

Progress Report on Analysis of the Nan Madol Archaeological and Ethnological Collection

Smithsonian Institution/U.S. National Museum

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March 2006

Material Culture and Archaeology, Nan Madol, Pohnpei, Micronesia

Abstract

This analysis is of material culture derived from Nan Madol, Pohnpei Island, Micronesia, and held in Smithsonian collections (Control No. 387062). Nan Madol is a famous site complex of artificial islands that formed a prehistoric political and religious center. Integration of archaeological and ethnological evidence provides an avenue for improved understanding of social and political patterns characteristic of the Pohnpeian chiefdoms in late prehistoric through early historic time periods. Comparisons with other exchange systems based on shell valuables found in Micronesia and Melanesia are possible with this study in ways that were not possible previously. The collection is primarily archaeological specimens of traditional chiefly body ornaments--including shell necklaces, beaded girdles, ear and chest pendants, and arm bands--and pearl shell "money" pieces carved in the shape of fishing lures. I have reviewed and studied the collection, with the aid of a Smithsonian Institution fellowship, and more recently, a portion of the collection on loan, and found that it contains approximately 20,000 artifact specimens as well as considerable food refuse. Most of the items are from the Nan Douwas tomb, the premier burial structure at the complex. A significant element of this project is correlation of portable artifacts with the architectural features I have mapped at the site. This research contributes to anthropological archaeology and its broad concerns with material culture, a central part of technological systems that we can access through archaeological inquiry. I am producing a typological study of the numerous shell ornaments and production pieces that will serve initially as a structuring and summarizing descriptive statement for the collection. A study of the relevant mortuary data (including architecture, grave goods, and site context) provides a basis for examining relationships among artifact variability, labor organization, and social structure and for interpreting artifact variability with regard to differences in social hierarchy and social networks.

I expect my work with the small portion of the collection I have here at Oregon to be completed by the end of June, 2006.

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My recent research has been of material culture derived from Nan Madol, Pohnpei Island, Micronesia, and held in Smithsonian collections. Integration of archaeological and ethnological evidence from these specimens provides an avenue for improved understanding of social and political patterns characteristic of the Pohnpeian chiefdoms in late prehistoric through early historic time periods, primarily from AD 500 to 1800. Pohnpei had a highly ranked chiefdom or chiefdoms encompassing some 25,000 people in late prehistoric times and based on both archaeology and ethnography it represents one of the better known island political systems. The extensive collection of archaeological specimens of traditional chiefly body ornaments—including necklaces, beaded girdles, ear and chest pendants, arm bands, and pearl shell fishing lures and other exchange valuables—was acquired in a U.S. National Museum project done in 1963 (Control No. 387062) at the famous Nan Madol site complex, a political and religious center built up of 100 artificial islands covering over 0.5 square mile on the coral reef flat of Pohnpei's east coast. I determined that over 90% of the artifacts in the collection came from the Nan Douwas tomb (NDA), the premier burial structure at the complex. Other remains of importance include the food remains from structures in the high status residence islet called Pahn Kadirra (PKI).

The materials from the two Nan Madol islets represent a unique collection and this sample of early Pohnpeian material culture cannot be acquired today from any new excavation effort. The specimens complement the extensive archaeological materials I

have collected at Nan Madol and other Pohnpeian sites since the late 1970s and they form an important body of material for comparative studies.

In my analysis I am looking at: 1). the importance of raw material types and resource availability, as well as historical context, for interpreting artifact variability; 2). technical systems as the broader context for interpreting material culture; and 3). material culture as both product and precedent of human action. I include as material culture the raw materials, technology, tools, and techniques, as well as the finished products.

In my study I am addressing the technical systems and technological style, including raw material acquisition, manufacturing methods, stages of production, and labor organization. The interplay of the desired or produced design, stylistic attributes, and the material capabilities and limitations is being examined. The portable artifacts themselves provide little insight into ritual practices, but the context within Nan Madol or Pohnpei sites adds significantly. The ornaments I view as part of an elaborate technology that aided in creating and maintaining a symbolically meaningful environment.

