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Northwest Mexico: The Prehistory of Sonora, Chihuahua, and Neighboring Areas

Matthew Pailes[1]

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Abstract This article surveys research in Northwest Mexico (Sonora and Chihuahua), with an emphasis on the Early Agricultural period to the Late Prehistoric period. Middle range societies that are diverse in scale and organization characterize this region. Significant advancements in our understanding of these societies have been made in recent years, but substantial challenges remain in building interpretative frameworks that account for both regional diversity and incorporate macroscale interactions. Topics covered in this review include the adoption of agriculture, population movements, bases of social differentiation, and interactions between organizationally disparate groups. These issues demonstrate the relevance of the Northwest to research on the organization of middle range societies.

Keywords Casas Grandes · Cerro de Trincheras · Huatabampo · Paquimé · Río Sonora · Serrana · Trincheras

Introduction

Northwest Mexico (hereafter the Northwest) encompasses plains, coasts, and mountainous topography; vegetation zones ranging from desert to conifer forest; and a diversity of sociopolitical systems from hunters and gatherers to one of the most complex polities north of Mesoamerica. The Northwest is unique in that it was largely defined in negative terms in relation to better-studied regions. From a southern perspective, the Northwest is conceptualized as the land beyond the periphery of Mesoamerica (Braniff 2001a; Caretta 2008; Hers and Soto 2000). From a northern perspective, the Northwest is accepted as intertwined with the American

✉ Matthew Pailes
mpailes@ou.edu

[1] Department of Anthropology, University of Oklahoma, 455 West Lindsey, Dale Hall Tower 521, Norman, OK 73019, USA

Southwest, but the international border and language barriers created *de facto* divisions in intellectual traditions. Not surprisingly for a region never defined by criteria of internal coherence, there is significant heterogeneity among its constituent groups. Such observations have caused substantial introspection concerning what the Northwest *is*, as well as critiques of the lingering effects of the cultural areas approach responsible for its delineation (Braniff 2001b; McGuire 2002; Mendiola Galván 2008; Pailes and Whitecotton 1995).

I take as a given that the Northwest was defined arbitrarily, but I argue there is much value in considering its prehistory as an analytical unit. In this review, I explore the comparative potential of the region, particularly to research on middle range/transegalitarian societies. Topics I address include the adoption of agriculture, perception and importance of migration events, the relative importance of various bases of social power in the maintenance of differentiation, interactions between groups of variable organizational complexity, and questions of historical continuity. With such a diverse and expansive region some degree of formulaic structure is necessary to render this discussion intelligible. I employ a primarily chronological framework. For early periods, geography is utilized as a second-tier organizing theme. For later periods, I organize the discussion by topical themes over geography in order to highlight disparate qualities and to counter uneven regional coverage.

Although the Northwest traditionally includes portions of the states of Zacatecas, Durango, and Sinaloa, this review focuses on Chihuahua and Sonora. Other authors have recently provided more succinct reviews of the region (Kelley and MacWilliams 2005; Kelley and Villalpando 1996; Nelson et al. 2015), focused on specific states (Bradley 2000b; Gamboa 1996; MacWilliams et al. 2002; Villalpando 2000a), or summarized overlapping regions (Cabrero 1993; . P. Fish and S. Fish 1994; Phillips 1989; Plog et al. 2016). I place emphasis on post-2000 publications, excepting topics that lack more recent investigations. Much Northwest research remains in gray literature *informes*; I constrain this review to accessible published literature. This entails an unfortunate biasing toward American university investigators at the expense of the extremely valuable contribution of Mexican archaeologists affiliated with state offices of INAH (Instituto Nacional de Antropología e Historia).

Early Hunters and Gatherers

A review of the early human occupancy of Northwest Mexico demonstrates that the seeds of regional diversity were sown very early.

Paleoindian Period

Paleoclimatic data for the Northwest are limited to sedimentological records, which are commensurate with diverse proxies from U.S. contexts. These indicate a more temperate and wetter climate (Cruz y Cruz et al. 2015) for the late Pleistocene. From 13,000 BP there was a trend toward increasing aridity with xeric biotic communities established by 8,000 BP. Paleoindian occupation has been recognized for decades

based on Robles Ortíz and Manzo's (1972) catalog of 25 Clovis points from 11 localities in Sonora. Most of these (24) came from desert, coastal, or foothills regions (≤600 masl) (see also Sánchez 2016). Three Clovis points are known from Chihuahua, one from Durango, and five from Sinaloa (MacWilliams et al. 2002; Sánchez 2001, p. 125; Sánchez and Carpenter 2003, p. 29). Exposed landscape ages bias these counts, but Clovis apparently spread south along a primarily Pacific corridor (Carpenter and Sánchez 2008, p. 23).

The Sonoran record makes substantial contributions to Clovis interpretations (see Fig. 1 and 2). The site of El Bajio, at over 4 km^2, is possibly the largest Clovis site in western North America. This site produced 19 Clovis points from surface finds (Sánchez and Carpenter 2010) and includes a substantial lithic quarry of volcanic material. Hundreds of lithic tools are likely attributable to the Clovis occupation (Gaines et al. 2009, p. 311; Sánchez 2015, p. 246). The El Bajio lithic industry included a blade technology with a possible analog to the Great Plains Gault site in eastern Texas (Sánchez and Carpenter 2003, p. 31). The amount of retouch on many Clovis tools suggests substantial periods of occupation at El Bajio (Sánchez and Carpenter 2003, p. 30). The Fin del Mundo site is the only extensively excavated Clovis site in the Northwest (Sánchez et al. 2014). This site presents the unequivocal association of four in situ Clovis points with a multiple gomphothere kill. Gomphotheres (an extinct taxonomic class of proboscideans) had not previously been associated with human hunting in North America. The calibrated age of the

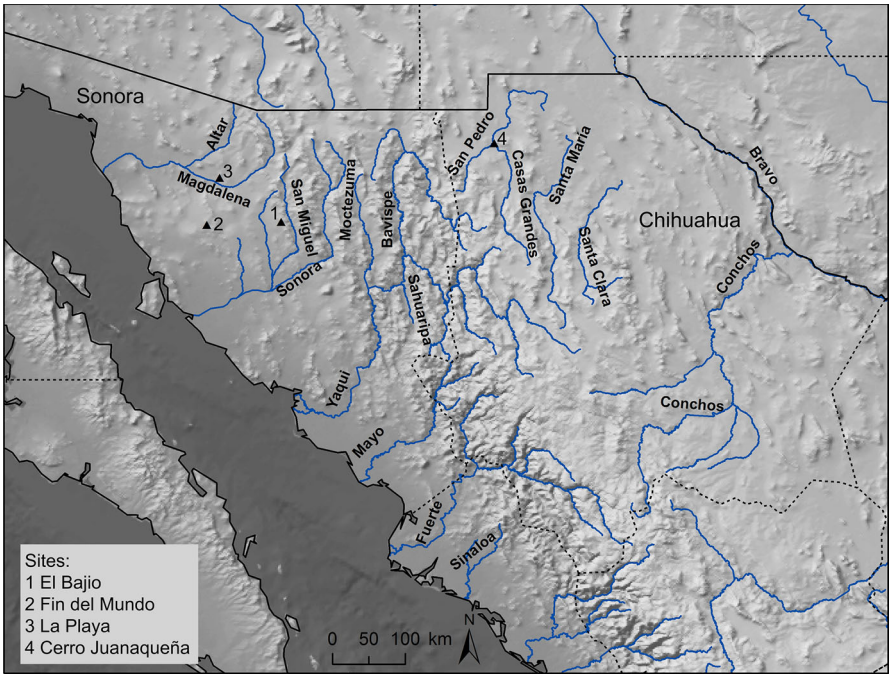
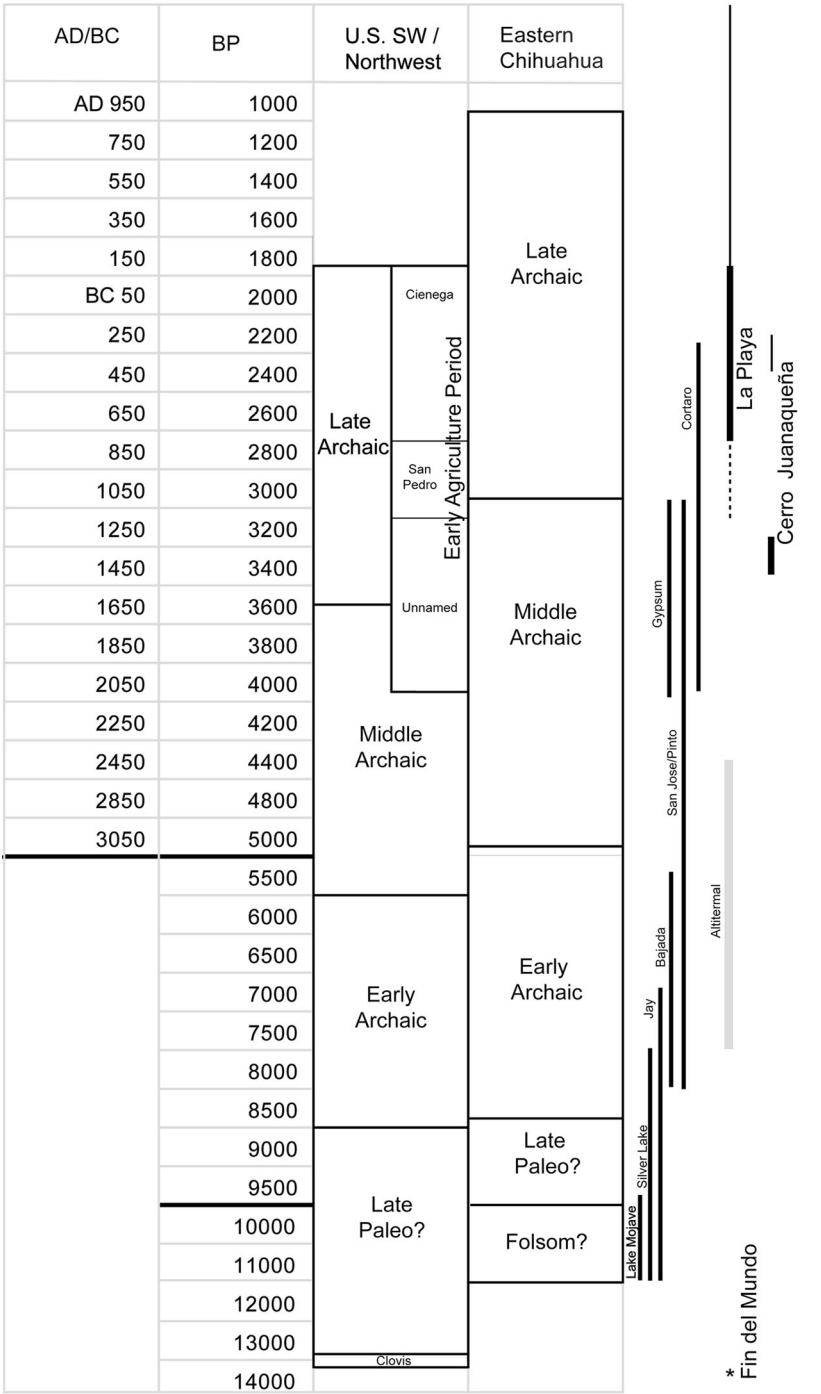


Fig. 1 Map of physiographic features, important rivers, and Paleoindian and Early Agricultural period sites mentioned in text


AD/BC
BP
U.S. SW / Northwest
Eastern Chihuahua
AD 950
1000
750
1200
550
1400
350
1600
150
1800
BC 50
2000
250
2200
450
2400
650
2600
850
2800
1050
3000
1250
3200
1450
3400
1650
3600
1850
3800
2050
4000
2250
4200
2450
4400
2850
4800
3050
5000
5500
6000
6500
7000
7500
8000
8500
9000
9500
10000
11000
12000
13000
14000
Late Archaic
Cienega
San Pedro
Unnamed
Early Agriculture Period
Late Archaic
Middle Archaic
Early Archaic
Late Paleo?
Clovis
Late Archaic
Middle Archaic
Early Archaic
Late Paleo?
Folsom?
La Playa
Cerro Juanaqueña
Cortaro
Gypsum
San Jose/Pinto
Altitermal
Bajada
Jay
Silver Lake
Lake Mojave
* Fin del Mundo

◀**Fig. 2** Chronological frameworks used for Paleoindian and Archaic periods as well as diagnostic artifacts, intervals, and dated sites mentioned in text

site, ~13,390 BP, is at the extreme limit for Clovis sites and adds credence to the theory that the Clovis technological complex developed in southern North America.

