. At this, the girl is even more distressed, and asks her grandfather who wins. His answer: "The one you feed." (Barash 2013:SR12)

We have focused here on war. Social violence waxed and waned on the Plains, taking different forms in different regions and over time. Plains communities wove war into the social and ideological aspects of their lives and altered important material aspects of their lives in response to it. Warfare mattered in the long-term history of the Great Plains.

So did peace. Some aspects of the anthropological debate over the prevalence and significance of war seem to depend as much on semantic tricks as on the real conditions of life faced by real groups of people in the present or the past, and they depend particularly on the way we define war and peace. We see only one useful definition of warfare—socially sanctioned group-level violence—with the specific form that war takes varying with many factors, including the nature of the community sanctioning it. This definition distinguishes war from individual conflicts that result in individual

DOI: 10.5876/9781607326700.c015

violence and underscores the importance of community validation. In so doing, though, it also highlights the importance of peace. Documenting long-term patterns in the presence of violence also means documenting long-term patterns in its absence, and these patterns are essential. To take only one example, Bamforth and Nepstad-Thornberry (2007b) document patterns in ceramic variability in the Middle Missouri region that suggest dramatic differences in patterns of intercommunity, perhaps interethnic, social interaction over time, with interaction notably higher in times when people built unfortified communities and notably lower when they lived within ditch-and-palisade defenses. Any effort to understand the processes of change operating on the Plains over time has to actively address the importance of both war and peace—of times when the prospect of violence could not be ignored, and of times when this prospect was not an issue. Our emphasis here on the first of these should not minimize the second.

Warfare varied on the Plains in time and space, and it did so in distinctly patterned ways. From a bird's-eye view, Plains warfare's slow development over time parallels the long, slow increase in indigenous population in North America in general (Peros et al. 2010), and its long-term geographic and temporal variation tracks fairly closely with long-term geographic and temporal patterns of subsistence intensification that likely derive from that increase. Looking more closely, violence seems at least sometimes to have ebbed and flowed with local circumstances like drought and population movements, and to have concentrated at times along boundaries between social groups—Puebloan and Plains, Apachean and Caddoan, and others. Written records from the late 1800s tell us clearly that individual people on the Plains chose war and peace consciously and strategically, evaluating circumstances and possibilities. Red Cloud, raised as a traditional Lakota warrior and the leader of the indigenous resistance to American expansion on the northwestern Plains that actually drove the frontier back for a decade, chose peace when he decided his people could not win in the long term (Drury and Clavin 2013). Comanche leader Quanah Parker led his people's resistance on the southern Plains, surrendered at Palo Duro Canyon in 1872, and ended his days as a rancher in Oklahoma (Neeley 1995). Other warriors on the Plains made other choices, but the transformation of men like these from truly terrifying fighters to citizens shows us unambiguously how situational collective violence is. They chose peace in a situation of military defeat, but they chose it nevertheless, and people can choose peace under other situations as well.

The debate over war and peace is also entwined with debates over many other issues, and we think that this kind of evidence from the Great Plains

bears on a number of these. Most concretely, war and peace have entered into discussions over the notion of the "fundamental" character of humanity, often conceived in evolutionary terms. On one hand, we do not lack for scholars who argue that selective pressures on humans to be warlike go far back in our evolutionary history: violence may have fitness links among at least some human groups and collective homicide among chimpanzees looks eerily like some forms of tribal war (Chagnon 1988; Macfarlan et al. 2014; Wrangham 1999). In contrast, other scholars have argued that evidence for violence in the deep past and in simple, mobile hunter-gatherer societies has been exaggerated and that both tribal and primate violence result from conditions imposed by settling down, by the effects of contact with more complex groups (in the case of primates, with humans), or by both of these (e.g., Ferguson 1992; Wilson et al. 2014). In this view, war grows from circumstances that, in effect, violate the conditions under which we evolved, which might suggest that humans are intrinsically, perhaps evolutionarily, peaceful.

However, we have trouble seeing the data from the Plains as evidence for either war or peace being wired into human beings in some kind of evolutionary sense. Like Barash (2013; also see Roscoe 2007; Thorpe 2003) it seems to us that human beings have the *capacity* to be either peaceful or warlike according to circumstance and, as we have seen, circumstances are often complicated. Instead of being innately warlike or inherently peaceful, human nature is rooted in interaction, and conflict and/or cooperation are simply choices people make.

Even the small-scale foraging societies that Fry and Söderberg (2013) view as "peaceful" document this. Viewing "history" writ very, very small, these authors consider the specific killings documented for such groups by ethnographers, including the Bushmen of southern Africa. Taking the Bushmen as a single and telling example, the list of killings that Lee (2003:116) compiles does look more like individual homicides than like the kind of collective violence that most of us label as "war." The rate of violent death among the Bushmen, though, is remarkably high, as their incidence of gendered and other violence in general have also been (see, for example, Shostak 1981, 2000). Despite the anthropological celebration of traditional Bushman mechanisms of dispute resolution, under actual "traditional"—that is, early twentieth century—circumstances, these often failed to control Bushman behavior: male Bushmen stopped killing each other to resolve their disputes only when they began to go to prison for doing so. Early to mid-twentieth-century Bushmen may not have gone to war, but, whatever their ideology, it is difficult to call them "peaceful" in any meaningful sense of the word.

But taking Southern African history written longer than just a few decades shows us a different side of these groups: "the Bushmen once waged war, and they lost" (Otterbein 1999: 798). The communities encountered by mid-twentieth-century anthropologists were the survivors of a systematic program of genocide carried out from 1912 to 1915 as a response to armed resistance to white appropriation of Bushman land (Gordon 2009; Guenther 2014; Hitchcock et al. 2014). This is a textbook example of Ferguson and Whitehead's (1992) "war in the tribal zone." However, unless we want to argue that white colonists provided military training to the indigenous people they were displacing, we have to acknowledge collective violence—warfare—as an inherent human capacity. Southern African hunter-gatherers organized themselves for war when they believed that they had to, and their poisoned arrows terrorized southern African whites, at least for a short time. And like all other human beings, the hunter-gatherer people of southern Africa have a history that extends long before European contact. We do not know this history in detail, but osteological evidence indicates that, while interpersonal violence was rare overall, some 2,500 years ago people on the southwest South African coast—especially women and children—often died violently (Pfeiffer 2016).

This means that understanding what we mean by "peace" is worth as much attention as defining "war." One simple, perhaps minimal, definition is the absence of social violence, but this masks a variety of circumstances with different implications for people present and past. Peace is not the passive result of lack of violence, but an active part of society (Ferguson 2013:193). Surely we want "peace" in this sense to reflect positive, friendly relations among neighboring social groups, relations that foster the free and willing flow of people, ideas, and goods and that make it possible to devote individual and community efforts to tasks other than the myriad of activities required by defense.

Peace can come about in different forms, including through diplomacy and ally making. This can be achieved through the mechanisms such as the Making of Relatives rite of the Oglala or the calumet ceremony (Albers 1993; Brown and Steltenkamp 1993; Hall 1997). It is possible to see the latter in the archaeological record (Blakeslee 1981). But the absence of social violence may also reflect the existence of offensive and defensive military capabilities sufficiently well developed to discourage attack, whether neighbors like each other or not. From the day-to-day perspective of a farmer hoping to travel safely to and from the fields, there may not be much distance between these different kinds of "peace." However, from the perspective of an archaeologist hoping to understand the long-term history of a region like the Great Plains, distinctions like this matter greatly.

The early fifteenth century along the Middle Missouri may be an example of the first of these. In that time and place, communities were relatively small, dispersed, and unfortified, and ceramic and other data suggest substantial geographic overlap of settlement locations among different social groups as well as movements of potters between these groups (Bamforth and Nepstad-Thornberry 2007b). Identifying examples of ancient peace enforced by a recognized balance of power, though, is more difficult, and leads directly to important domains for future archaeological research. Documenting war can be difficult, as the ambiguity of the Central Plains–tradition case illustrates (see Bamforth, chapter 1, this volume); LeBeau's chapter 6 here underscores how uneven and incomplete the evidence for warfare on the Plains is even in the Middle Missouri region, where violence is so spectacularly visible. No one line of evidence will suffice to sort out the details either of the nature of social violence when it existed or the nature and causes of different kinds of peacefulness when it does not exist. Fortifications by themselves tell us about the possibility of attack, but fortifications that are imposing enough may deter actual attacks, although they may not deter small-scale raiding away from fortified localities and, as Vehik's chapter 7 here shows, even endangered communities do not always build fortifications.

This has important implications for the ways in which we approach archaeological sites on the Plains, particularly sites dated to periods in which warfare was clearly important. The chapters here have discussed a wider variety of fortification styles than most of the Plains literature considers, and this is important. But documenting better-known kinds of fortifications in detail is also important. For example, people entered some recent palisaded sites on the Plains using ladders to climb up the inner face of the fortification ditch, ladders that people could pull up into the community to prevent access. Other Plains sites, though, have causeways across their ditches, which offer a very different kind of access and require a different approach to defense. Plains archaeologists have examined very few entrances to fortified sites: there is a simple baffle gate at Helb (Kay 1995) and at least one of the causewayed entrances to the Wittrock site appears to have a more complex and carefully designed and guarded baffled design (Anderson 1985). Documenting these aspects of fortifications along with the presence or absence of features like bastions and possible guard stations (e.g., the hearth within a corner bastion at Huff, perhaps to keep warm during winter sentry duty; Wood 1967) will open doors to questions we are only beginning to ask. It may be possible to gather data on topics like these with limited, or perhaps no, excavation, using geophysical techniques focused on very fine-scale subsurface patterns. More

focused attention on the details of site chronologies also matters: knowing at what point in the history of a community its members decided to fortify themselves is important, and this is often impossible to assess on the Plains because of an overwhelming emphasis in chronological work on placing sites in a culture-historical sequence rather than on understanding their individual occupation histories in detail.

Distinguishing clearly between evidence telling us that people were worried about attacks and evidence telling us that people actually were attacked is also essential. Osteological data are one obvious critical line of evidence in this context, and the Plains offers some of the most spectacular evidence of attacks known anywhere in the world, as we have discussed. However, partial publication of completed analyses addressing direct evidence for interpersonal violence on the Plains, not to mention the all-too-common total failure to publish for years after such analyses are completed, limits what we know in very serious ways. In a post-NAGPRA world, this is simply inexcusable.

But attacks are visible in archaeological data beyond human skeletons, and we need to design field strategies with this in mind. For example, we often take systematic evidence for burning of residential structures as possible evidence for war (e.g., Lintz 1986), although we all recognize that people may burn their houses for more than one reason. But careful documentation of detailed patterns of structure burning may help to distinguish between household accidents, destruction for ritual or safety reasons, and violence: setting houses with thatched roofs on fire from the outside, for example, may leave a distinctive signature (Bleed et al. 2009). Alternatively, Keeley (1996:19) illustrates point-plotted projectile points scattered along the outer face of a British Neolithic site's palisade, along with a swarm of points into the site's interior at the location of a gate. It is difficult to interpret a pattern like this except in terms of sustained arrow fire at defenders along the palisade along with a burst of fire through an opening in the palisade into the site's interior: this site was attacked. Lacking detailed provenience data, this pattern would be invisible.

Gathering field data like these might also let us look beyond the simple fact of massed attacks (in the cases where those occurred) to at least some of the tactics of these attacks. Both osteological data (most spectacularly at Crow Creek) and western Plains hunter-gatherer rock art underscore the central role of shock weapons in Plains warfare, and evidence for initial assaults by archers might document particular kinds of attacks or different stages in attacks. And well-fortified sites with no evidence for any kind of violence might document at least local peace that was enforced not by warm social bonds but by military prowess.

Finally, even the most detailed analyses of the most spectacular archaeological sites matter only because they tell us something meaningful about what ancient people did and why they did it: description for its own sake, no matter how sophisticated, is not worth the time and effort it consumes. War matters, and peace matters, because they affected the ways in which people have lived their lives, in the present and in the past. This means that understanding how war is related to human lifeways, and how and why it appears and disappears, is among the fundamental issues archaeologists should address. As for other fundamental issues, though, we will find no simple explanations of either war or peace: no single factors, material or otherwise, "cause" people to go to war or to make peace, and we should not expect to find one single universal set of causes for war or peace throughout the Plains or anywhere else.

This does not mean that it is not useful for specific analyses to target specific aspects of social violence, but, rather, that we will need many different analyses targeting many different topics to be able to outline the place of war in human history on the Plains.

References Cited

Abler, Thomas S. 2000. "Iroquois Policy and Iroquois Culture: Two Histories and an Anthropological Ethnohistory." *Ethnohistory (Columbus, Ohio)* 47(2):483–491. https://doi.org/10.1215/00141801-47-2-483.

Adams, Richard. 1994. "Stone Wall Buttes (48CR2762): A Prehistoric Structure Complex in the Powder River Basin, Northeastern Wyoming." Unpublished paper presented at the 52nd Annual Meeting of the Plains Anthropological Conference, Lubbock, TX.

Adams, Richard. 2006. "The Greater Yellowstone Ecosystem, Soapstone Bowls and the Mountain Shoshone." *World Archaeology* 38(3):528–546. https://doi.org/10.1080/00438240600814051.

Adams, Richard. 2010. "Archaeology with Altitude: Late Prehistoric Settlement and Subsistence in the Northern Wind River Range, Wyoming." PhD diss., Department of Anthropology, University of Wyoming, Laramie.

Afton, Jean, David Fridtjof Halaas, and Andrew E. Masich. 1997. *Cheyenne Dog Soldiers: A Ledgerbook History of Coups and Combat.* Boulder: University Press of Colorado. Denver: Colorado Historical Society.

Ahler, Stanley A. 1984. *Archaeological Investigations at the Elbee Site, 32ME408, Knife River Indian Villages National Historic Site.* Contribution No. 209. Grand Forks: Department of Anthropology and Archeology, University of North Dakota.

Ahler, Stanley A. 1993. "Architecture and Settlement Change in the Upper Knife-Heart Region." In *The Phase I Archaeological Research Program for the Knife River*

DOI: 10.5876/9781607326700.c016

Indian Villages National Historic Site, Part IV: *Interpretation of the Archaeological Record*, ed. Thomas D. Thiessen. Midwest Archaeological Center Occasional Studies in Anthropology No. 27. Lincoln, NE: US Department of the Interior, National Park Service, Midwest Archaeological Research Center.

Ahler, Stanley A. 2007. "Origins of the Northern Expression of the Middle Missouri Tradition." In *Plains Village Archaeology: Bison-hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 15–31. Salt Lake City: University of Utah Press.

Ahler, Stanley A., ed. 1988. *Archeological Mitigation at Taylor Bluff Village (32ME366), Knife River Indian Villages National Historic Site*. Department of Anthropology, University of North Dakota. Submitted to the National Park Service, Midwest Archaeological Research Center, Lincoln, NE.

Ahler, Stanley A., ed. 2005. *Archaeological Investigations during 2004 at Double Ditch State Historic Site, North Dakota.* Research Contribution No. 65. Flagstaff, AZ: Paleocultural Research Group.

Ahler, Stanley A., and Marvin Kay, eds. 2007. *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*. Salt Lake City: University of Utah Press.

Ahler, Stanley A., and Kenneth L. Kvamme. 2000. *New Geophysical and Archaeological Investigations at Huff Village State Historic Site (32MO11), Morton County, North Dakota.* Research Contribution No. 26. Flagstaff, AZ: Paleocultural Research Group.

Albers, Patricia C. 1993. "Symbiosis, Merger, and War: Contrasting Forms of Intertribal Relationships among Historic Plains Tribes." In *The Political Economy of Native American Indians*, ed. John H. Moore, 94–132. Norman: University of Oklahoma Press.

Allen, Mark W. 2006. "Transformations in Maori Warfare: Toa, Pa, and Pu." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 184–213. Gainesville: University Press of Florida.

Allen, Mark W. 2008. "Hillforts and the Cycling of Maori Chiefdoms: Do Good Fences Make Good Neighbors?" In *Global Perspectives on Collapse of Complex Systems*, ed. Jim A. Railey and Richard Martin Reycraft, 65–81. Anthropological Papers No. 8. Albuquerque: Maxwell Museum of Anthropology.

Allen, Mark W., and Elizabeth N. Arkush. 2006. "Introduction: Archaeology and the Study of War." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 1–19. Gainesville: University Press of Florida.

Allen, Mark W., and Terry L. Jones, eds. 2014. *Violence and Warfare among Hunter-Gatherers*. Walnut Creek, CA: Left Coast Press.

Allen, Wilma H., Charles F. Merbs, and Walter H. Birkby. 1985. "Evidence for Prehistoric Scalping at Nuvakwewtaqa (Chavez Pass) and Grasshopper Ruin, Arizona." In *Health and Disease in the Prehistoric Southwest*, ed. Charles F. Merbs and Robert J. Miller, 23–42. Anthropological Research Papers no. 34. Tempe: Arizona State University.

Ambrose, Stephen E. 2000. *Nothing Like It in the World: The Men Who Built the Transcontinental Railroad, 1863–1869*. New York: Simon & Schuster.

Anderson, Duane. 1985. *Excavations at the Wittrock Site (13OB4): A Compilation of Information Pertaining to Projects Conducted in 1959 and 1965*. Research Papers, Vol. 10, No. 1. Iowa City: Office of the State Archaeologist, University of Iowa.

Anderson, Duane C. 1986. "The Wittrock Excavations: Implications for the Study of Culture Process within the Initial Variant of the Middle Missouri Tradition." *North American Archaeologist* 7(3):215–241.

Anderson, James P. 1969. "A Cahokia Palisade Sequence." In *Explorations into Cahokia Archaeology*, 89–99. Bulletin No. 7. Urbana: University of Illinois.

Arkush, Elizabeth N. 2006. "Collapse, Conflict, Conquest: The Transformation of Warfare in the Late Prehispanic Andean Highlands." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 286–335. Gainesville: University Press of Florida.

Arkush, Elizabeth N. 2008. "War, Chronology, and Causality in the Titicaca Basin." *Latin American Antiquity* 19(4):339–373. https://doi.org/10.1017/S1045663500004338.

Arkush, Elizabeth N. 2009. "Warfare, Space, and Identity in the South-Central Andes: Constraints and Choices." In *Warfare in Cultural Context*, ed. Axel E. Nielsen and William H. Walker, 190–217. Amerind Studies in Archaeology Volume 3. Tucson: University of Arizona Press.

Arkush, Elizabeth N. 2011. *Hillforts of the Ancient Andes: Colla Warfare, Society, and Landscape*. Gainesville: University Press of Florida. https://doi.org/10.5744/florida/9780813035260.001.0001.

Arkush, Elizabeth N., and Mark W. Allen, eds. 2006. *The Archaeology of Warfare: Prehistories of Raiding and Conquest*. Gainesville: University Press of Florida.

Arkush, Elizabeth, and Charles Stanish. 2005. "Interpreting Conflict in the Ancient Andes: Implications for the Archaeology of Warfare." *Current Anthropology* 46(1):3–28. https://doi.org/10.1086/425660.

Armelagos, George J. 1977. "Disease in Ancient Nubia." In *Culture, Disease, and Healing: Studies in Medical Anthropology*, 1st ed., ed. David Landy, 77–83. New York: Macmillan.

Ashley, Keith, and Nancy M. White. 2012. "Late Prehistoric Florida: An Introduction." In *Late Prehistoric Florida: Archaeology at the Edge of the Mississippian World*,

ed. Keith Ashley and Nancy M. White, 1–28. Gainesville: University Press of Florida. https://doi.org/10.5744/florida/9780813040141.001.0001.

Axtell, James, and William C. Sturtevant. 1980. "The Unkindest Cut, or Who Invented Scalping." *William and Mary Quarterly* 37(3):451–472. https://doi.org/10.2307/1923812.

Bachrach, Bernard S. 2002. *Warfare and Military Organization in Pre-Crusade Europe*. Aldershot, Hampshire: Ashgate.

Bamforth, Douglas B. 1994. "Indigenous People, Indigenous Violence: Precontact Warfare on the North American Great Plains." *Man* 29(1):95–115. https://doi.org/10.2307/2803512.

Bamforth, Douglas B. 2006. "Climate, Chronology, and the Course of War in the Middle Missouri." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 66–100. Gainesville: University Press of Florida.

Bamforth, Douglas B. 2011. "Origin Stories, Archaeological Evidence, and Postclovis Paleoindian Bison Hunting on the Great Plains." *American Antiquity* 76(1):24–40. https://doi.org/10.7183/0002-7316.76.1.24.

Bamforth, Douglas B. 2013. "Long-Term Trends in Resource Intensification and Violence on the North American Great Plains." Paper presented at the 112th American Anthropological Associtation Annual Meeting, Chicago.

Bamforth, Douglas B. n.d. *An Archaeological History of the North American Great Plains*. Cambridge: Cambridge University Press.

Bamforth, Douglas B., and Curtis Nepstad-Thornberry. 2007a. "Reconsidering the Occupational History of the Crow Creek Site (39BF11)." *Plains Anthropologist* 52(202):153–173. https://doi.org/10.1179/pan.2007.012.

Bamforth, Douglas B., and Curtis Nepstad-Thornberry. 2007b. "The Shifting Social Landscape of the Fifteenth Century Middle Missouri Region." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 139–154. Salt Lake City: University of Utah Press.

Barash, David P. 2013. "Are We Hard-Wired for War?" *The New York Times*, September 28.

Barbeau, Marius. 1960. *Indian Days on the Western Prairies.* Bulletin No. 163, Anthropological Series No. 46. Ottawa: Department of Northern Affairs and National Resources, National Museum of Canada.

Barnes, James E. 1992. "Bioarchaeology of the Plaza of the Skulls, the Crenshaw Site." Paper presented at the Forty-Ninth Annual Meeting of the Southeastern Archaeological Conference, Little Rock, Arkansas.

Barnes, Jeff. 2008. *Forts of the Northern Plains: A Guide to the Historic Military Posts of the Plains Indians Wars*. Mechanicsburg, PA: Stackpole Books.

Barr, Juliana. 2005. "From Captives to Slaves: Commodifying Indian Women in the Borderlands." *Journal of American History* 92(1):19–46. https://doi.org/10.2307/3660524.

Barrett, S. A. 1933. "Ancient Aztalan." *Bulletin of the Public Museum of the City of Milwaukee* 13:1–602.

Barth, Fredrik, ed. (Original work published 1969) 1998. *Ethnic Groups and Boundaries: The Social Organization of Culture Difference*. Long Grove, IL: Waveland Press.

Bar-Yosef, O. 1986. "The Walls of Jericho: An Alternative Interpretation." *Current Anthropology* 27(2):157–162. https://doi.org/10.1086/203413.

Bass, William M., and Hugh E. Berryman. 1976. "Physical Analysis." In *Fay Tolton and the Initial Middle Missouri Variant*, ed. W. Raymond Wood, 29–31. Missouri Archaeological Society Research Series No. 13. Columbia: College of Arts and Science, University of Missouri-Columbia and The Missouri Archaeological Society.

Bass, William M., and Terrell W. Phenice. 1975. "Prehistoric Human Skeletal Material from Three Sites in North and South Dakota." In *The Sonata Complex and Associated Sites on the Northern Great Plains*, ed. Robert W. Neuman, 106–140. Publications in Anthropology No. 6. Lincoln: Nebraska State Historical Society.

