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WARFARE IN LATE PREHISTORIC WEST-CENTRAL ILLINOIS

George R. Milner, Eve Anderson, and Virginia G. Smith

Social-group competition and cooperation are critical elements of models of cultural evolution. Despite the presumed significance of such interactions, archaeologists find it difficult to measure these forms of behavior. An Illinois cemetery consisting of 264 burials dating to ca. A.D. 1300 illustrates the unique information that only mortuary sites can provide on the characteristics and intensity of prehistoric intergroup conflict. In this instance, violent death was indicated by several forms of bone damage. Chronic warfare caused a heavy loss of life (at least one-third of all adult deaths) and contributed to considerable hardship. Available evidence indicates that this conflict was part of a broader pattern of volatile Precontact-era social relationships that featured intergroup cooperation coupled with antagonism.

Competencia y cooperación de grupos sociales son elementos críticos en modelos de evolución cultural. A pesar de la presunta importancia de tales interacciones, los arqueólogos encuentran difícil medir estas formas de comportamiento. Un cementerio en Illinois integrado por 264 enterramientos fechados alrededor de 1300 D.C. sirve para ilustrar la singularidad de la información que solo sitios funerarios pueden ofrecer sobre las características e intensidad del conflicto entre grupos sociales prehistóricos. En este caso, muerte violenta fue indicada por diversas formas de daño en los esqueletos. Guerras endémicas causaron la pérdida de muchas vidas (por lo menos un tercio de todas las muertes de individuos adultos) y produjeron considerables privaciones. Las evidencias disponibles indican que este tipo de conflicto era parte de un patrón amplio de vínculos sociales volátiles del período precontacto caracterizado tanto por cooperación entre grupos como por antagonismo entre los mismos.

The causes, nature, intensity, and consequences of violence in small-scale societies are much debated by anthropologists, yet poorly understood. These controversial issues are an important part of a voluminous literature on the genesis, naturalness, and function of human aggression, including warfare where purposeful violence is employed to further the aims of separately constituted political factions (Chagnon 1990; Divale 1973; Ferguson 1984, 1990; Ferguson and Farragher 1988).

Discussions of conflict are bolstered by data that have been amassed over many years on both intragroup and intergroup violence in the small-scale societies of the ethnographic present. Much of the information on violent behavior, however, is inadequately substantiated and imprecise, especially the reports of inexpert observers comprising the ethnohistorical literature. Only a small fraction of this information is supported by quantitative data, embeds homicide in its cultural and ecological contexts, and provides a long-term view of antagonistic behavior (e.g., Chagnon 1972, 1974, 1983, 1988; Glasse 1968; Headland 1989; Heider 1970, 1979; Knauf 1987; Meggitt 1977). Moreover, stresses generated ultimately by colonial powers or enforced pacification compound the problems of studying indigenous conflict.

Archaeological studies of violence are even more particularistic, disjointed, and speculative than reports on modern peoples or those of the recent past. Defensible site locations, fortifications, battle gear, war-related themes in artistic works, and skeletons showing signs of lethal injuries are often included in statements on archaeological cultures. Unfortunately, pursuant discussions are rarely substantive, empirically backed treatments of warfare in prehistoric societies. Such data, however, are desperately needed to further our understanding of cultural dynamics and evolutionary processes. For example, warfare is often implicated as an integral component of the development of organi-

The recent excavation of an Oneota cemetery in Illinois provides the means of identifying the pattern and impact of violence involving a low-energy, horticultural society from a temperate region. The Oneota site dates to the late prehistoric period and, hence, it contributes to the scanty information available on the nature of conflict in precontact societies. The warfare that engulfed this community increased the likelihood of premature death and seemingly undermined the group’s viability in an otherwise hospitable resource-rich environment.

The osteological and archaeological evidence indicates that the Oneota victims tended to die in small-scale surprise attacks. Information from the ethnographic present provides a means of identifying points of congruence and discrepancy between the prehistoric example and the warfare practices in middle-range, especially tribal-scale, societies that result in many deaths. We emphasize lethal conflict because its conduct and intensity can be measured by archaeological, in this instance osteological, remains. This is an area where archaeologists can contribute to fruitful research on the role of conflict in differential population histories, dynamic cultural landscapes, and the development of more elaborate forms of social organization. Much less important from an archaeological perspective are other aspects of intergroup hostilities that produce few or ambiguous signatures, such as warfare’s attendant culture-specific beliefs and customs, or irregularly occurring ritual engagements producing light casualties. The Oneota data, in conjunction with ethnographic accounts, provide an interpretive framework for the largely unsystematically reported archaeological, especially osteological, information on violence in prehistoric eastern North America.

THE SKELETAL COLLECTION

Cultural Context

The completely excavated Norris Farms #36 cemetery was located in the central Illinois River valley in west-central Illinois (Santure et al. 1990). The site belongs to a regional variant of the upper midwestern Oneota tradition that recently has been called Bold Counselor (Conrad 1991; Esarey and Santure 1990). Dating to ca. A.D. 1300, the Norris Farms #36 cemetery and a nearby incompletely excavated habitation site represent a distinct departure from the immediately preceding Mississippian occupation of this part of the river valley. While artifacts are used as the primary means of identifying this shift in cultural identity, the Oneota society does not seem to have been as organizationally complex as its Mississippian predecessor. Regional specialists interpret the Oneota sites as an intrusion of people into the valley, and this particular ceramic tradition persisted with alterations into the fifteenth century (Conrad 1991; Esarey 1986; Esarey and Santure 1990; Harn 1980:82).

