WAR AND DEFENSE ON *CERROS DE TRINCHERAS* IN SONORA, MÉXICO

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At the turn of the twenty-first century, critics suggested that warfare profoundly shaped cultural change in the prehistoric Southwest/Northwest. This challenge was part of a much larger debate concerning violence and warfare before civilization. It has become clear that scholars need to consider violence and warfare to understand the aboriginal history of the Southwest/Northwest. Increasingly, archaeologists are asking: How did indigenous peoples practice war? How did warfare relate to social organization, adaptation, and religion? How did these relations change over time? Many authors have argued that we best answer these questions in well researched and carefully considered case studies. In Sonora, México, prehispanic peoples constructed terraces on isolated volcanic hills and built rooms, compounds, and other edifices on their summits to create cerros de trincheras. *The Cerros de Trincheras and Defense Project mapped and collected Trincheras Tradition* cerros de trincheras *in Sonora. We used Geographic Information Systems analysis to demonstrate how these* cerros de trincheras *were defensive, what defenses protected, and how these relationships changed over time. This article compares Trincheras Tradition* cerros de trincheras *to general models of "primitive" war, Yuman warfare, Andean Colla pukaras, and New Zealand Maori* pas *in order to infer a Trinchereño way of war.*

Al inicio del siglo XXI los críticos sugirieron que la guerra delineó de manera profunda el cambio cultural en el Suroeste/Noroeste prehispánico. Esta interpretación es parte de un debate mayor sobre las condiciones de violencia y la práctica de la guerra antes de la existencia de las sociedades urbanas, resultando claro que se debe tomar en cuenta la violencia y la guerra para entender la historia nativa del Suroeste/Noroeste. Los arqueólogos se preguntan con mayor frecuencia ¿Cómo es que los pueblos indígenas practicaron la guerra? ¿Cómo se relacionan la guerra con la organización social, la adaptación y la religión? ¿Cómo cambiaron con el tiempo estas relaciones? Muchos autores han argumentado que es mejor responder a estas preguntas con estudios de caso bien investigados y consideraciones cuidadosas. En Sonora, México, los pueblos prehispánicos construyeron terrazas en cerros volcánicos aislados, además de cuartos, recintos y otros edificios en las cimas, creando lo que se conoce como cerros de trincheras. *El proyecto Análisis de los Aspectos Defensivos de los cerros de trincheras, mapeó y realizó recolecciones de superficie en cerros de trincheras de la Tradición Trincheras en Sonora durante 2006. Utilizamos análisis de Sistemas de Información Geográfica para demostrar cómo estos* cerros de trincheras *fueron defensivos, qué fue lo que protegieron y cómo fue que estas relaciones cambiaron a través del tiempo. En este artículo comparamos los* cerros de trincheras *de la tradición Trincheras con modelos generales de guerra "primitiva," formas de guerra Yumana,* pukaras *Colla andinos y* pas *de los maoríes de Nueva Zelanda, con el fin de inferir una forma Trinchereña de hacer la guerra.*

O
n September 1, 1857, several hundred Quechan, Mohave, and Yavapai warriors rose before first light to attack a settlement of Maricopa living near Pima Butte, Arizona (Kroeber and Fontana 1986). The Maricopa had abandoned their homeland on the Colorado River and established their village among the Akimel O'odham on the Gila River to escape the warfare that racked Yuman peoples. The Quechan warriors and their allies traveled over 260 km to carry the war to the Maricopa. The attacking warriors first ran through the sleepy settlement assaulting any early risers. Yuman war parties used such run-through attacks to surround and annihilate small villages (Kroeber and Fontana 1986). But on this morning, too many Maricopa warriors rushed

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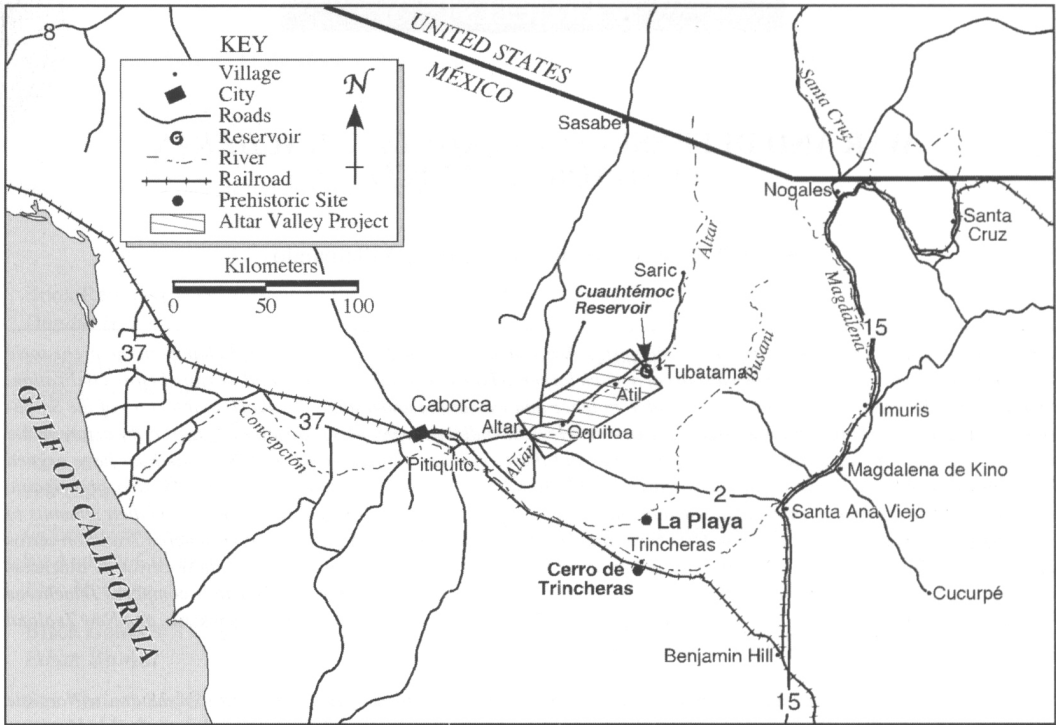
Figure 1. Location of Río Altar and the Río Magdalena.

from their homes, so the attackers formed into ranks on the edge of the village to invite a ritualized battle. While Maricopa elderly, women with children, and infirm fled to the sanctuary of a nearby hill, the defending warriors formed ranks that matched those of their assailants. The first row of fighters carried ironwood clubs, leather shields, and stone knives ready to close with the enemy. Behind them stood archers and, in the rear, women and boys armed with staves. The aggressors forced the defenders from the settlement and began looting the village. The spoil-laden Yavapai abandoned their Quechan and Mohave comrades before the Maricopa's Akimel O'odham allies arrived on horseback with guns. With the appearance of mounted support, the Maricopa took heart and charged back into the village, while the O'odham flanked the attackers. The invading army dissolved into a rout. Most of the Quechan and Mohave died that day, and only a handful returned to their Colorado River homes.

At the end of the twentieth century, many archaeologists regarded the battle at Pima Butte as an anomaly, a violent incident notable for its rarity. They viewed warfare as a sporadic occurrence in the southwest of the United States and northwest of México (the Southwest/Northwest) that had little or no consequences for understanding the aboriginal history of the region (Cordell 1997). By the turn of the twenty-first century, other authors argued that warfare profoundly shaped social organization, economies, and cultural change in the prehistory of the region (Haas 1990; Haas and Creamer 1996; Kohler et al. 2014; LeBlanc 1999, 2007; Lekson 2002; Rice and LeBlanc 2001; Turner and Turner 1998; Wilcox 1979; Wilcox and Haas 1994). This challenge was part of a much larger debate concerning violence and warfare before civilization (Arkush 2011; Arkush and Allen 2006; Clastres 1994; Dye 2008; Ferguson 2008; Gat 2008; Keeley 1997; Kelly 2000; LeBlanc and Register 2003; Martin et al. 2012; Nielson and Walker 2009; Osgood 2006; Otterbein 1997; Vandkilde 2003).

From these debates, it has become clear that scholars need to consider violence and warfare to understand the aboriginal history of the Southwest/Northwest (Cameron 2013; Nicholas and Crown 2008; Solometo 2006). Increasingly, archaeologists are asking: How did indigenous peo-

Figure 2. Cerro de Trincheras, photo by Adriel Heisey.

ples practice war? How did warfare relate to social organization, adaptation, and religion? How did these relations change over time? Many authors have argued that we best answer these questions in well researched and carefully considered case studies (Haas and Creamer 1996; Lekson 2002; Rice and LeBlanc 2001; Wallace and Doelle 2001).

In the Sonoran Desert, prehispanic peoples constructed terraces on isolated volcanic hills and built rooms, compounds, and other edifices on them to create settlements called *cerros de trincheras*. Some archaeologists interpret these sites as forts and as evidence for warfare (LeBlanc 1999; Wallace and Doelle 2001). Other scholars have argued that they were ritual spaces and architectural symbols of power and dominance (Downum 2007; Nelson 2007; O'Donovan 2002; Villalobos 2011). People of both the Hohokam Tradition in southern Arizona and the Trincheras Tradition of northern Sonora, México, built *cerros de trincheras* (Fish et al. 2007). At around A.D.