Continuing analyses with the collection I have on loan include the more detailed metric and stylistic analysis of shell arm bands or bangles, made primarily from conus shell, which other than the pearl shell lures, represent the primary artistic expression in preserved ornaments. The designs for the bands include variation in cross-section shape, although this was greatly limited by the structure of the conus shell itself, and surface patterns of raised areas in geometric forms (squares, rectangles and triangles). With these ornaments, the craftsmen explored the limits of the conus shell as a raw material, particularly within the confines of a geometric or angular design rather than a curvilinear one which is almost totally absent. Ornamental woven materials are impressive as preserved in ethnological collections, but these are not represented archaeologically. The ethnographic specimens uniformly emphasize the same kind of geometric design focus found in artifact ornamentation. Together with other Micronesian ethnological specimens, the archaeological materials offer an exceptional opportunity to better understand the material basis for chiefly status marking during prehistoric as well as recent times.

I have developed a detailed descriptive database of artifact forms so that specimens from different chronological and distributional contexts can be compared. Unfortunately, the main Nan Madol collection is from the tomb context and because it had been disturbed, little chronological differentiation can be ascertained. Available excavation records help in this regard, but only limited data on chronological patterns is emerging. I have developed a coding system and created a computer database of the specimens. This has turned out to be somewhat more time consuming than expected because none of the materials were cataloged and this continues to be an issue for comparative study. I found some problems with lot provenience identification for the collection, but most specimens have only a general provenience identified, for example, from the main tomb chamber or a residential area letter designation. The coding system is useful for attribute analysis because of the large number of specimens. Thus, my time initially was spent primarily in direct artifact description and cataloging and recently has shifted more towards typological and technical analysis.

I am also now comparing the results of this analysis with artifacts in my collection at the University of Oregon from other architectural features, especially architecturally different tombs (size and construction detail) that I have mapped, and other kinds of stone features and even the size, shape, and character of the artificial islets themselves that form Nan Madol. Clearly, the shell ornaments provide important verification of relative status differences of the burial complexes of clan groups living in different parts of the island. To a large extent this evidence is quantitative rather than stylistic but some data are available to explore stylistic differences per individual tombs within the Nan Madol complex itself. Because of preservation limitations, most tombs on the main island (of which hundreds are known) have provided very little comparative shell artifact material.

As part of the tomb contents from Nan Douwas, I have been surprised to find so much material reflecting the manufacturing stages of various kinds of ornaments, as well as raw materials pieces. The methods used by the excavators in the Nan Douwas case importantly preserved the full range of items left in the tomb chambers, thus reducing the recovery bias in documenting the contents. As I understand it, the entire coral sand floor of the main tomb was removed and processed en masse at the Museum.

Thus far, I have furthered two kinds of analyses:

1. A typological study of the numerous shell ornaments and production pieces that will serve as a structuring and summarizing descriptive statement for the collection. It allows comparison with earlier results of Hambruch's 1930s study of ethnological specimens as well as with my archaeological specimens from Nan Madol and other sites that are held in the University of Oregon laboratory.

2. A study of production and exchange for the relevant mortuary data (including architecture, grave goods, and site context) to examine the relationships among artifact variability, labor organization, and social structure and interpret artifact variability with regard to differences in social hierarchy and social networks. The ability of Nan Madol's rulers to control a chiefdom encompassing most or all of Pohnpei Island depended on their control of these production resources and finished products.

General Accomplishments Thus Far

1. I spent several months at the US National Museum studying the entire collection.

2. I re-visited the Nan Madol site last year to examine some of the contexts where the specimens and food remains were originally collected and reviewed my documentation of various archaeological features at Nan Madol that were studied some time ago.

3. A more detailed and comprehensive classification system for the major categories of material culture has been developed: armbands/rings; pearlshell lures/exchange valuables, spondylus pendants, and one-piece fishhooks (shell and bone). The discovery of complex bone harpoon points in the collection represents a previously unknown or unreported aspect of marine technology in eastern Micronesia.

4. I think the results will permit clarification of some aspects of ritual and use of Nan Madol islets and other architecture. This seems to be clear in the case of Pahn Kadira, the administrative center and the focus of much of the original fieldwork done in 1963. Because Evans and Meggers excavated out the fireplaces in dwelling structures

on Pahn Kadir, little has remained as material to document—through radiocarbon dating, for example—the latest stages of use of this complex. The collection does contain a range of introduced material culture (metal and glass especially) that provides an indication of the lateness of activities in the main ritual complex at Pahn Kadir. The presence of Euro-American artifacts introduced into the island primarily beginning in the first few decades of the 19th century (AD 1820s-1840s), but especially after the 1850s, shows that the fireplaces at the main administrative center-- which according to oral history became off-limits *tapu* areas after the overthrow of the last Sau Deleur ruler—were in use well into the 19th century. This affects how we interpret the time of the significant political struggles that resulted in the end of the long line of Sau Deleur rulers and major changes in the structure of the island's chiefly hierarchies.