Bates, Craig D., Bonnie B. Kahn, and Benson L. Lanford. 2003. *The Cheyenne/Arapaho Ledger Book from the Pamplin Collection*. Portland: Robert Pamplin.

Baugh, Timothy G. 2007. "Warfare among the Kirikir'i-s: Archeology, Ethnography, and Ethnohistory." *Kansas Anthropologist* 28:1–22.

Baxter, M. J., C. C. Beardah, and R.V.S. Wright. 1997. "Some Archaeological Applications of Kernel Density Estimates." *Journal of Archaeological Science* 24(4):347–354. https://doi.org/10.1006/jasc.1996.0119.

Bazely, Susan M. 2007. *Fort Frontenac: Bastion of the British*. Kingston, ON: Cataraqui Archaeological Research Foundation.

Beardah, Christian, and Mike Baxter. 1996. "The Archaeological Use of Kernel Density Estimates." *Internet Archaeology* 1. https://doi.org/10.11141/ia.1.1.

Beauchamp, William M. 1905. *Aboriginal Use of Wood in New York*. New York State Museum Bulletin 89. Albany: University of the State of New York.

Bell, Robert E. 1984. "Protohistoric Wichita." In *Prehistory of Oklahoma*, ed. Robert E. Bell, 363–378. Orlando: Academic Press.

Bell, Robert E., and Tyler Bastian. 1967. "Survey of Potential Wichita Archaeological Remains in Oklahoma." In *A Pilot Study of the Wichita Indian Archeology and Ethnohistory*, ed. Robert E. Bell, Edward B. Jelks, and W. W. Newcomb, 119–128. National Science Foundation Report.

Benn, David W. 1989. "Hawks, Serpents, and Bird-Men: Emergence of the Oneota Mode of Production." *Plains Anthropologist* 34(125):233–260.

Benson, Larry V., Timothy R. Pauketat, and Edward R. Cook. 2009. "Cahokia's Boom and Bust in the Context of Climate Change." *American Antiquity* 74(3):467–483. https://doi.org/10.1017/S000273160004871X.

Berlandier, Jean Louis. 1969. *The Indians of Texas in 1830*, ed. John C. Ewers. Washington, DC: Smithsonian Institution Press.

Berlo, Janet Catherine, ed. 1996. *Plains Indian Drawings, 1865–1935: Pages from a Visual History*. New York: Harry N. Abrams.

Bevan, Andrew, and James Conolly. 2006. "Multiscalar Approaches to Settlement Pattern Analysis." In *Confronting Scale in Archaeology*, ed. Gary Lock and Brian Leigh Molyneaux, 217–234. New York: Springer.

Biddle, Stephen. 2004. *Military Power: Explaining Victory and Defeat in Modern Battle*. Princeton: Princeton University Press.

Biddle, Stephen. 2007. "Explaining Military Outcomes." In *Creating Military Power*, ed. Risa A. Brooks and Elizabeth A. Stanley, 207–227. Stanford: Stanford University Press. https://doi.org/10.11126/stanford/9780804753999.003.0009.

Biggar, H. P., ed. 1924. *The Voyages of Jacques Cartier.* Publication No. 11. Ottawa: Public Archives of Canada.

Biggar, H. P. 1929. *The Works of Samuel de Champlain*, vol. III. Toronto: Champlain Society.

Bigman, Daniel P., Adam King, and Chester P. Walker. 2011. "Recent Geophysical Investigations and New Interpretations of Etowah's Palisade." *Southeastern Archaeology* 30(1):38–50. https://doi.org/10.1179/sea.2011.30.1.003.

Biolsi, Thomas. 1984. "Ecological and Cultural Factors in Plains Indian Warfare." In *Warfare, Culture, and Environment*, ed. R. Brian Ferguson, 141–168. Orlando: Academic Press.

Birch, Jennifer. 2010a. "Coalescent Communities in Iroquoian Ontario." PhD diss., Department of Anthropology, McMaster University, Hamilton, ON.

Birch, Jennifer. 2010b. "Coalescence and Conflict in Iroquoian Ontario." *Archaeological Review from Cambridge* 25(1):29–48.

Birch, Jennifer. 2012. "Coalescent Communities: Settlement Aggregation and Social Integration in Iroquoian Ontario." *American Antiquity* 77(4):646–670. https://doi.org/10.7183/0002-7316.77.4.646.

Birmingham, Robert A., and Lynne Goldstein. 2005. *Aztalan: Mysteries of an Ancient Indian Town*. Madison: Wisconsin Historical Society Press.

Black, Glenn A. 1967. *Angel Site: An Archaeological, Historical, and Ethnological Study*. 2 vols. Indianapolis: Indiana Historical Society.

Blakeslee, Donald J. 1975. "The Plains Interband Trade System: An Ethnohistorical and Archaeological Investigation." PhD diss., Department of Anthropology, University of Wisconsin, Milwaukee.

Blakeslee, Donald J. 1981. "The Origin and Spread of the Calumet Ceremony." *American Antiquity* 46(4):759–768. https://doi.org/10.2307/280104.

Blakeslee, Donald J. 1994. "Archaeological Context of Human Skeletons in the Northern and Central Plains." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 9–32. Washington, DC: Smithsonian Institution Press.

Blakeslee, Donald J. 1999. "Waconda Lake: Prehistoric Swidden-Foragers in the Central Plains." *Central Plains Archaeology* 7(1):1–170.

Blakeslee, Donald J., and Marvin F. Hawley. 2006. "The Great Bend Aspect." In *Kansas Archaeology*, ed. Robert J. Hoard and William E. Banks, 165–179. Lawrence: University Press of Kansas.

Bleed, Peter. 2006. "Living in the Human Niche." *Evolutionary Anthropology* 15(1):8–10. https://doi.org/10.1002/evan.20084.

Bleed, Peter, Jerry Renaud, and Luis Peon-Casanova. 2009. "Burning Issues: Observations on Old and New Burned Earthlodges." *Plains Anthropologist* 54(209):19–24. https://doi.org/10.1179/pan.2009.54.209.003.

Bleed, Peter, and Douglas D. Scott. 2009. "Archaeological Interpretation of the Frontier Battle at Mud Springs, Nebraska." *Great Plains Research* 19(1):13–25.

Bleed, Peter, and Douglas D. Scott. 2011. "Contexts for Conflict: Conceptual Tools for Interpreting Archaeological Reflections of Warfare." *Journal of Conflict Archaeology* 6(1):42–64. https://doi.org/10.1179/157407811X12958860458497.

Blew, J. Oscar, Jr., and John W. Kulp. 1964. *Service Records on Treated and Untreated Fence Posts*. US Forest Service Research Note FPL–068. Madison, WI: US Department of Agriculture, Forest Service, Forest Products Laboratory.

Blish, Helen Heather, and Amos Bad Heart Bull. 1967. *A Pictographic History of the Oglala Sioux*. Lincoln: University of Nebraska Press.

Blitz, John H. 1988. "Adoption of the Bow in Prehistoric North America." *North American Archaeologist* 9(2):123–145. https://doi.org/10.2190/HN64-P1UD-NM0A-J0LR.

Bouchet-Bert, Luc. 1999. "From Spiritual and Biographic to Boundary-Marking Deterrent Art: A Reinterpretation of Writing-on-Stone." *Plains Anthropologist* 44(167):27–46.

Bovee, Dana L., and Douglas W. Owsley. 1994. "Evidence of Warfare at the Heerwald Site." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 355–362. Washington, DC: Smithsonian Institution Press, Washington.

Bowers, Alfred W. 1950. *Mandan Social and Ceremonial Organization*. Chicago: University of Chicago Press.

Bowers, Alfred W. 1965. *Hidatsa Social and Ceremonial Organization.* Bureau of American Ethnology Bulletin 194. Washington, DC: Government Printing Office.

Bowers, Alfred W. (Original work published 1963) 1992. *Hidatsa Social and Ceremonial Organization*. Lincoln: University of Nebraska Press.

Bowers, Alfred W. (Original work published 1950) 2004. *Mandan Social and Ceremonial Organization*. Lincoln: Bison Books.

Boyd, Douglas K. 1996. "Evidence for Intersocietal Warfare among Late Archaic and Plains Woodland Peoples in the Texas Panhandle Plains and Western Oklahoma." Paper presented at the 54th Annual Meeting of the Plains Anthropological Conference, Iowa City.

Boyd, Douglas K. 1997. *Caprock Canyonlands Archeology: A Synthesis of the Late Prehistory and History of Lake Alan Henry and the Texas Panhandle-Plains.* Report of Investigation No. 110. Austin, TX: Prewitt and Associates.

Bragg, Don C. 2012. "Estimating the Quantity of Wood Used to Construct and Maintain the Late Mississippian Palisade at Parkin (3CS29)." Paper presented at the Annual Meeting of the Arkansas Archeological Society, Little Rock.

Brandão, José A. 1997. *"Your Fyre Shall Burn No More": Iroquois Policy toward New France and Its Native Allies to 1701*. Lincoln: University of Nebraska Press.

Bridges, Patricia S. 1996. "Warfare and Mortality at Koger's Island, Alabama." *International Journal of Osteoarchaeology* 6(1):66–75. https://doi.org/10.1002/(SICI)1099-1212(199601)6:1<66::AID-OA243>3.0.CO;2-J.

Bridges, Patricia S., Keith P. Jacobi, and Mary L. Powell. 2000. "Warfare-Related Trauma in the Late Prehistory of Alabama." In *Bioarchaeological Studies of Life in the Age of Agriculture: A View from the Southeast*, ed. Patricia M. Lambert, 35–62. Tuscaloosa: The University of Alabama Press.

Brooks, James F. 2002. *Captives and Cousins: Slavery, Kinship, and Community in the Southwest Borderlands*. Chapel Hill: University of North Carolina Press.

Brooks, Robert L. 1994. "Warfare on the Southern Plains." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 317–324. Washington, DC: Smithsonian Institution Press.

Brose, David S., and Greber N'omi. 1979. *Hopewell Archaeology: The Chillicothe Conference*. Kent, OH: Kent State University Press.

Brosowske, Scott D. 2005. "The Evolution of Exchange in Small-Scale Societies of the Southern High Plains." PhD diss., Department of Anthropology, University of Oklahoma, Norman.

Brown, James A. 1996. *The Spiro Ceremonial Center: The Archaeology of Arkansas Valley Caddoan Culture in Eastern Oklahoma.* Memoirs of the Museum of Anthropology 29, vol. 2. Ann Arbor: University of Michigan.

Brown, Joseph Epes, ed., and Michael F. Steltenkamp. 1993. *The Sacred Pipe: Black Elk's Account of the Seven Rites of the Oglala Sioux/Black Elk, Holy Man of the Oglala*. New York: MJF Books.

Brownstone, Arni. 1993. *War Paint: Blackfoot and Sarcee Painted Buffalo Robes in the Royal Ontario Museum*. Toronto: Royal Ontario Museum.

Brownstone, Arni. 2001a. "Seven War-exploit Painting: A Search for their Origins." In *Studies in American Indian Art: A Memorial Tribute to Norman Feder*, ed. Christian F. Feest. European Review of Native American Studies. Seattle: University of Washington Press.

Brownstone, Arni. 2001b. "The Musée de l'Homme's Foureau Robe and Its Moment in the History of Blackfoot Painting." *Plains Anthropologist* 46(177):249–267.

Brues, Alice M. 1957. "Skeletal Material from the Nagle Site." *Bulletin of the Oklahoma Anthropological Society* 5:101–106.

Bueschgen, Wolf D., and D. Troy Case. 1996. "Evidence of Prehistoric Scalping at Vosberg, Central Arizona." *International Journal of Osteoarchaeology* 6(3):230–248. https://doi.org/10.1002/(SICI)1099-1212(199606)6:3<230::AID-OA268>3.0.CO;2-Y.

Buff, Carolyn Miller. 1983. "The River Bend Site." *Wyoming Archaeologist* 26 (3–4): 11–21.

Burpee, Lawrence J., ed. 1927. *Journals and Letters of Pierre Gaultier de Varennes de La Vérendrye and His Sons.* Publications of the Hudson Bay Record Society 16. Toronto: The Champlain Society.

Butler, William B. 1976. "Context." In *Fay Tolton and the Initial Middle Missouri Variant*, ed. W. Raymond Wood, 27–29. Missouri Archaeological Society Research Series No. 13. Columbia: College of Arts and Science, University of Missouri-Columbia and The Missouri Archaeological Society.

Caldwell, Warren W. 1964. "Fortified Villages in the Northern Plains." *Plains Anthropologist* 9(23):1–7.

Caldwell, Warren W. 1966. *The Black Partizan Site.* Publications in Salvage Archaeology No. 2. Lincoln, NE: Smithsonian Institution River Basin Surveys.

Caldwell, Warren W., and Richard E. Jensen. 1969. *The Grand Detour Phase*. River Basin Surveys Publications in Salvage Archaeology 13. Lincoln, NE: Smithsonian Institution.

Calloway, Colin G. 1996. *Our Hearts Fell to the Ground: Plains Indian Views of How the West Was Lost*. Boston: Bedford Books of St. Martin's Press. https://doi.org/10.1007/978-1-137-07646-5.

Cameron, Catherine M., ed. 2008. *Invisible Citizens: Captives and Their Consequences.* Foundations of Archaeological Inquiry Series. Salt Lake City: University of Utah Press.

Cameron, Catherine M. 2011. "Captives and Culture Change." *Current Anthropology* 52(2):169–209. https://doi.org/10.1086/659102.

Cassells, E. Steve. 1997. *The Archaeology of Colorado*. Revised ed. Boulder: Johnson Books.

Catlin, George. (Original work published 1844) 1973. *Letters and Notes on the Manners, Customs, and Conditions of the North American Indians*. 2 vols. New York: Dover Publications.

Chacon, Richard J., and Rubén G. Mendoza. 2012. "Discussion and Conclusions." In *The Ethics of Anthropology and Amerindian Research: Reporting on Environmental Degradation and Warfare*, ed. Richard J. Chacon and Rubén G. Mendoza, 451–503. New York: Springer.

Chagnon, Napoleon A. 1988. "Life Histories, Blood Revenge, and Warfare in a Tribal Population." *Science* 239:985–992.

Chamberlain, Von Del. 1984. "Astronomical Content of North American Plains Indian Calendars." *Archaeoastromy*: *Journal for the History of Astronomy* 15(6):S1–S54.

de Champlain, Samuel. 1882. *Voyages of Samuel de Champlain*, Vol. 3, trans. Charles P. Otis. Boston: The Prince Society.

Charles, Douglas K., and Jane E. Buikstra, eds. 2006. *Recreating Hopewell*. Gainesville: University Press of Florida.

Chatters, James C. 2000. "The Recovery and First Analysis of an Early Holocene Human Skeleton from Kennewick, Washington." *American Antiquity* 65(2):291–316. https://doi.org/10.2307/2694060.

Chippendale, Christopher. 2009. "Fighting in Ancient Arnhem Land: Archaic Australian Pictures of Mass Warfare." Paper presented at the International IFRAO Congress, National Park Serra da Capivara, Piaui, Brazil.

Chittendon, Hiram Martin, and Alfred Talbot Richardson, eds. 1905. *Life, Letters and Travels of Father Pierre-Jean De Smet*. 4 vols. New York: Francis P. Harper.

Clark, Andrew, and Linea Sundstrom. 2010. "Combat in the Grass: Diverse Plans of Attack for Warfare Studies of the North American Great Plains." Abstracts of the SAA 75th Anniversary Meeting. Accessed November 12, 2017. http://saa.org/AboutttheSociety/AnnualMeeting/SAAAnnualMeetingAbstractARchive/SAA75thAnniversaryMeetingAbstracts/tabid/11415/Default.aspx.

Clark, Philip J., and Francis C. Evans. 1954. "Distance to Nearest Neighbor as a Measure of Spatial Relationships in Populations." *Ecology* 35(4):445–453. https://doi.org/10.2307/1931034.

von Clausewitz, Carl. (Original work published 1832) 1984. *On War*. [Vom Krieg]. Trans. Michael Howard and Peter Paret. Princeton: Princeton University Press.

Cole, Gloria G., and Caroline H. Albright. 1983. "Summerville I-II Fortifications." In *Prehistoric Agricultural Communities in West Central Alabama,* Vol. 1, *Excavations in the Lubbub Creek Archaeological Locality*, ed. Christopher S. Peebles, 140–196. Ann Arbor: University of Michigan.

Collins, Michael Bruce. 1968. "The Andrews Lake Locality: New Archeological Data from the Southern Llano Estacado, Texas." MA thesis, Department of Anthropology, University of Texas, Austin.

Connell, Samuel V., and Jay E. Silverstein. 2006. "From Laos to Mesoamerica: Battlegrounds between Superpowers." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 394–433. Gainesville: University Press of Florida.

Conner, Stuart W. 1962a. *A Preliminary Survey of Prehistoric Picture Writing on Rock Surfaces in Central and South Central Montana.* Billings Archaeological Society Paper 2. Billings, MT: Billings Archaeological Society.

Conner, Stuart W. 1962b. "The Fish Creek, Owl Canyon and Grinnvoll Rock Shelter Pictograph Sites in Montana." *Plains Anthropologist* 7(15):24–35.

Conner, Stuart W. 1980. "Historic Period Indicators in the Rock Art of the Yellowstone." *Archaeology in Montana* 21(2):1–13.

Conner, Stuart W. 1984. "Petroglyphs of Ellison's Rock (24RB1019)." *Archaeology in Montana* 25(2–3):123–145.

Conner, Stuart W., and Betty Lu Conner. 1971. *Rock Art of the Montana High Plains*. Santa Barbara: The Art Galleries, University of California.

Conner, Stuart W., Leslie B. Davis, and Joe Medicine Crow. 1977. "Carrot Camp Fortification Site (24BH664)." *Archaeology in Montana* 18(2–3):41–48.

Conolly, James, and Mark Lake. 2006. *Geographical Information Systems in Archaeology.* Cambridge Manuals in Archaeology. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511807459.

Conrad, Lawrence A. 1991. "The Middle Mississippian Cultures of the Central Illinois River Valley." In *Cahokia and the Hinterlands: Middle Mississippian Cultures of the Midwest*, ed. Thomas E. Emerson and R. Barry Lewis, 119–156. Urbana: University of Illinois Press.

Conrad, Lawrence A. 1993. "Two Elaborate Middle Mississippian Graves from the Kingston Lake Site, Peoria County, Illinois." In *Highways to the Past: Essays on Illinois Archaeology in Honor of Charles J. Bareis*, ed. T. Emerson, A. Fortier, and D. McElrath. *Illinois Archaeology* 5(1–2):297–314.

Cook, Edward R., Richard Seager, Mark A. Cane, and David W. Stahle. 2007. "North American Drought: Reconstructions, Causes, and Consequences." *Earth-Science Reviews* 81(1–2):93–134. https://doi.org/10.1016/j.earscirev.2006.12.002.

Cook, Edward R., Richard Seager, Richard R. Heim, Jr., Russell S. Vose, Celine Herweijer, and Connie Woodhouse. 2010. "Megadroughts in North America: Placing IPCC Projections of Hydroclimatic Change in a Long-Term Palaeoclimate Context." *Journal of Quaternary Science* 25(1):48–61. https://doi.org/10.1002/jqs.1303.

Cooke, Philip St George. (Original work published 1861) 2004. *Cavalry Tactics, Or, Regulations for the Instruction, Formations, and Movements of the Cavalry of the Army and Volunteers of the United States*. Mechanicsburg, PA: Stackpole.

Corbyn, Ronald Clive. 1976. "Archeological Photointerpretation of the Deer Creek Site, Kay County, Oklahoma." Manuscript on file. University Park: Department of Anthropology, Pennsylvania State University.

Cottier, John W., and Randy L. Cottier. 1976. "Site Description." In *Fay Tolton and the Initial Middle Missouri Variant*, ed. W. Raymond Wood, 2–8. Missouri Archaeological Society Research Series No. 13. Columbia: College of Arts and Science, University of Missouri-Columbia and the Missouri Archaeological Society.

Coues, Elliott, ed. (Original work published 1893) 1987. *The History of the Lewis and Clark Expedition*. vol. 1. 4 vols. London: Francis P. Harper.

Coyne, James H., ed. and trans. 1903. *Exploration of the Great Lakes, 1669–1670, by Dollier de Casson and de Bréhant de Galinée*. Ontario Historical Society Papers and Records 4. Toronto: Ontario Historical Society.

Davis, Carl M., James D. Keyser, and Cynthia D. Craven. 1994. "Coyote House: Prehistoric Butte Top Occupation in the Pine Parklands." *Archaeology in Montana* 35(2):5–58.

Davis, Don P., and Maxine J. Miller. 2008. "An Introduction to the Archaeology and Human Osteology of the Benick Ranch Site (48AB571)." In *Skeletal Biology and Bioarchaeology of the Northwestern Plains*, ed. George W. Gill and Rick L. Weathermon, 48–63. Salt Lake City: University of Utah Press.

Davis, Donald E. 2000. *Where There Are Mountains: An Environmental History of the Southern Appalachians*. Athens: University of Georgia Press.

Davis, Paul K. 1995. *Aggregation, Disaggregation, and the 3:1 Rule in Ground Combat*. Prepared for the United States Airforce, the United States Army, and the Office of the Secretary of Defense Mr–638AF/A/OSD. Santa Monica, CA: RAND.

Dawson, Sheila, and Ernest G. Walker. 1988. "The Bethune Site: An Avonlea Burial from Saskatchewan." *Saskatchewan Archaeology* 9:3–14.

Deetz, James. 1965. *The Dynamics of Stylistic Change in Arikara Ceramics*. Urbana: University of Illinois Press.

Deis, Richard W. 2004. "Spatial and Temporal Distribution of Rose Spring Projectile Points in the North-Central Sierra Nevada." *Proceedings for the Society for California Archaeology* 17:103–109.

Delacorte, Michael G. 1994. "Late Prehistoric Resource Intensification in the Numic Heartland." Paper presented at the 24th Annual Meeting of the Great Basin Anthropological Conference, Elko, NV.

DeMallie, Raymond J., and Douglas R. Parks. 2001. "Tribal Traditions and Records." In *Handbook of North American Indians,* Volume 13: *Plains,* Part 2, ed. Raymond J. DeMallie, 1062–1073. Washington, DC: Smithsonian Institution.

DeMallie, Raymond J., and Douglas R. Parks. 2003. "Plains Indian Warfare." In *The People of the Buffalo,* Volume 1: *The Plains Indians of North America: Military Art, Warfare and Change*, ed. Colin F. Taylor and Hugh A. Dempsey, 66–76. Germany: Tatanka Press, Wyk auf Foehr.

Dempsey, L. James. 2007. *Blackfoot War Art: Pictographs of the Reservation Period, 1880–2000*. Norman: University of Oklahoma Press.

Denig, Edwin Thompson. 1976. *Five Indian Tribes of the Upper Missouri: Sioux, Arickaras, Assiniboines, Crees, Crows*, ed. John C. Ewers. Norman: University of Oklahoma Press.

