

SAILING CANOE BUILDING ON MWOAKILLOA ATOLL

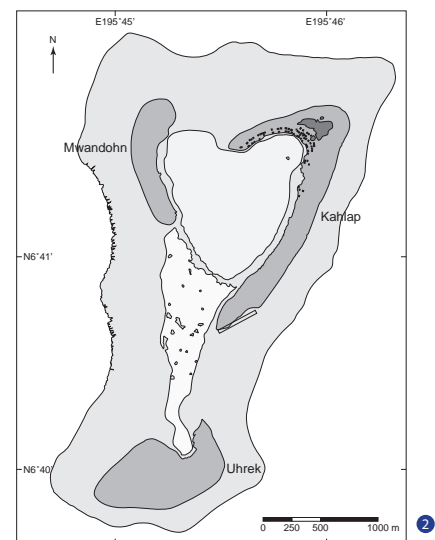
TAKUYA NAGAOKA

Canoes are very important things to Mwoakillese people. Men used to have sailing canoe races as contests of manhood.¹

— Boaz Poll

INTRODUCTION

The sailing canoe, which is a single outrigger canoe equipped with a triangular sail (Figure ①), is traditionally the only water craft for fishing, transporting, and voyaging on Mwoakilloa (formerly Mokil) Atoll,



a low coral atoll in the Eastern Caroline Islands (Figure ②). Before wooden boats became prevalent in the 1960s, canoes (*war*) held vital importance, and every extended family (*peninei*) owned at least one sailing canoe and one paddling canoe.

1. Boaz Poll, personal interview with author, 18 June 2004.

① Sailing canoe (1994). © Takuya Nagaoka

② Mwoakilloa Atoll. © Takuya Nagaoka

Mwoakilloa is located at 6°40' north, 159°47' east, approximately 192 kilometers east of Pohnpei (formerly Ponape), presently comprising an outer island of Pohnpei State. The atoll is composed of three islets: Kahlap, Mwandohn, and Uhrek, making a total of 1.24 square meters of land. Presently on Mwoakilloa, the village is situated on the lagoon side of Kahlap Islet, where the main taro patches as well as other contemporary communal facilities such as the municipal office, elementary school, dispensary, and church are located (Figure 3).² The population of the atoll is around 110 while



many more Mwoakillese, between 1,700 and 1,800, currently live in a more urban setting on Pohnpei, the political and commercial center of the state, and around 20 percent of the total population lives in U.S. territories. The atoll is currently connected to Pohnpei by weekly flights and infrequent cargo-passenger ships.

2. Barbara Hicks and Takuya Nagaoka, "The Ethnomathematics of Mwoakilloa Atoll, Micronesia" (report prepared for the Pacific Resources for Education and Learning, Hawaii, 2004, 3).

3. U.J. Andersson, "Eine Weltumsegelung mit der schwedischen Kriegs-fregatte 'Eugenie,' 1851-1853," trans. K.L. Kannegiesser (Leipzig: Karl Forch, 1854).

4. James E. Huxford, "Log of the Whaling Bark 'Ellen,' 1852-1856," Log 242, New Bedford: Old Dartmouth Historical Society and Whaling Museum, 1856.

5. Harold Williams, *One Whaling Family* (Boston: Houghton Mifflin Co., 1964), 98-101.

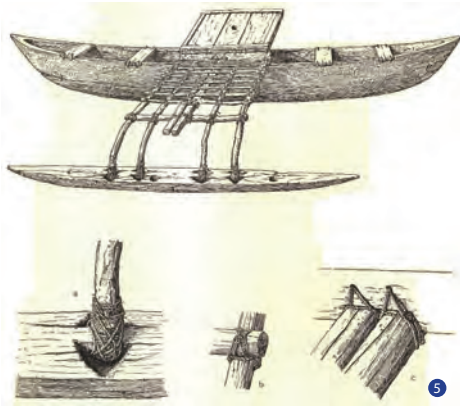
The Mwoakillese people are spoken of as enterprising (*kapehl*). They are, for example, known to be skilled at fishing, carpentry, and cooking using modern methods as well as the traditional. This characteristic seems to be related to considerable cultural changes undergone since the nineteenth century, when early beachcombers had enormous influence on the small atoll population; for instance, only eighty-seven people lived on the island in 1853.³ One beachcomber, for example, was observed by passing seamen as acting as chief and having considerable authority in 1854⁴ and then as "King of the Island" in 1859.⁵ One early missionary even reported that ship

captains called the islanders the “most civilized appearing natives in all the Pacific” in 1873.⁶

