

Investigating Environmental and Social Heterogeneity in a Landscape Perspective: A Hohokam Case Study

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The Problem

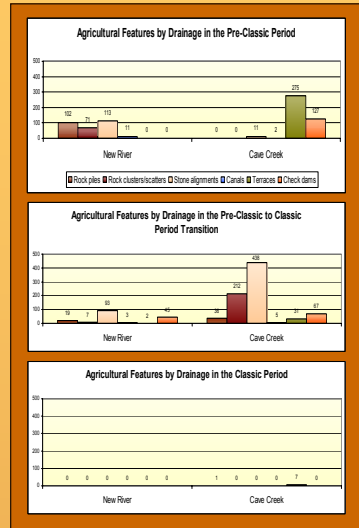
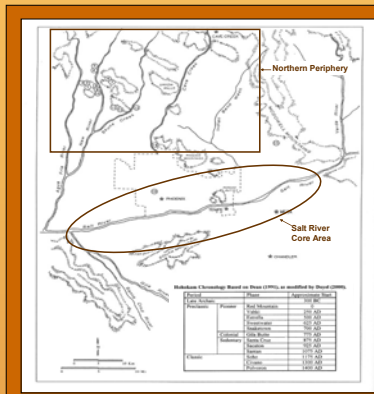
Although previous research divides the greater Hohokam culture area of the Phoenix Basin into a core area with peripheries (Doyl and Elson 1985), few studies investigate the appropriateness of these divisions empirically (but see Hackbarth et al. 2002). This *a priori* assumption that distinct blocks of variability existed within the Hohokam region is problematic for several reasons:

1. The designation of periphery versus core leads researchers to assume that human populations and cultural affiliations within the same area are more similar to each other than to populations outside that area.
2. The coarse-scale spatial division of the Hohokam region is based on partitioning derived from general direction (i.e., north, south, east, west), and does not critically consider finer scale variability. Cultural developments are the product of both social and environmental factors, and these are not always uniform within the designated core and periphery zones.
3. The divisions of the prehistoric Phoenix basin are static through time. This assumes that sub-regional cultural traditions were maintained consistently across temporal periods. We argue that cultural practices are dynamic processes in constant flux. Therefore, one cannot uncritically assume that a spatial division adopted for one time period will be appropriate for a subsequent period.

Our study tests the validity of the division between the northern periphery and the core area by adopting a landscape approach. We examine changes in cultural and environmental data from archaeological sites in the Hohokam region at varying scales through time and space, using individual drainages, rather than the conventional cultural divisions, as the basic unit of analysis. The data we examine includes public architecture, ceramics, macrobotanical, and pollen remains.

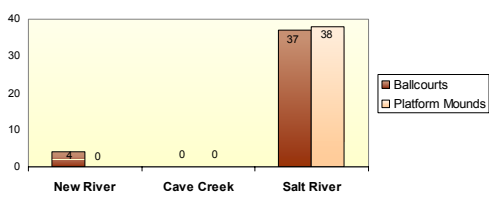
The Study Area

We define the Hohokam Core as the area directly irrigable by canals originating on the Salt River. This area had significantly higher population than the other drainages. The Northern Periphery is located between the rise of the mesas and buttes defining the Transition Zone physiographic province to the north and the flatter basin topography of the Phoenix Basin to the south. The elevation ranges from about 1400 feet amsl in the south to 2600 feet in the north. Numerous large sites are located along the four major drainages (Agua Fria, Skunk Creek, New River, and Cave Creek) flowing south out of the northern mountains; smaller sites are located on the bajadas between drainages. The New River and Cave Creek drainages represent the Northern Periphery in our study. New River had a slightly higher population than Cave Creek, particularly during the late pre-Classic.

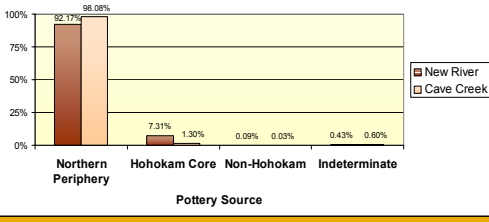


A comparison of agricultural features between the two Northern Periphery drainages shows that Cave Creek was most heavily cultivated during the period of 850 to 1250, a period spanning the transition from pre-Classic to Classic. This is true both in the number of features recorded as well as the variety, suggesting not just intensified agriculture, but greater variation as well. Agricultural sites were fully abandoned on New River in the late Classic, while some limited agriculture continued on Cave Creek.

