Knot News

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North Atlantic Gem Knots - Overture

Pieter van de Griend

Anybody who can tie a Nagem Knot is an object of respect – and at sea this statement will always hold true.

Prologue

The idea for this article sparked at the fireplace of the Flodigarry Hotel on the windswept Isle of Skye. Over Christmas 2002 I was reading *Knot News* issue 36. In a letter Roy Chapman [4, p5] said he had constructed knots from ABOK which had crossfidarcs like those of a Little Lump Knot (**LLK**). Roy continued his letter by writing that his find led him up a whole new avenue for knotting adventures. Such statements always bring tears (of joy) to my eyes. The fact that this paper has been laying on my desk for the next 3 Christmases also flushes seawater from my eyes, but for different reasons. However, let's finish it before Christmas falls upon us once again.

Some excerpts from Roy's writing:

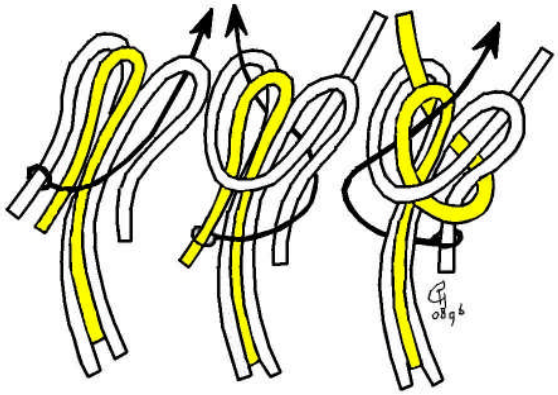
> One of my favorite knob knots is "A Diamond and Crown", ABOK #852.
> Since ABOK #913 is a Wall Knot with a particular Crown on top and ABOK #852 is a Diamond Knot with a particular crown on top, what would I get if I put a crown #913 on top of a Diamond [#852].
> Tie ABOK #693. Leave it loose enough to double. Place the crown of ABOK #913 over it (instead of the wall knot). Follow the lead below to double both diamond and crown. Tuck the ends down the stem.
> It is very reminiscent of the Little Lump Knot, but in four strands.

Obviously Roy is proposing to combine techniques to create knob knots. The LLK, however, comes closer to being a relatively simple spherical covering. In a string of articles I would like to pick up on Roy's adventures, work out some details and present some hopefully novel thoughts on decorative knotting. In *Knot News* issue 57 we studied aspects of Sphere Covering Knots (**SCK**), which will help us further Roy's idea [6]. We show that you can cover a sphere in a sausage-like fashion by transitioning a Cylindrical Regular Grid into two Hemispherical Nested Grids. Actually we take this a step further and create so-called Punctured Sphere Coverers (**PSC**) to which we shall elevate Knob Knots. A warning beforehand seems fair to me. Beware that the making of these knots requires the dexterity of an octopus and skills bordering on the art of black magic.

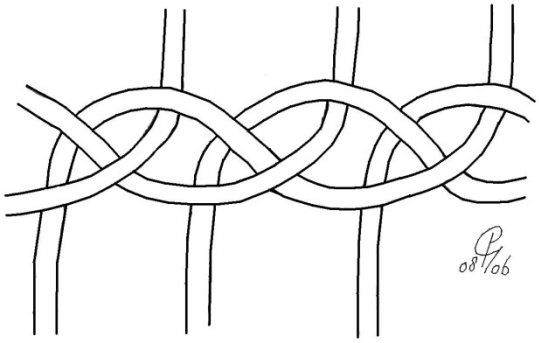
Roy mentions three knots from Clifford Ashley's *Book of Knots* [1, #693, #852, #913]. Let's take a closer look at them before bobbing off onto more esoteric Nested Knot aspects.