As will be illustrated below, by adding new features, this enterprising spirit created a most developed canoe. On the other hand, the same spirit enabled the people to make a speedy transition to locally made wooden boats and imported boats after World War II.

HISTORY OF MWOAKILLESE SAILING CANOE

Oral traditions relate that the styles and building technology of the Mwoakillese canoes (Figures ④ and ⑤) originated in the Marshall



Islands,⁷ as did several traits of Mwoakillese culture (e.g., material culture, customs,⁸ fishing methods, food preparation, cultigens,⁹ local medicines,¹⁰ dances, tales,¹¹ and vocabulary¹²) through their long-term interactions from the prehistoric period to today.^{13,14} As several basic Mwoakillese canoe part terms (e.g., hull, outrigger float, mast, upper boom, lower boom, and sheet) are obviously Pohnpeian words, the original Mwoakillese canoes were probably similar to Pohnpeian ones prior to the introduction of the Marshallese-type canoe. Contemporary elders describe these earlier Mwoakillese canoes as “not good; [they were] just like a dugout before, as they didn’t know how to measure.”¹⁵ According to Bentzen,¹⁶ the Marshallese-type canoe is said to have been introduced during Chief Lakaidak’s reign around 1760. At that time the Mwoakillese had only a paddling canoe of their own, similar to the ones found on the atoll today.

6. “Micronesian Mission,” *Missionary Herald*, August 1874, 249-256.

7. Anneliese Eilers, “Inseln um Ponape,” In *Ergebnisse der Sudsee Expedition 1908-1910*, ed. Georg Thilenius (Hamburg: Friederichsen, De Gruyter, 1934), 385.

8. Joseph E. Weckler, “Land and Livelihood on Mokil, an Atoll in the Eastern Carolines,” Pt. 1. CIMA Report no. 11. Washington, D.C.: Pacific Science Board, National Research Council, 1949.

9. Conrad Bentzen, “Land and Livelihood on Mokil, an Atoll in the Eastern Carolines,” Pt. 2. CIMA Report no. 11. Washington, D.C.: Pacific Science Board, National Research Council, 1949.

10. *Ibid.*, 179-182.

11. Takuya Nagaoka and Barbara Hicks, “*Oh Mehjwa*: Chants, Songs, Accounts, and Tales of Mwoakilloa Atoll, Micronesia,” unpublished manuscript, last modified 2014.

12. Kenneth L. Rehg and Byron W. Bender, “Lexical Transfer from Marshallese to Mokilese: A Case of Intra-Micronesian Borrowing,” *Oceanic Linguistics* 29(1) (1990): 1-26.

13. Weckler, “Land and Livelihood on Mokil, an Atoll in the Eastern Carolines.”

14. Saul H. Riesenberg, “Table of Voyages Affecting Micronesian Islands,” *Oceania* 36 (1965):155-170.

15. Makodo Daniel, 72 years old, from Mwoakilloa Atoll, personal interview with author, 27 February 2014.

16. Bentzen, “Land and Livelihood on Mokil, an Atoll in the Eastern Carolines.”

④ Sailing canoe in 1910. Source: Anneliese Eilers, “Inseln um Ponape,” In *Ergebnisse der Sudsee Expedition 1908-1910*, edited by Georg Thilenius, (Hamburg: Friederichsen, De Gruyter, 1934), 2, B, 8, Tafel 3.

