

Kosraean Woven and Stitching Mats



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Introduction

This paper describes the weaving of Kosraean mats. The Kosraean mat still holds a very special place in the life of Kosraean people. It is used for floor coverings, wedding exchange gifts, gift wrappers, birthday gifts, bedding, and mostly for funerals. During the period of kings and ranked titles on the island, mats were used to wrap up the corpse before burial. This practice was done until the arrival of the missionaries on Kosrae in the year 1852.

The mats are also used to line the inside of a grave before a coffin is put in and this is still done today. It is a traditional practice of the Kosraean people to use seven mats to cover a grave. The inside of the grave needs six mats: four are laid on the two sides, one on the head end and one for at the foot end of the grave. The seventh mat should be placed on top of the ground after the burial, and should remain there until it decays.

During funerals, the body is usually placed in the center of the home for viewing and last respects by family and friends. So another mat must be placed in the center of the house for the body to rest upon. After the body has been buried, that mat must remain on the floor for at least a month. It is a belief that if this mat is removed before a month has elapsed, somebody in the same family will die. This is how special mats are for Kosraean people. When there is a funeral, there should be a number of mats, both for floor covering and the graves. It is only today that store-bought mats are commonly used since it is easier to buy one than to weave one. However, some people still prefer using a woven mat to cover a grave because it is very rare these days.

During earlier times when there was a funeral, woman would usually come together to bring mats to help the family of the deceased with the funeral. Formerly in Kosrae, every woman knew how to weave mats or every household had a mat weaver. Occasionally, women gathered together to weave mats, and a mat could be prepared by four ladies in just one day. At present, however, only one person is still weaving mats in one of the villages. There are still a number of elders who have the knowledge of mat weaving nowadays but they are not doing it anymore.

Mat weaving is passed from mothers to daughters by teaching, observing or practicing. Most linguistic terms used in mat weaving, describing each step in the preparation and stages of weaving stages, are very uncommon today. Most people do not know these words, especially those in their 40s and younger. Only the elders know that such words exist and are still using them when it comes to weaving mats. Weaving of the Kosraean mat is already starting to disappear; as only a few elders are still maintaining this knowledge.

Methodology

The information included in this paper was obtained both from interviews (with expert mat weavers, community people, families, teaching colleagues), and from written sources. The main informants were a couple in their late 70s who are among the very few elders that still promote the traditional way of life, especially in weaving, carving and sharing of family meals with their whole neighborhood. Woven mats from pandanus leaves of different size, mats from coconut leaves, local fishing baskets, and very complicated crafts could be found at the residence of the couple, indicating that they are

still actively weaving. The husband is known for his skills in canoe-building, coffin-making, house-building and a lot more. The wife is an expert in weaving mats from both pandanus and coconut leaves, all kinds of local baskets even ladies' fishing baskets, fans, embroidered cloths like handkerchiefs, skirt decorations, hats and ladies' handbags. Nowadays, since local mats are rarely used, she weaves them mainly for the house whenever she is bored or has nothing else to do. Only on some occasions, especially funerals, will people ask her to weave mats for them.

It is fortunate that I already had a close relationship with the couple, so I had no problem asking questions and obtaining everything I needed to make my paper as complete as possible.

At the beginning of my visits, I made sure they knew the purpose of my visits and questions. I started with simple questions such as “What were some uses of locally made mats from the earlier times until the present time, How many types of mats are there, Who are the mat weaver, whether both gender or only female, If men can weave mat as well as women, When did people first start to use mats, How did they learn how to weave mats and all the other different weavings, What is their purpose in continueing to weave mats until today.” During with those starting questions, we would just sit and talk.

The next step is the “What” questions relating to materials and tools needed throughout the process of weaving mats.

And then the more challenging questions, concerning how to weave the mat, starting from the very beginning and continueing to the very end. This part of the interview was more challenging and it took more than a day for me to get everything. It was a show-and-tell strategy where we had to stop at some points, talk more about it, go

back to certain parts and then continue on. Thanks to the modern technology of video cameras and photography, I was able to save time and replay and review images.

The last group of questions was about the mathematical knowledge the weaver should have or apply throughout the weaving of the mat. The way I asked was, “In your own perspective as a mat weaver, do you think mathematics is critical when you weave? If yes, then what are some mathematical knowledge do you practice throughout the weaving of a mat?”

The even more challenging part of this research is to figure out or identify more mathematical relationships or patterns when studying the elements of the mat. It is during this stage that I was able to show the weavings to some of my co-teachers and ask if they could see anything different from what I got from the mat.

By my sixth visit with the couple, I finally felt confident enough to start putting things in writing. The main reason for the delay was likely the difficulty in knowing where to start and how to figure out English translations for a number of local words that previously I never knew existed. It is a challenge and a good experience to learn new words from my own good language.