Oneota societies in the central Illinois River valley, and in Illinois generally, are poorly understood. From the little that is known, this local variant approximates the characteristics of Oneota cultural manifestations elsewhere (Esarey and Santure 1990; Santure 1990a; Styles and King 1990b). These people were tribal-scale sedentary villagers who practiced a mixed food-acquisition strategy incorporating the cultivation of crops, including maize, along with the hunting, fishing, and gathering of an array of locally available plants and animals (Brown 1982; Griffin 1983; Overstreet 1978; Stoltzman 1983; Tiffany 1979).

The Cemetery

The Norris Farms #36 cemetery consisted of many graves, most containing single individuals, that collectively formed an elongated asymmetrical oval (Santure 1990b). The spatial extent of graves corresponded closely to the limits of a low mound, which was situated on the western bluff overlooking the river valley. A formal cemetery structure is indicated by the distribution of burials, the commonalities in mortuary treatment, the closely spaced arrangement of graves, the consistent positioning of nearby features, and the infrequent superpositioning of pits. These organizational
characteristics are consistent with the continuous use of a burial area for some unknown period of time, perhaps in this instance for a few decades.

The human remains, described elsewhere (Milner and Smith 1990), include 264 Oneota skeletons, most of which are reasonably complete by archaeological standards. The bones are well preserved, permitting the identification of even minor antemortem and postmortem alterations to normal bone morphology.

Considered as a group, the Norris Farms #36 skeletons closely approximate age-at-death distributions generated from demographic models using levels of fertility and mortality that are reasonable for traditional populations (Milner et al. 1989; Paine 1989). There are more adult females than males in the cemetery sample; however, this difference between the sexes is not significant. The sexes of juveniles, of course, are not known.

The overall demographic picture is consistent with the interment of most or all of the village dead in a community cemetery. Such a burial practice is by no means unusual for a small-scale society like the Oneota. In sum, there is no obvious osteological or archaeological evidence indicating that the cemetery consists of a nonrepresentative accumulation of skeletons; i.e., there is no indication that only certain individuals were specially selected for burial in the mound.

VIOLENT DEATH

Of the 264 Oneota burials, 43 complete or partial skeletons belonged to people who died violently. These skeletons display one or more of the following kinds of perimortem or postmortem alterations to their bones: unhealed injuries, signs of mutilation, and marks made by scavenging animals. Most of the skeletons included in the violent-death category have more than one of these kinds of bone destruction (Table 1).

Trauma

Many examples of lethal trauma in this skeletal collection are unambiguous, especially those where fragments of chert from deeply penetrating projectiles had lodged in bone. The reasonably intact chert fragments are identifiable as parts of arrowheads. The fracture characteristics of other damaged areas indicate that the breaks occurred near the time of death. Included in this category are splintered postcranial elements where sharp, often jagged, cracks had propagated through cortical bone in accord with its structural characteristics. Massive cranial injuries also are evident. Figure 1 shows a depressed mosaic of multiple, but still adherent, bone fragments (i.e., a comminuted fracture) that resulted from a blow to the back of the head. Other injuries produced gaping holes with internal edges bordered by areas where small pieces of the inner table and diploe had broken off the skull. Outwardly radiating cracks often originated at the places where the skulls had been penetrated by blows. These postcranial and cranial fracture patterns are distinct from those that occur when dry bones are broken long after death.

Many penetrating skull fractures seem to have been made with ground-stone celts, a common tool of the late prehistoric time horizon. Each of these elongated holes have one slightly curved

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* Number = number of complete or partial skeletons.
margin. The opposing edge is either similarly curved or irregular, the latter resulting from the removal of large bone fragments. Celts probably also produced V-shaped defects in two humeral heads from adults whose corresponding scapulae are also damaged.

Most unhealed injuries occur on the cranium, upper limbs, and trunk, and the blows had been directed toward these individuals’ fronts, sides, and backs. Fractures of the arm and hand bones might have occurred when these people tried to defend themselves. Reasonably complete skeletons typically exhibit several severe wounds, such as fractures from multiple blows to the skull.

Mutilation

The bodies of the victims of violence often were mutilated. Fourteen people had been scalped and 11 decapitated. They represent 66 percent of the 38 victims’ skeletons with either crania or any of the cervical vertebrae present. In addition, the postcranial bones of eight individuals were cut (i.e., bones other than cervical vertebrae are incised). Three of these eight individuals had also been decapitated.

Scalping produced multiple more-or-less parallel transverse and oblique cut marks on the anterior, lateral, and posterior sides of the cranial vault. Usually the cuts are concentrated on the frontal bone (Figure 2). The typical scalping procedure apparently involved cuts across the forehead near the hairline followed by incisions along the side and across the back of the head above the ears. This pattern is consistent with many scalped crania found elsewhere in eastern North America (Owsley and Berryman 1975; Owsley et al. 1977; Pollack et al. 1987; Zimmerman et al. 1981:166–168). The decapitated skeletons lack crania, and they have cut marks on one or more of the upper cervical vertebrae (Figure 3). Most postcranial cut marks, other than those on the cervical vertebrae, are located at the hip or on the posterior sides of tibiae and fibulae. In the latter instance, incisions through the calf penetrated deep enough to score the bone.

There can be little doubt that the removal of scalps and heads was part of the conflict-related mutilation of enemies. Furthermore, it is unlikely that postcranial dismemberment resulted from
Scavengers

Scavenging animals damaged 30 skeletons (Milner and Smith 1989). Bone destruction consists of splintered and punctured cortices and deeply gouged cancellous bone (Figure 4). Small-diameter punctures through thin cortical or subchondral bone are bordered by small fragments of bone that had been pressed into the circular to oval depressions. Cancellous bone is exposed in many skeletal elements where the cortex is normally thin, such as the ends of long bones. The surviving cancellous bone in the damaged areas is often furrowed by long channels where teeth dug through and destroyed the spongy bone. The cortex bordering extensively damaged areas often had a scalloped appearance where teeth had penetrated the hard bone. Short, shallow grooves and irregular eroded areas immediately adjacent to destroyed areas of bone indicate that the scavengers' teeth occasionally had ground into and were pulled across the bone near the places where the cortex was penetrated.