⑤ Paddling canoe in 1910. Source: Eilers, “Inseln um Ponape,” 385, Abb. 256

Present sailing canoe building techniques were derived from the stranding of Marshallese, which occurred in 1865 according to historical records.^{17,18} Contemporary elders credit a Marshallese man named Lapwajjong (Andrew), one of the castaways, with spreading canoe-building techniques. After the introduction of the Marshallese-type canoe, the Mwoakillese improved the structure of the original and refined the building technique throughout the historic period. Changes included the following:

- The hull was made shallower;
- The platform structure was simplified and strengthened;
- Attachment of the upper boom onto the boom step was simplified;
- The splash guards and decks were added to prevent water from flowing into the hull;
- Keel protectors were added to protect the bottom of the hull and the outrigger float; and
- The float ridge was added to make the attachment of secondary booms stronger.

The developmental process of a new Mwoakillese canoe was a simplification from the original Marshallese type and the creation of a structurally and stylistically superior canoe that was more suitable for the atoll environment (e.g., lack of lagoon passage). A few factors made this achievement possible. First, the introduction of Western iron tools (Figure 6) and materials (e.g., copper nails and milled



17. Jack A. Tobin, *Stories from the Marshall Islands*, (Honolulu: University of Hawaii Press, 2002), 353.

18. Saul H. Riesenberg. "Table of Voyages Affecting Micronesian Islands," *Oceania* 36 (1965), 161-163.

lumber) made advanced carpentry possible. Second, there were also new inventions suggested from the Euro-American sailing ships and whaling boats in the early historical times since many Mwoakillese men worked abroad. Third, the experience of building wooden ships and boats during the German and Japanese administrations on Nauru and Pohnpei helped them acquire highly developed carpentry skills.¹⁹

The art of canoe building was of great significance for men and was therefore passed down only within close relatives secretly due to the competitive nature of Mwoakillese society. According to the late Boaz Poll from Mwoakilloa Atoll, “People at that time were guarded and secretive of the art of measuring canoes. Until the 1930s, when they were making a canoe in a canoe house, they would hang up mats on all four sides to prevent people from seeing inside. In the evening, they would also wrap the canoe up in mats so nobody could see it.”²⁰ However, when an association of Evangelical Protestant churches called Christian Endeavor was established on Mwoakilloa in 1920, the Mwoakillese people became more faithful and cooperative. Men began to allow others to watch their work, except for the most secretive part of making a sail as discussed in the next section. Contemporary elders explain this phenomenon by saying that people became enlightened (*marainla*), in contrast to their former uncivilized (*rosros*) spirit. Moreover, in the Japanese administration period, many men went to work in the Marshalls as sailors and acquired the knowledge on building canoes, especially on sails. The technique was passed on to relatives and friends so that by the beginning of World War II almost all families possessed it.

There used to be an annual New Year’s sailing canoe race in which only newly built canoes could participate. It usually took an entire year to complete a canoe for the race, during which men competed ruthlessly. A large sail, for instance, was made for faster sailing especially for the race, although the upper and lower booms were cut shorter for daily use afterward. They used to build a racing canoe with a narrow and deep hull, which was not suitable for the open sea; however, due to the great labor and time invested, they later began to build an intermediate canoe suitable for both racing and fishing.²¹

19. Takuya Nagaoka, “Sailing Canoe Building Techniques on Mwoakilloa Atoll,” unpublished manuscript, last modified 2014.

20. Poll, personal interview, 2004.

21. Bentzen, “Land and Livelihood on Mokil, an Atoll in the Eastern Carolines,” 78.

The New Year's sailing canoe race, which stopped during the war, was held again in 1947 following the return of many Mwoakillese men who had gone to Pohnpei for conscripted work during the Japanese administration. In 1948, most of the young men on the island joined the race, although fewer men participated after that. The last annual New Year's sailing race in which only new canoes could participate was held in the late 1950s. Later the rules were changed to allow any canoe to enter, and the race continued until the 1960s. The production of the sailing canoe declined during the 1950s while the production of local wooden boats increased. After the last large sailing canoe was built in 1964, only small ones and paddling canoes were built from time to time.

