

Ancient systems of resource management on the island of Pohnpei, Micronesia

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Ancient sites associated with the management of particular resources have been identified within three ancient political centers found on the island of Pohnpei in Eastern Micronesia. These sites show that the management of particular resources for food, personal adornment, and the decoration of canoes were controlled by chiefly figures throughout the development of Pohnpei's ancient political system.

Dentro de tres antiguos centros políticos hallados en la isla de Pohnpei en Micronesia del Este, han sido identificados antiguos sitios asociados con el manejo de recursos especiales. Estos sitios muestran que la gestión de recursos especiales para la alimentación, los adornos personales y la decoración de canoas, era controlada por figuras prominentes durante el desarrollo del antiguo sistema político de Pohnpei.

Introduction

Specialization of labor has long been recognized as a hallmark of civilization embodied by a well-defined social status that allows for the creation of an artisan class as opposed to the common labor of each individual required in small egalitarian communities. However, specialized labor cannot be defined by simple presence versus absence; rather, it may be seen in many gradients. Archaeology has explored specialized labor in terms of craft specialization focusing on particular types of artifacts, such as stone tools. Due to the nature of its field of study, this is relegated to non-perishable artifacts in which certain artifacts are favored over others. This is particularly true for archaeologists working in the tropics, where despite well-developed weaving technologies, very few such artifacts survive. The existence of chiefly communities within the Pacific that maintain elements of well-developed state-level societies as well as small egalitarian communities offer the opportunity to view the development of specialized labor within unique environmental contexts of small isolated islands.

Many studies have focused on exotic goods as markers of political authority, particularly personal ornaments (Peregrine 1991). The Pacific Islands are no exception, and examples can be found across the islands including, but not limited to, whale tooth pendants throughout Polynesia and brightly-colored feather cloaks in Hawai'i. In Pohnpei, such examples include pearl shell trolling lures that could be used as pendants believed to have come from the Marshall Islands, shell money of the type seen today in Yap and many other islands, red *Spondylus* shell decorations of unknown origin, and finely made belts. The sheer quantity of these items collected during the 1960s expedition by the Smithsonian Institution and stored

in their archives today is staggering. These items were collected from Nan Madol, the royal ceremonial center of the Saudeleur, the ancient king of Pohnpei, from its royal tombs and the living quarters of the king, and are thus clearly associated with the established political authority in the same way as the site's massive stone construction. The labor intensiveness of producing thousands of shell beads and moving massive pieces of stone indicate that only someone of great political authority could accomplish such tasks. Likewise, obtaining large quantities of resources that are relatively rare, like *Spondylus* shell and pearl shell on Pacific islands, or gold in geographic areas where it is available, are signs of power. These status symbols led paramount leaders to attempt to control both craft production and resource management. Both of these attempts may be seen in areas beyond artifacts of personal adornment.

This article attempts to look beyond these particular items to the system of specialized labor that existed across the site's ninety islets as passed down through the oral records documented by the last Pohnpeian historian Masao Hadley (1981). This system of craft specialization within Nan Madol will then be compared to knowledge described for archaeological sites found in two different regions of Pohnpei, which include ceremonial centers that have been dated to both before and after the rise and fall of Nan Madol. This study builds from that reported by Bath and Athens (1990) and describes the results of an archaeological survey performed in 2012.

Ceremonial Centers of Pohnpei

Pohnpei is a volcanic high island within the Eastern Micronesian island group formerly known as the Caroline Islands. Nan Madol is a ceremonial center

consisting of over 90 different artificial islets and walls constructed within a reef lagoon at the southern end of Temwen Island that lies at the southeastern portion of Pohnpei. Additional ceremonial centers exist on the island at Nan Winsap in Sokehs, at Tipwendongalap in Nett, at Nan Koapwoarmen in Uh municipality, and Sawptakai in Kitti (Figure 1). These centers are said to

be part of a combined tradition with the structures at Sokehs being built first, with sequential constructions moving in a clockwise direction around the island, utilizing the windward side of the island. Within these ceremonial centers, many structures may be found, which typically served both as a house platform and a tomb. The majority of these are of a simple design