Public Architecture on Each Drainage



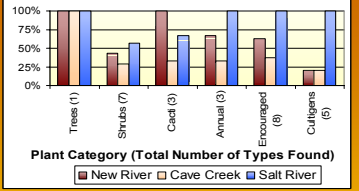
Percent of Total Pottery Found by Source



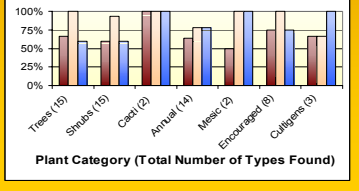
The top graph reports counts of all public architecture recorded at sites along the drainages within the study area. Public architecture served as loci for socially integrative functions including trade and religious activities. Ballcourts served this function during the pre-Classic Period. Platform mounds begin to appear in the Salt River core at the pre-Classic to Classic transition and gradually replaced ballcourts in importance for public works projects. The presence of ballcourts at both New River and Salt River sites suggest strong social and economic links between the inhabitants of these drainages in the pre-Classic. The lack of platform mounds in either Northern Periphery drainage suggests diminished ties between the Northern Periphery and the Core sites during the Classic period.

The lower graph shows the percentages of ceramic sherd types recorded at sites on the New River and Cave Creek drainages. Ceramics are divided by production location. The majority of ceramic types used in the Periphery drainages were locally produced. However, New River had access to a slightly higher percentage of ceramics produced in the Salt River core than did Cave Creek, consistent with the public architecture evidence. Very few ceramics recorded in the Northern Periphery were produced outside of the Hohokam culture area.

Percent of Total Macrobotanical Remains Found by Drainage



Percent of Total Pollen Types Found by Drainage



The top graph shows macrobotanical remains by drainage. These are plant remains found in archaeological contexts. In most cases in the Phoenix Basin, these are represented by carbonized plant parts in burned features. The high incidence of tree charcoal represents cooking and heating fires, showing a universally practiced activity through the region. With the exception of cacti, all other categories are higher for the Salt River, consistent with a model of goods being transported to the larger population centers of the Core. The higher incidence of cacti along New River is consistent with that drainage being drier than the other two and therefore producing more xeric crops. The remaining aspects of the findings are generally consistent with expectations due to higher and lower population bases for the three drainages.

Pollen found in archaeological contexts can help reconstruct diet as well as the local environment. Cultigens and encouraged species are indicators of food crops. The higher incidence of cultigens on the Salt River is expected due to the high number of canal irrigated fields in the Core. The greatest quantity of encouraged crops was found along Cave Creek, consistent with that drainage being more mesic than New River, more xeric than the Core along the Salt River, and not as heavily populated or cultivated as the core. Pollen from mesic plants is high along both Cave Creek and the Salt River, showing a more mesic environment on these two drainages. The higher incidence of tree and shrub pollen along Cave Creek suggests an environment that was less exploited for wood resources than the two other more populated drainages.

Conclusions

1. There is a great degree of cultural variability between Hohokam populations within the Northern Periphery. In the Pre-Classic period, New River settlements more closely resemble those of the Salt River in the core area than those in the Cave Creek Northern Periphery settlements.
2. Spatially, within the Northern Periphery, settlements along New River and Cave Creek differ in agricultural strategy, population size, and degree of interaction with populations along the Salt River and areas outside the Hohokam region.
3. Temporally, cultural developments in the Northern Periphery and the Core undergo significant change. New River settlements resemble those along the Salt River in the Pre-Classic, but by the early Classic there is greater resemblance between New River and Cave Creek. In addition, when viewed at a large-scale, farming strategies practiced within the Northern Periphery do not change significantly through time. However, when viewed at the drainage-based scale, it is clear that New River and Cave Creek undergo significant shifts in their choice of farming strategies.

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Works Cited

Hackbarth, Mark, Kelley Hays-Gilpin, and Lynn Neal (editors) 2002. *Phoenix Basin to Perry Mesa: Rethinking the "Northern Periphery"*. The Arizona Archaeologist Number 34. Tempe.

Doyl and Elson (editors) 1985 *Hohokam Settlement and Economic Systems in the Central New River Drainage*. Arizona. Publications in Archaeology No. 4. Soil Systems, Inc., Phoenix.

Dean, Jeffery S. 1991 *Some Thoughts on Hohokam Chronology*. In *Exploring the Hohokam: Prehistoric Desert Peoples of the American Southwest*, edited by George J. Gumerman. Pp. 61-149. Amerind Foundation, Dragoon, Arizona and University of New Mexico Press, Albuquerque.