There are several complex and interrelated factors that led to the decline of sailing canoe production. First, the prevalence of wooden boats (Figure 7) and outboard motors in the 1960s drove the sailing



canoe from the mainstream. The wooden boat building technique was first learned by taking a foreign boat apart in the 1920s. The production of boats became prominent in the late 1960s, and its mass production for sale made the island the center of manufacture in the region until the mid-1980s. This greatly influenced the penetration of the money economy into the island society and diminished the degree of cooperation. The use of wooden boats, however, has declined since the early 1980s due to the popularity of imported fiberglass boats on both Pohnpei and Mwoakilloa. Second, young

people simply lost interest in their traditional culture due to the rapid westernization after World War II. The enterprising nature of Mwoakillese people mentioned earlier spurred the decline of canoe production. Moreover, due to post-war migration of Mwoakillese people to Pohnpei, more of the men who engaged in wage working in Pohnpei were able to purchase expensive fiberglass boats and outboard engines. Thirdly, the sailing canoe building technique in Mwoakilloa is a highly developed and specialized skill that requires considerable time to acquire. Expectation for a high-standard product required from the community possibly discouraged youngsters from learning the technique. Lastly, the secrecy of the canoe-building technique made it difficult for some young men to access the skill due to lack of canoe builders among their relatives.

Today, only one paddling canoe is still in use while there is no sailing canoe left on the atoll. Only two canoe builders in their seventies are capable of constructing a sailing canoe, although many middle-aged to elderly men know some parts of canoe-building work.

SAILING CANOE BUILDING SKILLS AND KNOWLEDGE

In pre-war Mwoakilloa, almost all the men knew how to build a sailing canoe, although the degree of skillfulness varied considerably among builders. The descendants of Lapwajjong, for instance, preserve rich knowledge of the original Marshallese canoe. Young men acquired general canoe-building skills such as carving and tying parts with coconut sennit twine through their participation in the canoe-building projects of others. More detailed and secretive aspects, such as measurements of hulls and sails, however, were learned from their close relatives such as fathers and uncles. Acquiring the building technique of the sailing canoe is difficult and was considered one of the criteria for manhood and, therefore, marriageability. At the marriage proposal, a proposing man used to be asked if he could make a paddle or bailer, implying a sailing canoe.

The accomplishment of building one's first sailing canoe was celebrated by the special launching ceremony called *wospwuj*, as explained by the late Boaz Poll:

Long time ago, they decorated the new canoe by tying young coconut leaves. Later, after the modern goods became available, if his family was extremely happy that he was making his own sailing canoe and becoming a man, they would buy cloth for loincloth to give as presents to the women of the island. This cloth they would first tie to the ropes of the sail to decorate the canoe (Figure 8). Then the man would sail his new canoe around the lagoon, and when he came back in to Kahlap, all the women would run together to get their cloth.²²



Building a canoe begins with the selection of a suitable breadfruit tree, the only kind of tree on the island for building the canoe hull. According to Mwoakilloa tradition, a dead breadfruit tree can be cut down anytime, but it is forbidden to cut down the living breadfruit tree from the time when the trees start to bear fruit to the end of the breadfruit season (*roak*). It is believed that breaking the taboo will bring a bad harvest of breadfruit, the most important crop on Mwoakilloa. It is, however, possible to cut down the living tree if it has been killed through burning during the prohibited period. By custom, the leftover chips from carving cannot be burnt.

People used shell adzes for canoe building before the introduction of metal implements in the nineteenth century. They burnt coconut leaves on a breadfruit log so that the hull could be carved more easily.

22. Poll, personal interview, 2004.

Because of the slow pace of the work, sprouts reportedly would grow out of both ends of the log. Pre-Christian rituals associated with canoe building are unknown to contemporary elders, and the work today begins with the Christian prayers.