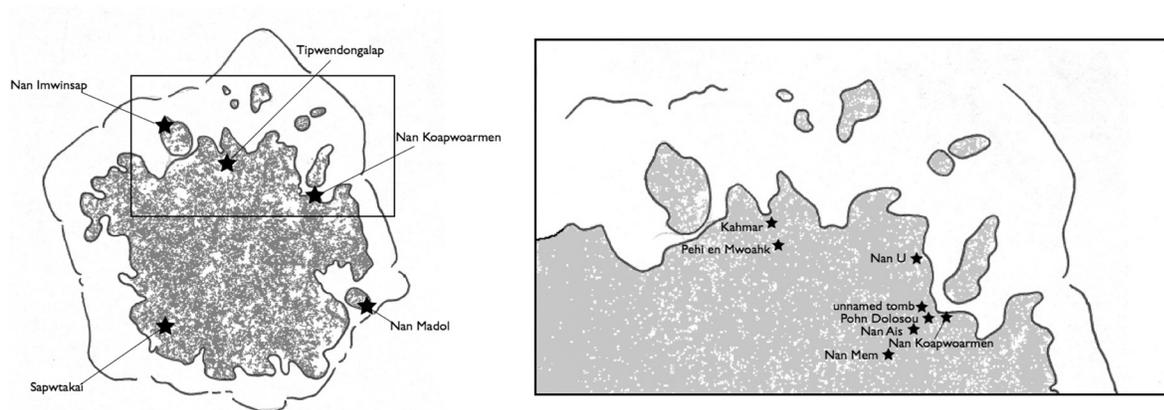


Figure 1. Map showing the location of major sites from the oral history of Pohnpei and sites identified in the survey.

Table 1. Details of the sites identified in the survey.

Site Name	Site Description	Oral History	Exact Location	Dimensions
Pehi en Mwoahk	small platform next to Pilen Meitik stream in Nett	a place where the mwoahk fish was traditionally managed	N06.9428, E158.2250	9 x 6.5 meters
Kahmar	subsurface site composed of charcoal and fire cracked rock	(no known oral traditions)	N06.94735, E158.22469	(unknown)
Nan U	high platform composed of flat stones with two tombs in its side atop a larger platform of large prismatic basalt	the house of the Nahmwarki of Uh first constructed by Nahlapenien the first Nahnken of Pohnpei	N06.92266, E158.28061	30 x 20 meters
Nan Ais	medium-sized platform composed of a modified natural outcrop located high in the mountains	a place where the nut of the ais tree was processed for the production of paint	N6.92834, E158.27968	10 x 10 meters
Pohn Dolosou	large site surrounded by a 1.5m wall with a small central platform located midway up the mountain	a place where tattooing occurred	N06.92266, E158.28061	30 x 20 meters
Nan Koapwoarmen	a large area consisting of stone structures that appears to have been highly modified in recent times	a place of silent worship and governance amongst chiefs	N06.92332, E158.28624	(unknown)
Nan Mem	a small two-chambered tomb	the name refers to the sweetness of the plants that grow here	N06.91599, E158.27351	5 x 4 meters
unnamed tomb	a small tomb with an outer wall and central platform	victims of epidemics in the 1850s and 1860s were buried here	N06.92724, E158.27908	9 x 9 meters

with a small square platform enclosed by an outer wall (Figure 2). These small structures were likely owned by low-ranking peoples while larger structures of more unique design were owned by the high-ranking chiefs.

Of these, Nan Madol is the largest of the ceremonial centers. Dating of Nan Madol shows that it was initially occupied by the very first settlers to the island at 1850 BP who brought with them a craft of pottery production (Athens 1990, 2007). Pottery, however, only seems to have existed for the first few hundred years, though the prevalence of sherds on some islets of Nan Madol suggests that the production could have been extensive (Rainbird 1999). Nevertheless, the construction of islets appears to have occurred at this time and to have continued over time, with fill layers of some islets being dated to 1500 BP (Ayres 1990).

The construction of stone structures, however, does not appear to occur until later, beginning at roughly 800 BP when the introduction of megalithic architecture occurs across Micronesia and the development of more complex hierarchies is believed to have occurred (Rainbird 2004). According to oral tradition, construction of megalithic temples on Pohnpei is said to have begun in Sokehs. This site is the smallest, with sites growing ever larger as they reach Nan Madol. Sokehs itself, it should be noted, lies on the opposite

end of Pohnpei from Nan Madol, which was occupied well before 900 BP, and unless one believes the island was suddenly depopulated, was well-occupied at that time as well. It makes sense for a newly arriving culture marked by the sudden introduction of megalithic architecture to initially settle on the opposite end of the island from its previous occupants. Oral traditions represent this newly arriving culture by a pair of mythical brothers named Olosihpa and Olosohpa, who legend says came from Katau Peidak, which literally means “places far downwind”, meaning far to the west given that the predominant wind is from the northeast. Additional stories say the brothers brought sand in their canoe with them that they threw into the lagoon, which became a reef that is today known as the ‘sands of Yap’. Stories on the island of Yap that focus on a mythical figure named Palulap tell of two sons of Palulap who went to the east, far into the wind, and created a mythical city. Archaeological evidence supports the migration coming from the west as earlier dates occur for sites on the island of Chuuk (Parker & King 1981), as well as the initial appearance of *latte* stone house foundations in the Marianas, which, while different in form, embody the same value as megalithic architecture, symbolically representing chiefly power (Rainbird 2004).