Most information collected in this paper I believe is complete enough for the purposes of developing math curricula.

The Stitching Mat

Materials needed:

1. Old pandanus leaves (30 or more)
2. Cutting tool (knife)
3. Pounding tools
4. Stitching tool
5. Hibiscus fibers

This form of mat is made from the old browned pandanus leaves. The leaves can be collected from the ground as well as taken from the trees. The regular size of this mat is also six feet length and four feet width. This size requires about thirty leaves. Once the leaves are collected, it is time for *sraksrak*, to take off the sharp sides from the leaves and also cutting the two ending sides. Knife or any cutting tool can be use for stripping of the sides. After *sraksrak*, it is time for *lihmihm*, to straighten out the leaves and getting rid of the folds. Each leaf is straighten out by spinning around the hand and rolled between both hands. After *lihmihm*, leaves are put together in rolls; eight to nine leaves in a roll. Each roll is called a *fuhfas*. To make into a roll is *fuhfaselah*. Putting leaves into rolls is only to tidy up the place. If weaver is to begin weaving right away, she could just take the leaves right from *lihmihm* and start pounding. Pounding of the leaf is done on a stone by a pounder.

From the earlier days when no metal was on the island, people use branches or stems of a tree called *kwacngi* for pounding. Nowadays, weavers use heavier metals. Well during pounding of the leaves, five to six leaves are arranged and then rolled up into a *nono* and then pounded. During arrangement of the leaves, all bigger sides or the head of the leaves are put on one side. This is to make sure that the head of leaves are pounded well since the part is much thicker.

After pounding, the leaves are straightened, soften, and ready to be stitched. This time, the weaver will take a leaf and try to estimate how many stitches possible for the mat. This will depend on the length of the leaves. Most leaves can have a possible of six to seven stitches while each stitch is four to five centimeter in between. Each stitch is called *acnilacl*.

Hibiscus fibers are used as threads when stitching mats. During the earlier days, weavers use the sharp tail of the stingrays as stitching needles. But now they use the frame of the umbrella. Throughout the preparation of the leaves, the hibiscus fibers should be set and ready to be use. The preparation of the fiber is another big challenge. The hibiscus branches are peeled and inside covering should be taken out and put in the ocean water for a whole week. After a week, it should be washed thoroughly and need to be very clean and out of the bad smell from soaking. Another two days will be in the sun to dry. After dried up, it should be stripped into narrow and long straps and then inserted into the needle.

The first set of leaves to be stitched will be folded just once so only an inch of the fold will be stitched up just to save a space for the last stitches. Another leaf will be use in the stitches as an outline of the starting mat. Each leaf is added one at a time.

When one leaf is stitch in, another will be added and inserted a little just next to the previous leaf. The stitching of each leaf is done with very tiny spaces in between that it could be impossible to tell how many stitches are there.

The stitching of the first set of leaves continues until it reaches fifteen leaves. This will determine the length of the whole mat which usually goes up to six and half feet length. When all fifteen leaves are stitched in, it is time for the second stitch which is

called *acnilacl*; where the weaver should first estimated before the actual stitching. This will continues until there are six or seven *acnilacl* based on their counting. Another half of this mat will be started again, with the same stitching procedures, where when finished, both sides will be stitched together in the middle folds. When stitched together, the sides will be where the weavers will create their own patterns for decorations. They could cut the sides as they prefer and stitched up the mat with colored hibiscus straps. Earlier weavers used to add colors to their straps using a certain fruit while today's weaver sometimes uses artificial colorings.

Like the woven mat, mathematics in the stitched mat is visible from the preparation throughout the end. The counting of the number of collected and prepared leaves are very important. If the leaves are less in numbers or not enough, the usual size mat won't be possible. The groupings and organizing the leaves into groups are also important aspect of mathematical knowledge. The approximations of the number of stitches that will be possible for each leaf are also important and was depending on length of the leaves. If the leaves are longer, there will also be as much stitches. And more stitches mean a wider mat. When stitching mat, local weavers also determine the length or measurement of their materials by using traditional mathematical talents like measuring using the hands.

There are two types of Kosraean Mats: The woven mat and a sewing mat.

The Woven Mat.