There are notable deviances in Sonoran sites from normative Clovis patterns in material usage that indicate more reliance on mediocre but widely available materials. Compared to U.S. patterns, Gaines et al. (2009, p. 329) argue that heavy usage of these materials indicates relatively less mobility and greater familiarity with local landscapes. Repeated visits to cienegas, including Fin del Mundo, suggest a central-place exploitative strategy (Sánchez 2015, p. 256). In general, these patterns support a "staging area" model of Clovis land use, as opposed to a "high technology forager" model that predicts very little regional residence time (Sánchez 2016, p. 124).

Later portions of the Paleoindian period are poorly documented. Folsom points are found in Chihuahua, but apparently are absent in Sonora. This corresponds to physiographic province distributions in the United States (Sánchez 2001, pp. 125–126) and reflects the distribution of bison species targeted by Folsom groups. Researchers have collected other lanceolate forms in Sonora and Chihuahua, but these lack clear chronological or contextual relationships. A few points found in Sonora bear a resemblance to the Dalton tradition of the late Paleoindian/Early Archaic period in the southeastern United States (Gaines et al. 2009, p. 330). In general, however, the late Paleoindian period of Sonora is not easily relatable to any known North American tradition (Sánchez 2016, p. 32). The lack of familiar late Paleoindian patterns may indicate either a hiatus in occupation or that broad-spectrum archaic lifeways followed shortly after Clovis occupations (Sánchez and Carpenter 2012, p. 143, 2014, p. 93).

Archaic Period

Archaic period studies in the Northwest rely on importing Southwest U.S. chronologies (see Carpenter et al. 2003) (Fig. 2). Surface finds of tapering stem points (Jay, Silver Lake, Lake Mojave) at La Playa and five other sites (Carpenter et al. 2015; Sánchez 2016 p. 33; Sánchez and Carpenter 2012 p. 140) indicate some Early Archaic occupation in Sonora. These Early Archaic point industries were widespread in western North America and suggest cultural continuity with Great Basin groups (Carpenter et al. 2008, p. 305). These technological traditions, always equivocal and somewhat temporally incoherent, are mostly restricted to northern Sonora (Carpenter et al. 2003, p. 8) but also appear as Bajada points in far eastern Chihuahua where they occur along with Plains tradition points (Mallouf 1992).

The archaeological record is sparse for much of the Early and Middle Archaic (Carpenter et al. 2005). This pattern is ascribable to the proposed Altithermal, a time of increased aridity and higher temperatures in the American Southwest. Sedimentological evidence suggests a similar climatic period from 7500 to 4500 BP in Sonora and Chihuahua (Cruz y Cruz et al. 2014). The presence of Pinto and San Jose projectile points, corresponding roughly to this era in northern Sonora, may

reflect episodic use of the area by Great Basin groups during periods of amelioration (Carpenter et al. 2002; Sánchez and Carpenter 2012). The frequency of these points in an Archaic locus of Fin del Mundo (see Carpenter and Sánchez 2013, p. 208; Sánchez and Carpenter 2014, p. 96) suggests at least some substantial or repeated forays into the region.

First Agriculturalists

During the late Middle Archaic period, clearer patterns emerged in Sonora similar to the Cochise Archaic tradition in the American Southwest. This period is the subject of debate regarding the linguistic identities of the region's first farmers. Hill (2001, 2006) interprets shared cognates for cultivation terms to indicate a migration of proto-Uto-Aztecan speakers from south to north with a suite of agricultural technologies prior to their split into a northern and southern branch. This argument originally required a lessening in the age of divergence of northern and southern Uto-Aztecan to as recently as 3000 BP to correspond to the earliest evidence of agriculture. Increasingly earlier discoveries of maize, now ~4500 BP (Vint 2015, p. 488), in southern Arizona lend credence to Hill's model. Relatedly, several researchers (Carpenter et al. 2002; Mabry et al. 2008) believe the Altithermal abandonment of the Northwest caused the Uto-Aztecan split. Their reading of the data accepts the ancestral relationship between cultivation cognates only for the southern branch of Uto-Aztecan and hypothesizes this group initially acquired agricultural technologies while in southern refugia. Subsequently, these recolonizers carried with them incipient practices of maize agriculture into the Sonoran Desert (Carpenter and Sánchez 2013). They (Carpenter et al. 2002, p. 251) identify contracting stemmed points (i.e., Gypsum) as a material correlate that diffused from central Mexico with maize to the southern Uto-Aztecans; subsequently, other point styles (Cortaro) reflect the earliest dispersal of these agriculturalists into the Sonoran Desert.

Tying linguistic groups to archaeological correlates is an admirable endeavor, but there are inconsistencies with the proposed associations. Martínez Tagüeña (2015, p. 15) points out that identical projectile point styles occur in regions occupied by the Comca'ac (Seri), a linguistic isolate. This requires either interpreting the Comca'ac as a later arrival (Villalpando 1992; see also Carpenter et al. 2005, pp. 16–17), or as Martínez Tagüeña prefers, accepting that technological systems have little correspondence with linguistic or other aspects of group identity. Also problematic, projectile points similar to Archaic traditions of south and west Texas are present at some of the earliest *potential* agricultural sites on the east side of the Sierra Madre (Hard et al. 2006, p. 479; see also Hard and Roney 1998, p. 1662; MacWilliams et al. 2008). Different types of maize involved in the spread of agriculture also may indicate Sonora and Chihuahua do not share the same proximal origins (see Hard et al. 2006, p. 477). None of these observations disprove the linguistic/maize/contracting stem association, but it seems likely that other groups also played a role in the post Altithermal peopling of the region.

Maize, though present at some Middle Archaic occupations, remained a relatively minor component of subsistence. In the ensuing Early Agricultural period maize clearly became a more dominant component of subsistence systems, but Archaic lifeways persisted in parts of Chihuahua until the historic period (González Arratia 1992; Guevara 2007). The west (Sonoran Desert) and east (Basin and Range) sides of the Sierra Madre presented very different opportunities and obstacles in the adoption of agriculture.

Sonora

Work at the low desert site of La Playa dominates Early Agricultural period research in Sonora. Similar aged deposits are present but uninvestigated at other sites (Carpenter and Sánchez 2013). The major social and technological changes seen at La Playa also are well documented and dated at several southern Arizona sites, particularly Las Capas (Mabry 2008). These recent discoveries suggest a rapid development of agricultural technology and an early investment in labor-intensive forms of production. At La Playa there is indirect evidence for canals in the form of sediments and mollusks indicative of wetland conditions during the San Pedro phase (Copeland et al. 2012, p. 2939). This reconstruction is commensurate with the earliest canals $\sim$3200 BP discovered in Early Agricultural period sites of southern Arizona. Substantial investment in canal infrastructure at La Playa was present by the Cienega phase. Macrobotanical remains, investment in agricultural infrastructure, large burial populations, and ubiquitous ground stone all suggest year-round sedentism during the Cienega phase, but with a mixed economy that continued to incorporate substantial wild resources (Carpenter et al. 2015). Bioarchaeological data—femoral biometrics—indicate a sexual division of labor in which males undertook substantial treks, a logical proxy for logistical mobility (Watson and Stoll 2013).

The deflated condition of the site precludes investigating village structure or even the identification of most architecture. Nonetheless, there are hints of the scale and methods of community formation. Concentrated deposits of rabbit bones indicate communal hunts (Carpenter et al. 2015; Martínez Lira et al. 2011, p. 235). The size of roasting pits, some $>$10 m, suggests communal feasting events. There is substantial evidence for ritual behavior. Bird bundles (Martinez Lira et al. 2005), special treatment of dogs (Carpenter et al. 2015, p. 235), and ochre use in human burials (Watson 2011) all reflect specific but little understood ritual practices. Marine shell procurement, and the related craft industry of jewelry manufacture, became well established, indicating the emergence of more complex economies and possibly the desire to signal aspects of social identity. The population appears relatively healthy, but a quarter of the La Playa population presented evidence of skeletal lesions, many indicative of violence (Watson 2011, p. 6). The prevalence of violence may reflect a fraught transition to larger sedentary communities and underdeveloped social structures to effectively negotiate usufruct rights and other newly required social contracts. Watson and Phelps (2016) interpret perimortem violence as a form of costly signaling associated with emergent inequalities and new group identities. La Playa presents evidence of river entrenchments at the

termination of the Cienega phase (Copeland et al. 2012), which likely had calamitous repercussions for the local irrigation systems.

Chihuahua

In contrast to the singular nature of La Playa, the archaeological record of Chihuahua permits the perception of larger-scale patterns. In the northern Basin and Range region, the first identifiable farming villages were constructed next to floodplain land on terraced volcanic hills, known as *cerros de trincheras* (Roney et al. 2007). In southern Chihuahua, unique rockshelters with "D"-shaped terraces as well as *cerros de trincheras* are potential early farming sites (MacWilliams et al. 2008, p. 45). Currently the best estimate is that maize was present in south-central Chihuahua by 3650 BP, northwest Chihuahua by 3250 BP, and in the southern Sierra Madre by 2150 BP. The distribution and ages of Early Agricultural period sites indicate that agriculture spread north along a broad front with highly variable rates of adoption and intensification (Hard et al. 2006). In some areas, groups moved relatively quickly from minimal inclusion of cultigens, likely as a means of risk reduction, to agricultural dependence, whereas in other contexts the transition took millennia (Hard and Roney 1998). Models of human behavioral ecology coherently account for these differences based on the geographically variable cost of agriculture and abundance of alternative wild resources (Hard and Roney 2005). Agriculture was adopted rapidly in the Basin and Range region of Chihuahua where precipitation permitted less-labor-intensive (nonirrigation) forms of agriculture. Sites with intense mesquite processing in northwestern Chihuahua also provide evidence that groups were pushed into more labor-intensive subsistence practices (T. VanPool et al. 2009). In eastern Chihuahua, the much later adoption of agriculture is tied to worsening environmental conditions that decreased the abundance of wild foods (see Mallouf 2005).

The best-known Early Agricultural period site in Chihuahua is Cerro Juanaqueña (Hard and Roney 1998). It is the largest of at least 13 *cerros de trincheras* in the Casas Grandes and Santa Maria drainages, which all likely date to the Early Agricultural period (Roney and Hard 2004). Cerro Juanaqueña comprises 486 terraces at a cost of 30 person years of labor, a level of investment generally not seen at Early Agricultural period sites (Hard et al. 1999). The presence of a perimeter wall at several *cerros de trincheras,* including Cerro Juanaqueña, indicates the site adhered to a preconceived planned layout. The occupation at Cerro Juanaqueña lasted from 200 to 300 years around 3250 BP; ground stone wear rates suggest that a population of $\sim$200 people occupied the site for six to nine months per year (Roney and Hard 2002). A lesser reoccupation occurred on lower slopes around 2200 BP., coincident with the (re)establishment of other *cerros de trincheras* in the region. Based on maize ubiquity and mano metrics, the residents of Cerro Juanaqueña were agriculturally dependent, but less so than later groups (Hard and Roney 2004; Hard et al. 2006). Hard and Roney (2007) believe the placement of habitation areas on hills reflects defensive concerns; this is supported by cross-cultural comparisons, perimeter walls, intervisibility between sites, and projectile point abundances. These early villages, with their stores of food, undoubtedly

provided an attractive target to nomadic groups in the region. The sporadic occupation of hilltops in a continuously occupied region suggests that agriculturalist populations were pushed into such settlements only during periods of intensive raiding (Hard and Roney 2004, p. 286).

In regard to the chronology and directionality of the spread of agriculture, interpretations of the Early Agricultural period in Sonora and Chihuahua are broadly commensurate, although several subjects obviously require more data. In Sonora, substantial effort is placed on discerning the *who* and the *how* of the spread of agricultural technology. Conversely, Chihuahuan research places emphasis on the *why* of adopting agriculture. Models derived from optimal foraging theory provide adequate explanatory frameworks for Chihuahua, but the early and rapid investment in labor-intensive canal irrigation in the Sonoran Desert, with its high-yield wild resources, requires more complex explanations. It is noteworthy that warfare, or at least violence, is a common theme in both regions despite the significant environmental differences.