The appearance of the damaged bone and the sites where it occurred distinguish this form of postmortem destruction from that caused by rodents. Damage from the gnawing of rodents, which produces distinctive closely spaced, paired, and shallow grooves, especially on bone promontories, often occurs on prehistoric skeletons from the Midwest and elsewhere (e.g., White 1991:Figure 18.5). The damage on the Norris Farms #36 remains, however, closely approximates the destruction of bone associated with canids on modern forensic cases (Haglund et al. 1988, 1989). Dogs and other canids, including coyotes and wolves, lived in prehistoric Illinois (Purdue and Styles 1986:19–20), and they apparently gained access to the Norris Farms #36 remains before burial.

The extent to which carnivores gnawed the skeletal elements varied considerably. Some victims' skeletons display no such damage, others are only minimally affected, and several are extensively damaged. In the most severe cases, carnivore damage is widespread throughout the bones available.
Figure 3. Cut marks on the superior surface of the second cervical vertebra.

Figure 4. Splintered bone and puncture marks from scavenging animals on an ilium.
Figure 5. The age-at-death distribution of 43 individuals who died violently compared to the remaining 221 people buried in the cemetery. The age and cause-of-death categories are expressed as percentages of the total cemetery sample of 264 skeletons.

for examination. Large portions of these particular specimens, including the ends of long bones, are destroyed.

**Victim Characteristics**

Of the 43 victims, 41 were greater than 15 years old at the time of death (Figure 5). A determination of sex from pelvic or cranial morphology was made for the majority of the adults, including most individuals included in the violent-death category. Eighteen males and an equal number of females are among the 41 adults. The percentages of male and female violent deaths relative to the number of adults in the collection for whom a sex could be determined are similar (male = 35 percent, female = 29 percent). Males and females occur in all of the adult age intervals shown in Figure 5.

Many of the people who were killed were experiencing some form of disability when they were attacked. These conditions included several affecting mobility: long-standing shoulder and hip dislocations; ribs with fractures showing an active bone response; and deformed, asymmetrical femoral heads. Others were suffering from infections that affected bone.

Forty-two percent of the 41 adult-victim skeletons showed evidence of a debilitating condition. This figure, however, underestimates impairment among the victims because many of their skeletons are incomplete. The fraction of disabled individuals increases to 58 percent in the 24 adults whose skeletons are reasonably intact (i.e., three-quarters or more of the following major bones are present: crania, scapulae, humeri, radii, ulnae, innominates, femora, tibiae, and fibulae). This figure must also be regarded as an underestimate because the identification of dysfunction is limited to abnormal characteristics of skeletal morphology.

**Victim Interment**

The people who died violently are represented by fully articulated skeletons, partially articulated body segments (often along with additional loose bones), or completely disarticulated skeletal elements. All partial remains, with one exception, were damaged by scavenging animals.

The graves of victims of violence were found throughout the cemetery, and each pit held the
remains of from one to five people. Most of these features contained only one skeleton. There were no instances of mass burials in single features indicative of the expedient interment of numerous people who died simultaneously.

Six graves contained multiple adult victims that satisfied the following criteria: their skeletons were in a similar state of articulation, they appear to have been buried at the same time, and a determination of sex was possible (except for one adult). Five of these graves contained adults of only one sex: Males were found in two pits and females in three features. Apparently, several people might die during a single episode of violence, and single-sex groups, presumably work parties, were often the target of attacks.

Victim Representativeness

The skeletons identified as belonging to victims of violence are only an imperfect approximation of the casualties experienced by this Oneota community. Some factors related to prehistoric behavior, bone representation and preservation, and analytical procedures serve to inflate this total, whereas others contribute to an underenumeration of such deaths. Nevertheless, the net effect of these ambiguities probably results in an underestimate of the violent deaths that took place.

A count based solely on unambiguous morphological criteria surely omits some fatalities from violence. It is unlikely that all fatal injuries would have affected one or more bones. This problem is compounded by the fact that it was not always possible to determine the origin of bone damage. Many of the Norris Farms #36 bones are broken, which is typical of archaeological samples. The conservative approach taken when separating different kinds of bone damage presumably resulted in the omission from further consideration of some fractures that occurred at the time of death. In addition, it cannot be assumed that all victims were recovered for burial in the cemetery. The disarticulated and carnivore-damaged skeletons show that their deaths often occurred in irregularly frequented places where remains would have been difficult to find.

Furthermore, only skeletons with cut cervical vertebrae, all lacking crania, are counted as decapitated. These skeletons, however, were not the only ones in the cemetery that were missing crania. The other skeletons without crania might have belonged to individuals who were decapitated. Nevertheless, all excavators are aware that bones are often inexplicably missing from archaeological skeletons. Their absence can reflect phenomena as diverse as particular mortuary customs, including the purposeful handling of skeletonized remains, and the postinterment disturbance of graves by animals. Concerning the latter, the loess soils on the bluffs flanking the Illinois River are riddled with the burrows of groundhogs that can displace large bones.

The count of victims presented here may be inflated by the burial in more than one grave of partially articulated body segments or completely disarticulated skeletal elements from single individuals. This pattern would require a wide dispersal of body parts, their discovery at different times, and eventual interment in separate graves. In addition, some instances of unhealed trauma may represent people who died from accidents as opposed to purposeful violence. One such individual, an adult male, is included in the violent-death total. This man’s femora, left humerus, left scapula, and right ilium have massive fractures lacking signs of healing. He was buried in an extended position, but broken bones were not in proper alignment. The skeletal elements affected, the diaphyseal location of fractures on large long bones, the unusually severe nature of the fractures affecting major bones, and the lack of either body mutilation or carnivore damage differentiate this skeleton from the remainder of the violent deaths.