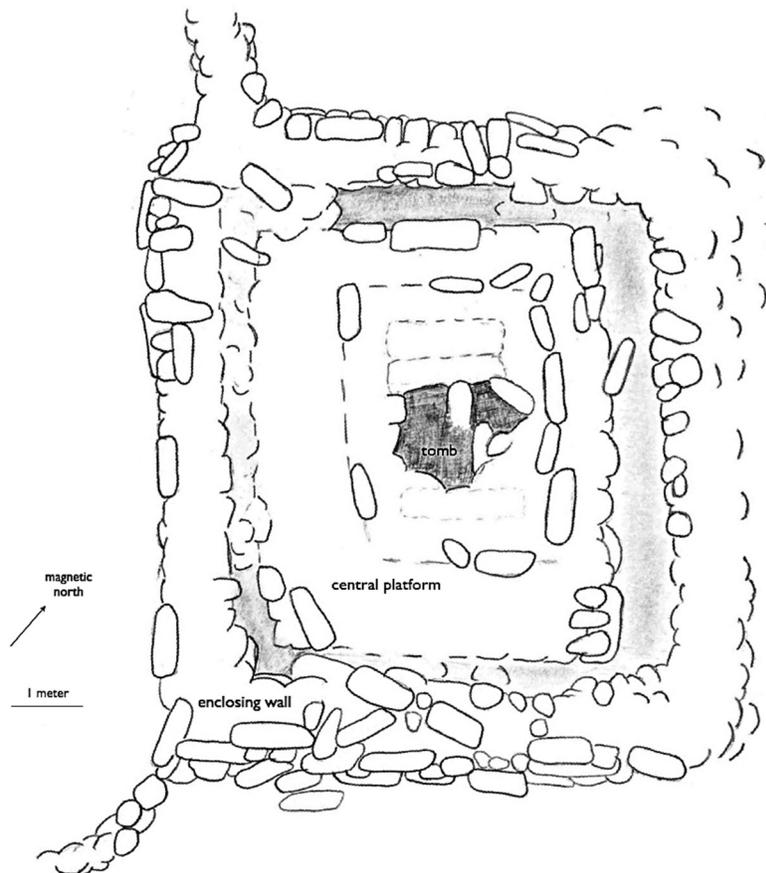


Figure 2. Site map of unnamed tomb of typical construction.

The ever-increasing size of the ceremonial centers shows increasing control of labor in order to create centers of larger size. Recently Alderson (2013) provided a detailed look at the labor investment throughout the history of Nan Madol. Her research has shown a clear rise and fall throughout the life of Nan Madol. In contrast, the sites described by this article show a constant control of particular resources across several political centers.

Pehi en Mwoahk: Pre-Nan Madol

The site called Pehi en Mwoahk lies within the region in Nett associated with Tipwendongolap, which is identified within the oral historic record as preceding the development of Nan Madol. The site of Pehi en Mwoahk was found to be a medium-sized platform with a small entrance leading to a small central raised platform (Figure 3). The central platform would have been large enough for a small wooden thatched structure to be constructed atop it. A small opening in the central platform led to what is likely an inner tomb, or *lolong*, though this was not thoroughly investigated. The site lies next to a long river that extends deep into the valley.

The traditional owner of the site is given the title of the same name, Pehi en Mwoahk, which may be translated to the house of Mwoahk. In the Pohnpeian State Site Registry, the Pohnpeian historian, Pensile

Lawrence, defined mwoahk as a type of fish that lives in fresh or brackish water. He described a channel at Nan Madol called Dauen Mwoahk as a place where such a fish could be found. Thus, both of these locations were where this particular type of fish could be obtained and by inference, the titled person attached to the site would oversee the resource.