The first parts of canoe building—cutting down a breadfruit tree for the hull (Figure 9), initial shaping (Figures 10 and 11), and hauling



the hull to the lagoon—are cooperative work and take around two days. The owner of the new canoe will provide the food for helpers. In days past, when men pulled the hull to the lagoon, they sang a chant from the Mortlock Islands in Chuuk State, learned during the shipbuilding at Henry and Oliver Nanpei's shipyard on Ahnd Atoll in Pohnpei during the Japanese administration period. Next, soaking the hull in the sea for more than three weeks prevents the gunwale from warping. Finishing the hull (Figures 12 and 13) and preparing



all other canoe parts, such as the upper structure of the hull, keel protectors, decks, outrigger complex, platforms, and rigging, are the owner's responsibility. Although his close relatives usually help him, the work usually takes several months due to his other daily duties.

9 Cutting down a breadfruit tree for the hull (1994). © Takuya Nagaoka

10 Shaping the outside of the hull (1994). © Takuya Nagaoka

11 Hollowing out the hull (1994). © Takuya Nagaoka

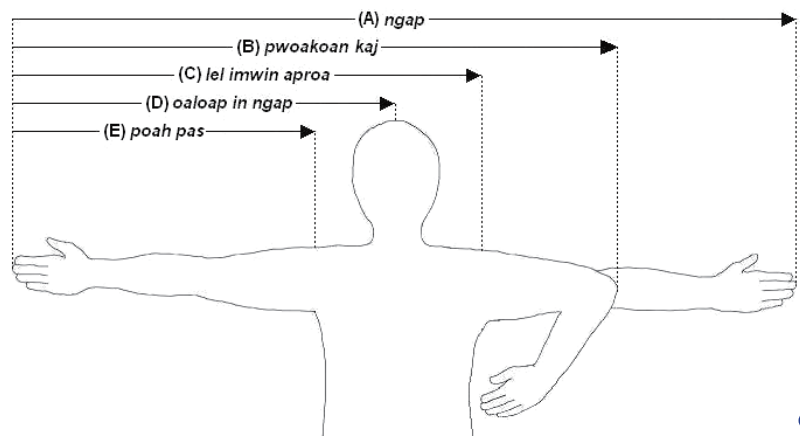
12 Shaving off the hull after soaking (1994). © Takuya Nagaoka

13 Hollowing out the hull (1994). © Takuya Nagaoka



Lashing the outrigger complex (Figure 14) and platforms (Figure 15) to the hull is another cooperative effort, which is done by all the workers in a day. This process fits all the parts together and is the last stage before launching except for the painting, which is done by the owner. The final and the most esoteric task is the measurement of the sail. Although stretching out the sail material requires the help of many neighbors (Figure 16), all outside helpers are dismissed and only special persons, usually close relatives, are allowed to participate in the work from the process of sail design onward. To avoid others copying their sail design, some builders used to eat the pandanus leaf ruler to keep a secret of the measuring formula and would use a Western-style ruler, converting their pandanus leaf ruler system into inches.

In canoe building, two methods of traditional linear measurement were used: the use of anatomical parts and the “halving system.” Like other Micronesian islanders,²³ Mwoakillese people traditionally measure (*jong*) things using their body parts, particularly their hands and fingers. Various scales are used for measuring different sizes of objects by using their hands (Figure 17). The fathom (*ngap*) is the most basic unit of length, measuring the distance between the outstretched



23. William H. Alkire, “Systems of Measurement on Woleai Atoll, Caroline Islands,” *Anthropos* 65 (1970), 1-73.

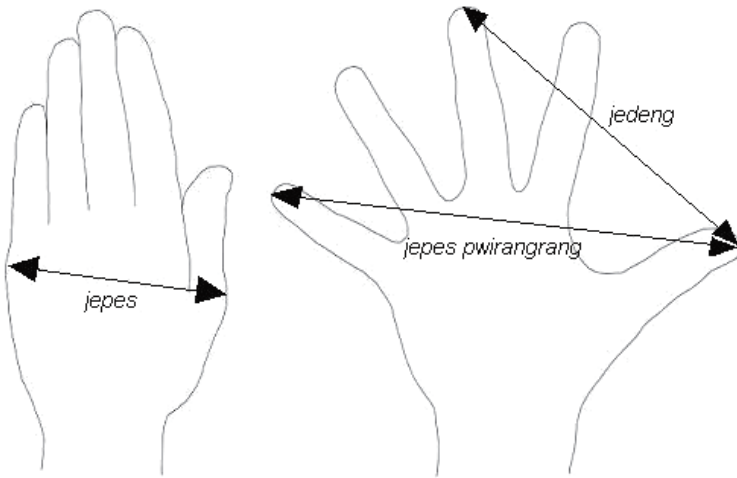
14 Lashing a secondary boom to the float ridge (1994). © Takuya Nagaoka