The linkage made here between postmortem carnivore damage and violent death requires additional explanation. It is unlikely that every instance of carnivore feeding resulted in recognizable alterations to the bones recovered for burial. Alternatively, some instances of scavenger damage might simply reflect the passage of time between a death unrelated to conflict, perhaps while hunting, and the recovery of the body for burial. Carnivore gnawing, however, is closely associated with other signs of violent death. Bones showing evidence of unhealed trauma from injuries or mutilations occur in 20 of the 30 scavenger-damaged skeletons. Of the 10 individuals that exhibit only carnivore damage, four were partial skeletons buried alongside victims of violence whose bodies were in the
same stage of decomposition. The burial association and similar preservation characteristics suggest that these deaths were related to one another.

Two patterns among the violent deaths deserve further comment. First, there are many more adults than juveniles. Second, skeletons with signs of debilitating conditions often occur in the violent-death category.

It is possible that children were often taken captive rather than killed, or that prolonged exposure contributed to the differential survival of their skeletonized remains. Both circumstances would reduce the number of immature skeletons found in the cemetery. Such biases, however, do not seem to have been instrumental in producing the markedly skewed violent-death age distribution because there is no underenumeration of juveniles in the collection (55 percent of all individuals buried in the cemetery were less than 15 years old).

People with some degree of dysfunction were often killed, perhaps because debilitating injuries or illnesses affected their ability to defend themselves or to escape. This observation raises a serious interpretive issue that has yet to be addressed satisfactorily in studies of archaeological skeletons: the nonrandom entry into the mortality sample of people experiencing different risk factors (Wood et al. 1989). Assuming people possessed differing capacities to respond effectively to life-threatening danger, the frequencies of infirmities in the victim sample are assuredly not the same as the prevalence of these particular conditions in the once-living population.

Regardless of how one chooses to weigh the skeletal evidence when estimating the portion of the community that died violently, changes to the total do not alter the following points. First, a sizable fraction of this community died violently. Second, adults were much more likely to experience such deaths than juveniles. Third, large numbers of both adult males and females were attacked. Fourth, partially incapacitated adults were often killed. Fifth, many corpses were mutilated. Sixth, each episode of violence resulted in few deaths. Seventh, a variable amount of time elapsed between death and the recovery of the remains for burial. Eighth, these deaths occurred at different times over a period spanning much, or all, of the duration of the cemetery.

Survivors

At least five people, all women, were wounded but survived. Three were scalped, and large portions of their cranial vaults feature an irregular external surface composed of porous to smooth-surfaced bone interrupted by many vascular channels. The edges of the distinctive areas of pathological bone are well demarcated in some places, but diffuse in others. Lesion margins do not conform to anatomical landmarks, particularly the temporal lines, that are associated with overlying soft tissue. They are, however, consistent with the distribution of the scalping cut marks described previously. These extensively remodeled areas of bone resemble a modern case of scalp avulsion (Ortner and Putschar 1985:92–93), as well as prehistoric crania from people who are thought to have survived being scalped (Berryman 1984:113–117; Gregg et al. 1981; Ortner and Putschar 1985:93; Zimmerman et al. 1981:208–212). During the historical period, some survivors of scalping lived for long periods of time following the traumatic incident (Hamperl and Laughlin 1959; Oswley and Berryman 1975; Reese 1940). Two other women had chert embedded in bones, a tibia and a rib. Post-traumatic remodeling of bone near the chert inclusions indicates that these people survived for an extended period after being injured.

LIFE AND DEATH IN AN ONEOTA COMMUNITY

Pattern of Violence

Unhealed trauma, mutilation, carnivore damage, body disposition, and differential skeletal articulation permit the reconstruction of the prevailing pattern of violent death. Taken together, the osteological and archaeological information shows that outbreaks of violence occurred regularly, and each attack resulted in only a few deaths.

The vulnerability of adults whose work would have exposed them in positions some distance away from the protection provided by the settlement is reflected in the age-at-death distribution of
victims. It seems that even people with disabilities were called upon to range widely in subsistence activities. Individuals with some form of prior dysfunction are represented among the carnivore-damaged and disarticulated skeletons. These remains are assumed to have belonged to people who died in remote locations.

People apparently were killed either while alone or in small groups, and the attacks continued throughout the period of cemetery use. Single-sex groups, presumably work parties, were often attacked, as indicated by several interments containing only males or females.

Warriors often lingered at the scene of an attack, as shown by many examples of decapitation and postcranial dismemberment. Nevertheless, effective aid was sometimes available to the victims, permitting the survival of a few women. Perhaps those particular incidents took place near the settlement.

The existence of a few survivors and variation in skeletal articulation and carnivore damage indicate that some people were rescued or their bodies were found shortly after an attack occurred, whereas others were not discovered until long after death. Unfortunately, it is not possible to estimate the length of time between death and recovery for burial, given the vagaries of preservation arising from the seasons of exposure, initial body disposition and condition, and scavenger access to the remains, all of which are unknown.

Alternative Scenarios

The skeletons and their mortuary context are not indicative of one or more massacres of large numbers of people. Different lengths of time elapsed between death and interment, as shown by variation in skeletal completeness, articulation, and carnivore damage. The distribution of regularly aligned and rarely superimposed mortuary features within a cemetery featuring an orderly arrangement of graves suggests that the pits containing victims of violence were dug at different times. If the deaths were from a single, or a very few, massacre(s) that resulted in the sudden and considerable loss of life, we would expect expedient mass interments instead of many individually dug graves containing at most only a few people. Burial in a common grave would be especially likely if the numerically depleted villagers were hurried because they were fearful of their attackers' return.