ABOK #693

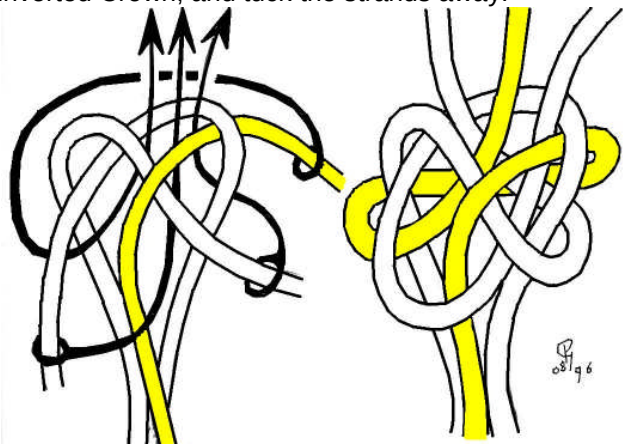
Our first port of call is ABOK #693. This icon of decorative knotting is flower-potted as utilitarian and ornamental by Ashley. Unfortunately it is flawed and possesses a lousy lead, which requires curing with a - guess what - Constrictor Knot.



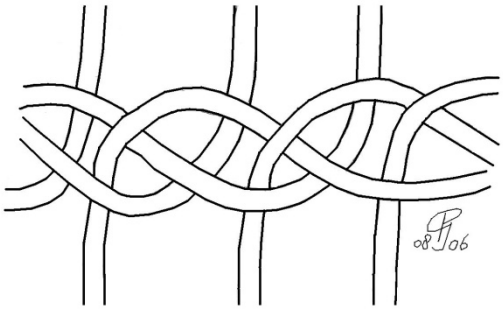
Draw out the weave of this knot to see the 3-stranded Flat Sennit being assembled. Note that the exits are not overly elegant with all strands sneaking out of a side door.



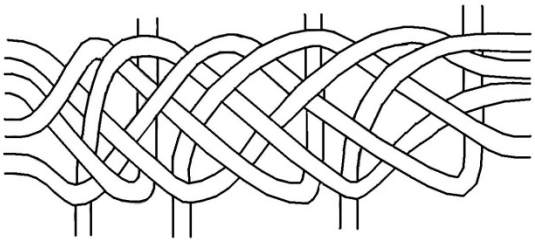
A well-known fix to repair asymmetry is to stick an inverted start component onto the first part. This principle works well as a general rule, but not here. The Footrope Knot exemplifies why this principle fails [1, #696]. First a Crown and then a Wall, i.e. an inverted Crown, and tuck the strands away.



Consider the weave of the Footrope Knot. This weave is the same as that of #693, but upside down.



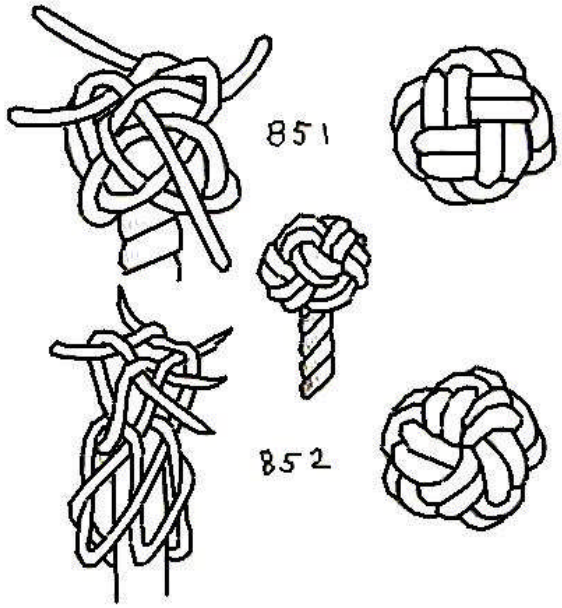
We witness a 3-stranded principle at work here. In Graumont and Hensel's *Encyclopedia of Knots and Fancy Ropework* (**EKFR**) you may find a 5-strand Sennit Rose Knot, which is an extension to this principle, [5, p484, #212]. This is also noted by ABOK, [1, p124, #706], but with unclear illustrations. It becomes apparent where EKFR's "5-parted" bit comes from when you draw out the weave.