5. A significant result is the rather complete photography and classification/sorting of approximately one thousand shell artifacts representing the key elements of the technological system that supported the production of exchange and status valuables, primarily ornaments.

6. Documentation of many new kinds of technology or ornaments used for marking status at the highest levels of Pohnpeian society is supporting a new and more complex level of data analysis. Some inkling of the complexity of this system became known from the pioneering work of the ethnographer Paul Hambruch, who in 1910 did an excellent overview study of the Nan Madol complex and collected a wide range of material culture. His collection, available to him then—but not to us now, basically—has been difficult to access because much of it was lost during WWII, as I was told, and because of subsequent problems of access. However, what is known from Hambruch's collection is very limited because, although his field work and report was monumental, it has never reported in its entirety because of Hambruch's untimely death in 1934. The current collection in the US National Museum takes on exceptional importance because of these circumstances.

7. One of the most useful aspects of my work on several aspects of the collection is the ability to relate this massive artifact collection to extensive architectural and construction interpretations that are the result of my work at Nan Madol since 1977. That is, while I have been able to develop map and construction data on many aspects of Nan Madol's over 100 artificial islands, with few exceptions other than prehistoric pottery, the artifact inventory recovered from recent work at the site has been very

limited except for basic wood working and food processing tools. Very few ornaments that have figured so prominently in the Pohnpeian social status system have been recovered in the recent archaeological work. There are two reasons for this: it is no longer possible to remove cultural material from burial contexts, the main source of the Smithsonian's collection, and it is significant that the primary location of the 1963 work was in the Nan Douwas tomb, the burial place of the highest ranking chiefs to rule on Pohnpei; this unique tomb is thus not replicated in other sites.

In sum, I place emphasis on the importance of historical context for interpreting artifact variability and technical systems as the broader context for interpreting material culture. The ability of Nan Madol's rulers to control an extensive Pohnpei chiefdom is reflected in their management of production resources and finished products. I am producing a typological study of the numerous shell ornaments and production pieces that will serve initially as a structuring and summarizing descriptive statement for the collection. A study of the relevant mortuary data (including architecture, grave goods, and site context) examines relationships among artifact variability, labor organization, and social structure and to interpret artifact variability with regard to differences in social hierarchy and social networks.

Work Remaining on the Portion of the Collection on Loan at the University of Oregon

Approximately 1,000 shell bands or rings and 300 provenience units of faunal remains are in the portion that is at Oregon for further analysis. I have made substantial progress in finishing the identifications and cataloging of these pieces and I expect to end this study of the remaining pieces in that collection by the end of June, 2006, and the collection on loan can then be returned to the US National Museum.

Collaborative Research and Consultation

At the Smithsonian/US National Museum, I have worked with Adrienne Kaeppler, as the Oceanic Curator, and Betty Meggers, as the original co-excavator of the materials, and Melinda Zeder and Bruce Smith of the Archaeology Staff—I used their lab facilities in the Museum Support Center, Suitland. D Doug Owsley, Physical

Anthropology, provided some detailed analysis of human skeletal material in the collection. Jerry Harasewych, Mollusks, was helpful in identifying and interpreting some of the marine shellfish in the collection. All receive my heartfelt thanks.

Pearl Shell Lure/Exchange Valuable Catalog (Sample)