17 Measurement with arms. © Barbara Hicks and Takuya Nagaoka

15 Lashing a side rail (1994). © Takuya Nagaoka

16 Stretching out the sail material before making the sail design (1994). © Takuya Nagaoka

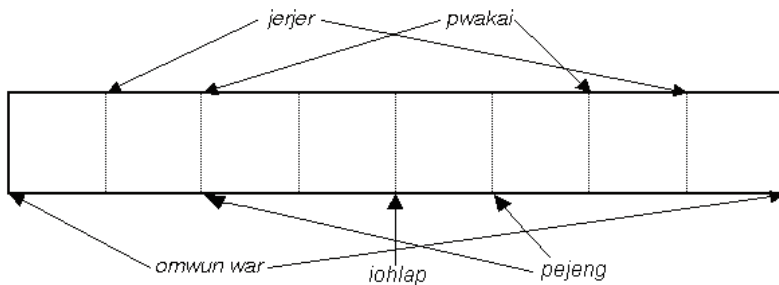
arms (Figure 17). Different units are used for measuring long canoe parts roughly. Measuring smaller things with the fingers is called *ngapen jaid* (literally, “fathom of finger”). There are three units in the *ngapen jaid* system (Figure 18). This method is used for measuring the



18

lengths of various canoe parts, such as the height of the hull, the lower boom, the three sides of the triangular sail, and the curved lines of the sail.

Another basic measuring technique, using the so-called halving system, includes halving and re-halving a certain length to divide it into equal lengths. After preliminary shaping of the breadfruit log for the hull, for example, the log is divided into eight equal lengths in order to draw the keel line (Figure 19). In addition, Mwoakillese



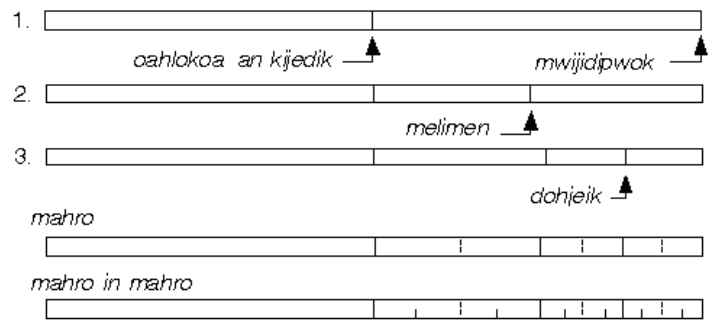
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people traditionally use a ruler made from a pandanus leaf (*pis*), called a *pisen war* (literally, “pandanus leaf of canoe”) for more detailed measurements of canoe parts. To make this ruler, a pandanus

18 Three kinds of measurement by hand, *ngapen jaid*. © Barbara Hicks and Takuya Nagaoka

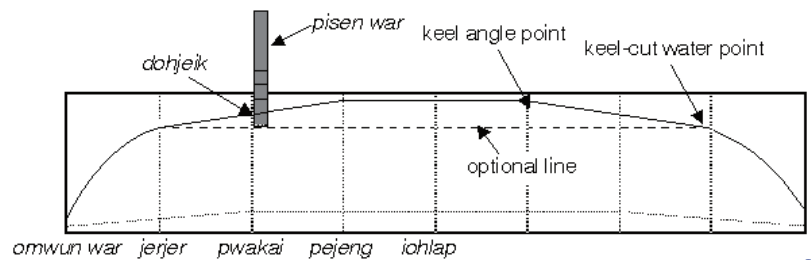
19 The layout of measurements of a breadfruit tree log. © Barbara Hicks and Takuya Nagaoka