1300, the Hohokam Tradition replaced the Trincheras Tradition in the Río Altar, Sonora (Figure 1). Trinchereños aggregated in the Río Magdalena, Sonora, where they built the massive site of Cerro de Trincheras (Figure 2).

The Cerros de Trincheras and Defense Project mapped and collected Trincheras Tradition *cerros de trincheras* in the Río Altar and Río Magdalena. The project used Geographic Information Systems (GIS) analysis to demonstrate how these *cerros de trincheras* were defensive, to determine what the defenses protected, and to evaluate how these relationships changed over time. In this article, we compare Trincheras Tradition *cerros de trincheras* to general models of "primitive" war, Yuman warfare, Andean Colla *pukaras*, and New Zealand Maori *pas* in order to infer a distinctive Trinchereño way of war. We argue that this way of war developed in the conflicts between Hohokam peoples and Trinchereños to counter offensive tactics like those at Pima Butte.

A Model for Aboriginal War in the Sonoran Desert

Each society has its own way of war. In the Southwest/Northwest, the Yumans of the lower Colorado River had the most intense and formalized way of war (Kroeber and Fontana 1986). They fought in ordered ranks arranged by weapon type, fielded armies of hundreds of warriors, practiced battle by champions, had career warriors, waged war to seize territory as well as for revenge or captive taking, sent armies hundreds of kilometers to do battle, and experienced conflict as a regular aspect of their lives. Yuman and Trincheras warfare must have shared many things. These desert farmers had comparably sized societies, similar technologies, and analogous economies. Yuman warfare, however, differed in a fundamental way from late prehispanic conflict among Hohokam and Trincheras peoples. The intensity and regularity of Yuman warfare did not drive people to relocate their settlements to high ground or to fortify their villages (Kroeber and Fontana 1986:149–155). Yumans did not build *cerros de trincheras*.

Yuman warfare provides a starting point for interpreting Trincheras Tradition *cerros de trincheras*. Following Allen and Arkush (2006:7), we draw on global studies of Neolithic warfare and on military science. Geographic Information Systems provides a method for interpreting defense on *cerros de trincheras*. In our conclusions, we will return to the differences between Yuman and Trinchereño warfare and add comparisons with Andean *pukaras* and New Zealand *pas* to answer two questions. Does the presence of fortifications in the prehispanic case indicate more intense or formalized warfare than in the historic Yuman case? Do these fortifications suggest a different way of war?

General Principles

Several principals guide our interpretations of Trincheras Tradition *cerros de trincheras* and war. First, fortifications are expensive to build and inconvenience mundane life. Therefore, people will do the minimum to protect themselves and will abandon fortifications when the perception of threat passes (Arkush and Stanish 2005:7; Roscoe 2008:509; Solometo 2006:36). Second, the form of fortifications reflects three things: (1) topogra-

phy and environment; (2) the offensive capabilities and tactics of the attackers (Arkush and Stanish 2005:7); and (3) what the defenders wish to protect or, put another way, what the attackers wish to gain (Keeley et al. 2007). Third, we reject the dichotomy of ritual, ceremony, and belief vs. war. People always ritualize war (Vega 2009:262). Violence occurs on a physical terrain but also in a spiritual landscape, and fortifications have symbolic potency as well as military uses (Arkush and Stanish 2005:20).

Topography and Environment

In the Sonoran desert, water and visibility directly affected warfare. Settlements clustered around permanent and semipermanent water sources such as the Río Altar and the Río Magdalena. War parties had to cross wide expanses of thinly populated or unpopulated territory with temporally and spatially sporadic water sources. The basin and range topography includes high mountains and flat plains. Volcanic dikes and fissures in the plains produced isolated volcanic hills, which are not distributed evenly over the landscape but cluster depending on the geology of block faulting. The Trinchereños built *cerros de trincheras* only on hills located near water. There are many defendable hills far from water and there are excellent locations for agricultural villages removed from isolated volcanic hills. Attackers could move easily across the flat plains and up the river valleys, but in doing so they would come under observation from defenders or lookouts on the hills. Attackers had to plot their routes based on water availability and undetectability. Quechan warriors may have scheduled their attack on the Maricopa in the scorching month of August because the summer monsoons would have created temporary water sources along their march.

Capabilities and Tactics

Archaeologists have often discussed warfare as if it was something set aside from the rest of social practice (Vandkilde 2003:127). But war does not exist, and therefore cannot be understood, apart from its social context. Scholars can analyze a society's way of war in terms of a nested hierarchy of constraints divided between infrastructure, social structure, and superstructure (Ferguson 2008:36–37). Infrastructure defines how people

will fight war, what they will fight over, the size of war-making units, the possible weaponry, the scheduling of war parties in relation to subsistence activities, and the availability and costs of essential resources. Social structure refers to all social interactions that might be included in kinship, politics, and economics. Finally, superstructure consists of beliefs, aesthetics, religion, and ideology. These three dimensions of cultural life exist only in an interdependent, dialectical relationship, but the distinctions between them are useful for structuring our discussions.

Trinchereños and Yumans had similar infrastructures. With communities rarely larger than 2,000 people, the largest armies would have included up to 1,000 fighters. Yumans recognized two types of war parties: (1) small raiding parties and (2) large expeditions (Kroeber and Fontana 1986:35). In any given year, warriors would launch many raids, but multiple years passed between expeditions. Small raiding parties would enter enemy territory to ambush people. Large expeditions sought to overwhelm and massacre settlements in run-through attacks. Failing to do that, the attacking army would engage the enemy in battle. An aggressive army would have to finish such an attack quickly because, as at Pima Butte, reinforcements would come from other villages to aid the defenders. Armies also engaged in prearranged ritualized battles with combat between champions proceeding or superseding a general melee. If opposing forces were evenly matched, they would exchange arrows and suffer few wounds because neither side would close for deadly combat.

Men engaged in warfare on a seasonal basis when not busy planting or harvesting. Yuman warfare focused on people and land as the main objectives of conflict (Kroeber and Fontana 1986). Attackers could kill people in blood feuds, take scalps, heads, or other trophies, or seize captives. Continued conflict could drive people, like the Maricopa, from their agricultural lands.

The weapons of the Yumans—leather shields, clubs, self bows, stone knives, and staves—correspond to the prehispanic possibilities. Additional prehispanic weapons could have included maces and wooden wands that could have been arrow-fending sticks or swords, (Peckham 1965). Yuman bows usually shot light arrows that would

wound but rarely kill and had a range of 100 m (Kroeber and Fontana 1986:73). Archaeologists have found no evidence of compound bows or other powerful, more deadly bow types in the region (Peckham 1965). Slings would have been possible, but archaeologists have found no evidence of them. We can reasonably expect that Trincheras Tradition warfare involved ranged weapons with limited reach and killing power. Lethal battle would have required warriors to close and engage in hand-to-hand combat. Where range weapons are weak, defenses are needed not so much to shield defenders from projectiles as to elevate them. From the heights, defenders can bring fire on attackers before the attackers can fire on them (Arkush 2011:68). Defenses also serve to impede the attackers' ability to engage in hand-to-hand combat and/or advantage defenders in such combat.

The means of transportation affects tactics and the conduct of battles, the speed and range that warriors can move across the landscape, the ability of armies to provision themselves, and what spoils successful raiders may carry away. The only means of transportation available to prehispanic Sonoran Desert warriors was human bearers. Lacking beasts of burden and usable waterways, war parties could count on only the food they carried to sustain themselves and they could not carry away large quantities of material goods or foodstuffs. Unlike a horse that will eat grass and carry human food, human bearers eat the food they carry, and a point of diminishing returns is reached at 100 km (Malville 2001).

Archaeologists generally describe the social structure of Southwest/Northwest agricultural societies as middle range. Such societies lack standing armies or professional soldiers, but some individuals may distinguish themselves as career warriors (Kroeber and Fontana 1986:47–48). The Yumans had both moral leaders and war chiefs. No leader could command or coerce individuals into going to war. Rather, war chiefs had to raise their raiding parties or armies through persuasion, charisma, and guile. This lack of command power and division between peace and war leaders is common in Southwestern/Northwestern cultures and in Neolithic societies in general (Arkush 2011:67; Ferguson 2008:44–45).

War also affected social structure and quotidian

life. Yumans waged a war of attrition that rarely produced large numbers of casualties in a single engagement (Pima Butte being a notable exception) but over the long term resulted in many deaths. The threat of death or captivity constantly hung over all Yuman people. Communities always contained captive foreign women and children.