Ceramic Period

Regional identities with diffuse boundaries emerged during the Ceramic (or Late Prehistoric) period (Fig. 3). Here I review geographical contexts and recent chronological refinements (Fig. 4) and offer broad-brush comments on how current research has evolved in response to prior models. I stress preemptively that research at two primate centers, Cerro de Trincheras (the largest site of *cerros de trincheras* form) in northwest Sonora and Paquimé in northwest Chihuahua, dominates this period. Developing models of interaction that are not wholly subsumed by questions regarding their preeminence in various spheres of interaction remains a substantial obstacle.

The Casas Grandes area covers most of northern and central Chihuahua and extends into mountainous eastern Sonora. Research predominantly focuses on the Basin and Range province of northwest Chihuahua. I use Casas Grandes to refer to the region in which Paquimé is the largest site. The later is the paragon of a primate center in terms of the richness of its artifact assemblage, areal extent/population, labor investment, and certainly sociopolitical clout. The exhaustive description of excavations at Paquimé by the Joint Casas Grandes Expedition (Di Peso et al. 1974) still provides the baseline for defining Casas Grandes culture. A reevaluation of Di Peso et al.'s tree ring chronology (Ravesloot et al. 1995) places the beginning of the Medio period, the era of cultural florescence, near AD 1200. A substantial number of ^{14}C dates (n = 49) from central Chihuahua provide a span from 775 to 1290 for the preceding Viejo period (Kelley et al. 2012). Some early dates in this sample ($\sim$A.D. 600) either reflect a pre-Viejo plainware period or alternatively argue for an extension of Viejo to a slightly earlier date (Stewart et al. 2005, p. 188). The basic phase sequence of Di Peso and colleagues also is widely questioned (Phillips and Carpenter 1999; Whalen and Minnis 2009). Minimal progress has been made in identifying temporally diagnostic artifacts to further divide the Medio period (Hendrickson 2001; Rakita and Raymond 2003). Whalen and Minnis (2009) argue

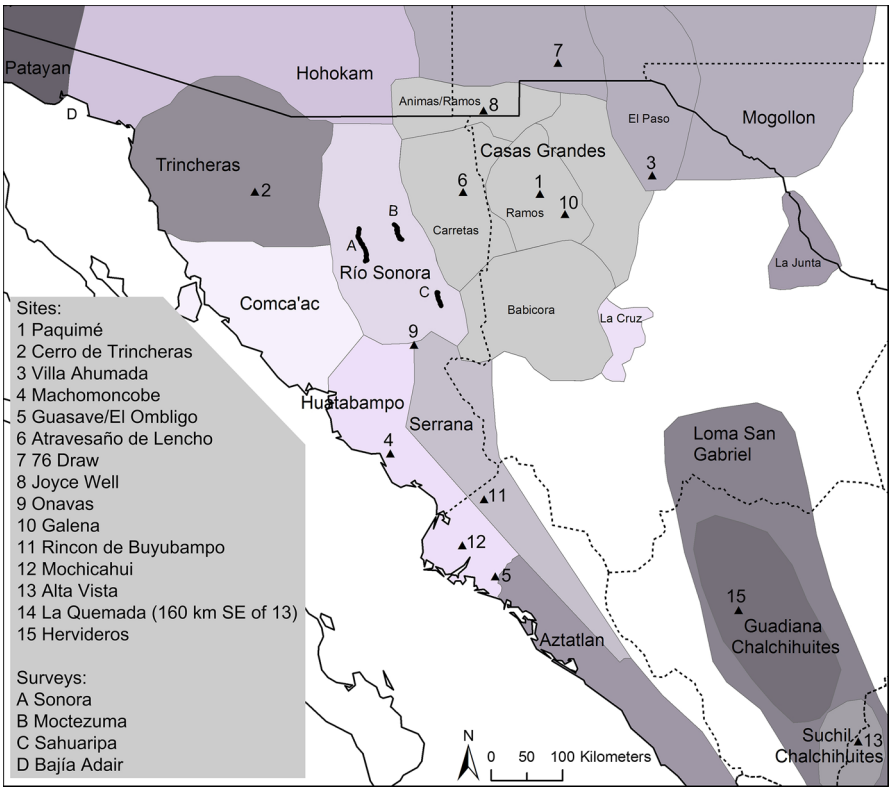


Fig. 3 Map of cultural regions and subregions for the Ceramic period and sites and survey projects mentioned in text

that the excavated portion of Paquimé corresponds entirely to post-AD 1300. A finer and more elaborate style of ceramic polychrome wares corresponds to this era (Whalen and Minnis 2012). Populations likely persisted in the region into the 16th century, after Paquimé's collapse (e.g., Whalen and Minnis 2004; Whalen and Pitezel 2015). Due to vagaries of the calibration curve post-AD 1450, ^{14}C dating is ill suited to answer this question.

The last 40 years of research has been focused on evaluating various aspects of Di Peso et al.'s (1974) interpretations. Arguments that Paquimé was founded and controlled by Mesoamerican merchants are no longer supported, but many aspects of Di Peso et al.'s interpretations remain influential. Whalen and Minnis (e.g., Whalen and Minnis 2001a, b, Whalen and Minnis 2003, 2004, 2009) have carried out substantial survey and excavation work in the region surrounding Paquimé, drawing on a variety of processual models that include peer polity, prestige goods, and core periphery. Whalen and Minnis' reconstruction is now typically the target of revisionist critiques.

We know less about Chihuahua beyond the Casas Grandes core region. Available data constrain most research to evaluating the nature of interaction with Paquimé

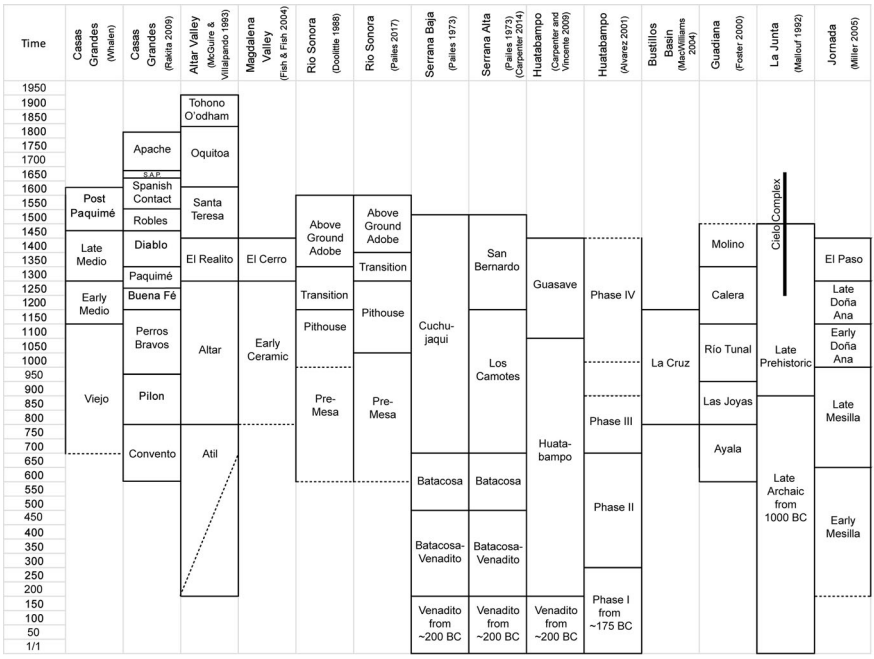


Fig. 4 Chronological frameworks used for Ceramic period occupations

and defining subregions based on ceramic assemblages (see Fig. 3; Douglas and MacWilliams 2015). In south-central Chihuahua, Kelley and colleagues (Burd-Larkin et al. 2004; Kelley 2004, 2009; Kelley et al. 2012) demonstrate the broadly shared historical background of Casas Grandes culture but find little evidence of the political complexity seen at Paquimé. Portions of the Sierra Madre also reflect cultural affinities with Paquimé (Guevara and Phillips 1992), but recent research is limited. Far southeastern Chihuahua remains mostly *terra incognita*. Recent studies in northeastern Chihuahua, including the La Junta region, have advanced by expanding models from west Texas (Mallouf 1992, 2005). Central eastern Chihuahua, around Villa Ahumada, reflects a mix of interactions with both west Texas and Paquimé (Cruz Antillón et al. 2004). Far southern Chihuahua was traditionally interpreted as affiliated with Loma San Gabriel groups, defined by research in Durango. For decades, the dominant narrative was that simple agrarian groups lived in close proximity to the Guadiana Chalchihuites (Foster 2000). Recent research (Hers 2013) argues for a near complete replacement of local groups through organized colonization. Loma San Gabriel is now widely accepted only as a pre-Chalchihuites manifestation (Punzo Díaz 2013) and of unclear relevance to southern Chihuahua.

Cultural regions in eastern Sonora have been tentatively redrawn. Originally, Río Sonora was defined as extending from northern Sinaloa to near the international border, encompassing both foothills and sierra terrain of the Basin and Range province. Recently, Carpenter (2008, p. 30), in consultation with other researchers,

split the region into two: a northern Río Sonora and southern Serrana. The archaeological record remains decidedly murky. One ^{14}C association from the Río Sonora Valley suggests ceramic occupations as early as 795 to 425 BC (R. Pailes 1984). Work in the Bavispe Valley indicates the presence of culturally diagnostic textured ceramics by AD 550 (Douglas and Quijada 2004b). The Late period also lacks precision beginning ca. AD1000/1100 when a settlement pattern focused on river terraces became dominant. In the Río Sonora, I (Pailes 2017) utilized Bayesian methods to refine Doolittle's (1988) architectural sequence, but much room for improvement remains. In the Serrana region, Pailes' (1973) early work still provides the basic chronology. The baseline interpretive model for these regions was inspired by world-systems theory and incorporated eastern Sonora into broader regional frameworks (Whitecotton and Pailes 1986). Ethnohistorical research focused on the 16th century commensurately emphasizes the importance of long-distance trade (Riley 2005). These interpretations provide the framework that still directs most research questions with varying degrees of criticality.

Research at two sites dominates the Huatabampo region. Machomoncobe is a coastal littoral site with a sequence beginning as early as 180 BC; the more widely accepted date is AD 200, with occupation continuing until ~AD 1000 (Alvarez 1990). The second site is El Ombligo, a burial mound excavated by Ekholm in the 1940s. Carpenter (1996, 2008) sees two phases at this site: Huatabampo from pre-650 to ~1100 and Guasave from ~1100 to 1450. The latter presents a significant uptick in social complexity previously thought to indicate Mesoamerican affiliation; now it is interpreted as a local development.

Great strides have been made in research in the Trincheras region (so-called for the prevalence of *cerro de trincheras* sites) in the Sonoran Desert of northwest Sonora. Tentative chronological frameworks for the Trincheras region are established for the Altar and Magdalena Valleys (McGuire and Villalpando 1993; Villalpando 1992). Painted ceramic production began sometime between AD 350 and 800 and ceased between 1100 and 1300, reverting to a wholly plainware tradition. Much like Casas Grandes, our knowledge of the Trincheras region is overly dominated by work at the primate center, Cerro de Trincheras. This site is truly singular, covering over 90 ha with over 900 terraces, some as long as 100 m. Recent research disproves that Trincheras was a mercantile outgrowth of shell jewelry consumption in neighboring regions. The reconstructions provided by McGuire and Villalpando (2011; Villalpando and McGuire 2009) have thus far not attracted substantial critique.

Minimal archaeological research has been undertaken in the Comca'ac (Seri) region along the Sonoran central coast (see Bowen 2009). INAH Sonora personnel are currently investigating far eastern, mountainous Sonora, but publications remain rare, aside from gray literature.

Formative Periods

Present data on Viejo period Casas Grandes are limited to partial excavation/testing of 13 sites over a broad swath of Chihuahua (Pitezel and Searcy 2013, p. 77). Earlier plainware ceramic periods are the subject of speculation but are essentially

unknown (Whalen and Pitezel 2015). Archaeologists have struggled to discover substantial Viejo sites. Whalen and Minnis' (2001b, 2009) research suggests that Viejo occupations underlie an appreciable number of Medio period sites. Pitezel and Searcy (2013, p. 79) suggest exclusively Viejo sites are relatively common but difficult to identify, because of their pithouse architecture and frequent location on rarely surveyed upper river terraces.