Densmore, Frances. 1918. "Teton Sioux Music." Bureau of American Ethnology Bulletin 61. Washington, DC: Smithsonian Institution.

Department of Army. 2008. *FM 3-0, Operations*. Washington, DC: US Department of Army.

DePratter, Chester B. 1983. "Late Prehistoric and Early Historic Chiefdoms in the Southeastern United States." PhD diss., Department of Anthropology, University of Georgia, Athens.

Dewdney, Selwyn. 1964. "Writings On Stone Along the Milk River." *Beaver Outfit* 295(Winter):22–29.

Dial, Susan, and Steve Black. 2010. "The Harrell Site: A Prehistoric Cemetery: Mass Burials and Mutilations." Accessed February 2010. http://www.texasbeyondhistory.net/harrell/cemetery.html.

Dial, Susan, and Darrell Creel. 2012. "Cultures, Conflicts, and Connections." Accessed October 2016. http://www.texasbeyondhistory.net/cairn/cultures.html.

Diamond, Jared. 2008. "Vengeance Is Ours." *New Yorker* 84:74–84.

Dies, Richard W. 2004 "Spatial and Temporal Distribution of Rose Spring Projectile Points in the North-Central Sierra Nevada." *Proceedings for the Society for California Archaeology* 17:103–109.

Din, Gilbert C., and Abraham P. Nasatir. 1983. *The Imperial Osages: Spanish-Indian Diplomacy in the Mississippi Valley*. Norman: University of Oklahoma Press.

Donck, Adriaen van der. 2008. *A Description of New Netherland*, ed. Charles T. Gehring and William A. Starna. Trans. D. W. Goedhuys. London: University of Nebraska Press.

Drass, Richard R. 1997. *Culture Change on the Eastern Margins of the Southern Plains.* Oklahoma Anthropological Society Memoir No. 7. Norman: Oklahoma Archeological Survey, University of Oklahoma.

Drass, Richard R. 1998. "The Southern Plains Villagers." In *Archaeology on the Great Plains*, ed. W. Raymond Wood, 415–455. Lawrence: University Press of Kansas.

Drass, Richard R., and Timothy G. Baugh. 1997. "The Wheeler Phase and Cultural Continuity in the Southern Plains." *Plains Anthropologist* 42(160):183–204.
Drass, Richard R., and Sheila Bobalik Savage. 1992. "The Duncan Site: Protohistoric Adaptations in the Mixed Grass Prairie." Paper presented at the 50th Annual Plains Anthropological Conference, Lincoln, NE.
Drass, Richard R., Susan C. Vehik, and Stephen M. Perkins. 2004. "Radiocarbon Dates for the Bryson-Paddock Site, 34KA5." *Oklahoma Archeology, Oklahoma Anthropological Society Journal* 52(4):26–28.
Drury, Bob, and Thomas Clavin. 2013. *Red Cloud: The Greatest Warrior Chief of the American West*. London: Robson Press.
Duffield, Lathel F. 1965. "The Taovayas Village of 1759: In Texas or Oklahoma?" *Great Plains Journal* 4(2):39–48.
Dupuy, Trevor N. 1979. *Numbers, Predictions, and War: Using History to Evaluate Combat Factors and Predict the Outcome of Battles*. Indianapolis: Bobbs-Merrill.
Durand, Stephen R., and Lonnie C. Pippin. 1992. "A Pragmatic Application of the Nearest Neighbor Statistic." *Journal of Field Archaeology* 19(2):263–271. https://doi.org/10.2307/529998.
Dyck, Ian, and Richard E. Morlan. 2001. "Hunting and Gathering Tradition: Canadian Plains." In *Handbook of North American Indians*, Volume 13: *Plains,* Part 1, ed. Raymond J. DeMallie, 115–131. Washington, DC: Smithsonian Institution.
Dye, David H. 1994. "The Art of War in the Sixteenth-Century Central Mississippi Valley." In *Perspectives on the Southeast: Linguistics, Archaeology, and Ethnohistory*, ed. Patricia B. Kwachka, 44–60. Athens: University of Georgia Press.
Dye, David H. 2006. "The Transformation of Mississippian Warfare: Four Case Studies from the Mid-South." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 101–147. Gainesville: University Press of Florida.
Dye, David H. 2009. *War Paths, Peace Paths: An Archaeology of Cooperation and Conflict in Native Eastern North America*. Lanham, MD: AltaMira Press.
Dye, David H., and Adam King. 2007. "Desecrating the Sacred Ancestor Temples: Chiefly Conflict and Violence in the American Southeast." In *North American Indigenous Warfare and Ritual Violence*, ed. Richard J. Chacon and Rubén G. Mendoza, 160–181. Tucson: University of Arizona Press.
Eames, Steven C. 2011. *Rustic Warriors: Warfare and the Provincial Soldier on the New England Frontier, 1689–1748*. New York: New York University Press. https://doi.org/10.18574/nyu/9780814722701.001.0001.
Earle, Timothy. 1997. *How Chiefs Come to Power: The Political Economy in Prehistory*. Stanford: Stanford University Press.

Eastman, Elaine Goodale. 1945. "The Ghost Dance War and Wounded Knee Massacre of 1890–91." *Nebraska History* 26(1):26–42.

Eckles, David, Jeffrey Lockwood, Rabinder Kumar, Dale Wedel, and Danny N. Walker. 1994. "An Early Historic Period Horse Skeleton from Southwestern Wyoming." *Wyoming Archaeologist* 3–4:55–68.

Ember, Carol R., and Melvin Ember. 1992. "Resource Unpredictability, Mistrust, and War: A Cross-Cultural Study." *Journal of Conflict Resolution* 36(2):242–262. https://doi.org/10.1177/0022002792036002002.

Emerson, Thomas E. 1986. "Middle Mississippian Societies of the American Bottom and the Central Illinois Valley." In *Prehistoric Mound Builders of the Mississippi Valley*, ed. J. B. Stoltman, 9–16. Davenport, IA: Putnam Museum.

Emerson, Thomas E. 1999. "The Langford Tradition and the Process of Tribalization on the Middle Mississippian Borders." *Midcontinental Journal of Archaeology* 24(1):3–56.

Emerson, Thomas E. 2007. "Cahokia and the Evidence for Late Pre-Columbian War in the North American Midcontinent." In *North American Indigenous Warfare and Ritual Violence*, ed. Richard J. Chacon and Rubén G. Mendoza, 129–148. Tucson: University of Arizona Press.

Engelbrecht, William E. 2003. *Iroquoia: The Development of a Native World*. Syracuse: Syracuse University Press.

Engelbrecht, William E. 2009. "Defense in an Iroquois Village." In *Iroquoian Archaeology and Analytic Scale*, ed. Laurie E. Miroff and Timothy D. Knapp, 179–187. Knoxville: University of Tennessee Press.

Epstein, Joshua M. 1989. "The 3:1 Rule, the Adaptive Dynamic Model, and the Future of Security Studies." *International Security* 13(4):90–127. https://doi.org/10.2307/2538781.

Esarey, Duane, and Lawrence A. Conrad. 1998. "The Bold Counselor Phase of the Central Illinois River Valley: Oneota's Middle Mississippian Margin." In *Oneota Taxonomy: Papers from the Oneota Symposium of the 54th Plains Anthropological Conference, 1996*, ed. R. Eric Hollinger and David W. Benn. *The Wisconsin Archeologist* 79(2):38–61.

Ewen, Charles R. 1990. "Soldier of Fortune: Hernando de Soto in the Territory of the Apalachee, 1539–1540." In *Columbian Consequences*, Volume 2: *Archaeological and Historical Perspectives on the Spanish Borderlands East*, ed. David Hurst Thomas, 83–91. Washington, DC: Smithsonian Institution Press.

Ewers, John C. 1955a. *The Horse in Blackfoot Indian Culture.* Bureau of American Ethnology Bulletin 159. Washington, DC: Government Printing Office.

Ewers, John C. 1955b. "The Bear Cult among the Assinboin and Their Neighbors of the Northern Plains." *Southwestern Journal of Anthropology* 11(1):1–14. https://doi.org/10.1086/soutjanth.11.1.3628993.

Ewers, John C. 1968. "Plains Indian Painting: The History and Development of an American Art Form." *American West Magazine* 5(2):4–15, 74–76.

Ewers, John C. 1975. "Intertribal Warfare as the Precursor of Indian-White Warfare on the Northern Great Plains." *Western Historical Quarterly* 6(4):397–410. https://doi.org/10.2307/967776.

Ewers, John C. (Original work published 1955) 1985. *The Horse in Blackfoot Indian Culture*. Washington, DC: Smithsonian Institution Press.

Ewers, John C. 1994. "Women's Roles in Plains Indian Warfare." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 325–332. Washington, DC: Smithsonian Institution Press.

Ewers, John C. 1997. *Plains Indian History and Culture Essays on Continuity and Change*. Norman: University of Oklahoma Press.

Ewers, John C., Helen M. Mangelsdorf, and William S. Wierzbowski. 1985. *Images of a Vanished Life: Plains Indian Drawings from the Collection of the Pennsylvania Academy of the Fine Arts*. Philadelphia: Pennsylvania Academy of the Fine Arts.

Fenn, Elizabeth A. 2001. *Pox Americana: The Great Smallpox Epidemic of 1775–1782*. New York: Hill and Wang.

Fenn, Elizabeth A. 2014. *Encounters at the Heart of the World: A History of the Mandan People*. New York: Hill and Wang.

Ferguson, R. Brian. 1984. "Introduction: Studying War." In *Warfare, Culture, and Environment*, ed. R. Brian Ferguson, 1–81. Orlando: Academic Press.

Ferguson, R. Brian. 1992. "Tribal Warfare." *Scientific American* 26 (1):108–113. https://doi.org/10.1038/scientificamerican0192-108.

Ferguson, R. Brian. 2006. "Archaeology, Cultural Anthropology, and the Origins and Intensifications of War." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 469–523. Gainesville: University Press of Florida.

Ferguson, R. Brian. 2008. "The Prehistory of War and Peace in Europe and the Near East." In *War, Peace, and Human Nature: The Convergence of Evolutionary and Cultural Views*, ed. Douglas P. Fry, 191–240. New York: Oxford University Press.

Ferguson, R. Brian. 2013. "The Prehistory of War and Peace in Europe and the Near East." In *War, Peace, and Human Nature: The Convergence of Evolutionary and Cultural Views*, ed. Douglas P. Fry, 191–240. New York: Oxford University Press. https://doi.org/10.1093/acprof:oso/9780199858996.003.0011.

Ferguson, R. Brian, and Neil L. Whitehead. 1992. *War in the Tribal Zone: Expanding States and Indigenous Warfare*. Santa Fe: School of American Research Press.

Finlayson, William D. 1985. *The 1975 and 1978 Rescue Excavations at the Draper Site: Introduction and Settlement Patterns.* Archaeological Survey of Canada, Paper No. 130. Ottawa: National Museum of Man.

Finlayson, William D. 1998. *Iroquoian Peoples of the Land of Rocks and Water, AD 1000–1650: A Study in Settlement Archaeology*. vol. 1–4. London, ON: London Museum of Archaeology.

Fletcher, Alice C. (Original work published 1904) 1996. *The Hako*. Lincoln: University of Nebraska Press.

Flint, Richard, and Shirley Cushing Flint, eds. 2005. *Documents of the Coronado Expedition, 1539–1542*. Dallas: Southern Methodist University Press.

Flores, Dan L., ed. 1985. *Journal of an Indian Trader: Anthony Glass and the Texas Trading Frontier, 1790–1810.* Texas A&M Southwestern Studies Number 4. College Station: Texas A&M University Press.

Fontana, Marisa D. 2007. "Of Walls and War: Fortification and Warfare in the Mississippian Southeast." PhD diss., Department of Anthropology, University of Illinois, Chicago.

Foreman, Carolyn Thomas. 1931. "The Cherokee War Path with Annotations." *Chronicles of Oklahoma* 9(3):233–263.

Foreman, Grant. 1927. "A Journal Kept by Douglas Cooper of an Expedition by a Company of Chickasaw in Quest of Comanche Indians." *Chronicles of Oklahoma* 5(4):381–390.

Fossati, Angelo Eugenio, James D. Keyser, and David A. Kaiser. 2010. "Flags and Banners in Warrior Rock Art." *Ethnographic Comparisons for Valcamonica and Bear Gulch Rock Art* 36:109–124.

Fox, Richard A. 1997. *Archaeology, History, and Custer's Last Battle: The Little Big Horn Reexamined*. Norman: University of Oklahoma Press.

Francis, Julie E. 2007. "Imagery of Medicine Lodge." In *Medicine Lodge Creek: Holocene Archaeology of the Eastern Big Horn Basin, Wyoming*, vol. 1. ed. George C. Frison and Danny N. Walker, 209–226. Avondale, CO: Clovis Press.

Francis, Julie E., and Lawrence L. Loendorf. 2002. *Ancient Visions: Petroglyphs and Pictographs from the Wind River and Bighorn Country, Wyoming and Montana*. Salt Lake City: University of Utah Press.

Fredlund, Lynn. 1990. *Investigations at Two Rock Art Sites on the South Fork of Canyon Creek, Yellowstone County, Montana.* GCM Services Report to Montana State Office of the Bureau of Land Management. MT: Butte.

Fredlund, Lynn. 1991. "Road King George: A Saga of Cycling Along Rosebud Creek in the 1890s." *Archaeology in Montana* 32(1):3–7.

Fredlund, Lynn. 1993. *Archaeological Investigations and Rock Art Recordation at Recognition Rock (24RB165) Rosebud County, Montana*. Butte, MT: GCM Service.

Frison, George C. 1967a. "Archaeological Evidence of the Crow Indians in Northern Wyoming: A Study of Late Prehistoric Period Buffalo Economy." PhD diss., University of Michigan, Ann Arbor.

Frison, George C. 1967b. "The Piney Creek Sites." *University of Wyoming Publications in Science* 33(1):1–92.

Frison, George C. 1988. "Avonlea and Contemporaries in Wyoming." In *Avonlea Yesterday and Today: Archaeology and Prehistory*, ed. Leslie B. Davis, 155–171. Saskatoon: Saskatchewan Archaeological Society.

Frison, George C. 1991. *Prehistoric Hunters of the High Plains*. 2nd ed. New York: Academic Press.

Frison, George C. 2004. *Survival by Hunting: Prehistoric Human Predators and Animal Prey*. Berkeley: University of California Press. https://doi.org/10.1525/california/9780520231900.001.0001.

Fritz, Sherilyn C., Emi Ito, Zicheng Yu, Kathleen R. Laird, and Daniel R. Engstrom. 2000. "Hydrologic Variation in the Northern Great Plains during the Last Two Millennia." *Quaternary Research* 53(2):175–184. https://doi.org/10.1006/qres.1999.2115.

Fry, Douglas P. 2006. *The Human Potential for Peace: An Anthropological Challenge to Assumptions about War and Violence*. New York: Oxford University Press.

Fry, Douglas P. 2007. *Beyond War: The Human Potential for Peace*. New York: Oxford University Press.

Fry, Douglas P., and Patrik Söderberg. 2013. "Lethal Aggression in Mobile Forager Bands and Implications for the Origins of War." *Science* 341(6143):270–273. https://doi.org/10.1126/science.1235675.

Funk, Robert E. 1967. "Garoga: A Late Prehistoric Iroquois Village in the Mohawk Valley." In *Iroquois Culture, History, and Prehistory*, ed. Elisabeth Tooker, 81–84. Albany: New York State Museum and Science Center.

Garcia, Andrew. 1967. *Tough Trip through Paradise, 1878–1879*. Sausalito, CA: Comstock Editions.

Garfinkel, Alan P. 2007. "Rose Spring Point Chronology and Numic Population Movements in Eastern California." *Pacific Coast Archaeological Society Quarterly* 43(1–2):42–49.

Garland, Elizabeth B. 1992. *The Obion Site: An Early Mississippian Center in Western Tennessee.* Report of Investigations No. 7. Starkville: Cobb Institute of Archaeology, Mississippi State University.

Gat, Azar. 2006. *War in Human Civilization*. Oxford: Oxford University Press.

Gebhard, David. 1966. "The Shield Motif in Plains Rock Art." *American Antiquity* 31(5):721–732. https://doi.org/10.1017/S0002731600095147.

Gebhard, David, Fred Heaton, and Jonathon Laitone. 1987. *The Rock Drawings of Castle Gardens, Wyoming*. Report on file with the Bureau of Land Management, Cheyenne, WY.

Gibbon, Guy. 1993. "The Middle Missouri Tradition in Minnesota: A Review." *Plains Anthropologist* 38(145):169–187.

Gilder, Robert F. 1913. "A Prehistoric 'Cannibal House' in Nebraska." *Records of the Past* 12:107–116.

Gill, George W., and Rick L. Weathermon, eds. 2008. *Skeletal Biology and Bioarchaeology of the Northwestern Plains*. Salt Lake City: University of Utah Press.

Gilmore, Melvin R. 1933. "The Plight of Living Scalped Indians." *Papers of the Michigan Academy of Science, Arts and Letters* 19:39–45.

Glaser, Charles L., and Chaim Kaufmann. 1998. "What Is the Offense-Defense Balance and How Can We Measure It?" *International Security* 22(4):44–82.

Goldenweiser, A. A. 1915. "The Heuristic Value of Traditional Records." *American Anthropologist* 17(4):763–764. https://doi.org/10.1525/aa.1915.17.4.02a00220.

Golitko, Mark, and Lawrence H. Keeley. 2007. "Beating Ploughshares Back into Swords: Warfare in the Linearbandkeramik." *Antiquity* 81(312):332–342. https://doi.org/10.1017/S0003598X00095211.

Goodman, Alan H., John Lallo, George J. Armelagos, and Jerome C. Rose. 1984. "Health Changes at Dickson Mounds, Illinois (AD 950–1300)." In *Paleopathology at the Origins of Agriculture*, ed. Mark Nathan Cohen and George J. Armelagos, 271–305. New York: Academic Press.

Gordon, Robert J. 2009. "Hiding in Full View: The 'Forgotten' Bushman Genocides of Namibia." *Genocide Studies and Prevention* 4(1):29–57. https://doi.org/10.3138/gsp.4.1.29.

Gramley, Richard M. 1988. "Conflict and Defense in the Eastern Woodlands." In *Interpretations of Culture Change in the Eastern Woodlands during the Late Woodland Period*, ed. Richard W. Yerkes, 86–97. Occasional Papers in Anthropology No. 3. Columbus: Ohio State University.

Green, William, and David J. Nolan. 2000. "Late Woodland Peoples in West-Central Illinois." In *Late Woodland Societies: Tradition and Transformation across the Midcontinent*, ed. Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, 345–386. Lincoln: University of Nebraska Press.

Greene, Candace S. 1985. "Women, Bison, and Coup: A Structural Analysis of Cheyenne Pictographic Art." PhD diss., Department of Anthropology, University of Oklahoma, Norman.

Greene, Candace S. 2006. "Arikara Drawings: New Sources of Visual History." *American Indian Art Magazine* 31(2):74–85, 99.

Greene, Candace S., and Russell Thornton, eds. 2007. *The Year the Stars Fell: Lakota Winter Counts at the Smithsonian.* Washington, DC: Smithsonian Institution. Lincoln: University of Nebraska Press.

Greene, Jerome A., and Douglas D. Scott. 2004. *Finding Sand Creek: History, Archeology and the 1864 Massacre Site*. Norman: University of Oklahoma Press.

Greer, John, Mavis Greer, James D. Keyser, and David Moyer. 2010. "Armored Horses in Rock Art of the Northwestern Plains." Manuscript in possession of James D. Keyser.

Greer, Mavis. 1995. "Archaeological Analysis of Rock Art Sites in the Smith River Drainage of Central Montana." PhD diss., Department of Anthropology, University of Missouri, Columbia.

Greer, Mavis, and John Greer. 1999. "Handprints in Montana Rock Art." *Plains Anthropologist* 44(167):59–71.

Greer, Mavis, and John Greer. 2002. "Overview of Powder River Basin Rock Art." Paper presented at the Annual Meeting of the Wyoming Archaeological Society, Riverton.

Greer, Mavis, and John Greer. 2003. "A Test for Shamanic Trance in Central Montana Rock Art." *Plains Anthropologist* 48(186):105–120.

Greer, Mavis, and John Greer. 2008a. "Weaponry in Northwestern Plains Rock Art of North America." Paper presented at the 73rd Annual Meeting of the Society for American Archaeology, Vancouver.

Greer, Mavis, and John Greer. 2008b. "Weaponry in Wyoming and Montana Rock Art." Paper presented at the Annual Meeting of the Wyoming Archaeological Society, Rock Springs.

Greer, Melissa, and James D. Keyser. 2008. "Women among Warriors: Female Figures in Bear Gulch Rock Art." *American Indian Rock Art* 34:89–103.

Gregg, John B., and Pauline S. Gregg. 1987. *Dry Bones: Dakota Territory Reflected*. Sioux Falls, SD: Sioux Printing.

Gregg, John B., and Larry J. Zimmerman. 1987. "Malnutrition in Fourteenth-Century South Dakota: Osteopathological Manifestations." *North American Archaeologist* 7(3):191–214. https://doi.org/10.2190/M698-GJA3-UM3P-QRC9.

Gregg, John B., Larry J. Zimmerman, James P. Steele, Helen Ferwerda, and Pauline S. Gregg. 1981. "Ante-Mortem Osteopathology at Crow Creek." *Plains Anthropologist* 26(94):287–300.

Griffin, David E. 1977. "Timber Procurement and Village Location in the Middle Missouri Subarea." *Plains Anthropologist* 22(78):177–185.

Griffith, Paddy. 1986. *Battle in the Civil War: Generalship and Tactics in America, 1861–1865*. United Kingdom: Field Books.

Griffith, Paddy. 1989. *Battle Tactics of the Civil War*. New Haven: Yale University Press.