War always interrelates with superstructure including ritual and religion (Arkush 2011:68; Arkush and Stanish 2005:10; Underhill 1972:127–141). Yuman war involved elaborate rituals to protect warriors and dreaming shamans to foretell the outcome of attacks and to choose auspicious dates for campaigns (Kroeber and Fontana 1986:44). The supernatural also threatened the warrior. Kroeber and Fontana (1986:52) noted that "Maricopa fighters knew the names of mountains in their enemies' territories and they knew these peaks could work them ill." If a warrior died in enemy country, his soul would wander and not find peace. In Yuman culture, and in virtually every other Southwestern/Northwestern culture, warriors who killed or had contact with an enemy had to undergo elaborate purification rites (Underhill 1972:137–140). In the minds of Southwestern/Northwestern warriors, supernatural dangers loomed as large as the physical adversities and the dangers of combat. By the same token, the enemy's sacred places also could be attacked, conquered, and purified to cancel their malevolent powers (Kroeber and Fontana 1986:52).

Yuman and "Primitive" Warfare

The offensive capabilities and tactics of Yuman warriors mirror more generalized discussions of "primitive" warfare (Arkush and Allen 2006; Arkush and Stanish 2005; Dye 2008; Gat 2008; Keeley 1997; Keener 1999; LeBlanc 2007; Nielson and Walker 2009; Osgood 2006; Parkinson and Duffy 2007; Roscoe 2008). Unlike many "primitive" warriors in the world, however, Yuman tactics did not include fortifications. Indeed, there seems to have been little reason for Yuman peoples to suffer the inconveniences of fortified living. Kroeber and Fontana (1986:142) recorded 15 expeditionary attacks on towns, and the aggressors won only two of these. In the other 13 cases, the villagers dealt the attackers stunning defeats much like Pima Butte. Defenders fought on familiar ground with their families at their backs. In each

defeat, the warriors in the village checked the initial run-through attack and, with the quick arrival of reinforcements from adjacent villages, overwhelmed the aggressors in battle.

People build fortifications first and foremost to deter attacks from occurring by minimizing the damage that aggressors can inflict and by maximizing the attackers' expectations that they will lose their lives if they try (Roscoe 2008:508). Allen and Arkush (2006:7) point out that, in middle-range societies, fortifications may exceed the offensive capabilities of attackers due to the limits of weaponry, the lack of command power, and logistical limitations. If warriors felt they could overwhelm a fortified position, they would attack it directly. More commonly, they might make an indirect attack by assaulting workers in the fields or outside buildings to draw defenders into the open to fight (Keener 1999). Solometo (2006:36) notes that concentrating people in fortified places might increase their security, but that raids and indirect attacks would leave crops and other resources vulnerable. Thus, tensions may exist between personal security and economic necessity.

The most common form of fortification is the fortified village or settlement (Arkush and Stanish 2005; Keeley et al 2007; Keener 1999; Parkinson and Duffy 2007; Roscoe 2008:507). In Neolithic societies, such defenses protect people from surprise attack at night. During the day, people are out in their fields. But at night, curtain walls or palisades require guards, or else attackers can easily breach them. The most obvious purposes of defensive works are to slow and tire attackers, to force the aggressors to scramble so they cannot use weapons, and to channel attackers into choke points so that defenders can concentrate force on a small number of aggressors. Defenses may not block attackers, but rather ensure that aggressors cannot escape the village alive. The placement of domestic features such as plantings, houses, and fences may create entanglements that confuse and divide attackers so that defenders can kill them. Roscoe (2008:510) argues that such entanglements are most common and effective when weaponry does not include deadly ranged weapons. Attackers cannot breach such defense in depth in a single spot.

Siege warfare presents nearly insurmountable logistical problems for attackers in Neolithic war,

especially when human bearers are the only bur-
den carriers (Allen and Arkush 2006:7; Arkush
and Stanish 2005:9). Defenders can lay up stored
food and thus have the resources to wait out a
siege. Attackers cannot carry enough food to feed
themselves for long periods or farm their own
fields. Also, a besieging force leaves their homes
vulnerable to attack. Without command power, a
leader could not force his warriors to stay in posi-
tion if they feared for their families.

GIS Analyses

Archaeologists studying Neolithic warfare in the
Pacific have pioneered the use of GIS to study
fortified hills (Field 1998; Jolivette et al. 2003).
These analyses used least-cost movement analyses
because the higher the cost of movement, the more
the hill and defensive architecture impedes at-
tackers. We will only summarize our GIS analysis
here. A more detailed discussion of the analysis
is available in Supplemental Text 1.

If terraces, walls, and other features on these
hills were for defense, we would expect them to
provide protection, impede advance, and be con-
tinuous and closed. If terraces, trails, ramps, and
stairs decreased movement costs from the natural
slopes of the hill, then they most likely are there
to make domestic activities on that hill easier
rather than to discourage attack. If the sum total
of natural slopes and architectural features are not
continuous and closed, then it seems more likely
that the architectural features were there to create
privacy, delineate social space, embody meaning,
or give physical expression to social ranking.

Geographic Information Systems least-cost
movement analysis begins with the setting of a
numerical value to determine the highest cost of
movement that will be acceptable as a path. We
set these values using the Yosemite Decimal Sys-
tem, which ranks climbing routes from 1 (a level
walk) to 6 (a technical climb). A rating of 3 refers
to a route that requires occasional use of hands (a
three-point climb). This is sometimes called
"scrambling." Thus, a terrace wall of .5 m or less
would serve as a step and facilitate movement (a
1 or 2 rating) and a higher terrace wall would re-
quire scrambling to get over. Attackers would be
seriously compromised on a route in which they
had to scramble, and we set the highest cost of
movement to correspond to scrambling. We then
used the GIS program to plot every possible route
of movement that can be achieved without ex-
ceeding the value for scrambling.

We did this for the natural hill and then added
the cultural features to the hill and did the analysis
again. A comparison of these two analyses told
us how the features modified the natural hill. If
features served to decrease movement costs of
the natural slope, we would expect the plot of
these routes to look like a braided stream with
many possible routes to ascend the terrain. If fea-
tures served to restrict movement (and thus to fa-
cilitate defensibility), we would expect these fea-
tures to increase the movement costs of the natural
slope to scrambling or higher and to channel
movement into a small number of routes blocked
by zigzag gates, walls, or other features.

Our GIS analysis demonstrated how Trincheras
Tradition *cerros de trincheras* were defensive. By
comparing the GIS results to artifact and feature
distributions, we inferred what the defenses pro-
tected. Comparison between *cerros de trincheras*
from two phases allowed us to evaluate how these
relationships changed over time.

Trincheras Tradition *Cerros de Trincheras*

We studied three Trincheras Tradition *cerros de
trincheras*: (1) the Altar phase sites of Tío Benino
and (2) La Hormiga on the Río Altar; and (3) the
Cerros phase site of Cerro de Trincheras on the
middle Río Magdalena. These sites date roughly
from A.D. 1000 to A.D. 1450 (McGuire and Vil-
lalpando 1993, 2011; O'Donovan 2002). The ter-
races that covered these hills provided platforms
for households, ritual features, and craft work-
shops. They are not agricultural terraces.