There is a broadly shared cultural identity across the Casas Grandes region during the Viejo period (Kelley 2004). Ceramic (Burd-Larkin et al. 2004) and architectural (Kelley and Searcy 2015) traditions show incipient regional divergences that became starker in the Medio period. In central Chihuahua (mostly Babícora in Fig. 3), a singular elaborate child burial, several sites with 20-plus pithouses, and large community houses indicate nascent social differentiation (Kelley et al. 2012; Kelley and Searcy 2015). This research also demonstrates minimal Viejo period involvement in regional exchange in the form of shell, turquoise, and Classic Mimbres ceramics from southern New Mexico (Kelley 2009; Kelley et al. 2012). In general, too little is known about the Viejo period to evaluate the causes and magnitude of social changes relative to the Medio period. This is complicated by the fact that the Viejo period is most extensively studied in central Chihuahua where there is a less pronounced augmentation of social complexity in the Medio period. In Di Peso et al.'s (1974) view, the Medio period shift in architectural styles, craft production, exchange relationships, and political complexity was so great it required exogenous forces. The overlapping of dates and increasing examples of superposition now indicate some continuity across this period but by no means preclude immigration or other exterior influences.

There is minimal research on the early ceramic period in the Río Sonora region. Douglas and Quijada (2004a) point out that early dates from Atravesaño de Lencho undercut arguments for a late arrival of eastern Sonora populations and are more indicative of in-place development with characteristics broadly shared with the Casas Grandes Viejo period. Most evidence for early sites in this region come from low, first terrace contexts (e.g., Douglas and Quijada 2004b), which are geologically rare. I suspect that most pre-AD 1000 sites are located on the floodplain and, thus, not easily detected.

In far southern Sonora, the Formative stage of most groups is poorly understood. There is general agreement on a Cochise Archaic background shared with neighboring regions. The earliest ceramics also exhibit a broad similarity that is frequently described as Mogollon in overall character, meaning coil and scrape forming, sand or natural temper, and brownware paste. These traits are shared across the Huatabampo, Serrana, Río Sonora, Loma San Gabriel, Viejo-Casas Grandes, Trincheras, Mogollon proper, and Comca'ac regions (e.g., Braniff 1992; Carpenter et al. 2008; Douglas and Quijada 2004b; Riley 2005). This list of characteristics is globally ubiquitous and thus not necessarily indicative of technological interchange. The strongest case for closely shared ceramic origins comes from the Serrana and Huatabampo area, which Carpenter (2014) ascribes to in-place development and differentiation of Cahitan groups. Carpenter and Sánchez (2008, p. 25) point out that the earliest ceramics yet known in the neighboring Aztatlán region of southern Sinaloa belong to a fully elaborated assemblage with polychromes, bichromes, and

plainwares with a basal date of AD 250. There are clearly some major gaps in this record.

Researchers ascribe diverse affiliations to groups in southern and eastern Chihuahua. Small *ranchería* settlements (see Bradley 2000b) indicate a possible Loma San Gabriel presence. At least nine *cerros de trincheras* of unclear affiliation are located in the southern Basin and Range region with Ceramic period dates from AD 500 to 1000 (MacWilliams et al. 2008, p. 45). Poorly understood pithouse dwelling groups, known as La Cruz, also existed in east-central Chihuahua. These sites are present in the Bustillos Basin between AD 800 and 1200, and possibly several centuries earlier (MacWilliams 2001; MacWilliams and Kelley 2004; MacWilliams et al. 2002). The signature of these groups is light in the archaeological record and may reflect a pattern of mobile agriculturalists similar to the ethnohistoric Rarámuri of the Sierra Madre. Other non-Casas Grandes agriculturalists in Chihuahua along the Río Conchos (Kelley 1992) are likely a late, post-AD 1200 development.

In the Trincheras region, there is general agreement on continuity between the end of the Early Agricultural period and the appearance of ceramic-producing groups. At the La Playa site, researchers tentatively identified a ceramic tradition beginning around AD 130 that differs from later Trincheras wares (Carpenter et al. 2015, p. 239). Also in the Magdalena Basin, S. Fish and P. Fish (2007, p. 167) infer an initial plainware tradition dominated by *tecomates*. There was one *cerros de trincheras* site in the Magdalena Valley associated with this early ceramic phase, but then there was potentially a centuries-long hiatus before this site type became common (S. Fish and P. Fish 2008, 2004). The site of La Playa presents evidence of continuity between Early Agricultural period and Late Prehistoric periods but little can be said of social organization in this transitional period.

Population Movements and Demographics

Researchers of Northwest Mexico have long noted spatially disjointed patterns of linguistic and cultural affiliation among historic populations (Fig. 5). A common approach to such relationships is to seek evidence of past migration events. The potential for migration events during the Paleoindian and Middle Archaic periods was noted above. These hypotheses focused on groups being pulled into empty landscapes that presented ecological opportunities. Unlike earlier periods, sociopolitical and demographic pressures during the Ceramic period likely played a dominant role as both push and pull factors.

The most significant migration debate hinges on alternative interpretations regarding when Taracahitan and Tepiman language groups obtained their historic distributions. I present these theories as oppositional, but there is much room for reconciliation. Wilcox and colleagues (Wilcox 1986; Wilcox et al. 2008, p. 160) propose that the post-1400 demographic decline of the Tepiman-speaking Hohokam of southern Arizona involved migration along a linguistic corridor to the Lower O'odham (Pima Bajo). Their model envisions an unbroken linguistic corridor to facilitate this migration. Relatedly, several researchers (Phillips 1989, p. 390; Wilcox et al. 2008, p. 160) suggest that after the demise of Paquimé, or perhaps

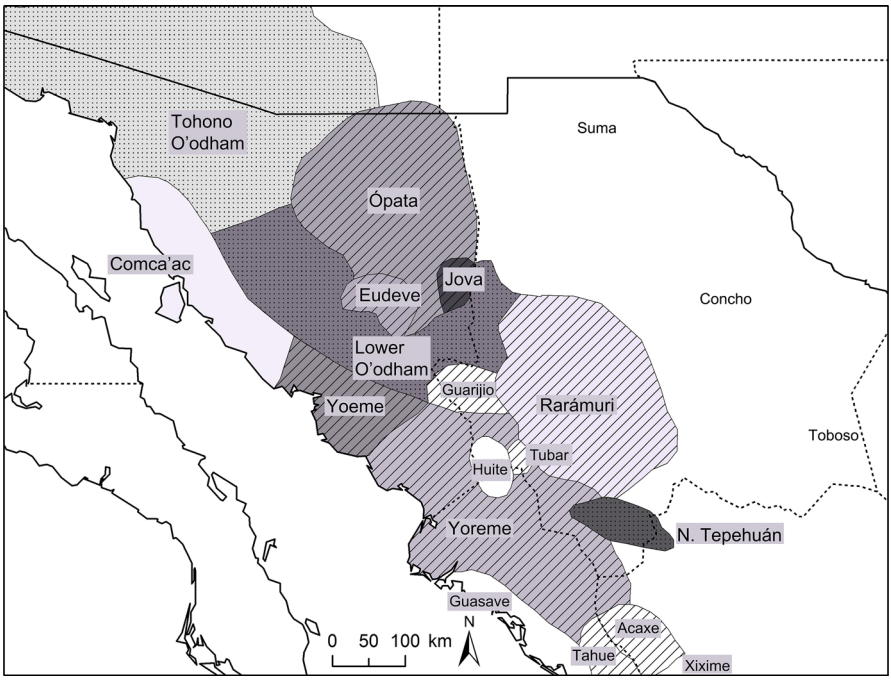


Fig. 5 Historic groups (large print mentioned in text) and linguistic divisions (after Goddard 1996, frontispiece), Taracahitan-hatched, Tepiman-stippling

earlier, Casas Grandes peoples migrated west, contributing to the Río Sonora who subsequently became the Taracahitan-speaking Ópata. Interpreting the Ópata as latecomers to a region already occupied by likely Tepiman speakers is a long-held supposition (Braniff 1992). Pushing the demise of Medio period Casas Grandes to the early 1500s (Whalen and Minnis 2009, p. 68; 2004) would complicate the timing and motivating factors for any Paquimé to Río Sonora/Ópata migration. Pueblos in the American Southwest are another potential receiver of post-Paquimé populations (Phillips and Gamboa 2015). In opposition to the late arrival Ópata model, Carpenter and Vincente (2009) argue that the ancestral homeland of the Taracahita is near the Sinaloa Sonora coast with a subsequent dispersion to the northeast. The timing of this Taracahitan dispersion is unclear, but it would significantly predate the potential Hohokam intrusion cited above. In other words, there would be no linguistic corridor present for the Hohokam to follow. Carpenter's model also contradicts previous work by suggesting in situ differentiation of local Serrana and Huatabampo groups (Carpenter 2014; Carpenter and Sánchez 2008). Limited genetics research suggests language is a poor proxy for genetic relatedness in Northwest Mexico (Gorostiza et al. 2012).

Also relevant to the theme of migration is Lekson's (1999) suggestion that the elite founders of Paquimé were refugees from the collapse of Pueblo centers in northern New Mexico. This proposal has yet to gain consensus status among Northwest Mexico/Southwest U.S. researchers (Phillips 2002a). Lekson's model is

literally a 180° inversion of Di Peso et al.'s (1974) proposal that Mesoamerican merchants established the center. Lekson (1999) also notes that the timing of Medio period growth suggests that the Mimbres region of New Mexico was a contributor to populations in Casas Grandes. A common theme among several hypothesized migrations is the movement of a population from a relatively well-studied region to a poorly studied one. That is, in the face of substantial data for a population decline, such as Hohokam, Pueblo, or Paquimé, it is assumed that the population was shunted into an area for which less evidence is available, mostly various parts of Sonora and also Viejo period Paquimé. I would point out that small-scale, household-level migrations were certainly more common than mass movements and potentially made a greater cumulative contribution to cultural and linguistic transmission.

A closely related topic is that of population estimates and growth rates. Demographic debates were prevalent in the Río Sonora region for several decades. Depending on how the region was defined, estimates ranged from 65,000 to 100,000, with densities of approximately 1.5 to 2.6 persons per km^2 (see Doolittle 1984; Riley 2005). Doolittle argues for a several-fold increase in populations between the Early and Late periods, divided at approximately AD 1300., In contradiction to others (e.g., Pailes 1997), Doolittle (1988) does not believe that immigration is required to explain the growth. My own suspicion is that the high growth rate may be an artifact of site visibility; this does not discount the more controversial high Late period population estimate. Demographic estimates for Sonora alone (Doolittle 2008; Reff 1991; Riley 2005) often exceed estimates for the entirety of the American Southwest/Northwest Mexico (see Hill et al. 2004, Fig. 2). Efforts focused on the American Southwest typically do not reference research conducted in Sonora, and the most widely cited research acknowledges difficulties in perceiving protohistoric populations similar to Sonoran groups (Hill et al. 2004, p. 697).

In Chihuahua, there is also a salient debate regarding population levels and their origins. Lekson and colleagues (2004), utilizing maps and site size estimates provided by Di Peso et al. (1974), produced an estimate of 285,000 for northwestern Chihuahua and northeastern Sonora, a figure acknowledged as unreasonably high. They suggest that one-third this number (95,000) is more realistic. Recent survey work in the Casas Grandes Valley has produced general correspondence in the numbers of sites identified by Di Peso et al., but with population levels that were *at most* one-third the estimate of Di Peso et al. (Whalen and Pitezel 2015). Specifically for the size of Paquimé, Whalen et al. (2010) propose halving the population estimates to 1,100 rooms and 2,500 people based on revised interpretations of the ruin's size and architectural plan. Whalen and Minnis (2003) argue that substantial immigration and exterior influence are not required to account for Viejo to Medio period demographic and social changes.

Bases of Political Power and Social Differentiation

Among the middle range societies of the Northwest, an incredible amount of research is directed toward elucidating the strategies that supported social

differentiation. Drawing on themes recurrent in studies of political economy, I ask *how* regions were complex, as opposed to asking if they were complex—a still completely valid question for many regions (Lekson 2005). There is significant interdigitation between the selected themes that is not easily compartmentalized, but I believe this approach presents a view of the region not duplicated in existing literature.