SITE		PoC3-1-	NDA												
Num	Ext	SPECIMEN	MAT	LOCATION	DESCRIPTION	WT (G)	LEN/HT	WID/DIA	THICKP	THICKD	R	L	HEAD F	DISTAL E	COMMENT
(lot)															
15	1	lure shank	pearl	NDA	main tomb floor	23.6	70.7	21.0	15.4	5.0	1		perf	bkn	finished
	2	lure shank	pearl	NDA		11.9	51.7	19.4	17.1	3.1	1		perf,offset	bkn	
	3	lure shank	pearl	NDA		14.5	69.0	13.9	15	3.9	2		perf,sym	bkn	
	4	lure shank	pearl	NDA		13.2	58.4	18.5	15	3.6		1	perf,sym	bkn	
	5	lure shank	pearl	NDA		3.9	48.9	14.7	7.1	3.1	1		perf,dist	bkn, head	split
	6	lure shank	pearl	NDA		4.0	33.2	8.2	15.0	0 ?			perf	bkn,dist	unusu;drk
	7	lure shank	pearl	NDA		16.9	62.7	16.0	16.8	2.5	1			bkn	1 knob lft
	8	lure shank	pearl	NDA		25.2	60.3	24.7	16.3	4.2	1			bkn	1 knob,lft?
	9	lure shank	pearl	NDA		13.9	46.8	21.9	15.0	3.5		1	2 knob	bkn	2 knob
	10	lure shank	pearl	NDA		10.4	43.4	17.4	12.2	5.1	2		2 knob	bkn	
	11	lure shank	pearl	NDA		16.3	64.0	14.8	12.6	4.2		2		bkn	
	12	lure shank	pearl	NDA		9.1	47.0	18.0	11.0	3.8		2	2 knob		dist end?
	13	lure shank	pearl	NDA		15.5	51.2	15.8	16.4	3.9		1	2 bar	bkn	
	14	lure shank	pearl	NDA		7.8	41.0	18.3	11.2	3.0		2	2 knob	bkn	
	15	lure shank	pearl	NDA	knob right	8.7	44.4	17.7	12.2	3.2	1		1 knob	bkn	
	16	lure shank	pearl	NDA		9.4	60.3	16.9	9.2	6.5		2	2 knob	bkn	
	17	lure shank	pearl	NDA		9.7	48.8	16.9	11.45	4.0	2		2 knob?	bkn	
	18	lure shank	pearl	NDA		14.7	45.5	17.6	14.9	5.7	2		2 bar	bkn	
	19	lure shank	pearl	NDA		13.5	58.7	15.5	16.2	2.9	2		2 knob	bkn	
	20	lure shank	pearl	NDA		7.3	40.7	16.6	8.8	4.6		2	2 knob	bkn	
	21	lure shank	pearl	NDA	thin	8.8	49.8	16.9	8.0	3.1	2		2 knob	bkn	dist end?
	22	lure shank	pearl	NDA	thin	5.1	42.0	15.1	7.8	3.6	1		2 knob	bkn	dist end?
	23	lure shank	pearl	NDA	bar lft; knob rt	11.9	52.3	12.3	14.2	4.3	1		2 bar	bkn	
	24	lure shank	pearl	NDA		7.7	40.8	14.2	12.5	3.6	1		2 knob	bkn	
	25	lure shank	pearl	NDA		16	55.7	16.3	16.7	3.6		2	2 knob?	bkn	
	26	lure shank	pearl	NDA		6.8	50.2	11.6	10.9	2.6		2	bar/knob	bkn	
	27	lure shank	pearl	NDA	bar/knob	8.8	55.0	13.6	12.2	2.8		2	2 bar	bkn	
	28	lure shank	pearl	NDA	thick head; knob bottom not	24.6	64.9	17.6	20.4	4.5		2	2 bar	bkn	

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To: Betty Meggers
Anthropology
U.S. National Museum

25 June 2002

Dear Betty:

Attached is a copy of my draft final report on my analysis project for the Nan Madol collection. I came by earlier today to give it to you but did not find you in, so I will leave it in your mailbox. Any comments would be appreciated. Also, with the efforts to finish up some aspects of the analysis, I did not find time to go through the photo collection again. I do have a set of numbers and wonder if you could mail those to me—if I don't see you before I leave for Oregon (I have to leave tomorrow the 26th). I could then scan them and return the originals to you. Please let me know at my email address: wsayres@oregon.uoregon.edu.

Thank you very much for your assistance with this project. I am sure I will see you again when I am in Washington.

Bill Ayres

Final Report on Senior Fellowship, Smithsonian Institution
Submitted by William S. Ayres
Department of Anthropology
University of Oregon
April - June 2002

My Fellowship research and writing focused on analysis of material culture derived from Nan Madol, Pohnpei Island, Micronesia, and held in Smithsonian collections. Integration of archaeological and ethnological evidence from these specimens provided an avenue for improved understanding of social and political patterns characteristic of the Pohnpeian chiefdoms in late prehistoric through early historic time periods, primarily from AD 500 to 1500. Pohnpei had a highly ranked chiefdom encompassing some 25,000 people in late prehistoric times and evidence from archaeology and ethnography makes it one of the better known island political systems. The extensive collection (Control No. 387062) of archaeological specimens of traditional chiefly body ornaments--including necklaces, beaded girdles, ear and chest pendants, arm bands, and pearl shell fishing lures--was acquired in a U.S. National Museum project done in 1963 at the Nan Madol site complex, a political and religious center built up of 100 artificial islands covering over 0.5 square mile on the coral reef flat of Pohnpei's east coast. I determined that nearly 98% of the artifacts in the collection came from the Nan Douwas tomb, the premier burial structure at the complex. Other items, especially food remains, came from structures on Pahn Kadirra (PKI), traditionally recognized as the residence area of the paramount chiefs.