At Nan Madol, the islet Darong (H-50) is where clams were raised for food production within a large reef pool, which still remains there. This resource would also be overseen by those chiefs of Nan Madol, for whom clam ceremonies were performed in their honor (Hambruch 1936; Hadley 1981; McCoy *et al.* 2015). A system of controlling food resources therefore appears to be consistent across Pohnpei.

A subsurface site at a place called Kahmar was located along the same river as Pehi en Mwoahk, but it has yet to be dated.

Nan U: Post-Nan Madol

In the region known as Wenik Peidak, or upwind Wenik (later named Uh) there is the ceremonial center of Nan Koapwoarmen. The name of this site refers to a place of silent meditation where chiefs would come to discuss matters of importance. In the oral history of Pohnpei, this site is associated with a time before Nan Madol. Much of the original architecture of Nan Koapwoarmen

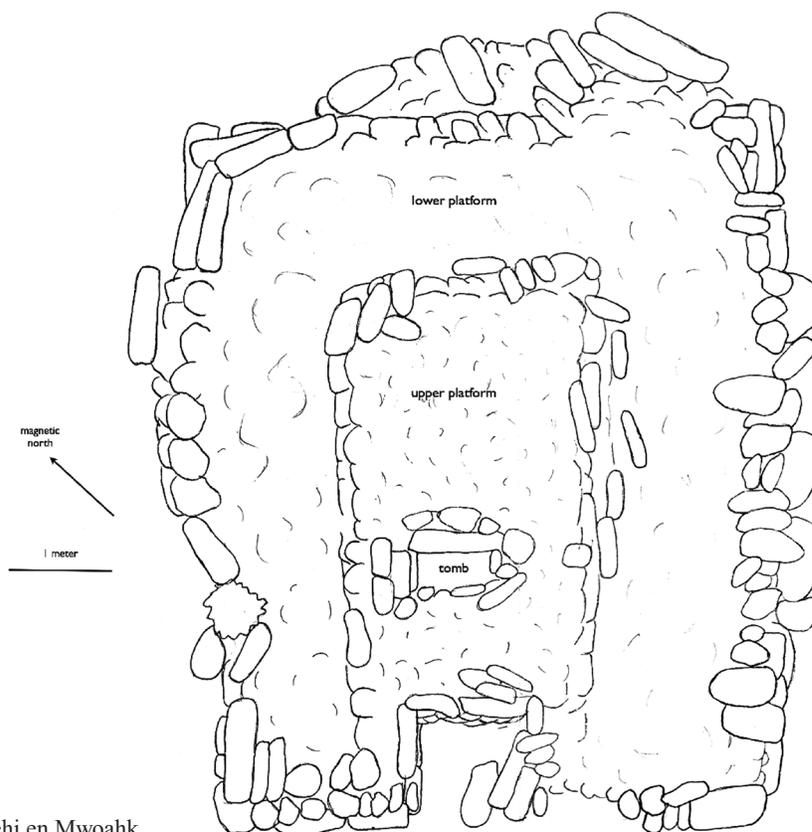


Figure 3. Site map of Pehi en Mwoahk.

appears to have been altered recently and the potential for archaeological investigation is minimal.

On the opposite end of this region is a site called Nan U. This is a unique structure with a high raised platform, large columnar basalt, and two tombs located within the side of the large platform (Figures 4 & 5). Out of all the sites in the region, this is the only one that fits the description of the Pohnpeian historian Luellen Bernart (1977) of the house of Nan U where

Nalapenien, who was the first Nahnken, or talking chief, resided. The two tombs are a unique feature in that they are associated with the development of the Nahnwarki-Nahnken two-chief system following the fall of Nan Madol. Most house platforms contain only a single tomb within their center. An additional site called Nan Mem was also found to contain two tombs side by side (Figure 6), suggesting that this was not an isolated event, but may represent a larger pattern. This