Subsistence

In the Casas Grandes region, Di Peso et al. (1974) grafted Wittfogel's (1957) concept of a hydraulic society onto Medio period Paquimé. They incorporated substantial portions of the Sierra Madre into this model, arguing that ubiquitous terraces and checkdams were constructed by Paquimé labor to protect the valley's soils (see also Braniff 2000, pp. 137–138). Irrigation systems of the Casas Grandes Valley require more investigation (Doolittle 1993), but few would now argue that Paquimé exercised direct control of water management beyond its immediate vicinity and down-river settlements (Whalen and Minnis 2001b, p. 73). Management of the subsistence economy, however, continues to hold a central place in the interpretations of the polity regarding both its expansion and subsequent decline. Although presently based on slim evidence, the initial differentiation of Paquimé from its neighbors was plausibly related to its superior productive potential (Whalen and Minnis 2001b, p. 198). More clearly, once established as the primate center, a paramount concern of the leaders of Paquimé became the extraction of staple goods from the surrounding ~30-km region (Whalen and Minnis 2001b). Significant oversight of subsistence production appears likely based on settlement pattern data, evidence of intensification beyond local need, and the presence of administrative centers in a zone 15 to 30 km from Paquimé (Whalen and Minnis 2009). Much of the evidence for intensification is in the form of xeric cultivation features utilized for agave (Minnis et al. 2006). Large agave roasting ovens, at Paquimé, administrative centers, and rarely at smaller sites, reflect feasting activities, indicating subsistence production also was used in the maintenance of regional authority (Whalen and Minnis 2009, pp. 169, 273–274). Large roasting pits are the most common integrative feature encountered in the region post-AD 1300 and present variation indicating potentially diverse contexts for feasting behavior (Minnis and Whalen 2005). Whalen and Minnis (2001b, p. 201) also invoke the subsistence economy in the eventual collapse of Paquimé. In this reconstruction, elites had become reliant on the continual expansion of subsistence production. When scalar limits were reached, resulting in increasingly marginal returns, Paquimé's elites lost their ideological mandate and the sociopolitical system collapsed. Lekson (2001, p. 220) criticized this model as grafting a familiar Southwest U.S. story onto social and environmental contexts that differ in important ways.

In other portions of Chihuahua, subsistence is most often invoked as a prohibitive variable in the emergence of social hierarchy. Kelly et al. (2012, p. 95) suggest that a lack of irrigation potential prohibited political centralization in southern portions of the Casas Grandes region. In the minimally studied southern Sierra Madre,

researchers link the limited size and dispersion of fields to patterns of social organization from the earliest known inhabitants (Hard and Merrill 1992) to the present mobile agriculturalists (Graham 1994; Hard and Merrill 1993). Large granaries at several sites in the northern Sierra Madre may indicate centralized control and redistribution of subsistence resources (Gamboa and Mancera Valencia 2008, p. 364). Douglas and Quijada (2004a), working in the Bavispe Valley of Sonora, perceive evidence for some subsistence intensification and diversification that may indicate patterns of community organization common to the western margin of the Casas Grandes sphere of influence (Douglas and MacWilliams 2015).

Much less is known of the subsistence economy in either the Serrana/Río Sonora or Trincheras regions. Doolittle (1988) argues that the earliest sites in the Sonora Valley were located adjacent to the most productive parcels, but the chronological methods to differentiate Early (12th century) from Late period sites (post-14th century) remain tentative. An abundance of spindle whorls and cotton remains recovered in the Sonora Valley indicate that agricultural crops were a significant component of surplus production and craft economies (Pailes 1984, p. 323). Doolittle's overall model for the region is that of a redistributive chiefdom (Doolittle 1988, p. 60). More recent research offers little in the way of conflicting or confirmatory evidence. Working in the Moctezuma Valley, I (Pailes 2015) argue that the topography of the landscape, which produces a very patchy distribution of arable land, was the primary determinant of the extent of political integration. Although the argument for small-scale political organization can be matched to previous settlement surveys in the upper Bavispe (Douglas and Quijada 2004a; Quijada and Douglas 2003) and central Sonora Valley (Doolittle 1988), the proposal that there may have been as many as 35 independent political units based on the distribution of arable land remains mostly untested. There is clearly no settlement pattern in all of eastern or southern Sonora that approaches the primacy of Paquimé. In the Trincheras region, survey in the Magdalena Valley also indicates that irrigation potential impacted settlement placement and larger community structure (S. Fish and P. Fish 2004). The much broader basins of this region allowed for much more expansive and, perhaps, populous communities than was feasible in eastern Sonora.

In the Huatabampo region, Alvarez' (1990) work at Machomoncobe provides insights on subsistence practices. The most nuanced version of this work applies a cultural ecology perspective and argues that site location reflected a desire to exploit a diverse resource base (Alvarez 2001). Fishing is highlighted as an important contribution, setting the Huatabampo apart from most Northwest sedentary groups. How these qualities affected the course of social differentiation in Huatabampo is not yet explained. Notably, Machomoncobe was abandoned after a change in the course of the nearby river altered the productive potential of the area.

Ideology

Investigators place significant emphasis on ideology as a basis for social power, but the uneven amount of research across the Northwest creates significant variance in the character and specificity of interpretations. I identify three general types of

ideological studies. The first attempts to interpret liturgical content, religious practices, and the personal qualities of ritual specialists. For the most part, this is only attempted at Paquimé and to a lesser extent at Trincheras. A middle level of investigation employed in most regions examines the role of ideology in legitimizing positions of social power and relies on cross-cultural comparisons to propose political frameworks; much of this research has a processual bent to its application. A final category maps the distribution of highly charged symbolic content. These studies often aim to understand the reach and influence of a primate center into hinterland regions or seek evidence for broadly shared religious traditions.

Paquimé, as the most complex center in the region with the greatest stylistic diversity, accordingly, receives disproportionate attention. The analysis of whole polychrome vessels permits detailed interpretations of Medio period symbolic content. Presumed affiliations to both Mesoamerican and Southwest U.S. symbolism provide comparative bases for element interpretation (Woosley 2001). Relational analyses, based on the frequency and repeated concurrence of design elements and depictions, permit semantic inferences (C. VanPool and T. VanPool 2009). C. VanPool and T. VanPool (2007) argue that a central tenet of religion at Paquimé was dualism. This is reflected in gendered identities (VanPool and VanPool 2006) and perceivable in treatment of day and night, and the local and the foreign. This worldview helped legitimize inequalities at Paquimé by emphasizing the unity of disparate parts of the societal whole (C. VanPool and T. VanPool 2002). In their view, shamans, represented on many vessels and in some effigy forms, were the ritual interceders capable of transcending dualisms and were central to power legitimization at Paquimé (C. VanPool 2003; C. VanPool and T. VanPool 2007). Agricultural cycles, rain, and fertility were likely targets of shamanistic efforts. The shaman designation in these discussions is mostly based on the perceived mode of spiritual interdiction, involving trances, possibly psychotropically induced (Huckell and VanPool 2006), in which the shaman entered a liminal dream/other worldly state to obtain knowledge and interact with supernatural forces (C. VanPool 2009). They envision these ritual specialists as the rulers of Paquimé (see also Schaafsma and Riley 1999) and thus fully enmeshed in public state rituals. Their reconstruction thus blends traditional definitional categories of shamans and priests (C. VanPool and T. VanPool 2015).

Rakita's (2009) mortuary analysis provides a diachronic outline of religious development at Paquimé that bridges shaman/priest interpretations. Shamanism seems probable for the small settlements of the Viejo period, which Rakita believes were dominated by clan affiliations. During this period, burial in public spaces provided a venue for competitive display. With increased aggregation in the Medio period, burial rituals became sequestered in order to restrict access to esoteric knowledge and to emphasize authority provided by prestigious ancestry. By the late Medio, many group membership lines became blurred and commoner burial in shared spaces reemerged, whereas the political theater of elite ancestor veneration and legitimization remained restricted. Ancestor veneration employed the use of heirloom human remains to symbolize the continuity of elite identity (Rakita 2006). The priesthood of the ancestor/political cult likely coexisted in a heterarchical

relationship with the priesthood of an integrative earth/fertility cult (see also Whalen and Minnis 2000). Rakita (2009, p. 163) believes polychromes reflect the inclusive earth/fertility tradition. This religious cohort also seems a logical association to the theocratic control of the city's water supply inferred by other researchers (Walker and McGahee 2006). Perception of multiple ritual organizations, or cults, has a long history in Paquimé interpretations (see Riley 2005, p. 141). Rakita's diachronic model, however, relies on divisions of the Medio period that are questioned by others (Whalen and Minnis 2009, p. 72).

The reconstruction offered by Whalen and Minnis also invokes ideological legitimacy as a component of Casas Grandes complexity. They acknowledge (2009, p. 147) the religious content of late Medio period polychrome motifs, but their treatment of the subject is more processual. Architecture and the distribution of particular classes of material culture serve as indicators of shared ideology in their settlement pattern analyses. Ballcourts and thick-walled architecture, which reflect an *architecture of power* (Whalen and Minnis 2001a), are particularly important markers. They argue that the absence of ballcourts in the immediate environs of Paquimé (~15 km) indicates total dominance of this zone. The presence of ballcourts beyond this limit (15–30 km) was originally thought to indicate increased autonomy and competition among near peer elites (Whalen and Minnis 1996, 2001b,). More recently, the presence of ballcourts is taken to indicate the projection of Paquimé's authority into these lands, particularly when they co-occur with other features such as thick-walled architecture, large roasting ovens, evidence of macaw aviculture, and ritual paraphernalia (Whalen and Minnis 2009, p. 276; Whalen and Pitezel 2015). This revision brings interpretations more in line with the phylogenetic analysis of Harmon (2005, 2006), who argues that the scale and form of ballcourts reflected the dominance of Paquimé over surrounding regions and simultaneous competition among elite factions at multiple levels. Harmon further states that the unique "T"-shaped court at Paquimé was constructed to strictly control access and was likely the venue of rituals conducted only at the center, including human sacrifice.

The town of Paquimé was, without doubt, at the center of a ritual landscape unrivaled by any Medio period contemporary. Several researchers suggest that the unique qualities of Paquimé reflect its role as a regional pilgrimage destination (P. Fish and S. Fish 1999, p. 40; C. VanPool 2003, p. 710). The center itself presents symbolically infused relationships among its monumental features (Pasahow 1993), including three ballcourts, a walk-in well, and 16 mounds. Paquimé also served as the nexus of a larger ritual landscape with the surrounding region containing shrines, trails/roads, and hilltop summit architecture (Pitezel 2007, 2011), as well as natural features such as springs (Schaafsma 1998). An extensive hilltop-signaling network may have facilitated coordinated ritual activity throughout this landscape to a distance of at least 75 km (Swanson 2003).

The presence of Casas Grandes-style monumental architectural features and symbolically laden polychromes at significant distances from Paquimé indicates that ideological and political strategies of the center were exported far beyond the limits of political domination (Carpenter 2002; Riley 2005). Sporadic Casas Grandes-style ballcourts exist as far away as the flank of the Sierra Madre (Naylor 1995), central

Chihuahua (Kelley et al. 2012, p. 92), and southern New Mexico. The most-well-known example of the latter is the Joyce Well site (Skibo and Walker 2002). The equally distant 76 Draw site presents a cross-shaped mound (Rakita et al. 2011), also of Casas Grandes affiliation. In the northern Sierra Madre, some researchers (Gamboa and Mancera Valencia 2008) interpret the presence of rock art with Casas Grandes symbols as evidence of a strong association with Paquimé, while others focusing on architectural communities of practice perceive greater autonomy (Bagwell 2004). No monumental architectural forms are known east of Paquimé. Regionally abundant polychrome types across much of Chihuahua and eastern Sonora (see Fig. 3) indicate broadly shared stylistic cannons that reflect shared ideological precepts or deep ancestral roots. Participation in the Casas Grandes sphere of influence was quite heterogeneous in these far hinterland areas (see Douglas 1995), with divergences corresponding to local agricultural adaptations, demographics, and variable exchange interactions (Douglas and MacWilliams 2015). Building on the above noted hypotheses, T. VanPool and colleagues (2005) interpret this heterogeneity to reflect idiosyncratic, voluntary, community-level decisions to participate in a pilgrimage-mediated ritual system of Paquimé.