Although it is not possible to identify the perpetrators of the attacks, it is likely that the great majority of the victims died as a result of intergroup conflict rather than in accidents, during disputes among community members that flared into lethal confrontations, or from the intragroup elimination of antisocial deviants whose actions made them impossible to tolerate. Warfare, not within-group homicide, is indicated by several characteristics of the mortality sample. A large number of people were killed throughout the period of cemetery use. This level of intragroup violence would have resulted in a fissioning of the community and, hence, a lessening of within-group tensions. Multiple individuals, instead of specially targeted people such as deviants, were often attacked. Children, an unlikely focus of extreme animosity, occasionally were killed. Corpse mutilation that involved the removal of body parts as trophies heralding the attacker's success was common, a practice most likely to occur among enemies.

Hardship

Essential community functions were quite likely disrupted by the threat of violence that resulted in the unexpected, premature, and proportionately great loss of life, especially of adults. The skeletons with injuries, mutilations, or carnivore damage, presumably an underestimate of violent death, are only the most archaeologically obvious result of this warfare.

Feelings of insecurity resulting in excessive caution when conducting subsistence practices would influence the success of food-procurement activities. This disruption might find expression in the size of the area regularly traversed by foraging parties, the number of people required to conduct resource-acquisition tasks reasonably safely, and the need for sentinels, which drains an already depleted labor pool. Regular access to resources located far from the protection provided by the settlement would be especially problematic. Difficulties arising from such situations would be compounded if acquisition strategies were pursued most efficiently by people working either singly or
in small groups. Isolated and, hence, vulnerable work parties would be particularly tempting targets, especially whenever their movements are highly predictable because of the restricted spatial distribution of resources harvested only at certain times of the year. Shortages stemming from a reduction in subsistence-strategy options would be aggravated by any outright destruction of crops in fields and in storage facilities.

Archaeologists have much to learn about the subsistence practices of this particular Oneota community. The information that is available, however, is provocative considering the strong possibility of the socially related circumscription of resource-procurement options. Styles and King (1990a, 1990b), who examined the plant and animal remains from nearby habitation features, found an atypical species composition. Their results show a lower than expected diversity in mammal and bird species and a limited use of wetland plants and hickory nuts. These researchers suggest that resource selection was adversely affected by a volatile social environment. Because this inference is based on a small sample, they also caution that their findings might be an artifact of assemblage size, preservation biases, or the occupational history of the site. Much further work is needed to clarify the impact of endemic warfare on the subsistence practices of this community.

Disease and Disability

It is possible that a socially induced disruption of subsistence practices contributed to circumstances favoring the considerable disease load experienced by the Norris Farms #36 community members. Many Oneota skeletons exhibit skeletal conditions that originated from nutritional deficiency or infectious disease (Milner and Smith 1990). The latter include lesions from disease processes that took a chronic course and often resulted in an extensive bone involvement. A number of the skeletons display pathological responses suggestive of tuberculosis, and other lesions are consistent with a treponemal infection.

The Norris Farms #36 skeletons exhibit many cranial lesions that osteologists typically associate with anemia, usually iron-deficiency anemia in Precolonial American remains (El-Najjar et al. 1976; Mensforth et al. 1978; Ortner and Putschar 1985:251–263; Palkovich 1987; Steinbock 1976: 213–252; Stuart-Macadam 1985, 1989). The lesions, called cribra orbitalia and porotic hyperostosis, are more common in juvenile crania (< 15 years old, 81 percent of 75 individuals) than in adult skulls (> 15 years old, 16 percent of 95 individuals). As in all paleopathological identifications, the problem of differentiating lesions is not trivial (Ortner and Putschar 1985:137–138, 263) and, in this instance, the disease process probably reflects synergistic interactions between nutritional inadequacy and infection. Nevertheless, in the mortality sample the lesions that feature an active bony response are found primarily among individuals who died during the first several years of life. This finding is consistent with osseous responses that reflect illnesses experienced as children (Stuart-Macadam 1985). Inactive (i.e., remodeled) osseous lesions are also common in the skeletal collection, especially among individuals who died as juveniles or as very young adults (< 20 years). Bone lesion patterning across age groups, particularly their frequent occurrence in the immature fraction of the mortality sample, suggests that people with these forms of pathological involvement were susceptible to stresses of unknown origin that enhanced the likelihood of early death.

Lesions consistent with modern-day tuberculosis that resemble those found in other Eastern Woodlands populations, most often skeletons dating to the late prehistoric period (Buikstra 1981; Clark et al. 1987; Pfeiffer 1984), are also important in this context. While a debate revolves around the identification and nature of this particular osteolytic disease process, modern-day tuberculosis is a superb example of an opportunistic infection. Its prevalence varies widely depending on local circumstances that impinge on the health of the host populations. For example, a century ago Native Americans living on reservations in deplorable conditions amidst squalor, hunger, and demoralization from forced changes in their ways of life suffered greatly from tuberculosis (Clark et al. 1987; Hrdlička 1909).

Osteolytic lesions with little or no perifocal bone proliferation occur in a number of the Oneota skeletons. Four individuals with a presacral spinal involvement affecting multiple vertebral bodies, but typically sparing arches, provide the clearest match between lesion morphology and skeletal
tuberculosis. Destructive lesions centered on the sacroiliac and major appendicular joints of other skeletons might have had a similar origin. Pathological tubular bones of the hands and one foot in six children are suggestive of the early onset of the disease. Finally, 19 skeletons display lesions on ribs that resemble the pathological involvement in an autopsy sample that has been attributed to pulmonary tuberculosis by Kelly and Micozzi (1984). Considering the lesions as an aggregate, but recognizing that different disease processes can contribute to similar pathological responses in bone, it appears that this prehistoric population was afflicted by an infection approximating modern-day tuberculosis.