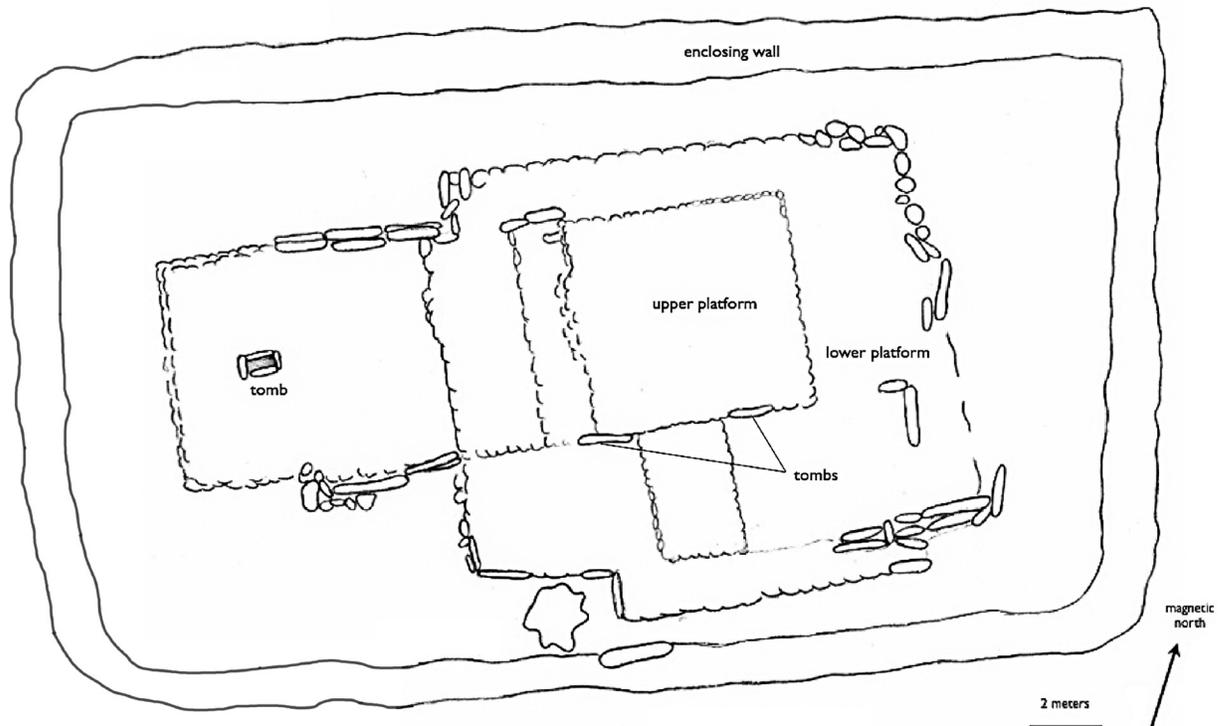


Figure 4. Site map of Nan U, note the two tombs in the side of the upper platform.



Figure 5. Photograph of Nan U showing one of the tombs in the side of the upper platform.

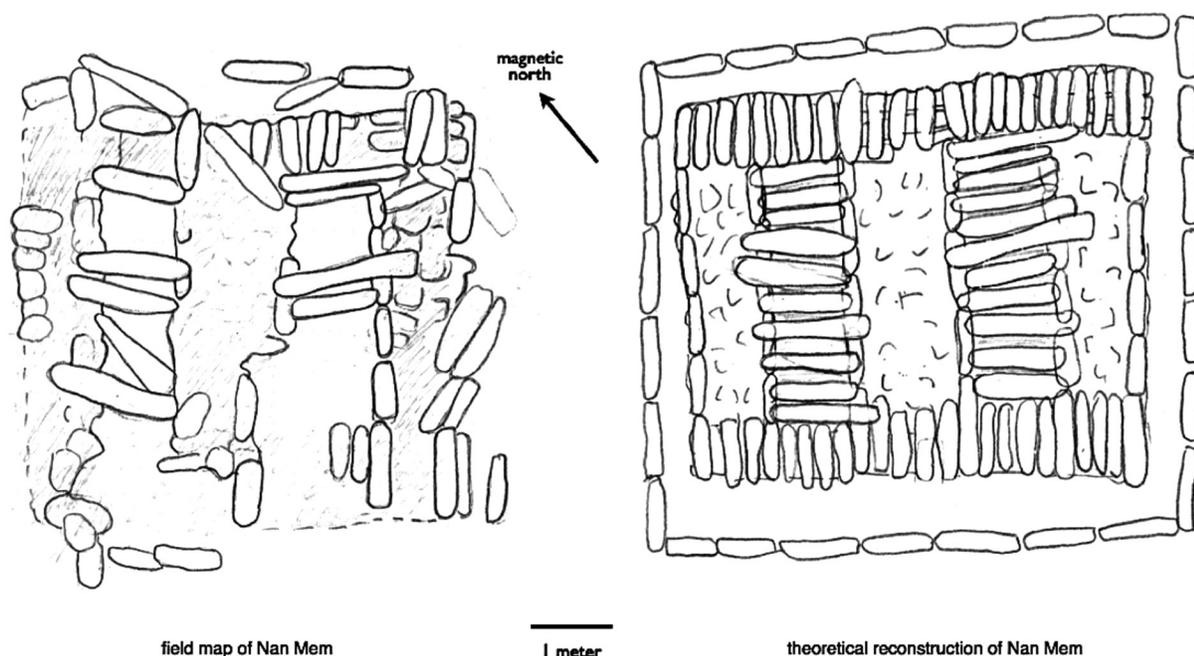


Figure 6. Site map of Nan Mem with theoretical reconstruction showing two tombs.