Recent research in the Río Sonora and Serrana regions is most notable for its lack of any clear ideological justification for positions of authority. Shamanism is inferred from rock art depictions in both the Río Sonora (Pailes 2017) and Serrana regions (Sánchez et al. 2009, p. 86). In the Moctezuma Valley, a small painted assemblage reflects stylistic connections to Casas Grandes but lacks any of the elements identified as ideologically significant (Pailes 2015). A few features were identified as ballcourts in the Sonora (Doolittle1988) and upper San Miguel Valleys (Braniff 1992), but they do not evidence significant labor investments. Most portions of eastern Sonora lack obvious forms of public architecture and bespeak considerable local variation (Gallaga 2007; Quijada and Douglas 2003; Pailes 2015). I (Pailes 2017) suggest that the lack/heterogeneity of integrative features reflects small-scale political organization, a desire by local leaders to differentiate from surrounding competitors, and an emphasis on other venues of social competition. In the middle Yaqui Valley, a region of unclear social affiliation (Gallaga 2007), the Onavas burial mound dating to the 11th–16th centuries contains individuals with cranial and dental modification. These practices suggest ideological and other connections to West Mexican Postclassic groups (Watson and García 2016). A similar case can be made for the contemporaneous portion of the Huatabampo sequence in Sinaloa based on excavations at the El Ombligo mortuary mound (Carpenter 2008). There are at least three other small mounds in the region (Carpenter 2014, p. 44; Carpenter and Sánchez 2014, p. 146; Talavera and Manzanilla 1991). Ceramic masks in El Ombligo and depicted in rock art (Sánchez et al. 2009) may reflect antecedents of those worn by historic Yoeme and Yoreme dancers (Carpenter 2008, p. 169).

Cerros de trincheras in the Trincheras region were the locus of hilltop-centered rituals. The ultimate inspiration for ascribing significance to such landforms may have emanated from Mesoamerican conceptions of monumentality (O'Donovan 2002, p. 66) or even hilltop towns such as Monte Albán (Nelson 2007). Hilltops as a nexus of ideological significance and focal point of ritual are commonplace in

regional ethnography (S. Fish and P. Fish 2008). This tradition reached its apogee with the construction of Cerro de Trincheras, occupied from the late 1200s to the mid-1400s (McGuire and Villalpando 2011; Villalpando and McGuire 2009). This site presents the unusual pairing of a summit feature with clearly restricted access and a large open feature located in a position that allowed easy viewing to most of the site's inhabitants (Zavala 2011a). The principal summit feature, named the Caracol, has a plan reminiscent of a *Conus* shell cross-section, which may have been a symbol for a population center (Zavala 2006). The exclusive nature of the feature and presence of artifacts associated with feminine craft industries—spindle whorls—reflect female-centric rituals (Gallaga 2011a, p. 403; McGuire and Villalpando 2011, pp. 831, 851). McGuire and Villalpando (2007) believe that elite households controlled the summit precinct. Based on an eclectic artifact assemblage, DiLeonardo (2011, p. 690) infers that diverse ritual events were enacted on the summit and near-summit elite terraces, including dancing, feasting, and healing ceremonies.

Several other sections of the site are likely candidates for elite residences (O'Donovan 2011), including one with a miniature version of the Caracol. O'Donovan (2004) interprets the overall character of leadership at Cerro de Trincheras to be heterarchical based on the site's layout, multiple and diverse forms of ritual architecture, and diffuse evidence of craft production. In comparative contexts, I believe Cerro de Trincheras stands out most for its suppression of individualistic aggrandizement or even expressions of unique identity. The prevalent cremation mortuary practices with few grave goods clearly reflect this pattern. With the exception of one burial in a polychrome jar and a few copper bells, individuality is not perceivable in a cemetery adjacent to Cerro de Trincheras (Watson et al. 2015, p. 349). Other evidence commensurate with the suppression of individual aggrandizement includes the minimal nature of domestic architecture at the site relative to its monumentality, a cessation of painted ceramic traditions, and, with the exception of shell, a paltry assemblage of imported goods.

At least 15 small *cerros de trincheras* were located within 75 km of the center, most with *corrales*—dry laid masonry enclosures—on their summits, diagnostic of the El Cerro phase. These smaller *cerros de trincheras* were not habitation sites but served local populations in which the rituals on the summit of Cerro de Trincheras were enacted in less elaborate form (cf. Carpenter et al. 2008, p. 305; P. Fish and S. Fish 2002; S. Fish and P. Fish 2004, 2007). Presumably, this relationship reflects direct influence from the primate center and not mere emulation. In contrast, the presence of *cerros de trincheras* in the Altar Valley (McGuire and Villalpando 1993) and as far away as the Tucson Basin (Downum 2007) reflects the adoption of hilltop ideology by regional neighbors with various levels of syncretism. In both the Altar and Magdalena Valleys, intervisibility to both contemporary and ancestral *cerros de trincheras* is a common characteristic (Zavala 2006) that may have significance for larger scales of integration as well as interpreting the content of hilltop rituals.

Warfare

Warfare has received variable interest from scholars in recent years. Few researchers follow Di Peso et al.'s (1974) interpretation that Paquimé suffered a dramatic end by unknown besiegers. Reanalysis of their data suggests that much of the evidence for in situ deposits created at the time of the town's supposed sacking, including despoiled ritual paraphernalia and unburied victims, actually represents intentional ritual deposits (Walker 2002). The supposed victims also display little evidence of violence (Casserino 2009). Whalen and Minnis (2009, p. 5) argue that relative to a global sample of middle range societies, warfare was of minimal importance to the political structure of Paquimé. Relatedly, a comparative study (VanPool and O'Brien 2013) shows that the introduction of the bow and arrow impacted settlement pattern trajectories of the Casas Grandes region less than the Pueblos in the American Southwest. The hilltop-signaling network that allowed for coordinated defense (Swanson 2003) provides contradictory evidence. Likewise, the presence of human remains kept as trophies (Ravesloot and Spoer 1989) and evidence of potential exocannibalism (Casserino 2009) indicate that more weight should be given to warfare than presently acknowledged, but there is scant evidence of its presence in the core of Casas Grandes.

Across the Northwest and throughout time, investigators interpret *cerros de trincheras* to reflect a defensive posture (see Leblanc 1999). At Cerro de Trincheras in northwest Sonora, researchers (O'Donovan 2002) emphasize multivariate motivations for living on a hill and disparage functional logic. That being said, McGuire and Villalpando (2011; Villalpando and McGuire 2007, 2009) note that the elevated position, steep slopes, and complex layout of sites provided obvious defensive benefits. GIS analyses of several *cerros de trincheras* in the Trincheras region indicate that the sites were an effective deterrent to the types of run-through raids known from the ethnographic record of western Arizona (McGuire and Villalpando 2015). McGuire and Villalpando interpret the initial founding of Cerro de Trincheras as an aggregated response to Hohokam incursion into the Altar Valley after AD 1300. Relatedly, across the eastern Trincheras/Hohokam Papaguería frontier, Bayman and Sullivan (2008, p. 11) argue that the encroachment of respective forms of public architecture reflects colonization intended to extend dominion over what was previously a common-pool resource zone. There is little direct evidence that these territorial encroachments resulted in violent warfare. I suspect this is because investment in communal architecture, such as *cerros de trincheras,* served as an effective warning for the potential of coordinated responses, thereby deterring most attacks.

In the Río Sonora region, interpretations of ethnohistoric accounts suggest warfare was a central component of political legitimacy in the 1500s (Riley 2005). My semiquantitative analyses of several ethnohistoric accounts demonstrated that warfare was essentially the only means of social differentiation regularly documented by early Spanish explorers (Pailes 2017). Warfare was likely a primary characteristic of the inferred balkanized landscape from approximately AD 1100 until contact. Geographic variance in projectile point styles in the Moctezuma Valley may indicate intentional signaling of group identity. In far southern Sonora

and northern Sinaloa, we have only the presence of possible trophy skulls included in the burial mound of El Ombligo (Carpenter 1996) to hint at the social significance of warfare. The ethnographic record of this region also suggests that warfare was common (Carpenter 2007).

Exchange

The first broad treatments of exchange in the Northwest employed world-systems theory and accordingly interpreted regional interaction in core-periphery frameworks. A subsequent generation placed emphasis on various iterations of models of prestige goods exchange. Recent research adds emphasis to the importance of exchange items as fonts of symbolic power and their role in a larger ritual and political economy. Paralleling theoretical advances, new archaeometric applications and discoveries of raw material sources overturn long-held assumptions and add detail to exchange models. For example, Vargas (1996, 2001) demonstrated that most copper items found at Paquimé are of West Mexican origin, as opposed to on-site production (see also Palmer et al. 1998). Thibodeau et al. (2015) developed a method to determine turquoise provenance that may overturn models of mineral export to Mesoamerica (see Weigand 2008). Several researchers (Fralick et al. 1998; Kiebler et al. 2014; Martynec et al. 2011; Shackley 2005) identified and characterized new obsidian sources. Analyses of Ramos polychrome indicated that Paquimé did not monopolize production (Woosley and Olinger 1993). Stable isotopic methods confirmed most macaws were bred on-site in the Northwest, instead of being imported (Somerville et al. 2010). Similarly, stable isotopes were used to source shell to provinces of the Sea of Cortez (Grimstead et al. 2013). These new methods and refinements have great potential for increasing our understanding of exchange by future application to museum collections.

Understandably, the Casas Grandes Medio period receives the most attention, given the concentration of exotica at Paquimé. Disagreements persist concerning the scale of interaction, motives for exchange, relative status among exchange partners, and acquisition strategies. Prestige goods models continue to form a component of many interpretations. Most such applications bear little semblance to their Marxist roots and instead reference strategies of material aggrandizement and legitimization facilitated by elite interactions (Douglas 2000). Bradley (1999, 2000a) interprets the wide distribution of Ramos polychrome and particular styles of shell jewelry as evidence of large-scale economic interaction between elites of the Casas Grandes and Southwest U.S. Mogollon and Pueblo regions. A significant obstacle in these models is identifying what Paquimé received in return from long-distance interactions with northern neighbors characterized by relatively banal exotic goods economies.

Whalen and Minnis (2000, 2001b, 2009) hew closer to the original formulation of prestige goods theories. Their model does not preclude other types of exchanges, but the dominant role they perceive is patronage outflows from the primate center balanced by inflows of staple goods. They raise the possibility, based on cross-cultural survey, that critical life-stage events, such as bride wealth payments, required the largesse of Paquimé elites, resulting in relationships of social

dependency (Whalen and Minnis 2001b, p. 200). The distribution of prestige goods suggests that this relationship was strongest within about a day's walk from Paquimé (Whalen and Minnis 2001b, p. 192). A clustering of larger sites about 60 km from Paquimé, possibly reflecting an entrepôt, was the absolute limit of this political economy (Whalen and Pitezel 2015, p. 120). There are several aspects of presently available data that seem inadequately addressed. Most saliently, rare goods such as shell, copper, minerals, and macaws were exceedingly rare in all surrounding settlements. Frequencies are far below what would seem plausible if these items were regularly exported in return for commodities and universally required for life-stage events. These researchers acknowledge this fact. Many rare and even moderate quality materials (T. VanPool et al. 2000) were almost completely lacking outside Paquimé, with most prestige goods being lesser quality items (Whalen and Minnis 2001b, p. 192, 2009, p. 238).

As to the hordes of rare goods at Paquimé (i.e., 3,000,000 + *Nassarius* sp. shells), there is general agreement that they represented stores of elite prestige (Bradley 2000a; Whalen and Minnis 2000), as opposed to staging for imminent distribution. Whalen (2013) recently suggested that Paquimé residents conceptualized these items as animate and as such, an inalienable source of prestige to the larger community. This argument draws on diverse examples to show that shell is often viewed as animate, sequestered, amassed in large amounts, and not necessarily high quality. To me, the supporting Pueblo literature on animate objects seems a more appropriate fit for such items as the singular turquoise-inlaid conch shell altar piece than the impractically displayed hordes of low-value *Nassarius* sp.

The *how* of acquisition is another unsettled manner. Most models seem to tacitly prefer interpretations of down-the-line exchange. Douglas (1992) argues that the inherent instability of middle range society exchange networks made direct procurement by Paquimé residents more feasible. The suggestion that Paquimé was a pilgrimage center is also relevant to this debate. If offerings were carried from diverse homelands, much of the heterogeneity of Paquimé's rare goods could be explained. This interpretation revives the aspects of long-distance itinerant models but changes the motivation from economic to spiritual. Developing methods to test the pilgrimage hypothesis should be a goal of future research that is, perhaps, reliant on some of the aforementioned archaeometric advances.