The major sites of the Sonoran Trincheras Tra-
dition cluster in the Magdalena, Altar, and Con-
cepción river valleys (Figure 3). Trinchereños cul-
tivated corn, beans, squash, cotton, and agave,
and lived in pithouse villages. Artisans in these
villages made jewelry from marine shell. We have
defined two Trincheras Tradition phases in the
Altar valley (McGuire and Villalpando 1993): (1)
Atil (A.D. 700–1000); and (2) Altar (A.D. 1000–
1300). In the Realito phase (A.D. 1300–1450),
Hohokam populations from the Pagagueria dis-
placed Trincheras peoples from the Altar Valley.
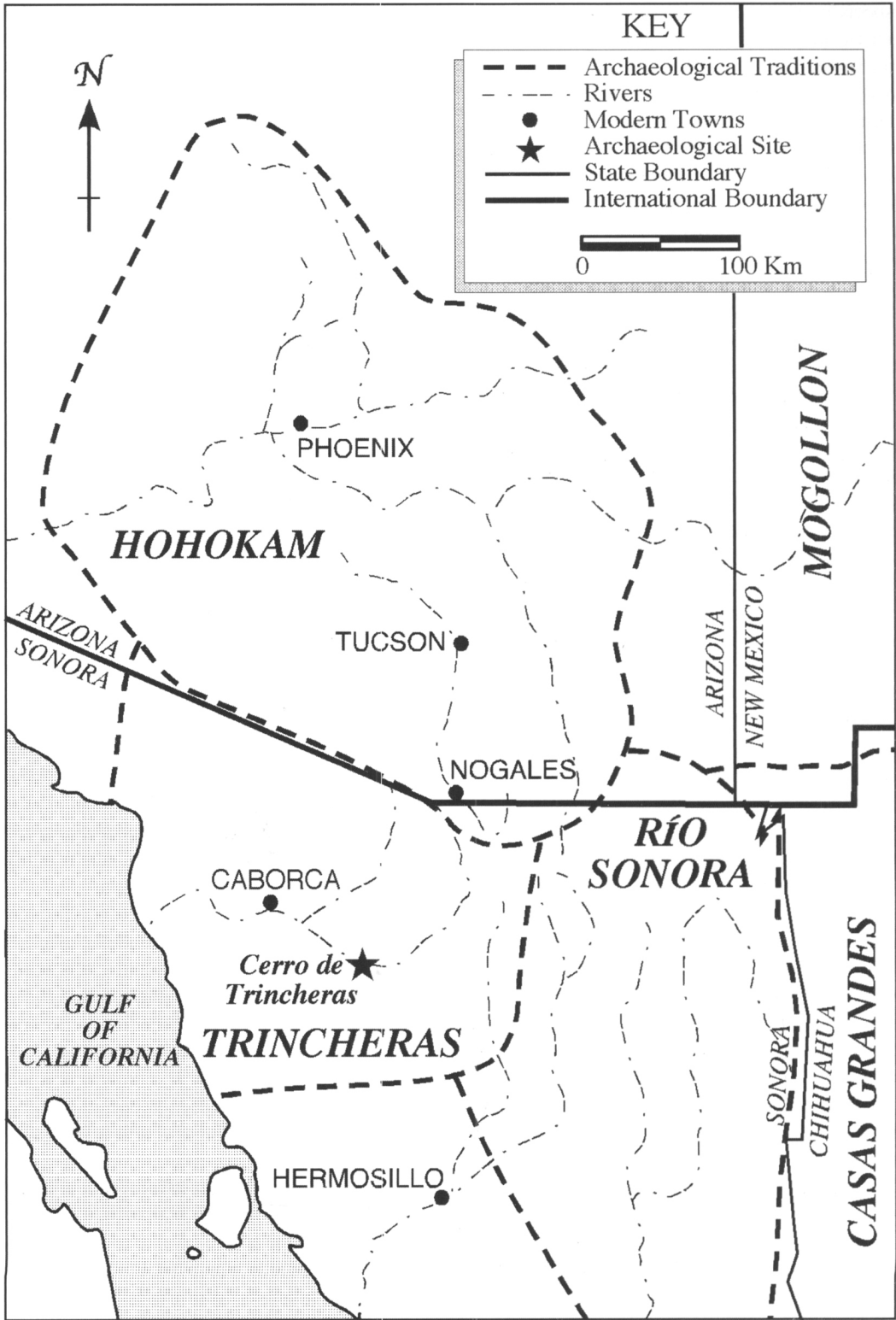Trincheras Tradition occupation continued in the

Figure 3. Archaeological Traditions in Sonora and Southern Arizona.

Río Magdalena during the El Cerro phase (A.D. 1300–1450) (Fish and Fish 2007).

The initial village agriculturalists who occupied both valleys participated in the Trincheras Tradition (Fish and Fish 2007; Hinton 1955; McGuire and Villalpando 1993, 2011:847–848). They made coil-and-scrape Trincheras Plainwares and Trincheras Purple-on-red and used a distinct concave metate (Greenwald 2011). During the Atil phase, Trinchereños lived in pithouse villages on the valley floor. The Altar phase settlement pattern included such villages and *cerros de trincheras* on many of the isolated volcanic hills. These *cerros de trincheras* frequently had a distinctive ceremonial feature that archaeologists call a corral. Farming villages appear to have been evenly spaced between these corrals (Fish and Fish 2007).

In the Realito phase of the Altar Valley, this material culture pattern changes dramatically from a Trincheras Tradition to a Papaguerian Hohokam assemblage from southern Arizona. Artisans now made paddle-and-anvil Sells Plain and Sells Red ceramics, and women ground corn in Hohokam-style trough metates. People lived in fewer but larger villages that they located on the terraces overlooking the river, and they built few *cerros de trincheras,* none with corrals. In the El Cerro phase of the middle Magdalena Valley, Trinchereños built Cerro de Trincheras, the population increased by a factor of two to three times, and they continued to make coil-and-scrape pottery and concave metates. The settlement pattern included villages on the valley floor and evenly spaced *cerros de trincheras* with corrals (Fish and Fish 2007; McGuire and Villalpando 2011). We argue that people from the Hohokam Papagueria displaced the Trincheras population in the Altar Valley to establish the Realito phase. Trinchereños left the Altar Valley and joined their kin in the middle Magdalena Valley, built Cerro de Trincheras as a primate center, and established the contemporary El Cerro phase.

Altar Valley Cerros de Trincheras

The two *cerros de trincheras* (Tío Benino and La Hormiga) that we investigated in the Altar Valley both dated to the Altar phase. They were part of a settlement pattern that included two types of habitation sites (1) six *cerros de trincheras* and (2) 29 valley-bottom villages/hamlets. We cannot determine whether the villages and the *cerros de trincheras* date to different epochs within the Altar phase, whether they were absolutely contemporary, or whether populations moved back and forth between the two site types during the phase. However, our GIS regional analysis suggests that each *cerro de trincheras* had a group of valley pithouse sites associated with it (Supplemental Text 1).

Tío Benino covers the peaks of two adjacent hills on the south bank of the Río Altar (Figure 4). Trinchereños built 288 terraces on the slopes of these two peaks with 35 structures and 14 additional features (Figure 5). We would estimate the village's population at between 250 and 450 people. Our survey found habitation terraces at all elevations on Tío Benino, with most domestic debris occurring on the lower terraces. We found no clearly definable elite barrio or elite artifacts. Our surface collections revealed no indication of agave cultivation and scant evidence for specialized craft production. We located few specialized ritual spaces including rock art and two plaza areas.

The construction of terraces on Tío Benino increased the cost of ascending the hill by at least 50 percent. The terracing on both of the peaks in this site, however, did not appear to funnel or channel movement into choke points or gates. Rather, the Trinchereños had covered the hill with entanglements. The myriad paths on the terraces might have been confusing to attackers and broken up offensive formations, but nowhere on the hill did we find fortifications that would have necessitated scrambling or that created a redoubt.

La Hormiga

La Hormiga is a prominent isolated hill located 4.25 km from the Río Altar. It consists of a single peak with a bench on its southeast side (Figure 6). The Trinchereños built features on both the bench and the peak. These features include 55 Circular Structures, seven miscellaneous features, nine walls integrated with six natural walls, six plazas, and eight gates, but only 30 terraces (Figure 7). About 25 percent of the features occurred on the bench and 75 percent on the peak. Walls, natural cliffs, and contiguous terraces with gates and stairs create a curtain wall surrounding the peak of the hill. We estimate the population of the community at between 70 and 140 people. We found a range of domestic trash but less di-
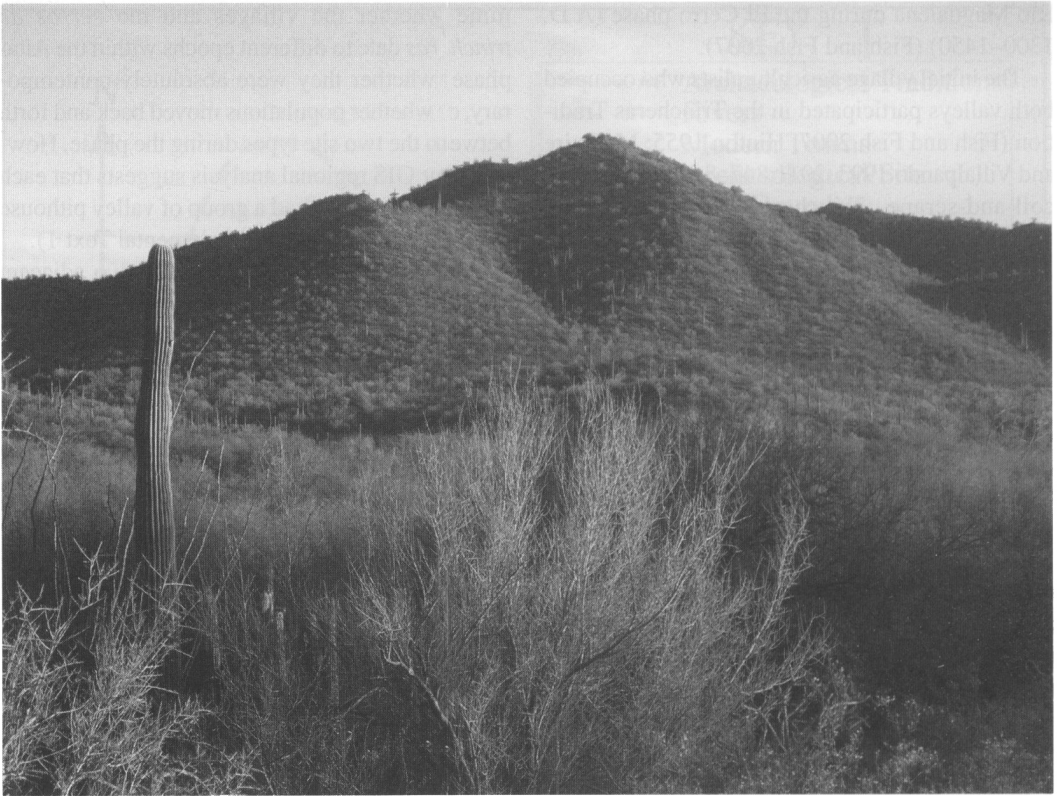
Figure 4. Tío Benino from north side of Río Altar.

versity of lithics and ground stone than on either Cerro de Trincheras or Tío Benino. We identified 28 of the terraces as habitation terraces, and 17 of these occurred in one cluster, with 11 in a second cluster. The first cluster included 43 structures. These circular structures were more substantial, with higher walls and better defined entrances than those on Tío Benino. We found no real evidence of elite residence or artifacts, and the two clusters of habitation terraces differed only in location. La Hormiga also yielded no evidence of gardening or of craft production. We did, however, locate indications of ritual activity. It is possible that the Trinchereños occupied La Hormiga only seasonally for rituals or that a small cadre of religious specialists and support personnel lived at the site.