The materials from the major Nan Madol islets represent a unique collection and a similar sample of early Pohnpeian material culture could not be acquired today from any new excavation effort. The specimens complement the extensive archaeological materials I have collected at Nan Madol and other Pohnpeian sites since the late 1970s and form a basis for continuing comparative analyses.

My analysis was guided by an interest in technical systems and technological style--such as learned techniques, labor organization and ritual practices--related to technology and production that can be viewed as stylistic in nature. The ornaments I view as part of a technology that aided in creating and maintaining a symbolically meaningful environment, and I have looked at: 1) the importance of historical context for interpreting artifact variability; 2) technical systems as the broader context for interpreting material culture; and 3) material culture as both product and precedent of human action. Material culture thus includes the raw materials, technology, tools, and techniques, as well as the finished products.

The work went approximately as planned and several weeks were spent on reviewing the provenience information (few records were found), determining which

specimens were artifacts, and identifying shell artifacts and food remains. Several weeks were spent on systematic classificatory and comparative study of artifacts made of marine shell and food remains. I spent a few days examining related Micronesian and Polynesian specimens held in the ethnology collections and approximately one week drawing and photographing selected specimens. I examined all materials in the collection and described most artifacts, other than the approximately 30,000 beads, in detail. Allotted time did not allow complete analysis of the shell arm bands or bangles, made primarily from conus shell, which represent the primary artistic expression in preserved ornaments. I will have these specimens on loan to finish this study.

Ornamental woven materials and other status items are impressive as preserved in ethnological collections in the US National Museum collections I examined, but these are not preserved archaeologically. However, the ethnological specimens aid in understanding the often incomplete artifact forms.

I developed a detailed descriptive database of nearly 1000 artifacts so that specimens from different chronological and distributional contexts can be compared. These are primarily from the tomb context and because it had been disturbed, little direct chronological differentiation can be ascertained with the available excavation records; however, comparative study will provide opportunities to date specific styles. I use a coding system and created a computer database of the specimens. This turned out to be more time consuming than expected because the materials were uncataloged. I found some problems with lot provenience identification. Thus, my time was spent primarily in direct artifact description and cataloging rather than analysis.

I am now in a position to compare the results of this analysis with artifacts from other architectural features, especially ones from tombs I have mapped which show differing sizes and construction detail, as well as other kinds of features--and even with different artificial islets that form Nan Madol as these vary in size, shape and character. Clearly, the shell ornaments provide important verification of relative status differences of the burial complexes of clan groups living in different parts of the island.

Overall, I accomplished two kinds of analysis:

1. A typological study of the numerous shell ornaments and production pieces that will serve as a structuring and summarizing descriptive statement for the collection. It allows comparison with earlier results of a study of ethnological specimens done in 1910 as well as with my archaeological specimens from Nan Madol and other sites.

2. A study of production and exchange for the relevant mortuary data (including architecture, grave goods, and site context) to examine the relationships among artifact variability, labor organization, and social structure and interpret artifact variability with regard to differences in social hierarchy and social networks. The ability of Nan Madol's rulers to control an expanded chiefdom encompassing most or all of Pohnpei Island depended on their control of these production resources and finished products. The prodigious labor investment in chiefly ornamentation is evident in the U.S. National Museum collection. The analysis was helpful for finishing up a paper on Nan Madol as a ritual center.

I worked with Adrienne Kaeppler, as the Oceanic Curator, and Betty Meggers, the original co-excavator of the materials, as well as with Melinda Zeder and Bruce

Smith of the Archaeology Staff. I used their lab facilities in the Museum Support Center, Surland. Doug Owsley, Physical Anthropology, provided some detailed analysis of human skeletal material in the collection after I had sorted it. Jim Kraker and Dave Rosenthal, Anthropology Collections Office, aided in the day to day access to the collections at MSC. Jerry Harasewych, of the Museum's mollusks department, was helpful in identifying and interpreting some of the marine shellfish in the collection. I thank all these individuals as well as numerous other individuals on the staff who made my stay an enjoyable and productive one.

Submitted 26 June 2002