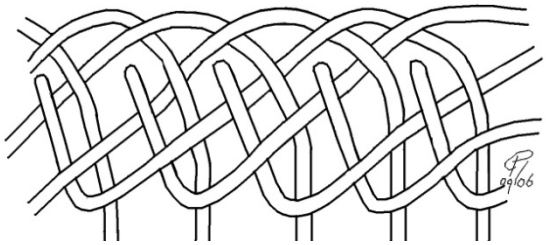
Despite all these interesting elaborations, issues with this kind of knot are manifold. It is clearly more of a cylindrical covering. Stretching it to cover a relative large sphere raises a gapping problem. Moreover, the strands emerge from two sides rather than one. It is demanding to incorporate a cap somewhere to create a spherical covering, which is closed at the top. After all, that is what we want, right?

ABOK #852

Suppose you want a cap. The cap-problem is partially solved by the Crown as shown in ABOK #852. It is not very elegant when more than 4 strands meet at the cap's summit. We say that the polar openness preferably requires order 4, but the system of #852 is workable.



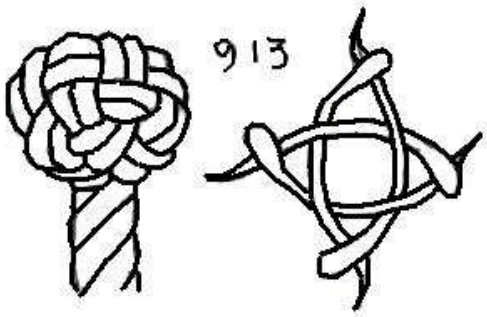
Drawing out the weave brings a surprise. We are still looking at Regular Grids! The illustration below clearly shows this for a piece of Flat Sennit of 4 parts in width and 5 bights in length.



Note how close this weave (*p/b* = 5/4) approaches its reciprocal Regular Grid, a well-known Turk's Head, which is often used to cover spheres. This kind of composite can be obtained from any multi-string basis of *b* strands quite easily. The principle can be extended to simulate any *p*-parted, *b*-bighted Regular Grid.

ABOK #913

Clifford Ashley is not very informative on this knot. He refers to the Diamond and Crown, which is presumably [1, p126, #715]. He states #913 gives the same results, leaving it an open implication that #913 is a cap on top of a Diamond Knot. Ashley almost extended the principle to 3 and 5 strands [ABOK, #901, #902]. This solution turns out to work quite well for spherical coverings.



Now, what is so special about #913? Where does this solution fulfill its office? If you try using it as Clifford Ashley describes, you'll end up with a Regular Grid of 5 parts and 4 bights. As you can guess, there must be more. In any case burn the #913 image onto your retina. It has Schwarzenegger allure: it'll be back!

Intermediate conclusions

Let us review our findings. With 963, 852 and 913 Clifford Ashley presented solutions to rope problems. The problem obviously is to create a knob at the end of piece of rope. This class of knots is called Knob Knots. Good Old Clifford devotes 8 out of his 41 chapters to Knob Knots of some kind. So they must be important.

Most of the knots, which we have seen so far, are related to Regular Grids. It is well-kept secret that Regular Grids neatly cover cylindrical surfaces. Given spherical surfaces a next step would then be to consider Nested Grids. We have not seen much of them yet. However, to create a stable spherical body you need a solid filler. Let's stick to the filler first. This can be achieved by means of a so-called mouse.

What on earth is a mouse? I am not sure whether this good old ancient word is correct in the realms of decorative knotting. In any case Master Mariner Paul Harrison used it, so we claim precedence [7, p44]. Originally a mouse was used on stays. Ashley is (almost) silent on them [1, p452, #2768]. He has an 1866 mention to Admiral Luce. However, Thomas Blankley in 1750 tells us [2, p108]:

> *Mouse: Is a large knot artificially made by the Riggers on the Ship's Stays.*

For *spherical coverings* a mouse is a prerequisite. Most Knob Knots do not cater for one. Why? Because Knob Knots so far comprise relatively simple covering thingies. If you start making larger, more complex, Knob Knots you will need to solve the problem of providing padding for the covering. Otherwise your carefully crafted architecture will cave in during tensioning. In a Knob Knot, the strands only cater for the exterior covering, not the interior works, as there never is a mouse.

Our general notes on this subset of ABOK Knob Knots are:

1. They have some form of cylindrical weave.
2. None has a mouse.
3. They have multi-leads.
4. Due to their shortness they exhibit spherical flair.
5. All samples are given in disc-presentation.