The curtain wall and associated cliff faces around the entire crest of the hill forced climbers to use both hands to attain the summit. On the southern slope of the hill, the builders had constructed a sunken trail to the crest, which passed through a baffled gate, then over a series of domestic terraces, and finally through a flanked and baffled gate before attaining the summit. They located both residential and ritual spaces above and below the curtain wall. The summit of La Hormiga appears to have been a fortified redoubt. Already a highly defendable position, the terraces and walls greatly enhanced the defensive nature of the hill. These defenses protected residential terraces on the south face of the hill and ritual areas with large numbers of circular structures above that. The population living within this fortified redoubt on the top of the hill would have numbered in the dozens. A comparably small number of people lived below the fortifications.

Cerro de Trincheras

Cerro de Trincheras was a middle Magdalena valley large town built on an artificially terraced hill covering approximately a square kilometer (McGuire and Villalpando 2011) (Figure 8). Radiocarbon dates suggest that people occupied the site during the Cerros phase (A.D. 1300–1450). The most striking features of the site are the more
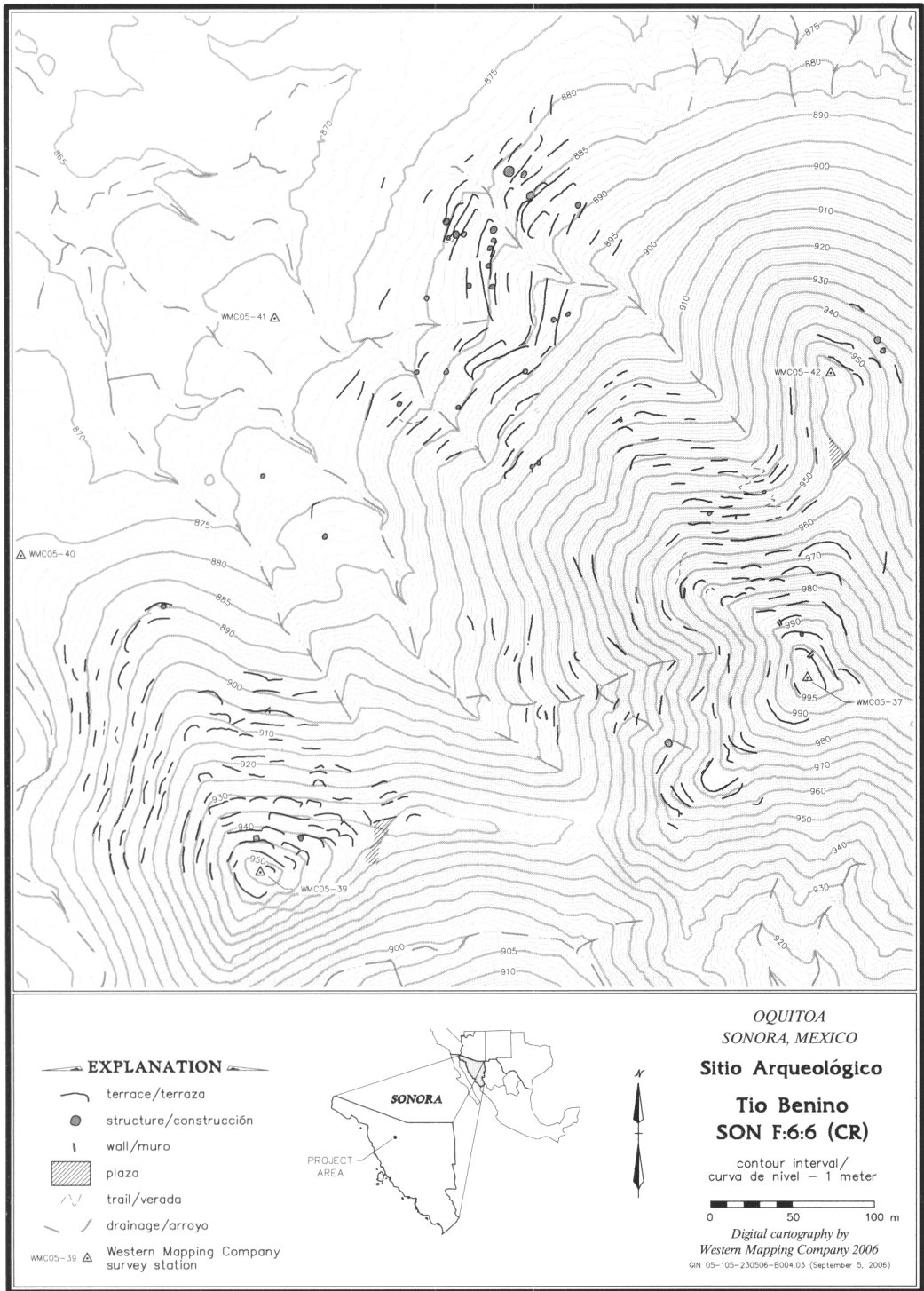
Figure 5. Map of Tío Benino, entanglements.

Figure 6. La Hormiga with crew at base.

than 900 domestic terraces that cover the hill. We estimate the maximum population as being between 1,000 and 2,000 people (McGuire and Villalpando 2011:856–857). Trincheras Plainware 3 makes up about two-thirds of the ceramic assemblage. Sells Plain accounts for almost one-third of the remaining sherds, with a small number of imported painted wares primarily from Chihuahua. The town had a complex activity structure (McGuire and Villalpando 2011). The Trinchereños cultivated corn, beans, squash, and cotton in irrigated fields by the river and agave at the base of the hill. One public ceremonial feature, La Cancha, sat above this agave. Domestic habitations covered the lower three-quarters of the hill, with concentrations of craft specialists in shell working, stone tool production, and weaving, forming distinctive barrios. Elite residences concentrated at the upper edge of the habitation zone. Above this elite barrio, structures for concealed rituals and storage cover the crest of the hill.

Fish and Fish's (2007) survey of the middle Magdalena Valley locates Cerro de Trincheras in

a regional context. They found 89 villages/hamlets from the Atil and Altar phases. Both excavation and survey data indicate that people did not live on Cerro de Trincheras in these phases. During the Cerros phase, the valley's population almost doubled to 141 villages/hamlets (Fish and Fish 2007). Carbon dating suggests that the Trinchereños built Cerro de Trincheras at the beginning of this phase and that it was occupied contemporaneously with some of the village/hamlets (McGuire and Villalpando 2011). Cerro de Trincheras was 17 times larger than any Altar phase site and covered twice the combined area of all other *cerros de trincheras* in the region (Roos et al. 2002).