Grinnell, George Bird. 1910. "Coup and Scalp among the Plains Indians." *American Anthropologist* 12(2):296–310. https://doi.org/10.1525/aa.1910.12.2.02a00080.
Grinnell, George Bird. 1926. *By Cheyenne Campfires*. New Haven: Yale University Press.
Grinnell, George Bird. 1956. *The Fighting Cheyennes*. Norman: University of Oklahoma Press.
Grinnell, George Bird. (Original work published 1923) 1972. *The Cheyenne Indians: Their History and Ways of Life*. 2 vols. Lincoln: University of Nebraska Press.
Guenther, Mathias. 2014. "War and Peace among Kalahari San." *Journal of Aggression, Conflict and Peace Research* 6(4):229–239. https://doi.org/10.1108/JACPR-02-2014-0005.
Haas, Jonathon. 2001. "Warfare and the Evolution of Culture." In *Archaeology at the Millennium: A Sourcebook*, ed. Gary M. Feinman and T. Douglas Price, 329–350. New York: Kluwer Academic Press. https://doi.org/10.1007/978-0-387-72611-3_9.
Habicht-Mauche, Judith. 2000. "Pottery, Food, Hides and Women: Labor, Production, and Exchange across the Protohistoric Plains-Pueblo Frontier." In *The Archaeology of Regional Interaction Religion, Warfare, and Exchange across the American Southwest and Beyond.* Proceedings of the 1996 Southwest Symposium, ed. Michelle Hegmon, 209–231. Boulder: University Press of Colorado.
Habicht-Mauche, Judith. 2008. "Captive Wives? The Role and Status of Nonlocal Women on the Protohistoric Southern High Plains." In *Invisible Citizens: Captives and Their Consequences*, ed. Catherine M. Cameron, 181–204. Salt Lake City: University of Utah Press.
Habicht-Mauche, Judith, Alytia A. Levendosky, and Margaret J. Schoeninger. 1994. "Antelope Creek Phase Subsistence: The Bone Chemistry Evidence." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 325–332. Washington, DC: Smithsonian Institution Press.
Halaas, David Fridtjof, and Andrew E. Masich. 2004. *Halfbreed: The Remarkable True Story of George Bent: Caught between the Worlds of the Indian and the White Man*. Cambridge, MA: Da Capo Press.
Hall, Robert L. 1997. *An Archaeology of the Soul: North American Indian Belief and Ritual*. Urbana: University of Illinois Press.
Halsall, Guy. 2003. *Warfare and Society in the Barbarian West, 450–900*. London: Routledge.
Hamalainen, Pekka. 2009. *The Comanche Empire*. 1st ed. New Haven: Yale University Press.
Hamell, George R., and W. Rogers. 2001. "Mohawk Iroquois Village: A Virtual Exhibit at the New York State Museum, Albany." Accessed January 2016. http://exhibitions.nysm.nysed.gov/iroquoisvillage.
Hamilton, T. M. 1982. *Native American Bows.* Special Publication No. 5. Columbia: Missouri Archaeological Society.

Hammatt, Hallett H. 1976. "The Gore Pit Site: An Archaic Occupation in Southwestern Oklahoma and a Review of the Archaic Stage in the Southern Plains." *Plains Anthropologist* 21(74):245–277.

Hammerstedt, Scott W. 2005. "Mississippian Construction, Labor, and Social Organization in Western Kentucky." PhD diss., Department of Anthropology, Pennsylvania State University, University Park.

Hammond, George P., and Agapito Rey. 1928. *Obregon's History of 16th Century Spanish Explorations in Western America*. Los Angeles: Wetzel Publishing Company.

Hammond, George P., and Agapito Rey. 1940. *Coronado Centennial Publications, 1540–1940*. vol. 2. Narratives of the Coronado Expedition, 1540–1542. Albuquerque: University of New Mexico Press.

Hammond, George P., and Agapito Rey. 1953. *Don Juan de Oñate: Colonizer of New Mexico 1595–1628*. Albuquerque: University of New Mexico Press.

Hampton, H. Duane. 2011. *Life and Death at the Mouth of the Musselshell*. 1st ed. Stevensville, MT: Stoneydale Press Publishing Company.

Handel, Michael I. 2001. *Masters of War: Classical Strategic Thought*. London: Frank Cass Publishers.

Hans, Frederic Malon. 1981. "Scouting for the US Army, 1876–1879: The Diary of Fred M. Hans," ed. Michael L. Tate. *South Dakota Historical Collections* 40:1–174.

Harding, Dennis. 2013. *Iron Age Hillforts in Britain and Beyond*. New York: Oxford University Press.

Harn, Alan D. 1978. "Mississippian Settlement Patterns in the Central Illinois River Valley." In *Mississippian Settlement Patterns*, ed. Bruce D. Smith, 237–268. New York: Academic Press.

Hart, Herbert M. 1967. *Pioneer Forts of the West*. Seattle: Superior Publishing.

Hartley, John D., and A. F. Miller. 1977. *Archaeological Investigations at the Bryson-Paddock Site: An Early Contact Period Site on the Southern Plains*. Archaeological Site Report 32. Norman: Oklahoma River Basin Survey.

Heidenreich, Conrad E. 1971. *Huronia: A History and Geography of the Huron Indians, 1600–1650*. Toronto: McClelland and Stewart.

Henning, Dale R. 2005. "The Evolution of the Plains Village Tradition." In *North American Archaeology*, ed. Timothy R. Pauketat and Diana DiPaolo Loren, 161–186. Oxford: Blackwell.

Henning, Dale R. 2007. "Continuity and Change in the Eastern Plains, AD 800–1700: An Examination of Exchange Patterns." In *Plains Village Archaeology: Bison Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 67–82. Salt Lake City: University of Utah Press.

Henning, Dale R., and Dennis L. Toom. 2003. "Cambria and the Initial Middle Missouri Variant Revisited." *Wisconsin Archeologist* 84(1&2):197–217.

Henning, Elizabeth R. P. 1982. "Western Dakota Winter Counts: An Analysis of the Effects of Westward Migration and Culture Change." *Plains Anthropologist* 27(95):57–65.

Heuser, Beatrice. 2010. *The Evolution of Strategy*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511762895.

Hewett, Janet. 1997. Supplement to the Official Records of the Union and Confederate Armies, Part II, *Record of Events,* vol. 50, Serial No. 62. Wilmington, NC: Broadfoot Publishing.

Hitchcock, Robert K., Maria Sapignoli, and Wayne A. Babchuk. 2014. "Settler Colonialism, Conflicts, and Genocide: Interactions between Hunter-Gatherers and Settlers in Kenya, and Zimbabwe and Northern Botswana." *Settler Colonial Studies* 5(1):40–65. https://doi.org/10.1080/2201473X.2014.899549.

Hoard, Robert J., and Christopher M. Schoen, eds. 2012. *Archeological Investigations at Arkansas City, Kansas*. Contract Archeology Publications No. 26. Kansas State Historical Society.

Hodder, Ian. 1982. *Symbols in Action: Ethnoarchaeological Studies of Material Culture*. Cambridge: Cambridge University Press.

Hodder, Ian, and Clive Orton. 1976. *Spatial Analysis in Archaeology*. Cambridge: Cambridge University Press.

Hoebel, E. Adamsom. (Original work published 1954) 2006. *The Law of Primitive Man: A Study in Comparative Legal Dynamics*. London: First Harvard University Press.

Hoffecker, John F., Owen K. Mason, Scott A. Elias, Diane K. Hanson, Claire Alix, Georgeanne L. Reynolds, and Karlene Leeper. 2012. "Uivvaq: A Stratified Iñupiq Occupation at Cape Lisburne, Northwest Alaska." *Alaska Journal of Anthropology* 10(1–2):143–172.

Hoffman, J. J. 1967. *Molstad Village.* Publications in Salvage Archaeology No. 4. Lincoln, NE: Smithsonian Institution River Basin Surveys.

Holcomb, G. R. 1952. "An Analysis of Human Remains from Aztalan." Master's thesis, Department of Anthropology, University of Wisconsin, Madison.

Holder, Preston. 1958. "Social Stratification among the Arikara." *Ethnohistory (Columbus, Ohio)* 5(3):210–218. https://doi.org/10.2307/480664.

Holder, Preston. 1970. *The Hoe and the Horse on the Plains: A Study of Cultural Development among North American Indians*. Lincoln: University of Nebraska Press.

Holley, George R. 1999. "Late Prehistoric Towns in the Southeast." In *Great Towns and Regional Polities: In the Prehistoric American Southwest and Southeast*, ed. Jill E. Neitzel, 23–38. Albuquerque: University of New Mexico Press.

Holley, George R., Neil H. Lopinot, Rinita A. Dalan, and William I. Woods. 1990. "South Palisade Investigations." In *The Archaeology of the Cahokia Palisade*, ed.

Thomas E. Emerson. Illinois Cultural Resource Study No. 14. Springfield: Illinois Historic Preservation Agency.

Hollimon, Sandra E. 2000. "Sex, Health and Gender Roles among the Arikara of the Northern Plains." In *Reading the Body: Representations and Remains in the Archaeological Record*, ed. Alison E. Rautman, 25–37. Philadelphia: University of Pennsylvania Press. https://doi.org/10.9783/9781512806830-005.

Hollimon, Sandra E., and Douglas W. Owsley. 1994. "Osteology of the Fay Tolton Site: Implications for Warfare during the Initial Middle Missouri Variant." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 345–354. Washington, DC: Smithsonian Institution Press.

Hollinger, R. Eric. 1993. "Investigating Oneota Residence through Domestic Architecture." Master's thesis, Department of Anthropology, University of Missouri, Columbia.

Hollinger, R. Eric. 1995. Residence Patterns and Oneota Cultural Dynamics. In *Oneota Archaeology: Past, Present and Future*, ed. W. Green, 141–174. Report 20. Iowa City: Office of the State Archaeologist, University of Iowa.

Hollinger, R. Eric. 2000. "Images of Power: Meaning and Social Function of Portable Art." Paper presented at the Joint Midwest Archaeological/Plains Anthropological Conference. St. Paul, Minnesota.

Hollinger, R. Eric. 2005. "Conflict and Culture Change in the Late Prehistoric and Early Historic American Midcontinent." PhD diss., Department of Anthropology, University of Illinois at Urbana, Champagne.

Hoppa, Robert D., Laura Allingham, Kevin Brownlee, Linda Larcombe, and Gregory Monks. 2005. "An Analysis of Two Late Archaic Burials from Manitoba: The Eriksdale Site (EfL1–1)." *Canadian Journal of Archaeology / Journal Canadien d'Archéologie* 29(2):234–266.

Horowitz, Donald L. 1985. *Ethnic Groups in Conflict*. Berkeley: University of California Press.

Horsch, Marcellus L. 1980. *Soil Survey of Cowley County, Kansas*. Washington, DC: United States Department of Agriculture, Soil Conservation Service.

Horse Capture, George P., Anne Vitart, Michael Waldberg, and W. Richard West. 1993. *Robes of Splendor: Native American Painted Buffalo Hides*. New York: The New Press.

Howard, James H. 1959. *Report of the Investigation of the Tony Glas Site, 32EM3, Emmons County, North Dakota, 1958.* Anthropological Papers No. 1. Grand Forks: University of North Dakota.

Howard, James H. 1960. "Dakota Winter Counts as a Source of Plains History." *Bulletin of the Bureau of American Ethnology* 173:335–416. Anthropological Papers No. 61. Washington, DC: Smithsonian Institution.

Howard, James H. 1976. "Yanktonai Ethnohistory and the John K. Bear Winter Count." *Plains Anthropologist* 21(73, Part 2):1–78.
Hoxie, Fred, and Frank Rzeczkowski. n.d. *The Grapevine Creek Battle*. Denver: National Park Service, Intermountain Support Office.
Hudson, Charles M. 1997. *Knights of Spain, Warriors of the Sun: Hernando De Soto and the South's Ancient Chiefdoms*. Athens: University of Georgia Press.
Hultkrantz, Ake. 1961. "The Shoshones in the Rocky Mountain Region." *Annals of Wyoming* 33(1):19–40.
Hunt, David C., Marsha V. Gallagher, and William J. Orr. 1984. *Karl Bodmer's America*. 1st ed. Lincoln: University of Nebraska Press.
Hunt, George R. 1967. *The Wars of the Iroquois: A Study in Intertribal Trade Relations*. Madison: University of Wisconsin Press.
Husted, Wilfred M. 1995a. "Linguistic Prehistory in the Great Basin: A View from the Rocky Mountains." Paper presented at the Second Biennial Rocky Mountain Anthropological Conference, Steamboat Springs, CO.
Husted, Wilfred M. 1995b. "The Western Macrotradition Twenty-Seven Years Later." *Archaeology in Montana* 36(1):37–92.
Husted, Wilfred M. 2002. "Archaeology in the Middle Rocky Mountains: Myopia, Misconceptions and Other Concerns." *Plains Anthropologist* 47(183):379–386.
Husted, Wilfred M., and Robert Edgar. 2002. *The Archeology of Mummy Cave, Wyoming: An Introduction to Shoshonean Prehistory*. Midwest Archaeological Center Special Report No. 4 and Southeast Archaeological Center Technical Report Series No. 9. Lincoln, NE: US Department of the Interior, National Park Service.
Husted, Wilfred M., and Oscar L. Mallory. 1967. "The Fremont Culture: Its Derivation and Ultimate Fate." *Plains Anthropologist* 12(36):222–232.
Hyde, George E. 1957. *Red Cloud's Folk: A History of the Oglala Sioux*. Norman: University of Oklahoma Press.
Hyde, George E. 1961. *Spotted Tail's Folk: A History of the Brule Sioux*. Norman: University of Oklahoma Press.
Hyde, George E. 1968. *Life of George Bent Written from His Letters*. Norman: University of Oklahoma Press.
Ingram, Daniel Patrick. 2012. *Indians and British Outposts in Eighteenth-Century America*. Gainesville: University Press of Florida. https://doi.org/10.5744/florida/9780813037974.001.0001.
Inomata, Takeshi, and Daniela Triadan. 2009. "Culture and Practice of War in Maya Society." In *Warfare in Cultural Context*, ed. Axel E. Nielsen and William H. Walker, 56–83. Amerind Studies in Archaeology Volume 3. Tucson: University of Arizona Press.

Iseminger, William R. 1990. "The Archaeological Remains: Features." In *The Archaeology of the Cahokia Palisade*, ed. Thomas E. Emerson. Illinois Cultural Resource Study No. 14. Springfield: Illinois Historic Preservation Agency.

Iseminger, William R., Timothy R. Pauketat, Brad Koldehoff, Lucretia S. Kelley, and Leonard Blake. 1990. "The Archaeological Remains: Features." In *East Palisade Investigations*, ed. Thomas E. Emerson. Illinois Cultural Resource Study No. 14. Springfield: Illinois Historic Preservation Agency.

Jablow, Joseph. 1951. *The Cheyenne in Plains Indian Trade Relations, 1795–1840.* Monographs of the American Ethnological Society No. 19. New York: J. J. Augustin Publishers.

Jackson, Douglas K. 1998. "Settlement on the Southern Frontier: Oneota Occupations in the American Bottom." *Wisconsin Archeologist* 79(2):93–116.

Jackson, Jack. 2005. *Indian Agent: Peter Ellis Bean in Mexican Texas*. College Station: Texas A&M University Press.

Jacobi, Keith P. 2007. "Disabling the Dead: Human Trophy Taking in the Prehistoric Southeast." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, ed. Richard J. Chacon and David H. Dye, 299–338. New York: Springer. https://doi.org/10.1007/978-0-387-48303-0_12.

Janetski, Joel C. 1994. "Recent Transitions in the Eastern Great Basin: The Archaeological Record." In *Across the West Human Population Movement and the Expansion of the Numa*, ed. David B. Madsen and David Rhode, 155–178. Salt Lake City: University of Utah Press.

John, Elizabeth A. H. 1975. *Storms Brewed in Other Men's Worlds: The Confrontation of Indians, Spanish, and French in the Southwest, 1540–1795*. College Station: Texas A&M University Press.

John, Elizabeth A. H. 1992. "A Case Study in the Interdependence of Archeology and History: The Spanish Fort Sites on the Red River." *Bulletin of the Texas Archeological Society* 63:197–209.

Johnson, Craig M. 1984. "Time, Space, and Cultural Tradition as Factors in Lithic Resource Exploitation in the Middle Missouri Subarea." *Plains Anthropologist* 29(106):289–302.

Johnson, Craig M. 1998. "The Coalescent Tradition." In *Archaeology on the Great Plains*, ed. W. Raymond Wood, 308–344. Lawrence: University Press of Kansas.

Johnson, Craig M. 2007a. *A Chronology of Middle Missouri Plains Village Sites.* Contributions to Anthropology no. 47. Washington, DC: Smithsonian Institution Scholary Press.

Johnson, Craig M. 2007b. "Jones Village: An Initial Middle Missouri Frontier Settlement." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central*

and Northern Plains, ed. Stanley A. Ahler and Marvin Kay, 41–52. Salt Lake City: University of Utah Press.
Jones, David E. 2004. *Native North American Armor, Shields, and Fortifications*. Austin: University of Texas Press.
Jones, David M., and Anne Jones. 1980. "The Defenses at Indian Fort Road, Tompkins County, New York." *Pennsylvania Archaeologist* 50(1–2):61–71.
Jones, Siân. 1997. *The Archaeology of Ethnicity: Constructing Identities in the Past and Present*. London: Routledge. https://doi.org/10.4324/9780203438732.
Jordan, Kurt A. 2010. "Not Just 'One Site against the World': Seneca Iroquois Intercommunity Connections and Autonomy, 1550–1779." In *Across a Great Divide: Continuity and Change in Native North American Societies, 1400–1900*, ed. Laura L. Scheiber and Mark D. Mitchell, 79–106. Amerind Studies in Archaeology. Tucson: University of Arizona Press.
Kaiser, David, and James D. Keyser. 2008. "Symbolic Superimposition: Overlapping Shield Bearing Warriors at Bear Gulch." *American Indian Rock Art* 34:37–59.
Kaiser, David, James D. Keyser, Amanda Derby, and John Greer. 2010. "The Bear Gulch Shield Bearing Warrior: Defining a Cultural Type." *American Indian Rock Art* 36:37–52.
Kay, Marvin. 1995. *Hard Times at the Helb Redoubt: 1992–1993: Archaeological Investigations at the Helb Site (39CA208), Campbell County, South Dakota*. Report to the US Army Corps of Engineers, Omaha District. Purchase Order No. DACW 45–92-P–1492.
Kay, Marvin. 1996. "Middle Missouri Subarea Fortifications and Warfare." *South Dakota Archaeology* 19&20: 87–100.
Kay, Marvin. 2007. "The Best and the Brightest." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 170–180. Salt Lake City: University of Utah Press.
Keegan, John. 1994. *A History of Warfare*. New York: Vintage Books.
Keeley, Lawrence H. 1996. *War before Civilization*. New York: Oxford University Press.
Keeley, Lawrence H. 2001. "Giving War a Chance." In *Deadly Landscapes: Case Studies in Prehistoric Southwestern Warfare*, ed. Glen E. Rice and Steven A. Leblanc, 330–342. Salt Lake City: University of Utah Press.
Keeley, Lawrence H., Marisa Fontana, and Russell Quick. 2007. "Baffles and Bastions: The Universal Features of Fortifications." *Journal of Archaeological Research* 15(1):55–95. https://doi.org/10.1007/s10814-006-9009-0.
Keener, Craig S. 1998. "An Ethnohistoric Perspective on Iroquois Warfare during the Second Half of the Seventeenth Century (AD 1649–1701)." PhD diss., Department of Anthropology, Ohio State University, Columbus.

Keener, Craig S. 1999. "An Ethnohistorical Analysis of Iroquois Assault Tactics Used against Fortified Settlements of the Northeast in the Seventeenth Century." *Ethnohistory* (Columbus, Ohio) 46(4):777–807.
Keith, Kenneth D., and Clyde C. Snow. 1976. "The Gore Pit Skeleton: Earliest Dated Human Burial from Oklahoma." *Plains Anthropologist* 21(74):283–290.
Kelley, William Fitch. 1971. *Pine Ridge, 1890: An Eye Witness Account of the Events Surrounding the Fighting at Wounded Knee*, ed. Alexander Kelley and Pierre Bovis. San Francisco: Pierre Bovis.
Kelly, Raymond C. 2000. *Warless Societies and the Origin of War*. Ann Arbor: University of Michigan Press. https://doi.org/10.3998/mpub.11589.
Kelly, Robert L. 1995. *The Foraging Spectrum: Diversity in Hunter-Gatherer Lifeways*. Washington, DC: Smithsonian Institution Press.
Keyser, James D. 1975. "A Shoshonean Origin for the Plains Shield Bearing Warrior Motif." *Plains Anthropologist* 20(69):207–215.
Keyser, James D. 1977a. "Writing-on-Stone: Rock Art on the Northwestern Plains." *Canadian Journal of Archaeology* 1:15–80.
Keyser, James D. 1977b. *The Rock Art of Writing-On-Stone.* Manuscript on file at Alberta Recreation and Parks, Edmonton.
Keyser, James D. 1979. "The Plains Indian War Complex and the Rock Art of Writing-on-Stone, Alberta, Canada." *Journal of Field Archaeology* 6(1):41–48.
Keyser, James D. 1984. "Rock Art of the North Cave Hills." In *Rock Art of Western South Dakota. Special Publication of the South Dakota Archaeological Society,* 9:1–51.
Keyser, James D. 1987a. "A Lexicon for Historic Plains Indian Rock Art: Increasing Interpretive Potential." *Plains Anthropologist* 32(115):43–71.
Keyser, James D. 1987b. "Graphic Example of Petroglyph Superimpositioning in the North Cave Hills." *Archaeology in Montana* 28(2):44–56.
Keyser, James, D. 1996. "Painted Bison Robes: The Missing Link in the Biographic Art Style Lexicon." *Plains Anthropologist* 41(155):29–52.
Keyser, James D. 2000. *The Five Crows Ledger: Biographic Warrior Art of the Flathead Indians*. Salt Lake City: University of Utah Press.
Keyser, James D. 2004a. *Art of the Warriors: Rock Art of the American Plains*. Salt Lake City: University of Utah Press.
Keyser, James D. 2004b. "'Bear Coming Out': A Distinctive Plains Shield Motif." *Wyoming Archaeologist* 48(2):35–42.
Keyser, James D. 2005. "Rock Art of the Ashland Ranger District, Custer National Forest." *Archaeology in Montana* 46(2):1–52.
Keyser, James D. 2006a. "Bear Gulch and the Origins of Narrative Art." *Archaeology in Montana* 47(2):57–75.

Keyser, James D. 2006b. *Northern Plains Shield Bearing Warriors: A Preliminary Database*. Summary document on file with the author.
Keyser, James D. 2007a. "The Warrior as Wolf: War Symbolism in Prehistoric Montana Rock Art." *American Indian Art Magazine* 32(3): 62–69.
Keyser, James D. 2007b. "Turner Rockshelter: A Blackfeet Redoubt in the Heart of Crow Country." *Plains Anthropologist* 52(201):9–27. https://doi.org/10.1179/pan.2007.001.
Keyser, James D. 2008a. "'These Curious Appendages': Medicine Bundles in Bear Gulch Rock Art." *American Indian Rock Art* 34:61–72.
Keyser, James D. 2008b. "Prehistoric Antecedents of the Plains Bow-Spear." *American Indian Art Magazine* 33(2):60–73, 92.
Keyser, James D. 2008c. "Two Ute Portraits: Late Rock Art on the Colorado Plateau." In *Utah Rock Art: Papers Presented at the Twenty-Sixth Annual Symposium of the Utah Rock Art Research Association*, 26:1–8. Salt Lake City: Utah Rock Art Research Association.
Keyser, James D. 2010. "Size Really Does Matter: Dating Plains Rock Art Shields." *American Indian Rock Art* 36:85–102.
Keyser, James D. 2011. "These Brave Deeds I Have Done: The Earliest Blackfeet War Record." *American Indian Art Magazine* 36(2):48–55.
Keyser, James D. 2012. "Northern Plains Horse Bonnets." *Whispering Wind* 40(5):4–10.
Keyser, James D., and Timothy J. Brady. 1993. "A War Shirt from the Schoch Collection: Documenting Individual Artistic Expression." *Plains Anthropologist* 38(142):5–20.
Keyser, James D., and Mike Cowdrey. 2008. "Northern Plains Biographic Rock Art: Ethnography Written on Stone." *Archaeology in Montana* 49(1):19–34.
Keyser, James D., John Greer, Carl M. Davis, Mavis Greer, Marvin Rowe, Sara Scott, and George Poetschat. 2011. "Dating the Bear Gulch and Atherton Canyon Rock Art Sites, Central Montana." *Archaeology in Montana* 52(1):7–36.
Keyser, James D., Mavis Greer, and John Greer. 2005. "Arminto Petroglyphs: Rock Art Damage Assessment and Management Considerations in Central Wyoming." *Plains Anthropologist* 5 (193):23–30. https://doi.org/10.1179/pan.2005.005.
Keyser, James D., and David A. Kaiser. 2010. "Getting the Point: Metal Weapons in Plains Rock Art." *Plains Anthropologist* 55(214):111–132. https://doi.org/10.1179/pan.2010.003.
Keyser, James D., and David A. Kaiser. 2014. "Bear Gulch Style Shield Heraldry: Iconography of a Protohistoric Period Northwestern Plains Warrior Society." *Plains Anthropologist* 59(230):144–181. https://doi.org/10.1179/2052546X14Y.0000000008.
Keyser, James D., and Michael A. Klassen. 2001. *Plains Indian Rock Art*. Seattle: University of Washington Press.