For the members of the Norris Farms #36 community, any diminished capacity to perform strenuous subsistence tasks must have added to problems stemming from a hostile social environment that restricted resource acquisition options and reduced the likelihood of their success. Injured survivors would have been a burden on the community during their convalescence. While only five such people are identified in the mortality sample, the likelihood of survival following an attack is surely underestimated because few kinds of antemortem trauma are unambiguously and necessarily examples of combat injuries. Furthermore, chronic diseases sapping the strength of community members would have affected their ability to engage in group maintenance, especially essential food-procurement activities. The reduced ability to carry out arduous tasks on a consistent basis would, in turn, compound any difficulties posed by external threats to subsistence security.²

Regional Conflict and Cooperation

The aggression involving the Norris Farms #36 community was clearly part of a broader regional phenomenon. Other late prehistoric skeletons from the central Illinois River valley exhibit evidence of violence, including projectile points embedded in bones and cut marks from mutilation (Conrad 1989, 1991; Morse 1978:116–117, 120–121; Neumann 1940). Unfortunately, detailed osteological information comparable to the Norris Farms #36 data is not available from sites elsewhere in the region. In addition, archaeologists previously have called attention to Mississippian and Oneota settlements in the valley that are fortified or situated in easily defended bluff-crest locations, such as the habitation site near Norris Farms #36 (Conrad 1989, 1991; Esarey and Santure 1990; Harn 1978, 1991; Santure 1981).

This Oneota community must have also participated in equanimous interactions with other social groups. The existence of such intergroup ties is indicated by Mississippian-style burial goods that resemble materials from distant regions (Santure and Esarey 1990). The presence of these objects is consistent with the late prehistoric distribution throughout the midcontinent of small amounts of selected artifacts (e.g., Williams 1980). Furthermore, some ceramic vessels from Norris Farms #36 and later central Illinois River valley sites display a combination of what archaeologists have traditionally recognized as Oneota and Mississippian vessel surface treatments and forms (Esarey and Santure 1990; Griffin 1946; Smith 1951:28, 31, 32, 40; Wray 1952). This union of distinctive vessel characteristics has been interpreted by regional specialists as indicating the regular and presumably cooperative interaction among people associated with different cultural traditions.

It is not surprising that evidence for both cooperative and antagonistic intergroup relationships occurs in the same archaeological context because these contradictory forms of behavior coexist among the inhabitants of hostile social environments (e.g., Ford 1972). The establishment and maintenance of contacts among members of different communities presumably were motivated in part by a desire to stabilize some aspects of a volatile social setting, thereby diminishing the hazards of everyday life. Unusual, highly valued, symbol-laden artifacts that over time pass through many hands and move across long distances are commonly used to seal interpersonal relationships in small-scale societies. The alliance-building efforts of the Norris Farms #36 community members, however, did not result in a cessation of the intergroup conflict experienced during the length of cemetery use.

Why They Fought

The Norris Farms #36 results show how warfare was conducted and its disruptive potential. Nevertheless, much additional research is needed to address the circumstances that favored the
initiation of hostilities, why they erupted into lethal violence, what perpetuated them, and why differences among antagonists were not easily resolved. At this point, only a few observations pertaining to these issues are possible because of the sketchy understanding of regional prehistory.

The distinctive cultural variant represented by the Norris Farms #36 community appears to have been a recent intrusion into the valley, presumably from areas to the north or west where Oneota sites are common (Esarey and Santure 1990). Thus, this site can be regarded as a frontier occupation that was part of a geographical expansion of culturally related populations. It is unknown whether the newcomers were pushed into the valley because of excessive pressures at their place of origin, or whether they were pulled into it by the attraction of the valley’s rich natural resources. Once there, however, intergroup violence posed an ever-present threat to the well-being of these people. Culturally affiliated sites in the valley are few in number, and judging by artifact inventories these people had contact, presumably both antagonistic and pacific, with others who are identified archaeologically as Mississippian. The latter had occupied parts of the valley for many generations prior to the Oneota arrival (Conrad 1989, 1991; Harn 1978, 1980, 1991).

It appears that accommodations to the constraints and possibilities of varied social and natural environments contributed to a shifting sociopolitical landscape featuring the fusion, fission, and movement of community and higher-level social groups. Disputes over the actual or anticipated use of resources, including those in rarely frequented, but traditionally claimed, hunting territories, were presumably initiated or exacerbated as groups jockeyed for position within and among resource-rich drainages. These valleys were the parts of the midwestern landscape that were considered prime areas for settlement.

Once a series of retaliatory killings started, it would have been self-perpetuating unless the cycle was halted by the spatial redistribution of people or the establishment of new sociopolitical relationships that reduced tensions and placated erstwhile foes. Despite the loss of life from attacks, the Norris Farms #36 community managed to sustain itself for a period lasting long enough for the cemetery to grow in size in an orderly fashion. During this time, they somehow prevented their enemies from gaining a decisive advantage; at least there is no evidence for massacres of a sizable fraction of the village population.

Viewed from an archaeological perspective spanning many generations, this region was the scene of shifting political factions and population movement. Judging from the skeletal and archaeological evidence, it seems likely that unresolved tensions often resulted in a chronic sniping at enemies. The Norris Farms #36 remains indicate that these hostilities occasionally evolved into bloody periods of fighting.

**SMALL-SCALE SOCIETY WARFARE**

**General Warfare Patterns**

Intergroup conflict is common in the small-scale societies of the ethnographic present, although the particular ways people fight and the number of casualties vary over time and space (bibliographies in Divale [1973], Ferguson and Farragher [1988]). Ambush-style tactics and indiscriminate, retaliatory actions occur frequently in these societies (Brookfield and Brown 1963:79; Chagnon 1983: 170–189, 1988, 1990; Ferguson 1990; Hallpike 1977:196–231; Heider 1970:99–133, 1979:99–112; Meggitt 1977; Morren 1984; Netting 1973, 1974). Episodes of violence result from chance encounters or organized raids, with the latter consisting of a few to many warriors pursuing loosely defined objectives often motivated by revenge. Surprise attacks on people found in vulnerable positions are common. Hostilities occasionally escalate to outright massacres and the destruction of considerable amounts of valued property. Such incidents are likely to occur in a climate of grievances over past wrongs and discrepancies in a group’s perceived strength compared with that of an enemy, especially if a particularly favorable opportunity to attack presents itself.