The GIS least-cost analysis indicates that the Trinchereños built terraces and walls on the hill as defensive works. Terracing increased the cost of ascending the hill by a factor of three times the cost of the natural slope. Below the elite barrio, terraces, agave gardens, and structures created complex entanglements that formed a myriad of paths, making it difficult for attackers to maintain
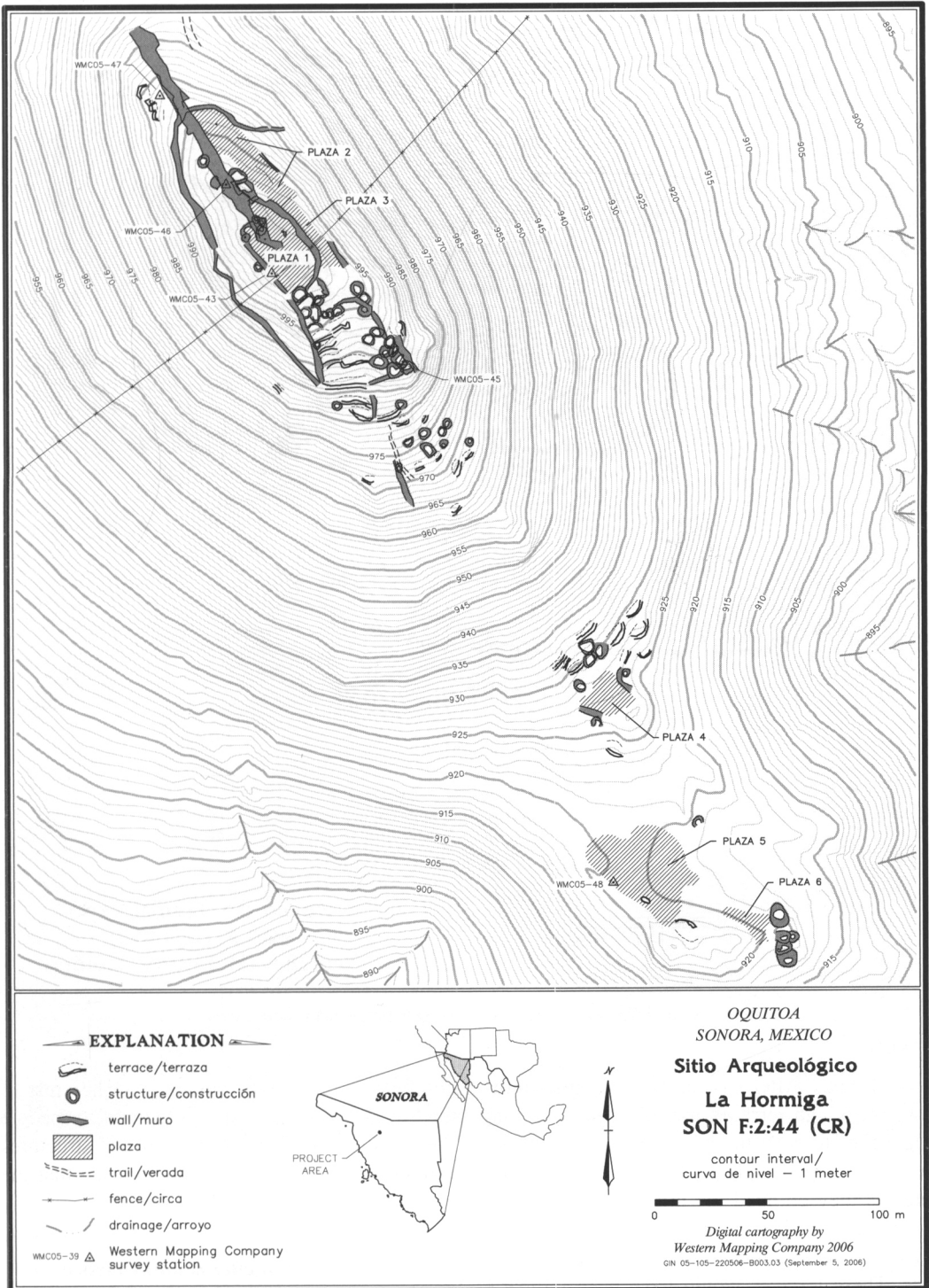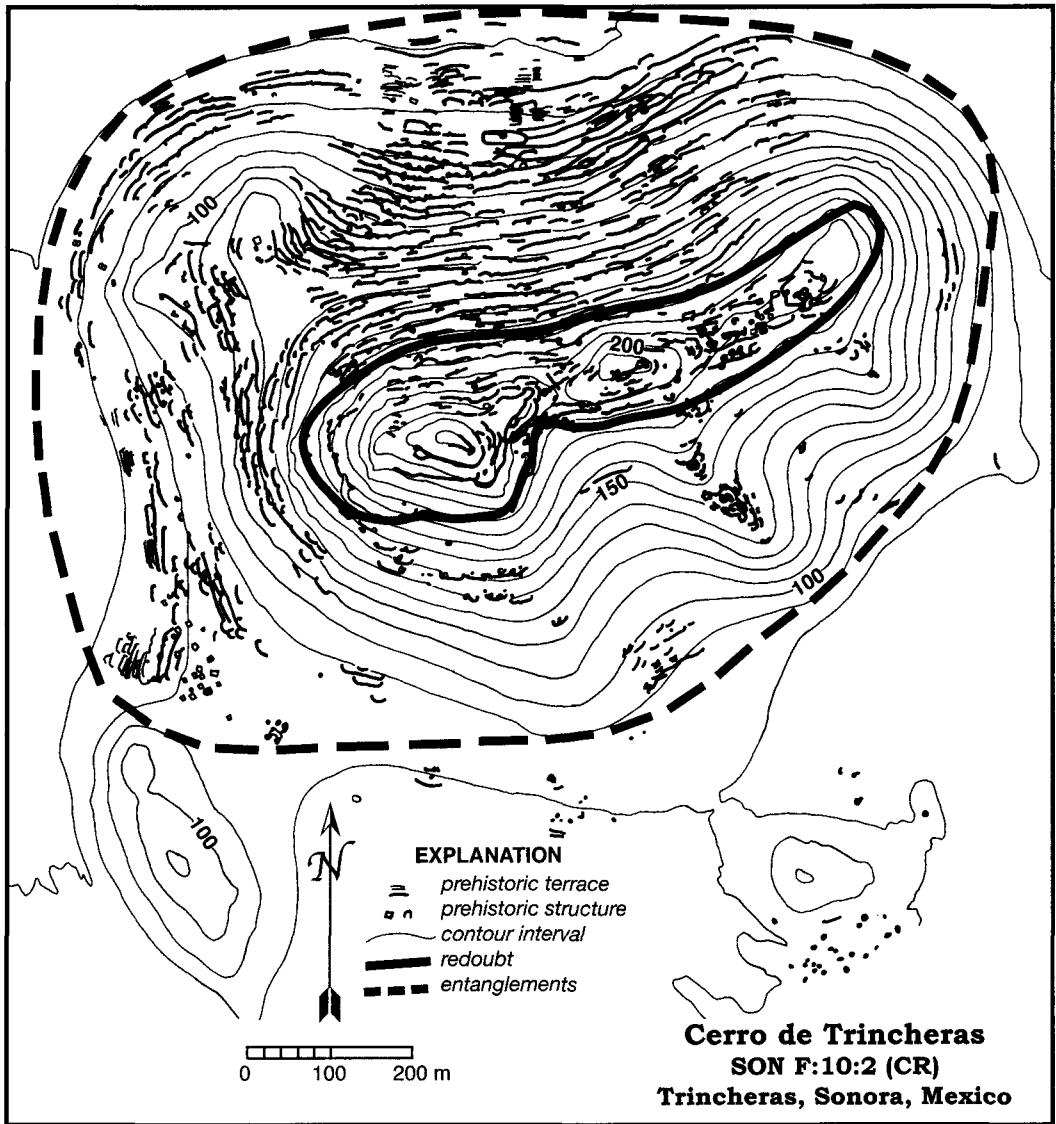
Figure 7. Map of La Hormiga, a redoubt.

EXPLANATION
prehistoric terrace
prehistoric structure
contour interval
redoubt
entanglements

Cerro de Trincheras
SON F:10:2 (CR)
Trincheras, Sonora, Mexico

0   100   200 m

Figure 8. Map of *Cerro de Trincheras* showing entanglements and the redoubt.

ordered ranks. After passing through this confu-
sion, walls and terraces forced aggressors into
single files to crest the hill. From this point on,
paths converged and climbers passed through
gates as they climbed the hill. The terraces be-
tween the elite barrio and the crest were rock-
filled and lack evidence of habitation or other
uses. These terraces would have been ramparts
that impeded attackers and provided fighting
stages for defenders. Many had piles of fist-sized
and larger cobbles at their fronts. Defenders could
have rained these rocks and arrows down on

climbers forming into files below. The crest of
the hill may have served as a redoubt for people
fleeing attackers from below. Special structures
and solstice observation points indicate that the
crest of the hill was also ritual space.

Cerros de Trincheras and Defense

Our analysis of three *cerros de trincheras* demon-
strates that terraces and walls increased the cost
of climbing these hills and made the communities
more defendable. We have also inferred what the

Figure 9. Curtain wall around the top of La Hormiga with César Villalobos.

occupants of these hills wished to defend. The Trinchereños built two basic types of defense systems, entanglements and redoubts. Entanglements protected people and their homes, while redoubts sheltered refugees, sacred space, and stored goods.

Tío Benino and the domestic terraces of Cerro de Trincheras could have protected people from a surprise run-through attack that could have led to the massacre of a village. This kind of attack produced confusion, forced noncombatants to flee or die, and denied warriors adequate time to organize for battle. Perhaps most importantly, the aggressors used the attack to force a battle on a level field that did not greatly advantage the defenders.

Entanglements would have disrupted a run-through attack. The terraces and the stone walls would have impeded attacking warriors, tiring them, disorienting them, and dividing them. The Trinchereños could have enhanced these entanglements with plantings. The narrow terraces at the base of Cerro de Trincheras held rows of sharp pointed agave. Ocotillo (Fouquieria splendens) thrives on these hills, and sharp curved spines cover the long straight branches of these woody desert plants. Modern farmers cut the branches off and plant them in rows to make living barbed wire fences. The Trinchereños could have made similar fences or planted ocotillo in strategic locations. At Tío Benino, even if aggressors slipped up the unprotected south flank of the hill, the entanglements of the terraced village would still have made a run-through attack difficult or impossible. At Cerro de Trincheras, attackers could not have easily slipped over the southern crest of the hill because of the redoubt the Trinchereños had built on top of the hill.