Keyser, James D., and Michael A. Klassen. 2003. "Every Detail Counts: More Additions to the Plains Biographic Rock Art Lexicon." *Plains Anthropologist* 48(184):7–20.

Keyser, James D., and Mark Mitchell. 2000. "Red Rock Ledger: Plains Biographic Rock Art in the Picketwire Canyonlands, Southeastern Colorado." *Southwestern Lore* 66(2):22–37.

Keyser, James D., and George Poetschat. 2005. *Warrior Art of Wyoming's Green River Basin: Biographic Petroglyphs along the Seedskadee.* Publication 15. Portland: Oregon Archaeological Society Press.

Keyser, James D., and George Poetschat. 2009. *Crow Rock Art in the Bighorn Basin: Petroglyphs at No Water Wyoming.* Publication 20. Portland: Oregon Archaeological Society Press.

Keyser, James D., and George Poetschat. 2012. "'On the Ninth Day We Took Their Horses': Blackfeet Horse Raiding Scenes at Writing-on-Stone." *American Indian Rock Art* 38:35–52.

Keyser, James D., and George Poetschat. 2014. *Northern Plains Shield-Bearing Warriors.* Publication 22. Portland: Oregon Archaeological Society Press.

Keyser, James D., and George R. Poetschat, eds. 2008. *Ute Horse Raiders on the Powder Rim: Rock Art at Powder Wash, Wyoming.* Publication 19. Portland: Oregon Archaeological Society Press.

Keyser, James D., George R. Poetschat, and Michael W. Taylor, eds. 2012. *Fraternity of War: Plains Indian Rock Art at Bear Gulch and Atherton Canyon, Montana.* Publication 21. Portland: Oregon Archaeological Society Press.

Keyser, James D., Linea Sundstrom, and George Poetschat. 2006. "Women in War: Gender in Plains Biographic Rock Art." *Plains Anthropologist* 51(197):51–70. https://doi.org/10.1179/pan.2006.003.

Kidder, Tristram R. 2007. "Contemplating Plaquemine Culture." In *Plaquemine Archaeology*, ed. Mark A. Rees and Patrick C. Livingood, 196–205. Tuscaloosa: University of Alabama Press.

King, Charles. 1880. *Campaigning with Crook and Stories of Army Life*. New York: Harper & Brothers Publishers.

Kivett, Marvin F., and Richard E. Jensen. 1976. *Archaeological Investigations at the Crow Creek Site (39BF11).* Publications in Anthropology No. 7. Lincoln: Nebraska Historical Society.

Klassen, Michael A. 1995. "Icons of Power, Narratives of Glory: Ethnic Continuity and Cultural Change in the Contact Period Rock Art of Writing-on-Stone." MA thesis, Trent University, Peterborough, ON.

Klassen, Michael A. 1998. "Icon and Narrative in Transition: Contact Period Rock-Art at Writing-on- Stone, Southern Alberta, Canada." In *The Archaeology of*

Rock-Art, ed. Christopher Chippindale and Paul S. C. Taçon, 42–72. Cambridge: Cambridge University Press.

Klimko, Olga, and Margaret G. Hanna. 1988. "The Avonlea Type Site Revisited: A Report on Excavations and Ceramic Analysis." In *Avonlea Yesterday and Today: Archaeology and Prehistory*, ed. Leslie B. Davis, 25–32. Regina: Saskatchewan Archaeological Society.

Klingelhofer, Eric C. 2010. "Tudor Overseas Fortifications in the New World." In *First Forts Essays on the Archaeology of Proto-Colonial Fortifications*, ed. Eric C. Klingelhofer, 65–84. Leiden: Brill. https://doi.org/10.1163/ej.9789004187542.i-278.31.

Knauft, Bruce M., Martin Daly, Margo Wilson, Leland Donald, George E. E. Morren, Jr., Keith F. Otterbein, Marc Howard Ross, H.U.E. Thoden van Velzen, and W. van Wetering. 1987. "Reconsidering Violence in Simple Human Societies: Homicide among the Gebusi of New Guinea." *Current Anthropology* 28(4):457–500. https://doi.org/10.1086/203549.

Knight, Dean H. 1987. "Settlement Patterns at the Ball Site: A 17th Century Huron Village." *Archaeology of Eastern North America* 15:177–188.

Knight, Vernon J., and Vincas P. Steponaitis. 1998. "A New History of Moundville." In *Archaeology of the Moundville Chiefdom*, ed. Vernon J. Knight and Vincas P. Steponaitis, 1–25. Tuscaloosa: University of Alabama Press.

Koch, Peter. 1896. "Life at Muscleshell in 1869 and 1870." In *Contributions to the Historical Society of Montana* 2: 292–303. Helena, MT: State Publishing Company.

Koenig, Orrin. 2010. "Does This Hearth Have a Home? A Hearth-Centered Spatial Analysis Study." MA thesis, Department of Anthropology, University of Wyoming, Laramie.

Kornfeld, Marcel, George C. Frison, and Mary Lou Larson. 2010. *Prehistoric Hunter-Gatherers of the High Plains and Rockies*. Walnut Creek, CA: Left Coast Press.

Krause, Richard A. 1972. *The Leavenworth Site: Archaeology of an Historic Arikara Community.* Publication in Anthropology 3. Lawrence: University of Kansas.

Krause, Richard A. 2001. "Plains Village Tradition: Coalescent." In *Handbook of North American Indians,* Volume 13: *Plains,* Part 1, ed. Raymond J. DeMallie, 196–206. Washington, DC: Smithsonian Institution.

Krause, Richard A. 2007. "A Potter's Tale." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 32–40. Salt Lake City: University of Utah Press.

Krause, Richard A. 2012. "The Kinship, Tradition, and Settlement Pattern Archaeology of Middle Missouri Community Life." *Plains Anthropologist* 57(222):125–139. https://doi.org/10.1179/pan.2012.013.

Kress, M., and I. Talmor. 1999. "A New Look at the 3:1 Rule of Combat through Markov Stochastic Lanchester Models." *Journal of the Operational Research Society* 50(7):733–744. https://doi.org/10.1057/palgrave.jors.2600758.

Krieger, Alex D. 1946. *Culture Complexes and Chronology in Northern Texas.* Publication 4640. Austin: University of Texas.

Krus, Anthony M. 2011. "Refortifying Cahokia: More Efficient Palisade Construction through Redesigned Bastions." *Midcontinental Journal of Archaeology, MCJA* 36(2):227–244. https://doi.org/10.1179/mca.2011.011.

Krus, Anthony M. 2013. "A Chronology for Warfare in the Mississippian Period (AD 1000–1500)." PhD diss., Department of Anthropology, Indiana University, Bloomington.

Krus, Anthony M., Timothy Schilling, and G. William Monaghan. 2013. "The Timing of Angel Mounds Palisade Construction: A Search for the Best Chronological Model." *Midcontinental Journal of Archaeology, MCJA* 38(2):171–182. https://doi.org/10.1179/mca.2013.006.

Krzyzewski, John, C. Ralph, and B. G. Spicer. 1980. "Performance of Preservative-Treated Fence Posts after 43 Years of Tests." Report submitted to Forintek Canada Corp. Eastern Forest Products Laboratory, Environment Canada, Ottawa.

Krzyzewski, John, and B. G. Spicer. 1974. *34 Years of Field Testing of Fence Posts: Results of Final Inspection*. Ottawa: Eastern Forest Products Laboratory, Environment Canada.

Kusimba, Chapurukha M. 2006. "Slavery and Warfare in Africa Chiefdoms." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 214–249. Gainesville: University Press of Florida.

Kvamme, Kenneth L. 2006. "Magnetometry: Nature's Gift to Archaeology." In *Remote Sensing in Archaeology: An Explicitly North American Perspective*, ed. Jay K. Johnson, 205–233. Tuscaloosa: University of Alabama Press.

Kvamme, Kenneth L. 2007. "Geophysical Mappings and Findings in the Northern Plains Village Sites." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 210–221. Salt Lake City: University of Utah Press.

Kvamme, Kenneth L. 2008. "Archaeological Prospecting at the Double Ditch State Historic Site, North Dakota, USA." *Archaeological Prospection* 15(1):62–79. https://doi.org/10.1002/arp.325.

Kvamme, Kenneth L., and Stanley A. Ahler. 2007. "Integrated Remote Sensing and Excavation at Double Ditch State Historic Site, North Dakota." *American Antiquity* 72(3):539–561. https://doi.org/10.2307/40035860.

Kvamme, Kenneth L., Duncan P. McKinnon, and Adam S. Wiewel. 2009. *Geophysical Investigations and Topographic Mapping during 2009 at Huff Village (32MO11), North*

Dakota. Submitted to the State Historical Society of North Dakota. Fayetteville: Archaeo-Imaging Lab, Department of Anthropology, University of Arkansas.
Lafferty, Robert H. 1973. "An Analysis of Prehistoric Southeastern Fortifications." MA thesis, Department of Anthropology, Southern Illinois University, Carbondale.
Lahren, Craig H., and Hugh E. Berryman. 1984. "Fracture Patterns and Status at Chucalissa (40sy1): A Biocultural Approach." *Tennessee Anthropologist* 9(1):15–21.
Lambert, Patricia M. 2002. "The Archaeology of War: A North American Perspective." *Journal of Archaeological Research* 10(3):207–241. https://doi.org/10.1023/A:1016063710831.
Lambert, Patricia M. 2007. "The Osteological Evidence for Indigenous Warfare in North America." In *North American Indigenous Warfare and Ritual Violence*, ed. Richard J. Chacon and Rubén G. Mendoza, 202–221. Tucson: University of Arizona Press.
Larson, Lewis H., Jr. 1972. "Functional Considerations of Warfare in the Southeast during the Mississippi Period." *American Antiquity* 37(3):383–392. https://doi.org/10.2307/278437.
Larson, Mary Lou, and Marcel Kornfeld. 1994. "Betwixt and Between the Basin and the Plains: The Limits of Numic Expansion." In *Across the West Human Population Movement and the Expansion of the Numa*, ed. David B. Madsen and David Rhode, 200–213. Salt Lake City: University of Utah Press.
Le Mercier, François. 1959. "Relation of What Occurred Most Remarkable in the Missions of the Fathers of the Society of Jesus." In *New France, in the Years One Thousand Six Hundred Sixty-Five and One Thousand Six Hundred and Sixty-Six: The Jesuit Relations and Allied Documents: Travels and Explorations of the Jesuit Missionaries in New France, 1610–1791*, ed. Reuben G. Thwaites, vol. 50: 96–147. New York: Pageant Book Company.
LeBeau, Albert M. 2010. "A Ditch by Any Other Name Is Still a Ditch: An Archaeological Assessment of Ditch Earthworks on the Middle Missouri in the Dakotas." MA thesis, Department of Anthropology, University of Nebraska, Lincoln.
LeBlanc, Steven A. 1999. *Prehistoric Warfare in the American Southwest*. Salt Lake City: University of Utah Press.
LeBlanc, Steven A. 2003. *Constant Battles: The Myth of the Peaceful, Noble Savage*. New York: St. Martin's Press.
LeBlanc, Steven A. 2006. "Warfare and the Development of Social Complexity: Some Demographic and Environmental Factors." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 437–468. Gainseville: University Press of Florida.

Lee, Richard B. 2003. *The Dobe Ju/'Hoansi*. Toronto: Wadsworth.
Lee, Wayne E. 2004. "Fortify, Fight, or Flee: Tuscarora and Cherokee Defensive Warfare and Military Culture Adaptation." *Journal of Military History* 68(3):713–770. https://doi.org/10.1353/jmh.2004.0124.
Lee, Wayne E. 2007. "Peace Chiefs and Blood Revenge: Patterns of Restraint in Native American Warfare, 1500–1800." *Journal of Military History* 71(3):701–741. https://doi.org/10.1353/jmh.2007.0216.
Lehmer, Donald J. 1954. *Archeological Investigations in the Oahe Dam Area, South Dakota, 1950–51*. Smithsonian Institution Bureau of American Ethnology Bulletin 158. River Basin Surveys Papers Inter-agency Archaeological Salvage Program No. 7. Washington, DC: US Government Printing Office.
Lehmer, Donald J. 1971. *Introduction to Middle Missouri Archeology.* Archaeological Papers No. 1. Washington, DC: Department of the Interior, National Park Service.
Lehmer, Donald J., and Warren W. Caldwell. 1966. "Horizon and Tradition in the Northern Plains." *American Antiquity* 31(4):511–516. https://doi.org/10.2307/2694383.
Lekson, Stephen H. 2002. "War in the Southwest, War in the World." *American Antiquity* 67(4):607–624. https://doi.org/10.2307/1593794.
Lensink, Stephen C. 2005. "This Old Earthlodge Village: How Long Were Sites of the Middle Missouri Tradition Occupied." In *Plains Earthlodges: Ethnographic and Archaeological Perspectives*, ed. Donna C. Roper and Elizabeth P. Pauls, 132–156. Tuscaloosa: University of Alabama Press.
Lensink, Stephen C., and Joseph A. Tiffany. 2005. *The Cowan Site: A Great Oasis Community in Northwest Iowa*. Iowa City: Office of the State Archaeoloigst, University of Iowa.
Leonard, Zenas. 2001. *Narrative of the Adventures of Zenas Leonard Five Years as a Mountain Man in the Rocky Mountains*. Santa Barbara: Narrative Press.
Levine, Ned, and Associates. 2010. *CrimeStat III: A Spatial Statistics Program for the Analysis of Crime Incident Locations.* Houston: Ned Levine and Associates. Washington, DC: National Institute of Justice.
Lewis, Oscar. 1942. *The Effects of White Contact upon Blackfoot Culture: With Special Reference to the Rôle of the Fur Trade.* Monographs of the American Ethnological Society No. 6. New York: J. J. Augustin.
Lewis, Thomas M. N., and Madeline D. Kneberg. 1946. *Hiwassee Island: An Archaeological Account of Four Tennessee Indian Peoples*. Knoxville: University of Tennessee Press.
Linderman, Frank Bird. 1962. *Plenty-Coups, Chief of the Crows*. Lincoln: University of Nebraska Press.
Lintz, Christopher. 1986. "*Architecture and Community Variability within the Antelope Creek Phase of the Texas Panhandle*." Studies in Oklahoma's Past No. 14. Norman: Oklahoma Archeological Survey.

Lintz, Christopher. 2001. "The Chronology of Occupations at Landergin Mesa, 41OL2, Oldham County, Texas." *La Tierra* 28(2):10–39.

Lippincott, Kerry. 2007. "Nightwalker's Buttes: A Study in the Closing of an Archaeological Tradition and an Example of Hidatsa Oral History." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 259–269. Salt Lake City: University of Utah Press.

Liston, Jolie, and H. David Tuggle. 2006. "Prehistoric Warfare in Palau." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 148–183. Gainseville: University Press of Florida.

Little, Keith J. 1999. "The Role of Late Woodland Interactions in the Emergence of Etowah." *Southeastern Archaeology* 18(1):45–56.

Liu, James H., and Mark W. Allen. 1999. "Evolution of Political Complexity in Maori Hawke's Bay: Archaeological History and Its Challenge to Intergroup Theory in Psychology." *Group Dynamics* 3(1):64–80. https://doi.org/10.1037/1089-2699.3.1.64.

Loendorf, Lawrence L. 1990. "A Dated Rock Art Panel of Shield Bearing Warriors in South Central Montana." *Plains Anthropologist* 35(127):45–54.

Loendorf, Lawrence L. 2002. "Castle Gardens Ceramic Vessel." *Wyoming Archaeologist* 46(2):73–82.

Loendorf, Lawrence L. 2009. "Shields and Shield-bearing Warriors: What We Thought We Knew, but Did Not!" Paper presented at the Legend Rock Petroglyph Site Symposium, April 2. Cody, WY: Buffalo Bill Historical Center.

Loendorf, Lawrence L. 2012. "Three Rock Art Sites on the Musselshell River, Montana." Report on file with the Montana SHPO Records Office, Helena. Albuquerque: Sacred Sites Research, Inc.

Loendorf, Lawrence L., and Kent N. Good. 1977. "Fortification Sites in the Big Horn Canyon Area." *Archaeology in Montana* 18(2–3):19–39.

Loendorf, Lawrence L., and Audrey Porsche. 1985. "The Rock Art Sites in Carbon County, Montana." Department of Anthropology, Contribution 224. Grand Forks: University of North Dakota.

Loendorf, Lawrence L., and Laurie L. White. 2010. *The Kobold Petroglyphs: Site 24BH406*. Red Lodge, MT: Loendorf and Associates.

Lovell, Nancy C. 1997. "Trauma Analysis in Paleopathology." *Yearbook of Physical Anthropology* 104(S25):139–170. https://doi.org/10.1002/(SICI)1096-8644(1997)25+<139::AID-AJPA6 3.0.CO;2-#.

Lovisek, Joan A. 2007. "Aboriginal Warfare on the Northwest Coast: Did the Potlatch Replace Warfare." In *North American Indigenous Warfare and Ritual Violence*, ed. Richard J. Chacon and Rubén G. Mendoza, 58–73. Tucson: University of Arizona Press.

Lowie, Robert H. 1915. "Oral Tradition and History." *American Anthropologist* 17(3):597–599. https://doi.org/10.1525/aa.1915.17.3.02a00190.
Lowie, Robert H. 1935. *The Crow Indians*. New York: Farrar and Rinehart.
Lowie, Robert H. 1956. *The Crow Indians*. New York: Holt, Rinehart and Winston.
Lowie, Robert H. 1963. *Indians of the Plains*. Garden City, NJ: Natural History Press.
Luttwak, Edward. 2001. *Strategy: The Logic of War and Peace*. Cambridge, MA: Belknap Press of Harvard.
Macfarlan, Shane J., Robert S. Walker, Mark V. Flinn, and Napoleon A. Chagnon. 2014. "Lethal Coalitionary Aggression and Long-Term Alliance Formation among Yanomamö Men." *Proceedings of the National Academy of Sciences* 111:16662–16669.
Magne, Martin P. R., and Michael A. Klassen. 1991. "A Multivariate Study of Rock Art Anthropomorphs at Writing-on-Stone, Southern Alberta." *American Antiquity* 56(3):389–418. https://doi.org/10.2307/280892.
Mahan, Dennis Hart. (Original work published 1836) 1968. *A Complete Treatise on Field Fortification: With the General Outlines of the Principles Regulating the Arrangement, the Attack, and the Defence of Permanent Works*. New York: Greenwood Press.
Mahon, John K. 1958. "Anglo-American Methods of Indian Warfare, 1676–1794." *Mississippi Valley Historical Review* 45(2):254–275. https://doi.org/10.2307/1902929.
Mails, Thomas E. 1973. *Dog Soldiers, Bear Men, and Buffalo Women; A Study of the Societies and Cults of the Plains Indians*. Englewood Cliffs, NJ: Prentice-Hall.
Mainfort, Robert C., and Lynne P. Sullivan, eds. 1998. *Ancient Earthen Enclosures of the Eastern Woodlands.* Gainseville: University Press of Florida.
Mallery, Garrick. 1886. "Pictographs of the North American Indians: A Preliminary Paper." In *Fourth Annual Report of the Bureau of Ethnology to the Secretary of the Smithsonian Institution*, 13–256. Washington, DC: Government Printing Office.
Mallery, Garrick. 1972 [1983]. *Picture-Writing of the American Indians*. New York: Dover Publications.
Martin, Ernest R. 1994. "The Dillard Site: A Late Prehistoric Plains Village Site in Cooke County, Texas." *Bulletin of the Texas Archeological Society* 62:105–200.
Martindale, Andrew, and Kisha Supernant. 2009. "Quantifying the Defensiveness of Defended Sites on the Northwest Coast of North America." *Journal of Anthropological Archaeology* 28(2):191–204. https://doi.org/10.1016/j.jaa.2009.01.001.
Martindale, Steven W., and George W. Gill. 1983. "A Late Prehistoric Killing in Robber's Gulch, Southern Wyoming." Paper presented at the 41st Annual Meeting of the Plains Anthropological Conference, Rapid City, SD.
Maschner, Herbert D. G., and Katherine L. Reedy-Maschner. 1998. "Raid, Retreat, Defend (Repeat): The Archaeology and Ethnohistory of Warfare on the North Pacific Rim." *Journal of Anthropological Archaeology* 17(1):19–51. https://doi.org/10.1006/jaar.1997.0315.

Maschner, Herbert D. G., and Katherine L. Reedy-Maschner. 2007. "Heads, Women and the Baubles of Prestige: Trophies of War in the Arctic and Subarctic." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, ed. Richard J. Chacon and David H. Dye, 32–44. New York: Springer. https://doi.org/10.1007/978-0-387-48303-0_3.

Matson, R. G., and Martin Paul Robert Magne. 2007. *Athapaskan Migrations: The Archaeology of Eagle Lake, British Columbia*. Tucson: University of Arizona Press.

Matthews, Washington. 1877. *Ethnography and Philology of the Hidatsa Indians.* United States Geological and Geographical Survey, Miscellaneous Publications No. 7. Washington, DC: Government Printing Office.

Maurer, Evan M. 1992. *Visions of the People: A Pictorial History of Plains Indian Life*. Minneapolis: Minneapolis Institute of Arts.

McCabe, J. Terrence. 2004. *Cattle Bring Us to Our Enemies Turkana Ecology, Politics, and Raiding in a Disequilibrium System*. Ann Arbor: University of Michigan Press. https://doi.org/10.3998/mpub.23477.

McChristian, Douglas C. 2009. *Fort Laramie: Military Bastion of the High Plains*. Norman, OK: Arthur H. Clark Company.

McCleary, Timothy P. 2008a. "Writing on the Wall: Crow Interpretation of the Joliet Rock Art Panels." *Archaeology in Montana* 49(1):35–62.

McCleary, Timothy P. 2008b. "Ghosts on the Land: Apsàalooke (Crow Indian) Interpretations of Rock Art." PhD diss., Department of Anthropology, University of Illinois at Urbana-Champagne.

McClintock, Walter. 1992. *The Old North Trail, or, Life, Legends, and Religion of the Blackfeet Indians*. Lincoln: University of Nebraska Press.