leaf is cut to an arbitrary length, such as one-fourth or one-eighth of

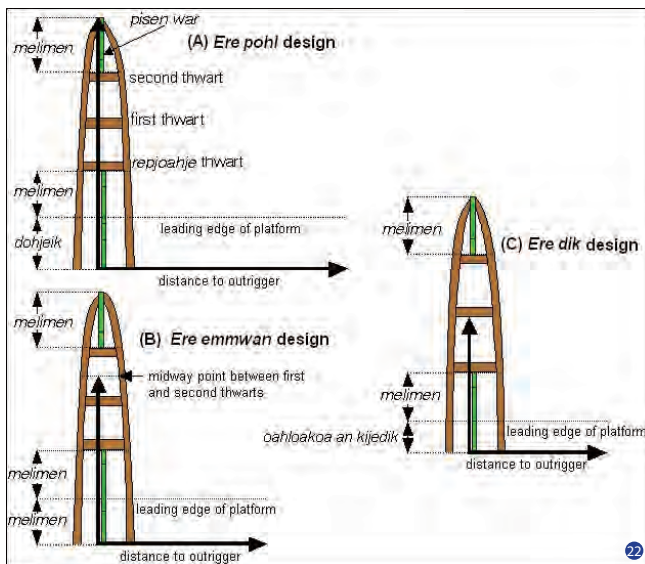


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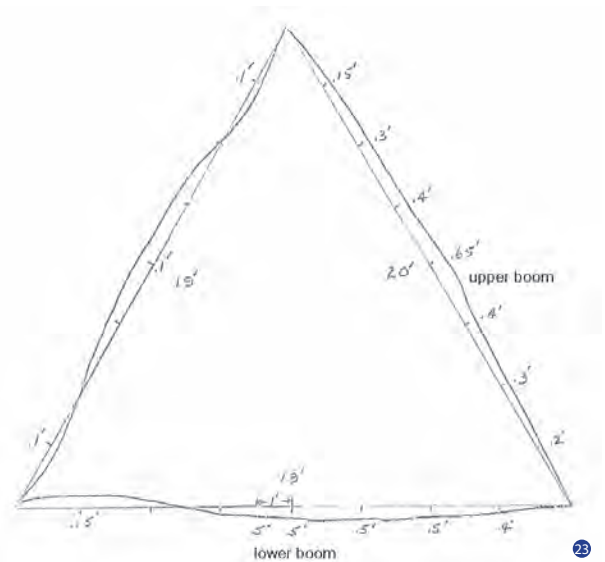
the hull length, and is halved and re-halved (Figure 20). The *pisen war* was used for measuring different parts of canoe: the slant of the keel line (Figure 21), the *ere* design (Figure 22), and the curved lines of the triangular sail (Figure 23).



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20 The process of producing the pandanus leaf ruler (*pisen war*). © Barbara Hicks and Takuya Nagaoka
 21 The measurement of the slant of the keel line on breadfruit tree log. The *dohjeik* design is used as an example. © Barbara Hicks and Takuya Nagaoka.
 22 Three *ere* designs. In each design, the bold horizontal arrow and the vertical arrow perpendicular to it are equidistant. Dotted lines indicate important points of measurement. © Barbara Hicks and Takuya Nagaoka
 23 Triangular sail, adapted from Conrad Bentzen's "Land and Livelihood on Mokil, an Atoll in the Eastern Carolines," 1949. The units are in feet.