Regardless of their precipitating causes, antagonisms culminating in violence contribute to highly dynamic social landscapes. Communities and larger social groups fission, expedient alliances are formed for mutual defense, people move to safer locations, and boundary zones are depopulated (Brookfield and Brown 1963:77–81; Chagnon 1972, 1983, 1988; Ferguson 1990; Glasse 1968:87–109; Hallpike 1977:196–231; Heider 1970:99–133, 1979:88–112; Meggitt 1977; Morren 1984; Net-

**Oneota Warfare**

The pattern of violent death at Norris Farms #36 is for the most part consistent with the general picture of small-scale society warfare. Internecine conflict resulting in a gradual attrition of community members was a pervasive element in everyday life. Few individuals were killed in any single action, and these people were often vulnerable to surprise attacks because they were physically disabled or were exposed in locations far from the main settlement. Bodies were often mutilated to obtain status-enhancing trophies and, presumably, to show the attackers’ disdain for their opponents.

The high level of mortality from violence experienced by the men of this Oneota community approximates the proportions of males killed in several ethnographically recorded bellicose societies (Chagnon 1972, 1974:160, 1983:79, 1988; Glashe 1968:98; Heider 1970:231, 1979:106; Meggitt 1977:110). There are, of course, significant problems with the derivation of all such estimates, especially from the archaeological example.


In the Oneota example, the similarity in the proportions of males and females who died violently is unlikely to be a result of the sample of skeletons that happened to be buried in the cemetery. There is no evidence for the omission of a sizable segment of the population, such as the bodies of numerous village males who died elsewhere, perhaps when raiding distant settlements. The overall Norris Farms #36 age-at-death distribution is reasonable, and there are nearly as many males as females in the adult fraction of the burials. Furthermore, many more females would be needed in order to reduce the large number of violent deaths among women to the low levels often reported for other societies.

It is unclear why there was an exceptionally close correspondence between the large numbers of Oneota male and female violent deaths. Perhaps attackers found it difficult to add and, hence, to support additional females in their own households. Such a problem might be linked to resource unpredictability, especially food shortfalls, in a temperate environment where seasonal fluctuations in the edible biomass were compounded by intergroup hostilities curtailing acquisition strategies or increasing the uncertainty of their success. Alternatively, the regular taking of captives might not have been a realistic option in the prehistoric upper Midwest wherever population aggregates were widely spaced and whenever raiders were far from the safety of their own villages. Historic north-eastern warriors killed would-be captives, including females, if they hindered flight when pursuit was imminent (Heidenreich 1978; Tooker 1964).

**Eastern North America**


Judging from the largely uncontrolled and generally poorly reported osteological evidence, the lethality of the aggression that enveloped this Oneota community was high. Nevertheless, death from conflict in eastern North America was by no means unusual. Skeletons with unambiguous

Massacres of many people also took place in this broadly defined geographical region. One such example is the mass burial of disarticulated, mutilated, and carnivore-damaged remains at the fourteenth-century Crow Creek site in South Dakota (Zimmerman et al. 1981). This particular attack apparently occurred while the village palisade was being replaced and, hence, when the community was especially vulnerable. Ethnographic reports of warfare and archaeological sites such as Norris Farms #36 suggest that the Crow Creek massacre was only one facet of intergroup hostilities featuring repeated ambushes punctuated by devastating attacks at particularly opportune moments.

There can be little doubt that intergroup aggression was an important fact of life in many parts of prehistoric eastern North America, especially during the millennium preceding European contact. The unsystematically collected and reported osteological evidence for conflict throughout the late prehistoric Eastern Woodlands is consistent with the widespread occurrence of palisaded villages and southeastern Mississippian artwork featuring war-related themes.

COPING WITH CONFLICT

The consequences of warfare beyond its effect on mortality patterns is occasionally mentioned in reports on contemporary societies and historical-period Eastern Woodlands cultures. Food acquisition is disrupted through the curtailment of subsistence-related activities, such as the avoidance of certain productive areas, or the loss of crops and animals and the destruction of stored food (Brookfield and Brown 1963:79, 141, 143–144; Chagnon 1983:73, 179; Ferguson 1990; Hallpike 1977:196–231; Heider 1970:99–133, 311, 1979:88–112; Meggitt 1977:36, 94; Morren 1984; Netting 1973, 1974; Rappaport 1967:109–152; Thwaites 1896–1901:5:93, 31:85). Members of small labor pools are diverted from active participation in food procurement when they are needed as sentinels (Chagnon 1983:73; Heider 1970:58, 114–117, 1979:100; Meggitt 1977:92–94, 99; Sagard 1939:164; Swanton 1946:693; Trigger 1969:30). At least occasionally, the subsistence practices required for the persistence of small, essentially self-sufficient communities can be adversely affected when antagonisms between social groups flare into outright conflict.

The overt and indirect, but no less insidious, effects of warfare on the adaptive posture of this particular Oneota community presumably influenced its chance of survival as a viable entity in an aggressive environment. The long-term continuance of such a community would have been linked to the group’s ability to extricate itself from a dangerous situation. Flight and alliance formation would have been two obvious solutions to a high-risk social environment.