Materials needed:

1. cutting tool (knife)
2. pounding tool (mwe tuktuk)
3. Stripping tool
4. Pandanus leaves

The woven mat is made from the green pandanus leaves taken right from the tree. Weavers don't count the leaves but they just collect as many as they think will do for the size of mat they aim for. After taking the leaves from the tree, the head and the tail of each leaf should be removed. Then the remaining part should be heated above a fire so it will be soften a little. And then *sruhkaclah* which is to take the sharp edges or sides off the leaves. Afterward is *fucsrfuchsr* - to place all leaves under the sun to dried up and heated some more. It should be under the sun for about one whole month, or for only two weeks on sunny weather. After this stage, the green leaves will turn into a somewhat white and green color. After heated under the sun, it is time for *lihmlihm*, in which to straighten the leaves and rolled it up. This part is done as the leaf is rolled up around the hand and back again just to straighten the folds of each leaf. Once rolled up around the hand, it should be in a roll shape then held by both hand to be pressed together some more. After this *lihmlihm* stage, the weaving house should be very crowded with rolls so now it is time to *fuhfaselah*- to put them together in a big roll. This is to tidy up the place and make easier to pull each leaf when weaving. After the leaves are *fuhfasiyucklac*, to make into rolls, each roll is called a *fuhfas*. Each roll is made up with 5-6 leaves if done by female. Sometimes, man helped in doing this part; since they have stronger and bigger hands, they could make rolls of 8-9 leaves.

The next step is to pound the leave to soften up. It will remain in rolls when pounding. This part is also can be done by a male since they have stronger harms. But woman usually do it themselves but with smaller rolls. The pounding tool should be of something heavy. In the past, weavers use a carved stone and a particular tree branch to pound the leaves with. Today heavier metals are use for the pounding. If the mat is not

going to be started right away, the leaves will need to be rolled up again into what was called *fuhfas*.

But if the weaver is to start immediately, the leaves will then be stripped using a particular tool. It doesn't mean the leaves will be in pieces but there is a space before the stripped to hold the strips together during weaving. So when it is stripped, each leaf will have four strips hanging. The size of the strips will be depending on the spaces between the edges of the stripping tool. The bigger size could be one inch width while the smaller size will be only half on an inch. And of course the size affects the time it takes to finish the weaving. The smaller size requires more time to weave comparing to the bigger size. For the strips, some have a harder end which was the bigger part of the leaf when it is first taken down from the pandanus tree. The others are the other end of the leaves and they are softer. This is important to consider when it is time to weave.

When in strips and starting, a hard and a softer part should go together. Each leaf will then have three, four, or five strips. Then two leaves will be put together one on top of the other. If each leaf have four strips, there should be eight strips for the start; four on top of the other four. Another pair of leaves should also be put intersecting the first pair. The weaving is the same as for baskets and plates but only that two parallel strips go together. Throughout the weaving process, the strips go in pairs; the top and bottom strips go together until the end of the weaving.

Well the first stage of weaving is called *srihmetack*, which is to weave one whole side to determine the width of the mat. The width of a regular mat is about 4 feet. *Srihmetack* is a word referring to something just starting. It is always applied to the very beginning of a woman's pregnancy. This first stage is considered most complicated in

mat weaving. When the first side reaches 4 feet wide, the weaving then goes a different direction.

Beginning from the same starting point, the weaving continues up or on a different direction where it will establish the length of the mat; usually six feet long. The second route of the weaving will be forming a right angle where the vertex will be the corner where the first weaving began. In fact, this is the main part of a mat weaving. This requires memorization of a sequence that the weaver repeated throughout. The only time that a weaver will stop from the repeated sequence is when she needs to add another strip during such time that the number of strips don't match together. The two longer parallel sides are woven along at the same time.

This repeating sequence continues until it reaches the usual length of the mat. Between weavings, weavers can also change sequence when trying to create a different pattern as decoration or styles on their mat. This depends on each weaver and their patterns are unique as it could be different from others. As mentioned earlier, size of strips affects the amount of time needed to finish a mat.

Mathematics in mat weaving is apparent from the preparation stages all the way to the finishing structure. When collecting leaves from the tree, collectors use estimation to figure out how many leaves they will need for the preferred size of mat. They usually collect as many in order for a larger size. During the stage of *fuhfahs* where the straightened leaves will be rolled up together, organization and groupings are applied. When rolled together, each group could be made up with 8-9 leaves. Once everything is in rolls, multiplication is used to figure out how much leaves are there. During pounding stage, leaves are distributed into groups of 5 or 6 and organized in a certain way to be

pounded. The heads of the leaves or the bigger size are put together and then rolled up again before pounding. Then comes the weaving stage where each pair of leaf should have the same number of strips. And two strips go together throughout the weaving. The determination of the length and width of the mat were done by using the hand measurement where two full hands are equivalent to a foot. Nowadays, weaver can also use the floor tiles to determine the length of their mats.

When the mat is all done, mathematics are even more obvious. The whole structure could be use to enforce learning about geometry based on the geometric figures and patterns visible with the mat. It could also be use as grids when learning about fractional numbers. The repeated weaving sequence even provides symmetrical aspects to the structure.

According to Mrs. Emilia R. Mongkeya, Counting and measurement are most important in all her weavings. During a weaving process when counting goes wrong, everything should be start all over again. This goes to the weaving of mat, baskets, handbags, plates and even broidering.

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