McCoy, Ronald T. 1983. "Winter Count: The Teton Chronicles to 1799." PhD diss., Department of History and Political Science, Northern Arizona University, Flagstaff.

McDermott, John D. 1996. "'We Had a Terrible Time Letting Them Go': The Battle of Mud Springs and Rush Creek, February 1865." *Nebraska History* 77(3):7–48.

McDermott, John D. 2003. *Circle of Fire: The Indian War of 1865*. Mechanicsburg, PA: Stackpole Books.

McDonald, J. Douglas, Larry J. Zimmerman, A. L. McDonald, William Tall Bull, and Ted Rising Sun. 1991. "The Northern Cheyenne Outbreak of 1879: Using Oral History and Archaeology as Tools of Resistance." In *The Archaeology of Inequality*, ed. Randall H. McGuire and Robert Paynter, 64–78. Oxford: Blackwell.

McElrath, Dale L., Thomas E. Emerson, and Andrew C. Fortier. 2000. "Social Evolution or Social Response? A Fresh Look at the 'Good Gray Cultures' after Four Decades of Midwest Research." In *Late Woodland Societies: Tradition and Transformation across the Midcontinent*, ed. Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, 3–36. Lincoln: University of Nebraska Press.

McGinnis, Anthony. 1990. *Counting Coup and Cutting Horses: Intertribal Warfare on the Northern Plains, 1738–1889*. Evergreen, CO: Cordillera Press.

McKee, David F. 1988. "A Faunal Analysis of the River Bend Site (48NA202): Evidence of Proto-historic Subsistence on the Northwest Plains." MA thesis, Department of Anthropology, University of Wyoming, Laramie.

Mead, James R. 1986. *Hunting and Trading on the Great Plains, 1859–1875*. Norman: University of Oklahoma Press.

Mearsheimer, John J. 1989. "Assessing the Conventional Balance: The 3:1 Rule and Its Critics." *International Security* 13(4):54–89. https://doi.org/10.2307/2538780.

Medicine Crow, Joseph. 1992. *From the Heart of the Crow Country: The Crow Indians' Own Stories*. New York: Crown Trade Paperbacks.

Melbye, Jerry, and Scott I. Fairgrieve. 1994. "A Massacre and Possible Cannibalism in the Canadian Arctic: New Evidence from the Saunaktuk Site (NgTn–1)." *Arctic Anthropology* 31(2):57–77.

Merbs, Charles F. 1989. "Trauma." In *Reconstruction of Life from the Skeleton*, 1st ed., ed. Mehmet Yasar Iscan and Kenneth A. R. Kennedy, 161–189. New York: A. R. Liss.

Metcalf, George. 1963. *Star Village: A Fortified Historic Arikara Site in Mercer County, North Dakota.* River Basin Surveys Papers No. 28. Smithsonian Institution Bureau of American Ethnology Bulletin No. 185. Washington, DC: Government Printing Office.

Michlovic, Michael G. 2008. "The Shea Phase of the Northeastern Plains Village Culture." *North Dakota Archaeology* 8:35–51.

Michlovic, Michael G., and Fred E. Schneider. 1993. "The Shea Site: A Prehistoric Fortified Village on the Northeastern Plains." *Plains Anthropologist* 38(143):117–137.

Middleton, Jessica L., Patrick M. Lubinski, and Michael D. Metcalf. 2007. "Ceramics from the Firehole Basin Site and Firehole Phase in the Wyoming Basin." *Plains Anthropologist* 52(201):29–41. https://doi.org/10.1179/pan.2007.002.

Miles, R., and J. R. Lovett. 1995. "Deeds That Put a Man among the Famous: The Pictographs of Joseph White Bull." *American Indian Art Magazine* 20(2):50–59.

Miles, Ray, and John R. Lovett. 1994. "The Pictorial Autobiography of Moses Old Bull." *American Indian Art Magazine* 19(3):48–57.

Millar, J. F. V. 1978. *The Gray Site: An Early Plains Burial Ground*. 2 vols. Ottawa: Parks Canada.

Miller, Elizabeth. 1994. "Evidence for Prehistoric Scalping in Northeastern Nebraska." *Plains Anthropologist* 39(148):211–219.

Miller, Maxine J. 1999. "The Paleopathology of Northwestern Plains Indians." MA thesis, Department of Anthropology, University of Wyoming, Laramie.

Miller, Maxine J. 2008. "Disease and Injury among Northwestern Plains Indians." In *Skeletal Biology and Bioarchaeology of the Northwestern Plains*, ed. George W. Gill and Rick L. Weathermon, 200–211. Salt Lake City: University of Utah Press.

Milner, George R. 1992a. "Morbidity, Mortality, and the Adaptive Success of an Oneota Population from West- Central Illinois." In *Late Prehistoric Agriculture: Observations from the Midwest*, ed. William I. Woods, 136–166. Studies in Illinois Archaeology No. 8, Illinois Historic Preservation Agency. Kampsville, IL: Center for American Archaeology Press.

Milner, George R. 1992b. "Disease and Sociopolitical Systems in Late Prehistoric Illinois." In *Disease and Demography in the Americas*, ed. John W. Verano and Douglas H. Ubalaker, 103–116. Washington, DC: Smithsonian Institution Press.

Milner, George R. 1995. "An Osteological Perspective on Prehistoric Warfare." In *Regional Approaches to Mortuary Analysis*, ed. Lane A. Beck, 221–244. New York: Plenum Press. https://doi.org/10.1007/978-1-4899-1310-4_10.

Milner, George R. 1998. "Archaeological Evidence for Prehistoric and Early Historic Intergroup Conflict in Eastern North America." In *Deciphering Anasazi Violence: With Regional Comparisons to Mesoamerican and Woodland Cultures*, ed. Peter Y. Bullock, 69–91. Santa Fe, New Mexico: HRM Books.

Milner, George R. 1999. "Warfare in Prehistoric and Early Historic Eastern North America." *Journal of Archaeological Research* 7(2):105–151. https://doi.org/10.1007/BF02446275.

Milner, George R. 2000. "Palisaded Settlements in Prehistoric Eastern North America." In *City Walls: The Urban Enceinte in Global Perspective*, ed. James D. Tracy, 46–70. New York: Cambridge University Press.

Milner, George R. 2004. *The Moundbuilders: Ancient Peoples of Eastern North America*. New York: Thames & Hudson.

Milner, George R. 2005. "Nineteenth-Century Arrow Wounds and Perceptions of Prehistoric Warfare." *American Antiquity* 70(1):144–156. https://doi.org/10.2307/40035273.

Milner, George R. 2007. "Warfare, Population, and Food Production in Prehistoric Eastern North America." In *North American Indigenous Warfare and Ritual Violence*, ed. Richard J. Chacon and Rubén G. Mendoza, 182–201. Tucson: University of Arizona Press.

Milner, George R., Eve Anderson, and Virginia G. Smith. 1991a. "Warfare in Late Prehistoric West-Central Illinois." *American Antiquity* 56(4):581–603. https://doi.org/10.2307/281538.

Milner, George R., and Sissel Schroeder. 1999. "Mississippian Sociopolitical Systems." In *Great Towns and Regional Polities: In the Prehistoric American Southwest and Southeast*, ed. Jill E. Neitzel, 95–107. Albuquerque: University of New Mexico Press.

Milner, George R., and Virginia G. Smith. 1990. "Oneota Human Skeletal Remains." In *Archaeological Investigations at the Morton Village and Norris Farms 36 Cemetery*, ed. Sharron K. Santure, Alan D. Harn, and Duane Esarey, 111–148. Illinois State Museum Reports of Investigations 45. Springfield: Illinois State Museum.

Milner, George R., Virginia G. Smith, and Eve Anderson. 1991b. "Conflict, Mortality, and Community Health in an Illinois Oneota Population." In *Between Bands and States*, ed. Susan A. Gregg, 245–264. Occasional Paper No. 9. Carbondale: Center for Archaeological Investigations, Southern Illinois University.

Mishkin, Bernard. 1940. *Rank and Warfare among the Plains Indians*. Seattle: University of Washington Press.

Mitchell, Mark D. 2007. "Conflict and Cooperation in the Northern Middle Missouri, AD 1450–1650." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 155–169. Salt Lake City: University of Utah Press.

Mitchell, Mark D. 2010. "Modeling Middle Missouri Warfare." Paper presented at the 75th Annual Meeting of the Society of American Archaeology, St. Louis, MO.

Mitchell, Mark D. 2012. "The Origins and Development of Farming Villages in the Northern Great Plains." In *The Handbook of North American Archaeology*, ed. Timothy R. Pauketat, 359–372. Oxford: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195380118.013.0030.

Mitchell, Mark D. 2013. *Crafting History in the Northern Plains: A Political Economy of the Heart River Region, 1400–1750*. Tucson: University of Arizona Press.

Mitchell, Mark D., ed. 2008. *Archaeological and Geophysical Investigations during 2007 at Larson Village, Burleigh County, North Dakota.* Research Contribution No. 81. Flagstaff, AZ: Paleocultural Research Group.

Mitchem, Jeffrey M. 2013. "Fortifications at Parkin Phase Sites in Northeast Arkansas." Paper presented at the Annual Mississippian Symposium, Cape Girardeau, MO.

Mitchem, Jeffrey M., and Jami M. Lockhart. 2012. "Searching for the Southeastern Corner of the Palisade at the Parkin Site, Northeast, Arkansas." Paper presented at the 69th Annual Meeting of the Southeastern Archaeological Conference, Baton Rouge, LA.

Moberg, Anders, Dmitry M. Sonechkin, Karin Holmgren, Nina M. Datsenko, and Wibjörn Karlén. 2005. "Highly Variable Northern Hemisphere Temperatures Reconstructed from Low-and High-Resolution Proxy Data." *Nature* 433(7026):613–617. https://doi.org/10.1038/nature03265.

Mooney, James. 1896. "The Ghost Dance Religion and the Sioux Outbreak of 1890." In *Fourteenth Annual Report of the Bureu of Ethnology to the Secretary of the Smithsonian Institution: 1892–93*, ed. J. W. Powell, 653–1110. Washington, DC: Government Printing Office.

Morgan, Chris. 2010. "High Altitude Intensification and Numic Expansion in Wyoming's Wind River Range." Paper presented at the 32nd Annual Meeting of the Great Basin Anthropological Conference, Layton, UT.

Morris, Wayne. 1970. "The Wichita Exchange: Trade on Oklahoma's Fur Frontier, 1719–1812." *Great Plains Journal* 9(2):79–84.

Morse, Dan F., and Phyllis A. Morse. 1983. *Archaeology of the Central Mississippi Valley*. New York: Academic Press.

Morse, Phyllis A. 1990. "The Parkin Site and the Parkin Phase." In *Towns and Temples along the Mississippi*, ed. David H. Dye and Cheryl Anne Cox, 118–134. Tuscaloosa: University of Alabama Press.

Mulloy, William T. 1954. "Archaeological Investigations in the Shoshone Basin of Wyoming." *University of Wyoming Publications in Science* 18(1):1–70.

Mulloy, William T. 1958. "A Preliminary Historical Outline for the Northwestern Plains." *University of Wyoming Publications in Science* 22(1).

Mumey, Nolie. 1972. *The Life of Jim Baker, 1818–1898*. New York: Interland Publishing.

Murie, James R., and Douglas R. Parks. 1981. *Ceremonies of the Pawnee.* Contributions to Anthropology No. 27. Washington, DC: Smithsonian Institution Press.

Nadeau, Gabriel. 1944. "Indian Scalping, Technique in Different Tribes." *CIBA Symposia (New York)* 5(10):1677–1681.

Nagy, Imre. 1994. "A Typology of Cheyenne Shield Designs." *Plains Anthropologist* 39(147):5–36.

Nasatir, Abraham P. 1952. *Before Lewis and Clark: Documents Illustrating the History of the Missouri, 1785–1804*. St Louis: St. Louis Historical Documents Foundation.

Nasatir, Abraham P. 1990. *Before Lewis and Clark: Documents Illustrating the History of the Missouri, 1785–1804*. Lincoln: University of Nebraska Press.

Nasatir, Abraham P., ed. 2002. *Before Lewis and Clark: Documents Illustrating the History of the Missouri, 1785–1804*. Norman: University of Oklahoma Press. Originally published 1952 as two volumes, St. Louis Historical Documents Foundation, St. Louis.

Nassaney, Michael S., and Kendra Pyle. 1999. "The Adoption of the Bow and Arrow in Eastern North America: A View from Central Arkansas." *American Antiquity* 64(2):243–263. https://doi.org/10.2307/2694277.

National Park Service. 2005. "Miscellaneous: Civil War Terms." Accessed October 2016. https://www.nps.gov/vick/learn/education/misc-civil-war-terms.htm.

Neeley, Bill. 1995. *The Last Comanche Chief: The Life and Times of Quanah Parker*. New York: John Wiley and Sons.

Neuman, Robert. 1960 "The Truman Mound Site, Big Bend Reservoir Area, South Dakota." *American Antiquity* 26:78–92.

Neuman, Robert W. 1975. *The Sonota Complex and Associated Sites on the Northern Great Plains.* Publications in Anthropology No. 6. Lincoln: Nebraska State Historical Society.

Neumann, Georg K. 1940. "Evidence for the Antiquity of Scalping from Central Illinois." *American Antiquity* 5(4):287–289. https://doi.org/10.2307/275199.

Neusius, Sarah W., and G. Timothy Gross. 2007. *Seeking Our Past: An Introduction to North American Archaeology*. New York: Oxford University Press.

Newcomb, W. W. 1950. "A Re-examination of the Causes of Plains Warfare." *American Anthropologist* 52(3):317–330. https://doi.org/10.1525/aa.1950.52.3.02a00020.

Newcomb, W. W., and W. T. Fields. 1967. "An Ethnographic Investigation of the Wichita Indians in the Southern Plains." In *A Pilot Study of Wichita Indian Archeology and Ethnohistory*, ed. Robert E. Bell, Edward B. Jelks, and W. W. Newcomb, 240–331. National Science Foundation Report.

Newton, Cody. 2011. "Towards a Context for Late Precontact Culture Change: Comanche Movement Prior to Eighteenth Century Spanish Documentation." *Plains Anthropologist* 56(217):53–69. https://doi.org/10.1179/pan.2011.006.

Nicholson, B. A. 1991. "Modeling a Horticultural Complex in South-Central Manitoba during the Late Prehistoric Period—The Vickers Focus." *Midcontinental Journal of Archaeology, MCJA* 16(2):163–188.

O'Brien, Matthew J. 2013. "The Socioeconomic Organization of Communal Hunting: An Archaeological Examination of Shoshone Collective Action." PhD diss., Department of Anthropology, University of New Mexico, Albuquerque.

O'Brien, Michael J., and Carl Kuttruff. 2012. "The 1974–75 Excavations at Mound Bottom, a Palisaded Mississippian Center in Cheatham County, Tennessee." *Southeastern Archaeology* 31(1):70–86. https://doi.org/10.1179/sea.2012.31.1.005.

Olsen, Sandra L., and Pat Shipman. 1994. "Cutmarks and Perimortem Treatment of Skeletal Remains on the Northern Plains." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 277–378. Washington, DC: Smithsonian Institution Press.

O'Shea, John M., and Patricia S. Bridges. 1989. "The Sargent Site Ossuary (25CU28), Custer County, Nebraska." *Plains Anthropologist* 34(123):7–21.

O'Shea, John M., and John Ludwickson. 1992. *Archaeology and Ethnohistory of the Omaha Indians the Big Village Site*. Lincoln: University of Nebraska Press.

Otterbein, Keith F. 1964. "Why the Iroquois Won: An Analysis of Iroquois Military Tactics." *Ethnohistory (Columbus, Ohio)* 11(1):56–63. https://doi.org/10.2307/480537.

Otterbein, Keith F. 1979. "Huron vs. Iroquois: A Case Study in Inter-Tribal Warfare." *Ethnohistory (Columbus, Ohio)* 26(2):141–152. https://doi.org/10.2307/481089.

Otterbein, Keith F. 1999. "A History of Research on Warfare in Anthropology." *American Anthropologist* 101(4):794–805. https://doi.org/10.1525/aa.1999.101.4.794.

Otterbein, Keith F. 2004. *How War Began*. College Station: Texas A&M University Press.

Otterbein, Keith F. 2009. *The Anthropology of War*. Long Grove, IL: Waveland Press.

Overstreet, David F., and James A. Clark. 1995. "Archaeological Recovery at the Mile-Long Site (47WI110), Walworth County, Wisconsin." Reports of Investigations No. 380. Milwaukee, WI: Great Lakes Archaeological Center, Inc.

Owsley, Douglas W. 1994. "Warfare in Coalescent Tradition Populations of the Northern Plains." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 333–344. Washington, DC: Smithsonian Institution Press.

Owsley, Douglas W., and Hugh E. Berryman. 1975. "Ethnographic and Archaeological Evidence of Scalping in the Southeastern United States." *Tennessee Archaeologist* 31(1):41–58.

Owsley, Douglas W., Hugh E. Berryman, and William M. Bass. 1977. "Demographic and Osteological Evidence for Warfare at the Larson Site, South Dakota." *Plains Anthropologist* 22(78):119–131.

Owsley, Douglas W., and Karin S. Bruwelheide. 2008. "Cranial Trauma in Historic Period Central and Northern Plains Indians." In *Skeletal Biology and Bioarchaeology of the Northwestern Plains*, ed. George W. Gill and Rick L. Weathermon, 212–225. Salt Lake City: University of Utah Press.

Owsley, Douglas W., Karin S. Bruwelheide, Laurie E. Burgess, and William T. Billeck. 2007. "Human Finger and Hand Bone Necklaces from the Plains and Great Basin." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, ed. Richard J. Chacon and David H. Dye, 124–166. New York: Springer. https://doi.org/10.1007/978-0-387-48303-0_7.

Owsley, Douglas W., and Richard L. Jantz, eds. 1994. *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*. Washington, DC: Smithsonian Institution Press.

Owsley, Douglas W., Robert W. Mann, and Timothy G. Baugh. 1994. "Culturally Modified Human Bones From the Edwards I Site." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 363–375. Washington, DC: Smithsonian Institution Press.

Page, Michael. 2007. "Pottery from the Crow Component. Appendix B." In *Medicine Lodge Creek: Holocene Archaeology of the Eastern Big Horn Basin, Wyoming*, ed. George C. Frison and Danny N. Walker, 1:245–250. Avondale, CO: Clovis Press.

Palka, Joel W. 2001. "Ancient Maya Defensive Barricades, Warfare, and Site Abandonment." *Latin American Antiquity* 12(4):427–430. https://doi.org/10.2307/972088.

Parkinson, William A., and Paul R. Duffy. 2007. "Fortifications and Enclosures in European Prehistory: A Cross-Cultural Perspective." *Journal of Archaeological Research* 15(2):97–141. https://doi.org/10.1007/s10814-007-9010-2.

Parsons, Mark L. 1987. "Plains Indian Portable Art as a Key to Two Texas Historic Rock Art Sites." *Plains Anthropologist* 32(117):257–274.

Pauketat, Timothy R. 2009. "Wars, Rumors of Wars, and the Production of Violence." In *Warfare in Cultural Context*, ed. Axel E. Nielsen and William H. Walker, 244–261. Amerind Studies in Archaeology, Vol. 3. Tucson: University of Arizona Press.

Payne, Claudine. 1994. "Mississippian Capitals: An Archaeological Investigation of Precolumbian Political Structure." PhD diss., University of Florida, Gainesville.

Pease, Theodore C., and Ernestine Jenison. 1940. *Collections of the Illinois State Historical Library*. vol. 3. *Illinois on the Eve of the Seven Years' War, 1747–1755*. French Series. Springfield: Illinois State Historical Library.

Penney, David W. 1992. *Art of the American Indian Frontier: The Chandler-Pohrt Collection*. Seattle: University of Washington Press.

Perkins, Stephen M., Susan C. Vehik, and Richard R. Drass. 2008. "The Hide Trade and Wichita Social Organization: An Assessment of Ethnological Hypotheses Concerning Polygyny." *Plains Anthropologist* 53(208):431–444. https://doi.org/10.1179/pan.2008.032.

Peros, Matthew C., Samuel E. Munoz, Konrad Gajewski, and André E. Viau. 2010. "Prehistoric Demography of North America Inferred from Radiocarbon Data." *Journal of Archaeological Science* 37(3):656–664. https://doi.org/10.1016/j.jas.2009.10.029.

Perttula, Timothy K. 1992. *The Caddo Nation: Archaeological and Ethnohistoric Perspectives*. Austin: University of Texas Press.

Peters, Virginia Bergman. 1981. *Women of the Earth Lodges: Tribal Life on the Plains*. North Haven, CT: Archon Books.

Petersen, Karen Daniels. 1971. *Plains Indian Art from Fort Marion*. Norman: University of Oklahoma Press.

Pfeiffer, Susan. 2016. "An Exploration of Interpersonal Violence among Holocene Foragers of Southern Africa." *International Journal of Paleopathology* 13:27–38. https://doi.org/10.1016/j.ijpp.2016.01.001.

Phenice, Terrell W. 1969. *An Analysis of the Human Skeletal Material from Burial Mounds in North Central Kansas.* Publications in Anthropology No. 1. Lawrence: University of Kansas.

Phillips, Philip, James Alfred Ford, and James B. Griffin. 1951. *Archaeological Survey in the Lower Mississippi Alluvial Valley, 1940–1947.* Papers of the Peabody Museum of American Archaeology and Ethnology. vol. 25. Cambridge, MA: Harvard University.

Phillips, Thomas R. 1940. *Roots of Strategy*. Harrisburg: Military Service Publishing.

Pigniolo, Andrew. 2004. "Points, Patterns, and People: Distribution of the Desert Side-Notched Point in San Diego County." *Proceedings for the Society for California Archaeology* 14:27–39.

Poplawski, Piotr, Joshua Kwoka, and William Engelbrecht. 2012. "Rethinking Palisades in the Northeast: Evidence from the Eaton Site." *Northeast Anthropology* 77–78:71–87.

Potter, Martha A. 1968. *Ohio's Prehistoric Peoples*. Columbus: Ohio Historical Society.

Powell, Mary Lucas, and J. Daniel Rogers. 1980. *Bioarchaeology of the Mccutchan-Mclaughlin Site*. Studies in Oklahoma's Past No. 5. Norman: Oklahoma Archeological Survey.

Powell, Peter J. 2002a. "Bearers of the Sacred Thunder Bow: Part 1." *American Indian Art Magazine* 27(3):62–71.

Powell, Peter J. 2002b. "Bearers of the Sacred Thunder Bow: Part 2." *American Indian Art Magazine* 27(4):56–65.

Prewitt, Elton R. 1974. *Archeological Investigations at the Loeve-Fox Site, Williamson County, Texas.* Research Report 49. Austin: Texas Archeological Survey, University of Texas.

Prezzano, Susan C. 1992. "Longhouse, Village, and Palisade: Community Patterns at the Iroquois Southern Door." PhD diss., Binghamton: Department of Anthropology, State University of New York.

Pringle, Heather. 1998. "Crow Creek's Revenge." *Science* 279(5359):2039. https://doi.org/10.1126/science.279.5359.2039.