The feasibility of flight depends on the distribution of land that can be claimed or seized as well as the disposition of potential antagonists and allies. For the Norris Farms #36 group, the choice of alternative areas for settlement was constrained by the discontinuous nature of the most productive land in the midcontinent, principally the river valleys. Free movement to new locations was also limited by the prior occupation or use of prime resource zones by roughly equivalent and self-interested social groups. This is a population-pressure argument insofar as social tensions are likely to be exacerbated in situations where there is real or perceived competition over limited, spatially
fixed resources. Violence is certainly not the only solution to such disputes, but it is a common outcome.

The alliance-formation option, assuming willing neighbors can be found, expands the number of cooperating residential communities through the establishment and reinforcement of the intergroup linking mechanisms that characterize tribal-scale societies. Such more-or-less equitable alliances can resolve the problems faced by threatened populations (e.g., Gregor 1990). These situations, however, also increase the likelihood for the development of unfavorable, undesirable, and imbalanced relationships among ostensibly cooperating groups and, hence, create tensions that eventually tear alliances apart. The short-term necessity of mechanisms fostering close intercommunity ties might obscure the long-term danger to individual group autonomy of forced associations favoring the development of asymmetric relationships. The likelihood of accepting disadvantageous social or economic roles presumably increases as hard-pressed populations become ever more desperate to alleviate a predicament for which there are few avenues of escape.

Alliance formation in the face of severe external threats would also favor the development of stronger means of dampening internal tensions through the mediation of disputes and the more effective coordination of war-related actions. A clearer identification of group members in contrast to behaviorally distinguishable and potentially hostile outsiders increases the definition of cleavage planes between separate constellations of affiliated communities. The outward deflection of the divisive interests of the participants in multicomunity middle-range social formations, especially male status-seeking adventurism, and its orientation toward designated traditional enemies serve to promote some degree of within-group equanimity. Furthermore, the cultural approval of bellicose behavior rewarding active participation in raids serves to perpetuate intergroup enmity.

For any number of difficult-to-identify and context-specific reasons, some small-scale prehistoric societies were simply more successful than others in a competitive environment where tensions escalated into outright violence. For the Norris Farms #36 community, risk was clearly related to the social setting. Tactics for lowering intergroup antagonisms did not eliminate the threat of violence during the period of cemetery use, despite this community’s participation in social networks that involved the transfer of unusual items. Perhaps tension-reducing options were difficult to put into effect or were not pursued vigorously because they were undesirable.

The Norris Farms #36 example illustrates the pressures that can be brought to bear on middle-range societies by their similarly structured neighbors. It underscores the arguments of anthropologists who consider competitive social environments as an important element contributing to the formation of more inclusive and elaborated social formations (Anderson 1990; Carneiro 1970, 1981, 1990; Cohen 1984; Service 1971:101–109, 134–143; Webster 1975; for the Iroquoian area of the Northeast see Engelbrecht [1985], Trigger [1976:158–163], and Tuck [1971:196–225]; for the Creek Confederacy see Smith [1987:129–142]). Middle-range societies are continually jockeying for advantageous positions using whatever means are at their disposal. The extension and reinforcement of social-integrating institutions enhance the mobilization potential of cooperating people. Response effectiveness is a function of population size and the organizational structures for the coordination of group actions. In short, local autonomy would not be as successful as a strength-through-numbers strategy that incorporates a dampening of tensions among allied political factions, an increase in strength through united action, and the identification of common enemies.

CONCLUSION

Archaeological discussions of warfare are rarely supported by empirical information on the nature and intensity of conflict experienced by small-scale societies in Precontact settings. Skeletons from an Illinois Oneota site provide an estimate of warfare-related mortality at one time and place in the late prehistoric Midwest. Episodes of violence were not mere caesurae in an otherwise seamless and harmonious way of life, judging from the number of victims and their distribution throughout the cemetery.

This archaeological example shows that prehistoric societies in eastern North America could become embroiled in warfare resulting in a noticeable increase in the risk of premature death,
especially for adults. Further archaeological and osteological work is needed to evaluate the strong possibility that conflict contributed to considerable hardship through a disruption of critical subsistence practices. Such situations establish a climate where people would view increasingly desperate measures as practicable options for ameliorating their plight.

The Norris Farms #36 cemetery provides a narrow, if unusually vivid, view of past social relations at one time and place. Nevertheless, it underscores the importance to cultural trajectories of social tensions requiring resolution. Taking a geographically broader perspective, structurally similar prehistoric groups seem to have possessed unequal socially determined access to basic resources that in a less dangerous setting would have been readily available in abundance without undue cost.

While the severity of intergroup antagonism and its consequences undoubtedly varied throughout the midcontinent, the hostilities that engulfed this Oneota community were not unusual. Unfortunately, archaeologists have only a hazy understanding of who fought, why conflicts broke out, and how participants were affected by warfare. Anthropologists agree that warfare became more intense in the postcontact era when European powers were expanding their spheres of influence and pursuing their own economic and political agendas. This conflict, however, built on earlier hostilities that at times resulted in many deaths, produced hardship, displaced people, and prompted the formation of more elaborate forms of social integration.

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NOTES

1 The Norris Farms #36 skeletal-lesion frequencies are at the high end of the ranges reported for similar forms of pathological bone involvement in sizable North American archaeological collections. Unfortunately, the interpretation of comparisons of lesion frequencies is not straightforward because such figures are derived from nonsurvivor samples, i.e., they are not the same as the prevalence of particular conditions in once-living populations. There are also many recording and reporting inconsistencies in the paleopathological literature, and numerous problems arise from variation in sample composition and skeletal preservation.

2 The points presented here are consistent with the comments of Buikstra et al. (1988) and Pfeiffer (1984) who call for additional research on how warfare, among other factors, might have contributed to differential disease patterns in the Native American populations of the Eastern Woodlands.

3 Interested readers are referred to Anderson (1987, 1990) for a thought-provoking excursion into the information on warfare in the Southeast, especially the ethnographic literature.

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