A closely related question concerns the relative level of craft specialization and potential for suprahousehold control of production. Few now support Di Peso et al's (1974) argument that guilds controlled craft production. Substantial on-site production for several classes of rare goods such as shell (Whalen 2013), copper (Vargas 2001), and turquoise (Rakita 2015) cannot even be unequivocally demonstrated. There is likely not one interpretation that fits all industries (Minnis 1988). In general, Whalen and Minnis (2001b, p. 184) argue that craft production was diffuse. Although evidence of centralized control is lacking, it remains possible that some production was elite-attached or even elite-performed, a possibility largely unexplored to date. The ubiquity of presumably household-level specialization (Rakita 2015) also bespeaks a complex economy. This is most clearly evidenced by the fact that specialization extended into the realm of mundane crafts, such as metates (VanPool and Leonard 2002). Such ubiquitous specialization

implies a degree of social differentiation—horizontal if not vertical—unseen among neighboring groups.

Knowledge of other areas of Chihuahua is in a rudimentary state. Kelley and colleagues (Kelley 2004, p. 303; Kelley et al. 2012) note the scarcity of rare goods such as turquoise, shell, and exotic sherds in central Chihuahua (Babícora in Fig. 3). Obsidian is fairly common in lithic assemblages of this region, but so are sources, and it was rarely exported beyond local procurement networks (Fralick et al. 1998). Minnis and colleagues (1993) report several cage stones, associated with macaw aviculture, in west and central Chihuahua but note that their distribution does not reflect production control. In east-central Chihuahua, investigations at Villa Ahumada (Cruz Antillón and Maxwell 1999) and Galena (Cruz Antillón et al. 2004) revealed minimal participation in Paquimé exchange systems. The density of turquoise at Villa Ahumada was actually higher than at Paquimé, indicating the site was clearly involved in some regional exchange (Maxwell 2006). Recent refinements to Paquimé's chronology could explain a lack of evidence for interaction in the mostly pre-AD 1300 investigations at Villa Ahumada, but presently the best evidence indicates autonomy and much stronger integration with Jornada Mogollon groups of west Texas.

Working in the international four corners region, Douglas (1995) notes the incongruousness of previous world-system models to present data. Douglas stresses that small-societies were not passively incorporated into exchange networks and, in fact, enjoyed structural advantages, including access to raw materials, less-labor-intensive subsistence, expansive kinship links, and greater mobility. These factors, however, reduce the reliability of reciprocal exchange partners, thereby increasing transaction costs. Douglas suggests a likely result is the formation of diverse long-distance connections that are inherently unstable. Recent research in the Río Sonora region indicates that long-distance prestige goods exchange was of minimal importance to social organization. I (Pailes 2015) found that large sites in the Moctezuma Valley had differential access to obsidian. Once obtained, obsidian did not circulate widely to either local satellites or exterior peer polities. Other potential prestige goods were most notable for their absence. The balkanized political landscape appears to have precluded most long-distance exchange, presumably due to a combination of bellicose neighbors and the need for numerous middlemen to effect long-distance transport. In stark contrast to the limited extent of rare goods exchange, mundane ceramics circulated *relatively* widely. I (Pailes 2016) have argued that this reflects household-level strategies of forging ties with groups unlikely to undergo simultaneous social depredations, such as warfare or local political upheaval.

In the far southern reaches of the Serrana and Huatabampo regions, Carpenter and Vicente (2009, p. 94) find evidence of prestige goods exchange at sites such as Rincon de Buyubampo (Carpenter and Sánchez 2007, 2008) and in the mortuary mound of El Ombligo (Carpenter 1996, 2008). Their argument entails a reinterpretation of the Guasave area of Sinaloa as a local Huatabampo/Cahitan sequence, as opposed to the northernmost outpost of Mesoamerican affiliation. Most of the prestige goods—an impressive list of materials in regards to El Ombligo (Carpenter 1996, 2008)—are local or originated from the adjacent and poorly

understood Aztatlán region. Notably, Aztatlán ceramics are currently recorded only as far north as Mochicahui (Carpenter 2014, p. 51). In the other direction, identifying trade routes from southern Sonora to Paquimé is a major thrust of current research. At present, evidence for Paquimé-oriented exchange in southern Sonora is limited to shell, turquoise, and a few sherds of Casas Grandes affiliation (Carpenter and Sánchez 2007, 2008; Watson and García 2016). Carpenter and Vincente's (2009, p. 93) work traces trade routes from Sinaloa to near Alamos, Sonora. Research presently continues with survey/excavation in the Sahuaripa and Yaqui Valleys with the intent of picking up the trail.

Kelley (2000) and Foster (1999) propose overlapping interpretations for much of northern Sinaloa. Their model envisions a mercantile frontier that spread in stages along natural corridors with a primary origin in the Mixteca Puebla traditions of central Mexico. In Kelley's view, established merchants would reach out to frontier communities, making contact with receptive individuals who by benefit of the relationship became elites invested in the maintenance of the system and interested in its expansion. These researchers (e.g., Kelley 2000, p. 150) perceive the spread of an Aztatlán tradition that encompassed material culture styles, associated ideologies, and technologies that entered the Northwest from Mesoamerican-inspired West Mexican entrepôts, such as Guasave. This view contradicts the above-cited interpretation that this area was a wholly Cahitan development on the periphery of Mesoamerican exchange networks. Also at odds with recent research is the inference of a substantial exchange corridor along the interior flank of the Sierra Madre (Punzo Diaz and Villalpando 2015) and central Sonoran participation (Pailes 2015), both of which now seem exceedingly unlikely. In short, while few would doubt that there must be some connection between West Mexico and Paquimé, finding hard evidence has been frustratingly elusive. The corridor proposed by Carpenter and colleagues would seem the last, best hope. At present, models that envision expansive economic integration, incorporating all corners of the Northwest, seem untenable.

Recent research in the Trincheras region has likewise overturned long-held ideas. Previous interpretations of the area suggested that Paquimé established Cerro de Trincheras in order to control regional shell exchange (Di Peso 1979). The prevalence of shell jewelry in the region also suggested affiliations to Hohokam groups, but differences in manufacturing techniques indicate that the relationship did not involve the export of finished pieces. The recent extensive excavations at Cerro de Trincheras now depict a society minimally involved in long-distance exchange (O'Donovan 2002, p. 79; McGuire and Villalpando 2011). The paucity of turquoise is one telling example (Villalobos et al. 2011), as is the extreme rarity in foreign ceramics from Río Sonora and Hohokam and the minimal representation of Chihuahuan polychromes (Gallaga 2011b). Multiple production loci across the site indicate that the manufacture of shell jewelry involved specialization but not centralization (Vargas 2011). Much shell jewelry production was likely for internal household or perhaps lineage consumption. Higher occurrences of rare pottery types indicate that specialist households enjoyed some differentiated status (Gallaga 2004), but the pinnacle of material differentiation remained low. The specialist production of *Conus* tinklers and subsequent distribution to neighboring populations

in the Magdalena Valley potentially reflect a component of political strategies at Cerro de Trincheras (Villalpando and McGuire 2009). *Conus* tinklers are utilized in ritual contexts, linking their presence to the control of esoteric knowledge. The ubiquity of spindle whorls at the site also may hint at the importance of crafts that are poorly preserved in the archaeological record (Zavala 2011b).

Investigations near Bahía Adair identified several shell middens that are the result of Hohokam use of the area via logistical forays to collect shell (Foster et al. 2008; Mitchell and Foster 2000). This interpretation relies on the presence of Hohokam plainwares at these sites. Curiously, the middens do not contain much evidence for the exploitation of species associated with jewelry manufacture but rather reflect subsistence activities not typically ascribed to Hohokam shell exploitation. This area was a cultural nexus between Patayan, Trincheras, Hohokam, and likely hunter, gatherer, and fisher people (Martynec and Martynec 2014).

The Omnipresent Question: Foreign Contacts

Closely related to inferences of exchange and ideological legitimization are more general questions of influence from exterior regions, particularly Mesoamerica. This was a dominant element in the cultural historical narrative constructed by Di Peso et al. (1974) for the rise of Paquimé. The suggestion that Toltec *pochteca* established the center won few adherents due to its controversial reading of the chronology. It is now well established that the Medio period dates to a time of Mesoamerican contraction along its northern frontier, e.g., Río Tunal phase and later (see Fig. 4). Strong arguments for direct and coordinated military or political intervention in the region are now rare, and arguments for long-distance influence have shifted to other venues of interaction. Present research places great emphasis on the religious and political legitimization garnered from long-distance contact and foreign affiliations. Whether such influence was predominantly gained by direct travel or down-the-line mechanisms is a persistent debate.

Northwest groups with greater levels of hierarchy show greater inclinations for legitimizing elite position by insinuating Mesoamerican origins (see Searcy 2014). Accordingly, this research theme is mostly raised in regard to Paquimé where some level of influence is not in doubt. At one end of the continuum, Whalen and Minnis (e.g., 2000, 2001b, 2009) argue for only moderate emulation as a means of legitimizing elite positions with no direct contact of importance and an endogenous origin for most of Paquimé's political trajectory. Conversely, several researchers argue that the interpretive pendulum has swung decidedly too far toward local forces. Phillips and Gamboa (2015) provocatively suggest that the fall of Paquimé reflects a sort of peasant uprising in which local populations took umbrage with the imported foreign religion. Foster (1999) states that Paquimé would not have become a regional center of such magnitude were it not for the Aztatlán mercantile system. Lekson (2009) advocates for a view of greater Northwest Mexico/American Southwest that takes as its starting point an assumption of connectivity and the ability of prehistoric systems to overcome geographic distance. Phillips (2002b) notes Mesoamerica was an omnipresent source of ideological legitimization that was always easier to draw on than *de novo* creations. Some amount of the

divergence in interpretations is the result of analytical scale. Researchers seeking to construct a grand narrative of prehistory include Mesoamerican influence as an obvious variable (e.g., Lekson 2009; Riley 2005). A survey of all of Northwest Mexico and the American Southwest easily notes points of correspondence (e.g., Nelson 2006), but the scale at which most projects are conducted tends to favor the perception of endogenous forces.

Significant divergences remain in interpretations among the cohort of researchers who perceive strong evidence for imported ideological/political systems, regarding both ultimate and proximal origins and specific liturgical content. The most exhaustive compilation of evidence for Mesoamerican influence is by Mathiowetz (2011), who links every major event in Northwest Mexico and the American Southwest post-AD 900 to the importation of the Flower World ideological complex with its pantheon of Mesoamerican deities and concordant political positions. Aztatlán (West Mexico) plays a central role in this reconstruction with direct contact as the inferred mechanism of cultural transmission. The net is cast decidedly wide in these analyses, and many scholars, myself included, feel significant regional variation is too readily dismissed as epiphenomenal, to say nothing of geographical distance and temporal incongruities. More structured phylogenetic analysis infer substantial Mesoamerican influence in regards to ritual ballcourts at Paquimé (Harmon 2006), but the proximal source of much ceramic iconography reflects a Mimbres (New Mexico) source with little subsequent evidence for Mesoamerican inspiration (Harmon et al. 2005; Leonard 2001; C. VanPool et al. 2008; T. VanPool et al. 2008). Moulard (2005) also perceives heavy Mimbres overtones but argues that symbolism at Paquimé was a political strategy to invoke connections to many powerful and distant places. The use of symbols thus does not necessarily reflect actual historical links. Notably, recent research in the Mimbres area (Gilman et al. 2014) suggests ultimate sources of Mesoamerican inspiration that would completely circumvent the Aztatlán region; others (Phillips et al. 2006) suggest some "Mesoamerican" iconography, such as water serpents, may actually hail from the southern Plains. The list of recently proposed proximal and ultimate sources of ideological content would thus include the southern Plains/Oklahoma, southern New Mexico, West Mexico, the Gulf Coast of Mexico, and central Mexico. These suggestions are all nonexclusive. This glancing review makes no attempt to delve into the intricacies of the content of ideological systems that are the basis for these arguments, suffice to say there is substantial disagreement on which deities/concepts were important, their indexical associations, and degree of intent in invoking distant associations (C. VanPool and T. VanPool 2015).