Pugh, Daniel C. 2010. "The Swantek Site: Late Prehistoric Oneota Expansion and Ethnogenesis." PhD diss., Department of Anthropology, University of Michigan, Ann Arbor.

Quaife, Milo Milton, ed. 1973. *"Yellowstone Kelly": The Memoirs of Luther S. Kelly*. Lincoln: University of Nebraska Press.

Quaife, Milo Milton. 1978. *Narrative of the Adventures of Zenas Leonard*. Lincoln: University of Nebraska Press.

Raczka, Paul M. 1979. *Winter Count: A History of the Blackfoot People*. Brocket, AB: Oldman River Culture Centre.

Ramenofsky, Ann F. 1987. *Vectors of Death: The Archaeology of European Contact*. Albuquerque: University of New Mexico Press.

Ray, Melissa M. 2007. "The Shield Bearing Warriors of Bear Gulch: A Look at Prehistoric Warrior Identity in Rock Art and Places of Power." MA thesis, Department of Anthropology, University of Montana, Missoula.

Reese, Hans H. 1940. "The History of Scalping and Its Clinical Aspects." In *The 1940 Year Book of Neurology, Psychiatry, and Endocrinology*, 47–58. Chicago: The Year Book Publishers.

Reid, C. S. Paddy. 1975. "New Trends in the Early Ontario Iroquois Tradition." *Ontario Archaeology* 25:7–20.
Reyna, Stephen P. 1994. "A Mode of Domination Approach to Organized Violence." In *Studying War: Anthropological Perspectives*, ed. S. P. Reyna and R. E. Downs, 29–68. Amsterdam: Gordon and Breach.
Rice, Glen E., and Steven A. LeBlanc. 2001. *Deadly Landscapes: Case Studies in Prehistoric Southwestern Warfare*. Salt Lake City: University of Utah Press.
Richter, Daniel K. 1983. "War and Culture: The Iroquois Experience." *William and Mary Quarterly* 40(4):528–559. https://doi.org/10.2307/1921807.
Riley, Paul D. 1973. "The Battle of Massacre Canyon." *Nebraska History* 54(2):220–249.
Ritchie, William A. 1980. *The Archaeology of New York State*. Revised edition. Harrison, NY: Harbor Hill Books.
Ritterbush, Lauren W. 2006. "Late Prehistoric Oneota in the Central Plains." In *Kansas Archaeology*, ed. Robert J. Hoard and William E. Banks, 151–164. Lawrence: University Press of Kansas.
Ritterbush, Lauren W. 2007. "Oneota Interaction and Impact in the Central Plains." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 181–192. Salt Lake City: University of Utah Press.
Robarchek, Clayton A. 1994. "Plains Warfare and the Anthropology of War." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 307–316. Washington, DC: Smithsonian Institution Press.
Robertson, David. 1987. *A Dictionary of Modern Defence and Strategy*. London: Europa.
Robertson, James A. 1993. "The Account by a Gentleman from Elvas." In *The De Soto Chronicles: The Expedition of Hernando de Soto to North America in 1539–1543*, ed. Lawrence Clayton, Vernon J. Knight, and Edward C. Moore, 1:19–219. Tuscaloosa: The University of Alabama Press.
Robison, Ken, ed. 2013. *Life and Death on the Upper Missouri: The Frontier Sketches of Johnny Healy*. Fort Benton, MT: Overholster Historical Research Center.
Rockwell, David B. 1991. *Giving Voice to Bear: North American Indian Rituals, Myths, and Images of the Bear*. Niwot, CO: Roberts Rinehart Publishers.
Rodee, Howard D. 1965. "The Stylistic Development of Plains Indian Painting and Its Relationship to Ledger Drawings." *Plains Anthropologist* 10(30):218–232.
Rolingson, Martha A. 2002. "Plum Bayou Culture of the Arkansas-White River Basin." In *The Woodland Southeast*, ed. David G. Anderson and Robert C. Mainfort Jr., 44–65. Tuscaloosa: University of Alabama Press.
Ronda, James P. 2002. *Lewis and Clark among the Indians*. Lincoln: University of Nebraska Press.

Roper, Donna C. 2001. "The Role of Fire in the Destruction of Upper Republican Phase Lodges in the Medicine Creek Valley, Nebraska." *Central Plains Archeology* 9(1):25–33.

Roper, Donna C. 2007. "The Effect of the Direct Historical Approach on the Development of Theory in Plains Archaeology: A Comment on Mitchell's Analysis of the MBP Legacy." *American Antiquity* 72(4):785–788. https://doi.org/10.2307/25470447.

Roper, Marilyn Keyes. 1969. "A Survey of the Evidence for Intrahuman Killing in the Pleistocene." *Current Anthropology* 10(4, part 2):427–459. https://doi.org/10.1086/201038.

Roscoe, Paul. 2007. "Intelligence, Coalitional Killing, and the Antecedents of War." *American Anthropologist* 109(3):485–495. https://doi.org/10.1525/aa.2007.109.3.485.

Roscoe, Paul. 2008. "Settlement Fortification in Village and "Tribal" Society: Evidence from Contact-Era New Guinea." *Journal of Anthropological Archaeology* 27(4):507–519. https://doi.org/10.1016/j.jaa.2008.08.002.

Royce, Karen L. 2007. "A Geophysical Investigation of the Early Late Woodland Water Plant Site (33FR155) in the Middle Ohio River Valley." *Anthropology Insider*. Accessed January 2013. https://anthropology.osu.edu/news/insider/spring07/articles/geoinvestigation.php.

Sagard-Théodat, Gabriel. 1939. *The Long Journey to the Country of the Hurons*, ed. George M. Wrong. Trans. Hugh H. Langton. Toronto: The Champlain Society.

Sahlins, Marshall D. 1961. "The Segmentary Lineage: An Organization of Predatory Expansion." *American Anthropologist* 63(2):322–345. https://doi.org/10.1525/aa.1961.63.2.02a00050.

Sakaguchi, Takashi, Jesse Morin, and Ryan Dickie. 2010. "Defensibility of Large Prehistoric Sites in the Mid-Fraser Region on the Canadian Plateau." *Journal of Archaeological Science* 37(6):1171–1185. https://doi.org/10.1016/j.jas.2009.12.015.

Salkin, Philip H. 2000. "The Horicon and Kekoskee Phases: Cultural Complexity in the Late Woodland Stage in Southeastern Wisconsin." In *Late Woodland Societies: Tradition and Transformation across the Midcontinent*, ed. Thomas E. Emerson, Dale L. McElrath, and Andrew C. Fortier, 525–542. Lincoln: University of Nebraska Press.

Santure, Sharron K. 1990. "Social Conflict." In *Archaeological Investigations at the Morton Village and Norris Farms 36 Cemetery*, ed. Sharron K. Santure, Alan D. Harn, and Duane Esarey, 154–159. Illinois State Museum Reports of Investigations 45. Springfield: Illinois State Museum.

Saunders, Joe W., Rolfe D. Mandel, C. Garth Sampson, Charles M. Allen, E. Thurman Allen, Daniel A. Bush, James K. Feathers, Kristen J. Gremillion, C. T. Hallmark, H. Edwin Jackson, et al. 2005. "Watson Brake, a Middle Archaic

Mound Complex in Northeast Louisiana." *American Antiquity* 70(4):631–668. https://doi.org/10.2307/40035868.

Savage, Sheila Bobalik. 1995. "Bison Procurement and Processing Strategies: Contrasts in Two Non-kill Sites on the Southern Plains." PhD diss., Department of Anthropology, University of Oklahoma, Norman.

Scarry, C. Margaret. 1995. *Excavations on the Northwest Riverbank at Moundville: Investigations of a Moundville I Residential Area.* Report of Investigations 72. Tuscaloosa: Office of Archaeological Services, University of Alabama.

Schaafsma, Polly. 2000. *Warrior, Shield, and Star: Imagery and Ideology of Pueblo Warfare*. Santa Fe, NM: Western Edge Press.

Schaepe, David M. 2006. "Rock Fortifications: Archaeological Insights Into Precontact Warfare and Sociopolitical Organization Among the Stó:lō of the Lower Fraser River Canyon, BC." *American Antiquity* 71(4):671–705. https://doi.org/10.2307/40035884.

Schambach, Frank. 2014. "Introduction to the Crenshaw Bioarchaeological Project." *Arkansas Archaeologist* 52:1–15.

Scheiber, Laura L. 1993. "Prehistoric Domestic Architecture on the Northwestern High Plains: A Temporal Analysis of Stone Circles in Wyoming." MA thesis, Department of Anthropology, University of Wyoming, Laramie.

Scheiber, Laura L. 2006. "Skeletal Biology: Plains." In *Handbook of North American Indians,* Volume 3: *Environment, Origins, and Population*, ed. Douglas H. Ubelaker, 595–609. Washington, DC: Smithsonian Institution.

Scheiber, Laura L. 2008. "Life and Death on the Northwestern Plains: Mortuary Practices and Cultural Transformations." In *Skeletal Biology and Bioarchaeology of the Northwestern Plains*, ed. George W. Gill and Rick L. Weathermon, 22–41. Salt Lake City: University of Utah Press.

Scheiber, Laura L., and Judson Byrd Finley. 2010. "Mountain Shoshone Technological Transitions across the Great Divide." In *Across a Great Divide: Continuity and Change in Native North American Societies, 1400–1900*, ed. Laura L. Scheiber and Mark D. Mitchell, 128–148. Amerind Studies in Archaeology. Tucson: University of Arizona Press.

Scheiber, Laura L., and Judson Byrd Finley. 2011. "Mobility as Resistance: Colonialism among Nomadic Hunter-Gatherers in the American West." In *Hunter-Gatherer Archaeology as Historical Process*, ed. Kenneth E. Sassaman and Donald H. Holly, 167–183. Amerind Studies in Archaeology Volume 7. Tucson: University of Arizona Press.

Scheiber, Laura L., and George W. Gill. 1997. "Bioarcheology of the Northwestern Plains." In *Bioarcheology of the North Central United States*, ed. Douglas W. Owsley and Jerome Carl Rose, 88–114. Fayetteville: Arkansas Archeological Survey.

Scheiber, Laura L., and Charles A. Reher. 2007. "The Donovan Site (5LO204): An Upper Republican Animal Processing Camp on the High Plains." *Plains Anthropologist* 52(203):337–364. https://doi.org/10.1179/pan.2007.023.

Schermer, Shirley J. 2003. "Great Oasis Osteology and Burial Practices." *Journal of the Iowa Archaeological Society* 50:99–128.

Schroeder, Bryon. 2010a. "That's Allot of Rock: The Rediscovery and Reanalysis of the Shirley Basin Lodge Site 35 Years Later." Paper presented at the Annual Meeting for the Wyoming Archaeological Society, Casper.

Schroeder, Bryon. 2010b. "If It Walks Like a Duck and Quacks Like a Duck . . . Fortification Use by the Eastern Shoshone." Paper presented at the 32nd Annual Meeting of the Great Basin Anthropological Conference, Layton, UT.

Schroeder, Sissel. 2006. "Walls as Symbols of Political, Economic, and Military Might." In *Leadership and Polity in Mississippian Society*, ed. Brian M. Butler and Paul D. Welch, 115–141. Occasional Paper No. 33. Carbondale: Center for Archaeological Investigations, Southern Illinois University.

Schuster, Helen. 1987. "Tribal Identification of Wyoming Rock Art: Some Problematic Considerations." *Archaeology in Montana* 28(2):25–43.

Schwimmer, Brian. 2003. "Akan Lineage Organization." Electronic document, accessed January 2013. http://www.umanitoba.ca/faculties/arts/anthropology/tutor/case_studies/akan/lineage.html.

Scott, Douglas D., Peter Bleed, and Benjamin Bilgri. 2011. "Archaeological Investigations of the 1865 Rush Creek Battlefield, 25MO181, Morrill County, Nebraska." *Central Plains Archaeology* 13(1):79–129.

Scott, Douglas D., and Andrew P. McFeaters. 2011. "The Archaeology of Historic Battlefields: A History and Theoretical Development in Conflict Archaeology." *Journal of Archaeological Research* 19(1):103–132. https://doi.org/10.1007/s10814-010-9044-8.

Scott, Douglas D., Richard A. Fox, Jr., Melissa A. Connor, and Dick Harmon. 1989. *Archaeological Perspectives on the Battle of the Little Bighorn*. Norman: University of Oklahoma Press.

Secoy, Frank Raymond. 1953. *Changing Military Patterns on the Great Plains (17th Century through Early 19th Century).* Monographs of the American Ethnological Society No. 21. Locust Valley, NY: J. J. Augustin.

Secoy, Frank Raymond. 1992. *Changing Military Patterns of the Great Plains Indians*. Lincoln: University of Nebraska Press.

Seeman, Mark F. 1988. "Ohio Hopewell Trophy-Skull Artifacts as Evidence for Competition in Middle Woodland Societies circa 50 BC–AD 350." *American Antiquity* 53(3):565–577. https://doi.org/10.2307/281217.

Seeman, Mark F. 1992. "The Bow and Arrow, the Intrusive Mound Complex, and a Late Woodland Jack's Reef Horizon in the Mid-Ohio Valley." In *Cultural*

Variability in Context: Woodland Settlement of the Mid-Ohio Valley, ed. Mark F. Seeman, 7:41–51. Midcontinental Journal of Archaeology Special Paper No. 7. Kent, OH: Kent State University Press.

Seeman, Mark F. 2007. "Predatory War and Hopewell Trophies." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, ed. Richard J. Chacon and David H. Dye, 167–189. New York: Springer. https://doi.org/10.1007/978-0-387-48303-0_8.

Shelby, Charmion. 1993. "La Florida by Garcilaso de la Vega." In *The De Soto Chronicles: The Expedition of Hernando de Soto to North America in 1539–1543*, ed. Lawrence Clayton, Vernon J. Knight, and Edward C. Moore, 2:25–559. Tuscaloosa: The University of Alabama Press.

Sherwood, Sarah C., and Tristram R. Kidder. 2011. "The Davincis of Dirt: Geoarchaeological Perspectives on Native American Mound Building in the Mississippi River Basin." *Journal of Anthropological Archaeology* 30(1):69–87. https://doi.org/10.1016/j.jaa.2010.11.001.

Shimkin, Demitri B. 1947. "Wind River Shoshone Ethnogeography." *University of California Anthropological Records* 5(4):245–288.

Shostak, Marjorie. 1981. *Nisa: The Life and Words of a !Kung Woman*. 1st ed. Cambridge, MA: Harvard University Press.

Shostak, Marjorie. 2000. *Return to Nisa*. Cambridge, MA: Harvard University Press.

Smith, Bryan T., Andrew C. Winters, Corey M. Mead, Andrew R. Dean, and Tomas E. Castellanos. 2010. *Measured Severe Wind Gust Climatology of Thunderstorms for the Contiguous United States, 2003–2009*. Norman, OK: NOAA/NWS/Storm Prediction Center.

Smith, Carlyle Shreeve. 1977. *The Talking Crow Site.* Publications in Anthropology 9. Lawrence: University of Kansas.

Smith, G. Hubert 1980. *The Explorations of the La Verendryes in the Northern Plains, 1738–43*, ed. W. Raymond Wood. Lincoln: University of Nebraska Press.

Smith, John. 1624. *The General Historie of Virginia, New-England, and the Summer Isles*. London: I.D. and I.H. for Michael Sparks.

Smith, Marian W. 1938. "The War Complex of the Plains Indians." *Proceedings of the American Philosophical Society* 78(3):425–464.

Smith, Marian W. 1951. "American Indian Warfare." *Transactions of the New York Academy of Sciences* 13(8 series II):348–365. https://doi.org/10.1111/j.2164-0947.1951.tb01044.x.

Snead, James E. 2008. "War and Place: Landscapes of Conflict and Destruction in Prehistory." *Journal of Conflict Archaeology* 4(1–2):137–157. https://doi.org/10.1163/157407808X382791.

Snortland, J. Signe. 1994. "Northern Plains Woodland Mortuary Practices." In *Skeletal Biology in the Great Plains*, ed. Douglas W. Owsley and Richard L. Jantz, 51–70. Washington, DC: Smithsonian Institution Press.

Snow, Charles E. 1941. "Possible Evidence of Scalping at Moundville." In *Anthropological Studies at Moundville*, 53–59. Museum Papers 15. Mobile: Alabama Natural History Museum.

Snow, Dean R. 1994. *The Iroquois*. Oxford: Blackwell.

Snow, Dean R. 1995. "Migration in Prehistory: The Northern Iroquoian Case." *American Antiquity* 60(1):59–79. https://doi.org/10.2307/282076.

Snow, Dean R. 2001. "Evolution of the Mohawk Iroquois." In *Societies in Eclipse Archaeology of the Eastern Woodlands Indians, AD 1400–1700*, ed. David S. Brose, C. Wesley Cowan, and Robert C. Mainfort, 19–25. Washington, DC: Smithsonian Institution Press.

Snow, Dean R. 2007. "Iroquois-Huron Warfare." In *North American Indigenous Warfare and Ritual Violence*, ed. Richard J. Chacon and Rubén G. Mendoza, 182–201. Tucson: University of Arizona Press.

Snow, Dean R. 2010. *Archaeology of Native North America*. Upper Saddle River, NJ: Prentice Hall.

Solometo, Julie. 2004. "The Conduct and Consequences of War: Dimensions of Conflict East-Central Arizona." PhD diss., Department of Anthropology, University of Michigan, Ann Arbor.

Solometo, Julie. 2006. "The Dimensions of War: Conflict and Culture Change in Central Arizona." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 23–65. Gainesville: University Press of Florida.

Solometo, Julie. 2010. "Conflict in the Prehistoric American Southwest: Using Archaeological Evidence and Ethnographic Insights to Reconstruct the Conduct and Consequences of War." *SAA Archaeological Record* 10(4):50–52.

Spaulding, Albert C. 1956. *The Arzberger Site, Hughes County, South Dakota*. Occasional contributions from the Museum of Anthropology of the University of Michigan No. 16. Ann Arbor: Museum of Anthropology, University of Michigan.

Speth, John D. 2005. "The Beginnings of Plains-Pueblo Interaction an Archaeological Perspective from Southeastern New Mexico." In *Engaged Anthropology: Research Essays on North American Archaeology, Ethnobotany, and Museology : Papers in Honor of Richard I. Ford*, ed. Michelle Hegmon and B. Sunday Eiselt. Anthropological Papers No. 94. Ann Arbor: Museum of Anthropology, University of Michigan.

Speth, John D., and Khori Newlander. 2012. "Plains-Pueblo Interaction: A View from the 'Middle." In *The Toyah Phase of Central Texas Late Prehistoric Economic*

and Social Processes, ed. Nancy Adele Kenmotsu and Douglas K. Boyd, 152–180. College Station: Texas A&M University Press.

SPSS Inc. 2007. *SPSS for Windows*. Chicago: SPSS Inc.

Squier, Ephram G., and Edwin H. Davis. (Original work published 1847) 1998. *Ancient Monuments of the Mississippi Valley*. Washington, DC: Smithsonian Institution Press.

Stahl, Ann Brower. 1993. "Concepts of Time and Approaches to Analogical Reasoning in Historical Perspective." *American Antiquity* 58(2):235–260. https://doi.org/10.2307/281967.

Stahle, David W., Falko K. Fye, Edward R. Cook, and R. Daniel Griffin. 2007. "Tree-Ring Reconstructed Megadroughts over North America Since AD 1300." *Climatic Change* 83(1–2):133–149. https://doi.org/10.1007/s10584-006-9171-x.

Stands in Timber, John, and Margot Liberty. 1967. *Cheyenne Memories*. New Haven, CT: Yale University Press.

Starna, William A., and Jose Antonio Brandão. 2004. "From the Mohawk-Mahican War to the Beaver Wars: Questioning the Pattern." *Ethnohistory (Columbus, Ohio)* 51(4):725–750. https://doi.org/10.1215/00141801-51-4-725.

Steadman, Dawnie. 2011. "Health Hazards Models in the Middle Cumberland Drainage." Paper presented at the Short NSF Team Seminar, School for Advanced Research, "Warfare and the Epidemiological Transition," Santa Fe, NM.

Steinacher, Terry L., and Gayle F. Carlson. 1998. "The Central Plains Tradition." In *Archaeology on the Great Plains*, ed. W. Raymond Wood, 235–268. Lawrence: University Press of Kansas.

Steinen, Karl T. 1992. "Ambushes, Raids, and Palisades: Mississippian Warfare in the Interior Southeast." *Southeastern Archaeology* 11(2):132–139.

Stewart, James R., and Larry J. Zimmerman. 1989. "To Dehumanize and Slaughter: A Natural History Model of Massacres." *Great Plains Sociologist* 2:1–15.

Stirling, Matthew W. 1938. *Three Pictographic Autobiographies of Sitting Bull. S*mithsonian Miscellaneous Collections 97(5). Washington, DC: Smithsonian Institution.

Stout, Charles B., and R. Barry Lewis. 1998. "Mississippian Towns in Kentucky." In *Mississippian Towns and Sacred Spaces Searching for an Architectural Grammar*, ed. R. Barry Lewis and Charles B. Stout, 151–178. Tuscaloosa: University of Alabama Press.

Strong, William Duncan. 1935. *An Introduction to Nebraska Archaeology*. Smithsonian Miscellaneous Collections, Vol. 93, Number 10. Washington, DC: Smithsonian Institution.

Stuart, David E., Rory P. Gauthier, and Thomas W. Merlan. 1981. *Prehistoric New Mexico: Background for Survey*. Albuquerque: University of New Mexico Press.

Sudbury, Byron. 1976. "Ka–3, the Deer Creek Site: An Eighteenth Century French Contact Site in Kay County, Oklahoma." *Bulletin of the Oklahoma Anthropological Society* 24:1–135.

Sullivan, N. C. 1990a. "The Biological Consequences of the Mississippian Expansion into the Western Great Lakes Region: A Study of Prehistoric Culture Contact." In *Powers of Observation: Alternative Views in Archaeology*, ed. S. N. Nelson and A. B. Kehoe, 73–87. Archaeological Papers of the American Anthropological Association. Arlington, VA: American Anthropological Association.

Sullivan, N. C. 1990b. "Oneota Subsistence: Inferences from Dental and Skeletal Pathology." In *The Woodland Tradition in the Western Great Lakes: Papers Presented to E. Johnson*, ed. G. E. Gibbon, 11–17. Publication in Anthropology no. 4. Minneapolis: Department of Anthropology, University of Minnesota.

Sundstrom, Linea. 1990. *Rock Art of the Southern Black Hills: A Contextual Approach*. New York: Garland.

Sundstrom, Linea. 1996. "The Destruction of Larson Village: A Possible Contemporary Lakota Account." *Newsletter of the South Dakota Archaeological Society* 26(3):1–4.

Sundstrom, Linea. 1997. "Smallpox Used Them Up: References to Epidemic Disease in Northern Plains Winter Counts, 1714–1920." *Ethnohistory (Columbus, Ohio)* 44(2):305–343. https://doi.org/10.2307/483371.

Sundstrom, Linea. 2003. "The Thin Elk/Steamboat Winter Count: A Study in Lakota Pictography." Accessed February 2016. http://groups.creighton.edu/sfmission/museum/exhibits/wintercounts/thinelk.html.