Figure 7. Photograph of Pohn Dolosou showing the size of the columnar basalt.

region in Uh therefore contains sites associated with the time period before and after Nan Madol.

Several sites lie within the region surrounding this area. Close to Nan Koapwoarmen is the site called Pohn Dolosou (Figure 7), which consists of a stone wall one and a half meters high encircling a large area, roughly 100 meters by 80 meters. There is a large central platform at its center. Local informants said that tattooing once took place at the site and that it was therefore a location of ceremonial significance.

A smaller site of even more larger columnar basalt was located across from it.

Another site which lies high in the mountains is known as Nan Ais. *Ais* refers to a particular tree, the nut of which is used to create the base of paint. This tree is only found in the mountains. Many nuts must be collected, their centers scraped out, ground, and boiled down to produce the thick sticky liquid to which pigment is added. The addition of charcoal would create black paint, red soil would create red,

burnt coral would create white, and ground tumeric would create yellow. This paint was used to decorate canoes and houses and to help seal the wood from rot. The chief's canoes were called *warasap*. The last of these *warasap* canoes was made in the 1990s. Its construction required many *ais* nuts to create the paint for the canoe. Control of the available *ais* trees would therefore confer an ability to control the decoration of canoes and houses to establish prestige.

Like Pehi en Mwoahk, Nan Ais was a place where a particular resource was managed and is similar to sites at Nan Madol. The islet Peinieng (H-29) translates to *pehi en oang*, or the house of tumeric, and is believed to be where tumeric was processed to create yellow pigment used commonly in body adornment. On the islet of Peinering (H-101), coconut oil was produced also for bodily adornment and medicine (Hadley 1981; Morgan 1988; McCoy *et al.* 2015). Both tumeric and coconut oil are used for dance performances in honor of chiefs. Further, the islet Dapahu (H-93) is where canoes were made (Bernart 1977; Hadley 1981; Athens 1980; McCoy *et al.* 2015). The chief's canoes were highly decorated in Pohnpei and the crafts people Oun Dapahu and Oaron Dapahu who lived on the islet made specialized canoes, one of which was said to be made of stone and would therefore have taken great effort (Hadley 1981).

Conclusion

Areas associated with the time periods both before and after the establishment of Nan Madol contain oral history narratives that describe specialized areas of craft production and resource control. This suggests that specialized labor was an inherent part of Pohnpeian culture throughout these periods of time.

While the rise and fall of the Saudeleur system in Pohnpei shows a concomitant rise and fall of labor represented by the relative size of its ceremonial centers over time, there appears to be a constant control of resources within specialized sites. The control of such resources may be seen as one of the fundamental roles performed by more complex civilizations, however this role may be performed by societies both big and small. That such specialized sites exist on a small island in the middle of the Pacific at all is remarkable. That the names and histories of these sites still remain show that they were an indelible part of the culture that carried on after it, even as the chiefly system continued to go through profound changes. Thus, the transformation to the Nahnwarki-Nahnken system did not necessitate a change to the economic system of specialized production.

This report follows in the footsteps of Bath and Athens' (1990) work, which addressed the changes within the culture that would have occurred as the

chiefly system transformed from the single-chief Saudeleur system to the dual-chief Nahnwarki system. Their report assessed whether oral traditions and archaeological research at that time supported a pattern of decentralization of the power structure marked by the abandonment of centers, disappearance of elite funerary patterns, population decrease, and a shift in the organization of craft manufacture and government structure. The results of the more recent survey suggest a shift in centers, with the creation of Nan U in a new location, a shift in funerary patterns to two-chambered tombs, and the maintenance of a system of craft manufacture. The shift in government structure seems obvious as it is inherent in the transformation to a new chiefly system. Therefore the transition is characterized not by drastic devolution, but by a transformation from one culture to another. The end result of this transformation incorporated the role of the Nahnken, which better connected the commoners to the chiefly class while leaving the traditional economy unaffected.

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