La Hormiga and the top of Cerro de Trincheras present a very different type of defense than Tío Benino or the terraced faces of Cerro de Trincheras. A combination of walls, terraces, and cliffs creates curtain walls surrounding the crests of both of these hills (Figure 9). At La Hormiga, one gate breaks this curtain, and walls flank the trail leading to it. Five gates pierce the curtain wall of Cerro de Trincheras. One of these gates is clearly baffled; walls and terraces flank the other four. At both sites, walls and terraces would have funneled attackers to these choke points before they could mount the crest of the hill. These redoubts would have provided protection during a persistent attack. They could have served three purposes in Trinchereño defensive posture: (1) a refuge for people; (2) the protection of stored foods; and (3) safeguarding sacred ritual spaces.

Refuge would appear to be a clear purpose of the Cerro de Trincheras redoubt, but not at La Hormiga. The noncombatant population of Cerro de Trincheras could have easily fled to the crest to escape an enemy attack on the settlement. Defenders could also have retreated to the redoubt if they failed to repulse the attack. La Hormiga appeared to have a small resident population, some of which lived within the curtain wall. The few households that may have been outside the curtain

wall could have retreated to the redoubt. La Hormiga, however, sits 6 km away from the nearest contemporary village. This means that La Hormiga would not have provided a refuge in the event of a surprise attack, such as the Quechan assault on the Maricopa. Only with significant forewarning could noncombatants have effectively fled to La Hormiga.

The redoubts at both La Hormiga and Cerro de Trincheras contain a high number of circular stone structures. They usually range from 1.5 to 6.2 m in diameter, with stone foundations rising to 1 m high and with jacal or adobe walls above (McGuire and Villalpando 2011). On the terraces of Cerro de Trincheras, we excavated five such structures and recovered dense concentrations of artifacts and definable floors. The features and artifacts suggest that the Trinchereños used these structures for habitation, milling of grain, and artifact production. In the redoubt, excavators recovered virtually no artifacts and no evidence of floor surfaces in 20 circular stone structures. We infer that the Trinchereños used the circular stone structures in the redoubts for storage of food and valuables.

Our analyses suggest that the Trinchereños regarded the crests of both La Hormiga and Cerro de Trincheras as sacred places for ritual and that they used them as redoubts. A direct relationship between the sacred and war should not strike us as unusual. Around the world people defend sacred places, as well as their persons, goods, and resources (Keeley et al 2007:81; Vega 2009). Cultures regularly worship high places, and high places are also the most defendable. People often invest large amounts of resources and labor in the construction of sacred buildings, making these buildings the most substantial and the easiest to secure. Among the Moche of Peru (Arkush and Stanish 2005:15), the Aztec of central México (Hassig 1988:105), the Maya of the Yucatan peninsula (Inomata 2006), and the Mississippians of the southeastern United States (Pauketat 2004), the ritual pyramid/mound was the last redoubt in the defense of a city. We would postulate a dialectical relationship between fortifications and sacred places in both a spiritual and a physical realm. People seek spiritual protection in war and strive to destroy the spiritual power of the enemy. Fortifications have symbolic power because peo-

ple know what they are for (Arkush 2011:13; Arkush and Stanish 2005:20), and this symbolism also embodies the sacred.

Inferring a Trinchereño Way of War

The nature of fortifications reflects the collective labor of defenders and the offensive capabilities of attackers (Arkush 2011:67). These two factors in turn interact with social organization and power relations both within and between societies. Solometo (2006) has argued that we can best understand these relations and build comparisons by untangling four aspects of warfare: (1) scale (the size of war parties); (2) intensity or frequency; (3) goals; and (4) consequences.

Trinchereño fortifications would have made a Yuman way of war problematic. Entanglements would have compromised run-through attacks and would have lessened the possibility of both surprise and massacre. With entanglements, attackers could not have forced a battle on a level field that did not dramatically favor the defenders. Redoubts have no equivalent in Yuman strategy or tactics. *Cerros de trincheras* may have developed as a reaction to Yuman style warfare, and, once in place, they would have created a different way of war. As in most cases of Neolithic war, fortification of settlements would have trumped the offensive capabilities of the attackers.

The Trinchereños were not the only peoples with a Neolithic technology and village/town-based social organization to fortify high places. In the Andes and in New Zealand, Neolithic peoples amplified the defensibility of topographically prominent features to defend their settlements.

Colla Pukaras

During the Late Intermediate period (A.D. 1000–1450) in the Titicaca Basin of highland Peru, the Colla built hill forts called *pukaras* (Arkush 2011). These developments follow the collapse of the Tiwanaku civilization and the restructuring of the Titicaca Basin into small warring polities based around networks of *pukaras*. This reorganization decentralized political control, deemphasized social hierarchy, altered ceremonial architecture and iconography, and reordered the spiritual, social, and economic landscape of the basin (Arkush 2011:136–140). The *pukaras* exceeded the offen-

sive potential of Late Intermediate-period striking or shock weapons (Arkush 2011:84). These weapons included clubs, stone maces, axes, spears, staves, and hard wood swords. Ranged weapons were limited to slings, *bolas*, and thrown stones. The largest *pukaras* consisted of concentric circles of massive stone curtain walls spaced 15 to 30 m apart on steep hills. The walls ranged from 1 to 4 m in thickness and 1.5 to 5 m in height, sometimes reinforced with ditches on the downhill side. Gates with wooden doors punctured the walls. The walls had parapets or fighting platforms from which defenders could hurl sling stones, *bolas*, and cobbles.

People lived within the walls (Arkush 2011:97–136). The number of structures sheltered by the walls ranged from a handful to 1,000 or more. These structures included homes with domestic trash and large numbers of storage structures. There were no cisterns or other water sources, suggesting that the Colla did not anticipate sieges. Tombs, ceremonial structures/spaces, and corrals for camelids occurred both within and outside the curtain walls. The evidence for elites is limited when compared to earlier Tiwanaku or the later Inka settlements. Larger houses with elite objects tend to be in the most defendable parts of the *pukaras*. These sites appear to have grown organically by the addition of houses and walls rather than from formal plans. *Pukaras* primarily protected people, stored goods and food, and camelids.

Arkush (2011:71) and her crews located 100 *pukaras* in an area of about 6,800 km². Estimates for the prehispanic Colla population in this area run as high as 200,000 people. Arkush (2011:145–146) classified *pukaras* into size classes ranging from small refuges lacking habitation to large towns covering 1 km² and sheltering 1,000-plus people. She defined 18 clusters of these sites based on visibility and ceramic variation. In A.D. 1450, the Inka fielded armies of tens of thousands to overcome the defensive capabilities of the *pukaras* (Arkush 2011:215–220). Their system of roads and store houses loaded with food, weapons, clothing, and sandals allowed them to lay siege to *pukaras* and conquer the Colla and the Titicaca Basin.

Maori Pas

In the sixteenth century, the Maori on the North Island of New Zealand began building *pas* or for-

tified settlements on hills. They continued to make active military use of these *pas* until the British subjugated them in 1872 (Allen 1994, 2008; Vayda 1960). The Maori lived in political coalitions made up of various *pa* settlements under the sway of a chief and noble family (Allen 2008:68). The ranked society of the Maori included nobles, commoners, and slaves. Warfare and *pas* appear to have increased elite authority, privilege, and power. Once in place, however, *pas* made it difficult for chiefs to consolidate larger-scale polities and to increase their power and privilege.

The Maori went to war for revenge, honor, trophy taking, territory capture, captives, and stored food (Allen 1994; Vayda 1960). Tactics included revenge raids and major war expeditions, either of which could be undertaken multiple times a year. A war expedition involved hundreds or, in extreme cases, thousands of warriors. The largest battles engaged up to 10,000-plus combatants. In such mêlées, warriors fought hand to hand with shock weapons that included clubs, spears, staves, and stone axes. The only ranged weapon was a throwing spear. Tactics favored surprise attacks, usually from ambush. The defensive capabilities of the *pas* exceeded the offensive capabilities of the Maori, and siege was unusual because of the difficulty in feeding large quantities of warriors. *Pas* fell by deceit or treachery, but rarely by assault (Vayda 1960:75). Consequences of war included special warrior classes, creation of buffer zones between tribes, massacres of entire villages, displacement of tribal groups, and Maori people living under the constant threat of violence and captivity.

Pas varied from simple stockades that protected an extended family to massive fortified towns of hundreds of people. Construction of the largest such towns entailed extensive earth moving and the building of elaborate defenses to make prominent hills more impregnable. These fortifications included terraces, ditches, ramparts, palisades, fighting stages, outposts, underground tunnels, and a *tihi* (a labyrinth of walls and rooms) in the most defendable part of the *pa*.