After the completion of a new sailing canoe, the owner would ask a canoe expert to examine his canoe to ascertain that everything was in order before it was put out to use. This is called *likpwar*. The expert would check such things as the length of the mast and the lean of the hull, which were adjusted before he would “bathe” (*duhp*) the canoe:

Mwoakillese men have to bathe new pieces of fishing equipment such as boats, canoes, spears, nets, hooks, or even lines. The man who has a new one of these needs a man lucky in fishing to join him in bathing it. The lucky fisherman will make the piece of equipment lucky. If, after a man bathes a piece of equipment, it still catches no fish, the next day, he may find someone else lucky to go out with him, so that the piece of equipment will be able to catch fish.²⁴

On such an occasion, men sprinkled fish blood over their canoes to show their luck (*poaroan* or *marahra jedin*). Some fishermen never washed the blood off their canoe or boat so that they would not lose their luck. As is done for the first fruits of a new crop or new season, catch from the bathing was brought to the chief or church minister to be blessed. Traditionally, men needed to guard (*poaldi*) themselves and their fishing equipment from the influence of women. Violation of this taboo was believed to bring bad luck during their fishing trips. Therefore, women were excluded from riding on sailing canoes. Indeed, the work of sailing canoe building is largely done by men while women are only in charge of weaving pandanus leaf mat sails, making coconut sennit twine and rope (Figure 24), and preparing food for helpers.

In the annual New Year’s sailing race, three components—canoe, sail, and sailing ability—determine the outcome of the race. While the skilled person can keep the wind in his sail and look for the next wind by looking at the surface of the sea, the unskilled person cannot keep the wind. A competent man also can disrupt the wind of the following leeward canoe by releasing the sheet and changing the air current. The disturbed wind makes the leeward canoe’s sail slack, and the canoe slows down. Due to the intensity of the race, a fight might break out at its conclusion.



24

24. Poll, personal interview, 2004.

24 Women beating soaked coconut husk to make coconut sennit twine (1994). © Takuya Nagaoka

CONCLUSION



25

A sailing canoe was a material symbol of men’s skill and, therefore, their pride. Due to this importance, a canoe is included in the Mwoakilloa Municipal Government’s official seal (Figure 25), along with the most prized fish, blackjack (*kehpwini*).²⁵ Significant social value and prestige were attached to the skills of canoe building. The late Boaz Poll stated that “men used to have sailing canoe races as contests of manhood.”²⁶ Even today, for those who know their history, the Mwoakillese sailing canoe symbolizes the traditional standards of men: competitiveness (*aksuwahu*), cooperation (*minmin*), and hard work (*pworjek*).

With the passing in the last decade of the last several master canoe builders (*joupal*) who possessed genuine knowledge and skills in sailing and building, canoe building has entered a critical era for its survival. Some Mwoakillese men have talked about the necessity of reviving sailing canoes due to the recent rise in gasoline price and lack of canoes, both of which have reduced the number of men’s fishing trips. There have been several attempts to revive the sailing canoe building on Mwoakilloa in the past two decades (Figure 26), although they achieved very limited success. Today, some members of a newly established organization of Mwoakillese elders known as the Mwoakilloa Senior Citizen Association discuss their strong interest



26

25. Blackjack is targeted at the most important communal fishing competition (*indenkamw*) of men held during the breadfruit season.

26. Poll, personal interview, 2004.

25 Official seal of the Mwoakilloa Municipal Government, which includes a canoe in the center. © Mwoakilloa Municipal Government

26 Three sailing canoe-building class instructors (with caps), the late Apiner Jim (1921-2006), the late Moses Henry (1920-2008), and the late Robert Joel (1922-1998) and the author (right) (1994). © Takuya Nagaoka

in a revival and are willing to pass down this dying art to succeeding generations without guarding their knowledge. The successful revival of sailing canoe building in the Marshalls²⁷ suggests the possibility of reviving Mwoakilloa canoe building. Limited time is left for the Mwoakillese people.

ACKNOWLEDGEMENTS

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Kalahngan en kamwai ohroj!

27. Joseph Genz, "Navigating the Revival of Voyaging in the Marshalls: Predicaments of Preservation and Possibilities of Collaboration," *The Contemporary Pacific*, 23 (1) (2011), 1-34.

28. Nagaoka, "Sailing Canoe Building Techniques on Mwoakilloa Atoll," 2014.

29. Nagaoka and Hicks, "Oh Mehjwa," 2014.

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