Where Influence Is Not in Doubt

The southern borders of Sonora and Chihuahua are near the maximum extent of the Mesoamerican frontier. Investigating this geographical area, where contact seems most probable, provides data of obvious relevance to broader regional patterns. At Mesoamerican centers such as Alta Vista (Durango: Chalchihuites) and La Quemada (Zacatecas: Malpaso Juchipila), the cultural apogee was around AD 600 to 800 with a perceptible decline by AD 1000. Debate continues regarding the

processes of Mesoamericanization in this frontier region (Jiménez and Darling 2000, p. 175) that are similar to the endogenous versus exogenous models of later Paquimé. Peer polity models present an obvious fit to the perceived simultaneous rise of multiple regional centers, but Hers (2013) suggests coordinated colonization. Researchers uniformly perceive increased West Mexican interaction later in time, but they characterize it very differently. In regards to non-Mesoamerican neighbors, the position of the aforementioned Loma San Gabriel is far from certain. As noted, present interpretations range from a group that lived intermingled among Chalchihuites but maintained a distinct identity well past the apogee of Mesoamerican interaction (Foster 2000), to merely the commoner or country cousins of Chalchihuites (Hers 1989, 2013). The mere fact that these debates exist is indicative of the highly variable and unpredictable nature of cultural transmission even when very close to the point of influence. What is not in doubt is that people in southern Chihuahua, approximately 275 km from the most northern ballcourt town of Hervideros, showed no vestiges of their Mesoamerican neighbors. No argument of significant influence of any kind can be made until one reaches noncontemporaneous Paquimé.

A similar but perhaps more complex story appears to hold true on the west coast of Sinaloa and far southern Sonora. Central to the question of Mesoamerican influence is the interpretation of Aztatlán, which as Carpenter and Vincente (2009, p. 86) point out, is alternatively interpreted as a geographic region, a ceramic horizon, a cultural complex, a chronological period, and a mercantile system. As noted above, present interpretations suggest that Guasave (Carpenter 1996, 2008) was a local development with regional exchange links as opposed to an actual Mesoamerican outpost as previously interpreted. Most foreign goods at El Ombligo came from the most proximal sources in Sinaloa (Carpenter 2008, p. 169), and some exchange between Sinaloa and coastal Sonora was present before Aztatlán development (see Alvarez 1990). Evidence for strong ideological influence is lacking. The currently known suite of monumental architecture in all of Sinaloa (see Carpenter and Sánchez 2008, pp. 26–27), two ballcourts and a possible truncated pyramid, are less than that present solely at Paquimé. The mortuary mounds of Huatabampo, including El Ombligo, seem to be a local development (Carpenter 2014, p. 42) but also may be considered public architecture. In short, as would be expected, exchange clearly occurred in this frontier zone, and local groups certainly availed themselves of access to Aztatlán finery, but there is no evidence to support colonization or the establishment of trade entrepôts or other coordinated interactions. None of these observations rule out Northwest polities accessing the Aztatlán region through long-distance trade routes. The data do, however, suggest spatially incongruent patterns of influence. The fact that there are geographic gaps in perceptible interaction, particularly in Chihuahua, may be a critically important observation. The resulting inaccessibility likely allowed northern elites greater freedom in controlling the perceived meaning of Mesoamerican concepts. That is, it may be no coincidence that the only true primate centers in the Northwest were located far from the Mesoamerican frontier.

Interactions with Hunters and Gatherers

The Northwest is often conceptualized as the domain of the largely unsettled Chichimecs of Aztec and perhaps Toltec lore (Braniff 2001a, b). The genesis of these associations may have accurate historical roots in the contraction of the Mesoamerican frontier in which Chalchihuites and other groups to the south collapsed (Hers 2013). These associations have long stimulated a theoretical interest in relationships between hunters and gatherers of the Northwest and more sedentary groups, but this has not translated into substantial data collection. In Sonora, the most intensive research focuses on the Comca'ac of the central Sonoran coast. These hunter, gatherer, and fisher people clearly had regular contact with their Trincheras neighbors as indicated by painted ceramics at coastal shell midden sites (Villalpando 2000b). Recent ethnographic studies reflect a social memory in which intermarriages connected Comca'ac bands and O'odham groups (Martinez Tagüeña 2015), and the presence of mixed cultural assemblages may reflect such household-level unions in prehistory. Much of the Sonoran Desert may have been awash in nomadic groups that are little acknowledged in archaeological literature. At the time of contact, nomadic and seminomadic groups were commonplace in northern Sonora. Research on these groups is essentially nonexistent until the historic period, which tends to focus on Athabaskans, whose time of arrival remains unclear (Seymour 2009).

In Chihuahua, hunters and gatherers dominate the archaeological record for much of the state. There are periods in which at least part-time agriculturalists lived alongside hunter and gatherers in both the Conchos and Bravos Valleys (Cielo complex). In the La Junta region, these juxtapositions may reflect symbiotic relationships between unrelated groups or a continuum of subsistence strategies among related peoples (Mallouf 1992). Similar conditions likely held for much of the Río Conchos where agriculture was a short-lived protohistoric phenomenon (see Kelley 1992). In both areas, the technological foray into agriculture was a brief episode in a much longer story of adaptive responses to local conditions. We can imagine items, such as the bison elements at Paquimé, also reflect interactions between hunters and gatherers and fully sedentary groups, but this remains largely unexplored in archaeological data. Relations almost certainly were not always friendly. The hostile interactions between historic settlements and Athabaskans and other mounted nomadic groups are well documented (Radding 1997). Defensive sites ranging from Early Agricultural period *cerros de trincheras* (Hard and Roney 2007) to the location of many Loma San Gabriel settlements (Hers 1989) indicate that hostile relationships were common throughout the prehistory of the region.

Continuity with Ethnographic Groups

With a few notable exceptions there is a general presumption that the groups encountered at contact in the Northwest (Fig. 5) correspond to prehistoric antecedents. For northern Sinaloa, Carpenter (2007; Carpenter and López 2009) constructs the most convincing and detailed arguments, which link Huatabampo and Serrana to known Cahitan groups. However, the litany of groups recorded in this

region by the Spanish relative to the specificity of archaeological constructs is a somewhat disheartening reminder of the limits of our data. There is an assumption of historic to prehistoric continuity for most of the eastern Sonora Ópateria, which is essentially coterminous with the Río Sonora region. The political balkanization perceived in this area may reflect some historic cultural identities such as Eudeve, Ópata, and Jova, although exact links are beyond present data (see also Riley 2005; Yetman 2010). The present reconstruction is more equivocal for the Trincheras region. Researchers (e.g., McGuire and Villalpando 1993, p. 90; O'Donovan 2004) identify Trincheras as essentially O'odham, and it is well established that O'odham groups lived in the region at contact. However, direct continuity is an oversimplification, because of major changes across the protohistoric archaeological record (McGuire and Villalpando 1993; Villalpando 1992).

Two regions stand out as lacking a consensus for identifying connections through the protohistoric period. In southeastern Sonora, the time depth of Lower O'odham occupation in the region is unclear. I singularly hold the opinion that the similarity between bichromes seen in the Onavas region and the pre-AD 1300 Trincheras traditions may indicate substantial time depth. Carpenter's (2008, 2014) model suggests a late arrival for many of these groups, but there is much room for reconciliation. Ethnohistoric observations that O'odham groups occupied the poorest land certainly lend credence to a late arrival interpretation (see Carpenter 1996, pp. 147–148). The Sierra Madre (northern Tepehuán) is one possible source location for O'odham populations. This issue is entangled with arguments regarding continuity between Loma San Gabriel/Chalchihuites groups and any historic populations (Foster 2000, p. 210; Hers 2013, p. 189). The other location that lacks consensus is the region around Paquimé. This area was largely depopulated by the time it was reached by the Spanish in the mid-1500s, thus we do not have much in the way of ethnographic baselines. Aside from the scenarios of migration and dispersion cited in above sections, the Rarámuri of the neighboring Sierra Madre or perhaps even the semisedentary Conchos (Riley 2005, p. 177) may be related to Casas Grandes.

Conclusion

At the beginning of this review, I alluded to the fact that the delineation of the Northwest was mostly an accident of modern political boundaries and, more importantly, the cultural area approach. Even under the logic of this now disparaged system, there was little to support the Northwest's coherence other than the spatial propinquity of its constituent groups. While the physical and social diversity of the Northwest may have been a hindrance to prior models, it is an attractive benefit to current applications. The region's potential is particularly evident to comparative research on middle range groups and for understanding the interaction patterns between groups of disparate social complexity.

Regional diversity emerged early in the Northwest sequence. Environmental parameters certainly played a role in alternative trajectories but are inadequate to completely explain the variable character and development of early sedentism and

the adoption of agriculture. In later periods, Northwest groups collectively span most continua of complexity. This is true in regards to proxy data such as settlement pattern primacy, diversity of material assemblages, subsistence system expansiveness, and geographic reach of ideological influence. Researchers perceive substantial diversity in regards to the various emphases placed on subsistence production, warfare, and external and internal exchange. Ideological systems also receive substantial attention in regards to both their proximal role in establishing and legitimizing social differentiation and as a means of tracing large-scale interaction patterns. Researchers of ideological traditions have yet to reach consensus on many important points. Examples include the role of ideological specialists, the number and ranking of religious offices, the origin of liturgical content, and the character and significance of variation in ideological materializations. While these are all fascinating questions to regional specialists, they also highlight the Northwest's potential to contribute to broader theoretical debates in archaeology.

I offer two largely conceptual examples of how further comparative research that includes Northwest groups could contribute to theoretical advancements. I draw these two examples from recent Southwest U.S. applications because of obvious geographical and organizational similarity. Recent research in resilience theory emphasizes the importance of social diversity in avoiding situations of lock-in. Very succinctly stated, the propensity of decision-making channels to become ossified, resulting in a higher likelihood of dramatic reorganization events, appears correlated with a low diversity in material culture among several Southwest groups. Presumably, diversity in material culture serves as a proxy for diversity in social personae and thus flexible and nimble response potential (Nelson et al. 2011; Schoon et al. 2011). How would such applications explain diversity in the Northwest? Trincheras and Casas Grandes respectively present arguably the most uniform and most diverse material assemblages of primate centers in the whole of western North America, yet both underwent broadly similar sequences of boom and bust. Conversely, the moderately diverse Río Sonora and Serrana potentially never experienced anything beyond local reorganization events over a period of 1000 years. I am not critiquing previous findings but rather noting a situation ripe for expanding current understanding. Similarly, applications of social network theory in the Southwest identify previously unforeseen emergent properties that affect settlement longevity and persistence. An active topic of research, with not entirely commensurate interpretations (cf. Borck et al. 2015; Peeples and Haas 2013), focuses on the benefits and costs of maintaining socially diverse exterior group ties. These applications could foreseeably offer much to the same records just mentioned: Casas Grandes, Trincheras, and Río Sonora. Perhaps even more enlightening, however, would be to ask similar questions of groups such as Huatabampo and perhaps even Loma San Gabriel who potentially interacted simultaneously with state-level, middle-range, and hunter-gatherer societies. Based on anecdotal observation, it would seem such structural brokerage positions are indeed perilous.

These imagined applications would require much more data collection than achieved to date. And there are quite a few areas in which the present state of research remains underdeveloped. We face a particularly high hurdle regarding the

outsize gravity of primate centers in our research designs. Research at these locations has progressed to the point that we can now justifiably speak of Trinchereño or Paquiméan identity. We can even trace various spheres of influence into hinterland areas and express general agreement that subsistence economies, political affiliations, exchange relationships, and religious systems have nested, if amorphous, boundaries. However, I fear our lack of data in most "hinterland" regions encourages us to overemphasize those components of assemblages that show signs of foreignness simply because they are interpretable. Perhaps no region of the Northwest truly lay beyond the event horizons of Paquimé, Trincheras, and Chalchihuites, but I suspect that in much of the Northwest these areas were at most mercurial conceptions that played only tangential roles in quotidian life. It will be a substantial challenge to build interpretive frameworks that span multiple scales of analysis, appropriately weight exogenous and endogenous forces, and integrate the importance of nonparticipation into political economy models. Despite these difficulties, I believe the environmental, social, and organizational heterogeneity of Northwest Mexico promises to make the region one of the most dynamic research areas in North America for the foreseeable future.

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