The battlements sheltered villages and towns with homes, craft workshops, and storage facilities (Allen 1994, 2008; Vayda 1960). The Maori built elite residences in the most defensible area of the *pa*, usually in the *tihi*. The focal point of the *pa* would be a sacred plaza with an adjacent meeting house, but the Maori did not necessarily place this religious complex in the most defendable part of the *pa*. The largest *pa*, Maungakiekie, had a population of up to 5,000 people. Noble families resided year-round in *pas*. Common people lived in a *pa* during the growing season, when tribes were most likely to field raids and war expeditions. When not in the *pa*, they lived in hamlets associated with fields and marine resources, but they remained ready to retreat to the *pa* if violence threatened.

Cerros de Trincheras, Pukaras, *and* Pas

Cerros de trincheras were not *pukaras* or *pas*. Analyzing similarities and differences between *cerros de trincheras, pukaras,* and *pas*, however, reveals a unique Trinchereño way of war.

There are striking similarities across these cases. Maori, Colla, and Trincheras societies had elites, but all three lacked stratification and have been characterized as middle-range societies. All were societies of village and town-living agriculturalists with Neolithic technologies. These technologies facilitated the construction of hilltop, fortified villages and towns, and similar weaponries that depended primarily on striking or shock weapons with weak-ranged weapon capabilities. The defensive capabilities of the villages and towns exceeded the offensive capacity of attackers. Weak command power and Neolithic technologies made siege warfare difficult to impossible. The Maori and Yumans practiced war seasonally in relationship to the agricultural cycle, and it is probable that this was also the case in Colla and Trincheras. Maori and Yumans had societies dominated by the warrior role of men, and we would infer the same for the Colla and Trincheras. The overlap between the three cases and the Yumans are significant, but the differences are important.

Although Trinchereño *cerros de trincheras* overlap, both *pukaras* and *pas* in size, they are less impressive than the largest such sites. In Arkush's (2011:145–147) classification of *pukaras,* La Hormiga would be small, Tío Benino medium, and Cerro de Trincheras large. The largest Colla *pukaras* were slightly larger than Cerro de Trincheras. *Pukaras* defensive works were, however, consistently more massive than *cerros de trincheras* constructions, with walls up

to two times as thick and two times as tall. *Pas* include a wide range of sizes, but only Cerro de Trincheras would come close in size to a large *pa*. However, the largest *pas,* such as Maungakiekie, dwarf Cerro de Trincheras, just as Cerro de Trincheras dwarfs all other *cerros de trincheras.* The complexity and size of defensive works on *pukaras* and *pas* dramatically exceeds those on *cerros de trincheras.* These differences in scale reflect the greater size of Colla and Maori societies. These cultures had populations in the tens of thousands, whereas the Trinchereño population probably numbered in the thousands.

We have identified two tactics for defense on *cerros de trincheras*—entanglements and redoubts. By this classification, Colla *pukaras* and Maori *pas* are redoubts. Defenders may have placed entanglements to enhance the defenses of the redoubts, but they did not use entanglements as the primary protection for people, homes, and craft workshops as the Trinchereños did. Walls, ramparts, palisades, and ditches in redoubts would have provided more protection than entanglements. So, we might ask: Why did the Trinchereños settle for entanglements to protect their lives and homes? The most obvious answer is that entanglements would have required less effort to create and would not have inconvenienced mundane life as much as a redoubt. Defenses are expensive to build, and they interfere with day-to-day life, so people will expend the minimum effort deemed necessary in their construction (Arkush and Stanish 2005:7; Roscoe 2008:509; Solometo 2006:36). A less obvious answer has to do with tactics for surviving an attack. A redoubt presents a barrier to keep attackers out, but these same features also keep defenders in. Attackers could massacre defenders trapped in a breached redoubt. With an entanglement tactic such as we see at Tío Benino, defeated defenders had a greater opportunity to save their lives through flight, as opposed to being trapped in a redoubt.

The relationship of defensive works to what the defenders wish to protect varies between *cerros de trincheras, pukaras,* and *pas. Pukaras* and *pas* provide the highest levels of protection to elite residences, followed by commoners' homes and storage. In both cases, ritual spaces exist but do not seem to be a focus of defense. Arkush

(2011:135) argues that the ideological power of Colla pukaras did not rest on connections to ancestral sacred places. *Cerros de trincheras* exhibit different priorities. They defend storage and ritual space best, and people and homes (even elites) less. Arkush (2011:96) notes that *pukaras* among the Lupaca, neighbors to the Colla, look more like *cerros de trincheras* with habitations below the hilltop redoubts. From this observation, she infers that violence was less frequent and unpredictable among the Lupaca and that attackers were more likely to target noncombatants and homes in Colla settlements than in Lupaca villages and towns.

Our comparisons with Yuman, Colla, and Maori warfare suggest a Trinchereño way of war different than any of these cases. Trinchereños may have built *cerros de trincheras* in reaction to a Yuman style of offensive war that had a higher scale and intensity than seen among the historic Yumans. In doing so, they would have shifted to tactics dominated by defense. Thus, Trinchereño war became similar to the Andes and New Zealand. However, the Trinchereños gave priority to protecting different things—storage and sacred spaces vs. elites, people, and workshops. This implies that the Maori and Colla emphasized dissimilar goals in warfare than the Trincheras Tradition. The smaller size of Trinchereño defensive works implies that Trinchereño war probably involved fewer warriors and less deadly battles than Colla and Maori conflict. Consequences may also have been different. For example, when a *pa* fell, the attackers slaughtered everyone in the settlement (Allen 2008:68). Yuman war never reached a scale that allowed the total annihilation of enemies (Kroeber and Fontana 1986:141). We would suggest that Trinchereño war would have been like the Yuman, inadequate in scale and intensity for annihilation. Attackers would have found it difficult to massacre the inhabitants of a Trincheras settlement protected by entanglements.

Analysis of *pukaras* and *pas* reveals two self-limiting processes that result from the dominance of defense in Neolithic ways of war (Allen 2008; Arkush 2011:2–4, 13, 223). People build fortifications to protect themselves from violence, but fortified landscapes define and reproduce antagonistic groups that encourage aggression, leading to a self-perpetuating cycle of violence (Allen 2008:68). Fortifications facilitate the succession

of elites who derive their power from warfare, and they impede efforts to overthrow or transform these relations. Defensive works raise issues of who gets to live in the most secure spots and who must live on the peripheries (Arkush 2011:107). New Zealand *pas* facilitated the development of ranking, territoriality, and war (Vayda 1960). Once in place, however, they limited the ability of noble households to consolidate and increase their power and rule. In contrast, Colla *pukaras* followed the collapse of a stratified Tiwanaku. They made a reconsolidation of the Titicaca Basin into a stratified state difficult. In both cases, the transformation of existing social hierarchies resulted from the invasion of the regions by entities (the Inka and the British) with overwhelming force and technologies that disrupted the tactics of defense.

These two processes would have existed also in prehispanic northern Sonora. During the Atil phase, Trinchereño people lived in small villages or hamlets scattered along the Altar and Magdalena Rivers. Conflicts either internal or with Hohokam peoples in the Papagueria slowly intensified as a pattern of raiding and run-through attacks on villages developed. By the Altar phase, this violence had reached a scale and intensity that made defensive tactics of flight and reinforcement inadequate to protect villages. On hills like Tío Benino, the Trinchereños constructed terraces, houses, agave gardens, thorny plantings, and other features to create entanglements that would tire, slow, and confuse attackers. They occupied these *cerros de trincheras* seasonally during the time of war or for longer periods when the intensity and scale of violence increased. By the Cerros phase, war had intensified and elites consolidated their power. The Trinchereños left the Altar Valley and built Cerro de Trincheras as a massive terraced town. Elites built their homes at the top of the habitation area so that the bodies and homes of farmers and artisans below them became the bulwark of their defense. A variety of objects, shell, pipes, animals, animal parts, and Chihuahuan Polychrome pottery materialized their new authority, power, and prestige. Above their homes, they built a massive redoubt with ramparts of stone walls, cliffs, and terraces. They covered the crest of the hill with restricted ritual spaces and round structures to store foodstuffs and other useful or valuable things.

Conclusion

The Quechan, Mohave, and Yavapai warriors, who launched a run-through attack on the Maricopa in 1857, practiced tactics of offensive war that probably had a long history in the Southwest/Northwest. We have argued that conflicts between prehispanic Papaguerian Hohokam and Trinchereño people intensified similar offensive tactics to a scale and intensity that drove people to develop defensive tactics of entanglements and redoubts to protect themselves from violence. As among the Colla of the Andes and the Maori of New Zealand, the capabilities of defenders exceeded the aggressive abilities of attackers, resulting in a spiraling cycle of war and the transformations of social power and hierarchies. This Trinchereño way of war gave priority to protecting storage and sacred spaces vs. elites and people. It fed increasing violence and allowed elites to consolidate power. The Trinchereño way of war is a case that shows how considerations of violence and warfare are important to understand the aboriginal history of the Southwest/Northwest.

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