Sundstrom, Linea. 2004. *Storied Stone: Indian Rock Art in the Black Hills Country*. Norman: University of Oklahoma Press.

Sundstrom. Linea. 2006. "History in Pictures: Father Buechel and the Lakota Winter Counts." Accessed February 2016. http://groups.creighton.edu/sfmission/museum/exhibits/wintercounts/articles.html.

Sundstrom, Linea. 2015. "The Meaning of Scalping in Native North America." In *Transforming the Dead: Culturally Modified Bone in the Prehistoric Midwest*, ed. Eve A. Hargrave, Shirley J. Schermer, Kristin M. Hedman, and Robin M. Lillie, 249–261. Tuscaloosa: University of Alabama Press.

Sundstrom, Linea, and James D. Keyser. 1998. "Tribal Affiliation of Shield Petroglyphs from the Black Hills and Cave Hills." *Plains Anthropologist* 43(165):225–238.

Sundstrom, Linea, Linda Olson, and Lawrence Loendorf. 2001. "*Hulett South Site, 48CK1544*." Loendorf and Assosicates. Report on file with the Wyoming Department of Transportation, Cheyenne.

Surovell, Todd A., Judson Byrd Finley, Geoffrey M. Smith, P. Jeffrey Brantingham, and Robert Kelly. 2009. "Correcting Temporal Frequency Distributions for

Taphonomic Bias." *Journal of Archaeological Science* 36(8):1715–1724. https://doi.org/10.1016/j.jas.2009.03.029.

Sutton, Mark Q., and David Rhode. 1994. "Background to the Numic Problem." In *Across the West Human Population Movement and the Expansion of the Numa*, ed. David B. Madsen and David Rhode, 6–15. Salt Lake City: University of Utah Press.

Sutton, Wendy Ann Swanson. 2004. "Economic and Social Change during a Critical Transition: The Protohistoric in the Powder River Basin and Bighorn Mountains." PhD diss., Columbia University, New York.

Swagerty, William R. 1988. "Indian Trade in the Trans-Mississippi West to 1870." In *Handbook of North American Indians*, vol. 4. ed. Wilcomb E. Washburn, 351–374. Washington, DC: Smithsonian Institution.

Swanton, John Reed. 1946. *The Indians of the Southeastern United States.* Bureau of American Ethnology Bulletin 137. Washington, DC: Smithsonian Institution.

Swegle, Mark. 1979. *Unpublished notes curated at the University of South Dakota*. Vermillion.

Swenson, Fern E. 2007. "Settlement Plans for Traditional Mandan Villages at Heart River." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 239–258. Salt Lake City: University of Utah Press.

Szabo, Joyce M. 1994. *Howling Wolf and the History of Ledger Art*. Albuquerque: University of New Mexico Press.

Tanner, Helen Hornbeck. 1987. *Atlas of Great Lakes Indian History*. Norman: University of Oklahoma Press.

Taylor, Colin F. 1975. *The Warriors of the Plains*. New York: Arco Publishing Company.

Taylor, Colin F. 1994. *The Plains Indians: A Cultural and Historical View of the North American Plains Tribes of the Pre-Reservation Period*. New York: Crescent Books.

Taylor, Colin F. 1998. *Buckskin and Buffalo: The Artistry of the Plains Indians*. New York: Rizzoli International Publications.

Taylor, Colin F. 2001. *Native American Weapons*. Norman: University of Oklahoma Press.

Taylor, Matthew S. 2001. "Paleopathology of the Ernest Witte Site." MA thesis, Department of Anthropology, Texas Tech University, Lubbock.

Theler, James L., and Robert F. Boszhardt. 2006. "Collapse of Crucial Resources and Culture Change: A Model for the Woodland to Oneota Transformation in the Upper Midwest." *American Antiquity* 71(3):433–472. https://doi.org/10.2307/40035360.

Thoburn, Joseph B. 1930. "Northern Caddoan People of Prehistoric Times and the Human Origin of the Natural Mounds, So Called, of Oklahoma and Neighboring States." Manuscript on file in the Oklahoma Historical Society archives, Oklahoma City.

Thomas, David Hurst. 1981. "How to Classify the Projectile Points from Monitor Valley, Nevada." *Journal of California and Great Basin Anthropology* 3(1):7–43.

Thomas, Davis, and Karin Ronnefeldt. 1976. *People of the First Man: Life among the Plains Indians in Their Final Days of Glory*. New York: Dutton.

Thompson, David. 1962. *David Thompson's Narrative 1784–1812*, ed. Richard Glover. Toronto: The Champlain Society.

Thoms, Alston V. 2009. "Rocks of Ages: Propagation of Hot-Rock Cookery in Western North America." *Journal of Archaeological Science* 36(3):573–591. https://doi.org/10.1016/j.jas.2008.11.016.

Thornton, Russell. 2002. "A Rosebud Reservation Winter Count, circa 1751–1752 to 1886–1887." *Ethnohistory (Columbus, Ohio)* 49(4):723–741. https://doi.org/10.1215/00141801-49-4-723.

Thorpe, I. J. N. 2003. "Anthropology, Archaeology, and the Origin of Warfare." *World Archaeology* 35(1):145–165. https://doi.org/10.1080/0043824032000079198.

Tiffany, J. A., S. J. Schermer, J. L. Theler, D. W. Owsley, D. C. Anderson, E. A. Bettis, and D. M. Thompson. 1988. "The Hanging Valley Site (13HR28): A Stratified Woodland Burial Locale in Western Iowa." *Plains Anthropologist* 33(120):219–259.

Tiffany, Joseph A. 1982. *Chan-Ya-Ta: A Mill Creek Village*. Report No. 15. Office of the State Archaeologist, University of Iowa, Iowa City.

Tiffany, Joseph A. 2003. "Mississippian Connections with Mill Creek and Cambria." *Plains Anthropologist* 48(184):21–34.

Tiffany, Joseph A. 2007. "Examining the Origins of the Middle Missouri Tradition." In *Plains Village Archaeology: Bison-Hunting Farmers in the Central and Northern Plains*, ed. Stanley A. Ahler and Marvin Kay, 3–14. Salt Lake City: University of Utah Press.

Tiffany, Joseph A., and Lynn M. Alex. 2001. ""Great Oasis Archaeology: New Perspectives from the Decamp and West Des Moines Burial Sites in Central Iowa." Plains Anthropologist Memoir 33. *Plains Anthropologist* 46(178):1–104.

Tiffany, Joseph A., Austin A. Buhta, L. Adrien Hannus, and Jason M. Kruse. 2011. "New Insights into the Anoka Phase: Initial Results from Work at the Lynch (25BD1), Anoka (25BD2/201), Hostert (25BD16), and Mohr (25BD139) Sites, Boyd County, Nebraska." *Central Plains Archaeology* 13(1):1–34.

Toom, Dennis L. 1992. "Climate and Sedentism in the Middle Missouri Subarea of the Plains." PhD diss., Department of Anthropology, University of Colorado, Boulder.

Toom, Dennis L., and Kenneth L. Kvamme. 2002. "'The 'Big House' At Whistling Elk Village (39HU242): Geophysical Findings and Archaeological Truths." *Plains Anthropologist* 47(180):5–16.

Topic, Theresa, and John R. Topic. 2009. "Variation in the Practice of Prehispanic Warfare on the North Coast of Peru." In *Warfare in Cultural Context*, ed. Axel E. Nielsen and William H. Walker, 17–55. Amerind Studies in Archaeology, Volume 3. Tucson: University of Arizona Press.

Toy, Sidney. 1955. *A History of Fortification from 3000 BC to AD 1700*. London: William Heinemann.

Trigger, Bruce G. 1976. *The Children of Aataentsic: A History of the Huron People to 1660*. Montreal: McGill-Queen's University Press.

Trigger, Bruce G. 1990. *The Huron: Farmers of the North*. 2nd ed. New York: Holt, Rinehart and Winston.

Trubitt, Mary Beth D. 2003. "Mississippian Period Warfare and Palisade Construction at Cahokia." In *Theory, Method, and Practice in Modern Archaeology*, ed. Robert J. Jeske and Douglas K. Charles, 149–162. Westport, CT: Praeger.

Trubitt, Mary Beth D. 2010. "Cahokia and Mississippian Warfare in the 13th Century." Paper presented at the 75th Annual Meeting of the Society for American Archaeology, St. Louis, MO.

Tyrell, J. B., ed. 1916. *David Thompson's Narrative of His Explorations in Western America 1784–1812.* Publication 12. Toronto: The Champlain Society.

Tzu, Sun. 2011. *Master Sun's Art of war*. Trans. Philip J. Ivanhoe. Indianapolis: Hackett Publishing Company.

Underhill, Anne P. 2006. "Warfare and the Development of States in China." In *The Archaeology of Warfare: Prehistories of Raiding and Conquest*, ed. Elizabeth N. Arkush and Mark W. Allen, 253–285. Gainesville: University Press of Florida.

Van Horne, Wayne William. 1993. "The Warclub: Weapon and Symbol in Southeastern Indian Societies." PhD diss., University of Georgia, Athens.

Vanpool, Todd L., and Michael J. O'Brien. 2013. "Sociopolitical Complexity and the Bow and Arrow in the American Southwest." *Evolutionary Anthropology: Issues, News, and Reviews* 22(3):111–117. https://doi.org/10.1002/evan.21355.

Vehik, Susan C. 1986. "Oñate's Expedition to the Southern Plains: Routes, Destinations, and Implications for Late Prehistoric Cultural Adaptations." *Plains Anthropologist* 31(111):13–33.

Vehik, Susan C. 1992. "Wichita Culture History." *Plains Anthropologist* 37(141):311–332.

Vehik, Susan C. 2002. "Conflict, Trade, and Political Development on the Southern Plains." *American Antiquity* 67(1):37–64. https://doi.org/10.2307/2694876.

Vehik, Susan C. 2006. "Wichita Ethnohistory." In *Kansas Archaeology*, ed. Robert J. Hoard and William E. Banks, 206–218. Lawrence: University Press of Kansas.

Vehik, Susan C. 2012. "Prehistory and Ethnohistory of the Wichita Indians." In *Archeological Investigations at Arkansas City, Kansas*, ed. Robert J. Hoard and

Christopher M. Schoen. Contract Archeology Publications No. 26. Kansas State Historical Society.
Vehik, Susan C., Lauren M. Cleeland, Richard R. Drass, Stephen M. Perkins, and Liz Leith. 2010. "The Plains Hide Trade: French Impact on Wichita Technology and Society." In *Across a Great Divide: Continuity and Change in Native North American Societies, 1400–1900*, ed. Laura L. Scheiber and Mark D. Mitchell, 149–173. Amerind Studies in Archaeology. Tucson: University of Arizona Press.
Vencl, Slavomil. 1999. "Stone Age Warfare." In *Ancient Warfare: Archaeological Perspectives*, ed. John Carman and Anthony Harding, 57–72. Stroud, Gloucestershire: Sutton Publishing.
Vogel, Joseph O., and Jean Allan. 1985. "Mississippian Fortifications at Moundville." *Archaeology* 38(5):62–63.
Walde, Dale. 2006. "Sedentism and Pre-Contact Tribal Organization on the Northern Plains: Colonial Imposition or Indigenous Development?" *World Archaeology* 38(2):291–310. https://doi.org/10.1080/00438240600694032.
Walker, Phillip L. 2001. "A Bioarchaeological Perspective on the History of Violence." *Annual Review of Anthropology* 30(1):573–596. https://doi.org/10.1146/annurev.anthro.30.1.573.
Warrick, Gary A. 1988. "Estimating Ontario Iroquoian Village Duration." *Man in the Northeast* 36:21–60.
Warrick, Gary A. 1990. "A Population History of the Huron-Petun, AD 800–1650." PhD diss., Department of Anthropology, McGill University, Montreal.
Watt, Frank H. 1969. "The Waco Indian Village and Its People." *Central Texas Archeologist Journal* 9:187–244.
Weddle, Robert S. 2007. *After the Massacre: The Violent Legacy of the San Sabá Mission*. Lubbock: Texas Tech University Press.
Wedel, Mildred M. 1981. *The Deer Creek Site, Oklahoma: A Wichita Village Sometimes Called Ferdinandina: An Ethnohistorian's View.* Series in Antrhopology No. 5. Oklahoma City: Oklahoma Historical Society.
Wedel, Mildred M. 1988. *The Wichita Indians 1541–1750: Ethnohistorical Essays.* Reprints in Anthropology, vol. 38. Lincoln, NE: J&L Reprint Company.
Wedel, Waldo R. 1938. *The Direct-Historical Approach in Pawnee Archaeology.* Smithsonian Miscellaneous Collections 97(7). Washington, DC: Smithsonian Institution.
Wedel, Waldo R. 1959. *An Introduction to Kansas Archeology.* Bureau of American Ethnology Bulletin 174. Washington, DC: Smithsonian Institution.
Wedel, Waldo R. 1961. *Prehistoric Man on the Great Plains*. Norman: University of Oklahoma Press.

Wedel, Waldo R. 1967. "The Council Circles of Central Kansas: Were They Solstice Registers?" *American Antiquity* 32(1):54–63. https://doi.org/10.2307/278778.

Wedell, Christopher R. von. 2011. "Methods of Dating Glass Beads from Protohistoric Sites in the South Platte River Basin, Colorado." MA thesis, Department of Anthropology, Colorado State University, Fort Collins.

Weitzner, Bella. 1979. "Notes on the Hidatsa Indians Based on Data Recorded by the Late Gilbert L. Wilson." *Anthropological Papers of the American Museum of Natural History* 56(2):183–322.

Wendorf, Fred. 1968. "Site 117: A Nubian Final Paleolithic Graveyard near Jebel Sahaba, Sudan." In *The Prehistory of Nubia*, ed. Fred Wendorf, 2:954–1040. Dallas: Southern Methodist University Press.

Weston, Timothy, and William B. Lees. 1994. "History and Status of an Earthwork Known as 'Neodesha Fort,' Kansas." *Plains Anthropologist* 39(150):415–428.

Whallon, Robert. 1974. "Spatial Analysis of Occupation Floors II: The Application of Nearest Neighbor Analysis." *American Antiquity* 39(1):16–34. https://doi.org/10.2307/279216.

Wheatley, David, and Mark Gillings. 2002. *Spatial Technology and Archaeology: The Archaeological Applications of GIS*. New York: CRC Press. https://doi.org/10.4324/9780203302392.

Will, George F. 1930. "The Mandan Lodge at Bismarck." *North Dakota Historical Quarterly* 5:38–48.

Willey, Patrick S. 1990. *Prehistoric Warfare on the Great Plains: Skeletal Analysis of the Crow Creek Massacre Victims*. New York: Garland Press.

Willey, Patrick S., and Thomas E. Emerson. 1993. "The Osteology and Archaeology of the Crow Creek Massacre." *Plains Anthropologist* 38(145):227–269.

Williams, John A. 1994. "Disease Profiles of Archaic and Woodland Populations in the Northern Plains." In *Skeletal Biology in the Great Plains: Migration, Warfare, Health, and Subsistence*, ed. Douglas W. Owsley and Richard L. Jantz, 91–108. Washington, DC: Smithsonian Institution Press.

Williams, John A. 2002. "Analysis of Human Skeletal Remains." In *Prehistory on First Street NE: The Archaeology of Scattered Village in Mandan, North Dakota*, ed. Stanley A. Ahler, 17.1–17.22. Research Contribution No. 40. Flagstaff: Paleocultural Research Group.

Williamson, Ron. 2007. "'Otinontsiskiaj ondaon' ('The House of the Cut-off Heads'): The History and Archaeology of Northern Iroquoian Trophy Taking." In *The Taking and Displaying of Human Body Parts as Trophies by Amerindians*, ed. Richard J. Chacon and David H. Dye, 190–221. New York: Springer. https://doi.org/10.1007/978-0-387-48303-0_9.

Wilson, Gilbert L. 1917. *Agriculture of the Hidatsa Indians: An Indian Interpretation.* Studies in the Social Sciences No. 9. Minneapolis: University of Minnesota.
Wilson, Gilbert L. 1918. *Hidatsa Report, Summer of 1918.* Papers of Gilbert Wilson, Box 9, Folder 1. W577. New York: Division of Anthropology, American Museum of Natural History.
Wilson, Gilbert Livingstone. 1934. *The Hidatsa Earthlodge.* Anthropological Papers 33, Part 5. New York: American Museum of Natural History.
Wilson, Michael L., Christophe Boesch, Barbara Fruth, Takeshi Furuichi, Ian C. Gilby, Chie Hashimoto, Catherine L. Hobaiter, Gottfried Hohmann, Noriko Itoh, Kathelijne Koops, et al. 2014. "Lethal Aggression in *Pan* Is Better Explained by Adaptive Strategies than Human Impacts." *Nature* 513(7518):414–417. https://doi.org/10.1038/nature13727.
Winham, R. Peter, and F. A. Calabrese. 1998. "The Middle Missouri Tradition." In *Archaeology on the Great Plains*, ed. W. Raymond Wood, 269–307. Lawrence: University Press of Kansas.
Winham, R. Peter, W. Raymond Wood, and L. Adrien Hannus. 1994. *Village Sites of the Middle Missouri Subarea: AD 1000–AD 1887.* National Historic Landmark Thematic Study. Sioux Falls, SD: Augustana College.
Witte, Stephen S., and Marsha V. Gallagher, eds. 2012. *The North American Journals of Prince Maximilian of Wied*. vol. 3. Norman: University of Oklahoma Press.
Wolf, Eric R. 1997. *Europe and the People without History*. Berkeley: University of California Press.
Wood, W. Raymond. 1961. *The Huff Site, 32MO11, Oahe Reservoir Area, North Dakota: 1960 Excavations*. Bismarck: State Historical Society of North Dakota.
Wood, W. Raymond. 1967. *An Interpretation of Mandan Culture History.* Bureau of American Ethnology Bulletin 198, No. 39. Washington, DC: Smithsonian Institution.
Wood, W. Raymond. 1969. ""Two House Sites in the Central Plains: An Experiment in Archaeology." Memoir 6." *Plains Anthropologist* 14(44).
Wood, W. Raymond. 1971. *Biesterfeldt: A Post-Contact Coalescent Site on the Northeastern Plains.* Contributions to Antrhopology 15. Washington, DC: Smithsonian Institution.
Wood, W. Raymond. 1980. "Plains Trade in Prehistoric and Protohistoric Intertribal Relations." In *Anthropology on the Great Plains*, ed. W. Raymond Wood and Margot Liberty, 98–109. Lincoln: University of Nebraska Press.
Wood, W. Raymond. 2001. "Plains Village Tradition: Middle Missouri." In *Handbook of North American Indians*, Volume 13: *Plains,* Part 1, ed. Raymond J. DeMallie, 186–195. Washington, DC: Smithsonian Institution.
Wood, W. Raymond, ed. 1976. *Fay Tolton and the Initial Middle Missouri Variant.* Missouri Archaeological Society Research Series No. 13. Columbia: College of

Arts and Science, University of Missouri-Columbia and The Missouri Archaeological Society.
Wrangham, Richard W. 1999. "Evolution of Coalitionary Killing." *Yearbook of Physical Anthropology* 42:1–30.
Wylie, Alison. 2002. *Thinking from Things: Essays in the Philosophy of Archaeology*. Berkeley: University of California Press.
Young, Stephanie. 2010. "The Application of Multivariate Cluster and Discriminant Analyses to the Bear Gulch Shield Bearing Warrior Style." Unpublished MS thesis, Fariborz Maseeh Department of Mathematics and Statistics, Portland State University, Portland, OR.
Zeimens, George. 1975. "48AB301: A Late Prehistoric Period Site in the Shirley Basin of Wyoming." MA thesis, Department of Anthropology, University of Wyoming, Laramie.
Zimmerman, Larry J. 1985. *Peoples of Prehistoric South Dakota*. Lincoln: University of Nebraska Press.
Zimmerman, Larry J., and Robert Alex. 1981. "How Crow Creek Archaeologists View the Question of Reburial." *Early Man* 3(3):25–26.
Zimmerman, Larry J., and Lawrence E. Bradley. 1993. "The Crow Creek Massacre: Initial Coalescent Warfare and Speculations about the Genesis of Extended Coalescent." *Plains Anthropologist* 38(145):215–226.
Zimmerman, Larry J., and James R. Stewart. 1991. "An Application of the Massacre Model to a 700 Year Old Mystery." *Great Plains Sociologist* 4(1):23–39.
Zimmerman, Larry J., and Richard G. Whitten. 1980. "Prehistoric Bones Tell a Grim Tale of Indian v. Indian." *Smithsonian* 11(6):100–108.

Douglas B. Bamforth is professor and chair of anthropology at the University of Colorado Boulder. He is available at bamforth@colorado.edu.

Peter Bleed is Professor Emeritus, University of Nebraska–Lincoln, currently residing in Little Rock, Arkansas, but available at pbleedɪ@unl.edu.

Andrew J. Clark works for the US Army Corps of Engineers as a field archaeologist covering Lake Sharpe and Lake Francis Case along the Missouri River. His email is ajkclark@gmail.com.

Richard R. Drass is research archaeologist emeritus at the Oklahoma Archeological Survey, University of Oklahoma, Norman. He can be reached at rdrass@ou.edu.

David H. Dye is professor of archaeology, Department of Earth Sciences, University of Memphis. His email is daviddye@memphis.edu.

Mavis Greer and John Greer are the owners of Greer Archeology, Casper, Wyoming. They can be reached at mavis@GreerServices.com and jgreer@GreerServices.com.

R. Eric Hollinger is repatriation case officer for the Midwest, Northeast, Great Basin, and California at the Smithsonian Institution National Museum of Natural History. His email is hollingere@si.edu.

Ashley Kendell is assistant professor at California State University, Chico. She can be contacted at akendell@csuchico.edu.

James D. Keyser taught at SUNY Buffalo and the University of Tulsa and is retired from the US Forst Service. He currently directs the Oregon Archaeological Society Rock Art Interest Group. He can be reached at jkeyserfs@comcast.net.

Albert M. LeBeau III is an enrolled member of the Cheyenne River Sioux Tribe and an American Indian archaeologist. He is the cultural resource program manager at Effigy Mounds National Monument, Harper's Ferry, Iowa. His email is albert_lebeau@nps.gov.

Mark D. Mitchell is research director for the Paleocultural Research Group, PO Box 745309, Arvada, Colorado 80006. His email is Mark.mitchell@paleocultural.org.

Stephen M. Perkins is associate professor of anthropology in the Department of Sociology, Oklahoma State University, Stillwater. He can be reached at stephen.perkins@okstate.edu.

Bryon Schroeder is project archeologist for the Center for Big Bend Studies of Sul Ross State University in Texas. His email is bryon.schroeder@sulross.edu.

Douglas Scott is visiting research scientist at Colorado Mesa University, Grand Junction, Colorado. He is available at DougDScott@gmail.com.

Linea Sundstrom is a private contractor specializing in North American archaeology, ethnogeography, and rock art. She can be reached at linea.sundstrom@gmail.com.

Susan C. Vehik is professor emerita of anthropology at the University of Oklahoma, Norman. She can be reached at svehik@ou.edu.

Index

Page numbers in italic indicate illustrations.