Let us now proceed to taking a closer look at The Little Lump Knot Roy mentioned. As Julie Andrews sang in *The Sound of Music*, Let's start at the very beginning, which is a very good place to start ♫♪ …

Little Lump Knot Aspects

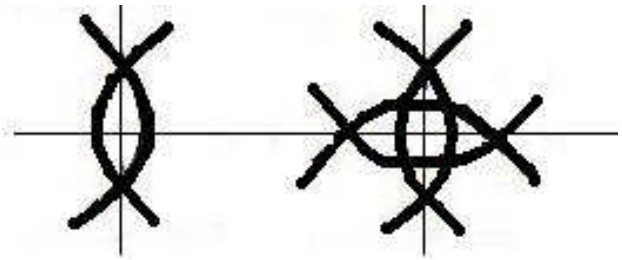
What *is* an LLK? Compared to the Knob Knots, which we have just seen from ABOK, it is a construct consisting of a mouse and a multi-strand spherical covering. The LLK concept is perceived as a single knot, but is in fact a principle representing a class of Sphere Covering Knots. Our LLK, based on 8 strands, is almost the smallest element of an interesting knot-family.

A relevant question is whether the LLK is a knob knot? It does not look that way, as it has a mouse.

Before we proceed to considering aspects of the covering I assume that you know of many ways to make a mouse. If you do not, then split up your 8 strands into 4 pairs and smack in a Crown, supported by a Wall. Repeat this operation twice to create a non-excessive blob begging for a cover. Let's now move to the covering bit.

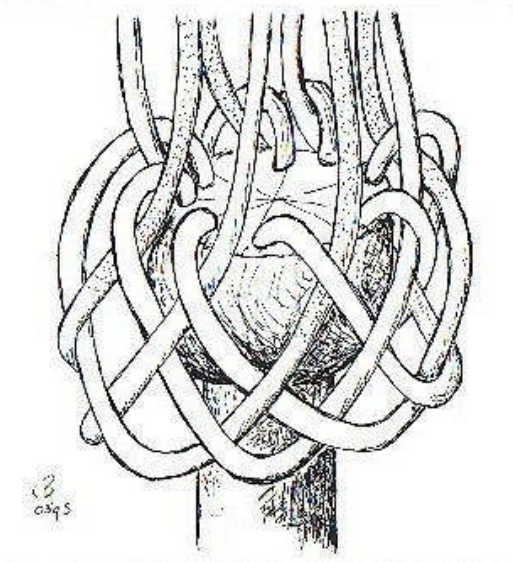
CrossfidArcs

Note that #913 has a set of 4 crossing arcs. The smallest collection of such cross arcs consists of 2, as we do not allow a strand to cross-arc itself. During the monumental 1997 New Bedford meeting it was customary to throw a fid into anything and everything. So, when we were discussing crossarcs, we had no other option than to interject "fid" somewhere. And guess where it landed ☺.

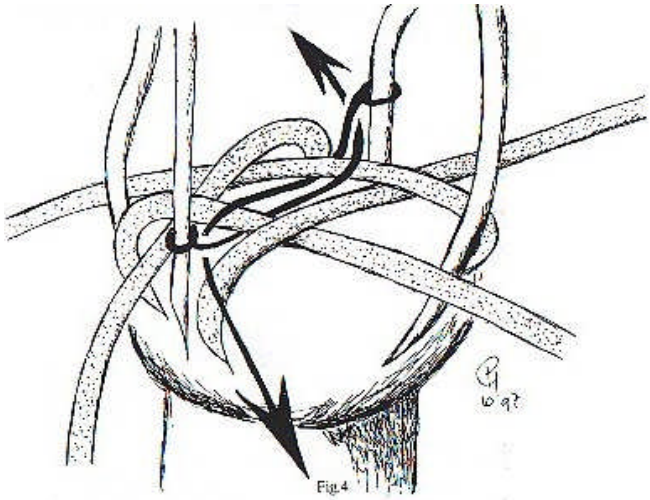


Crossfidarcs came to denote a set of 2 or more crossarcs.

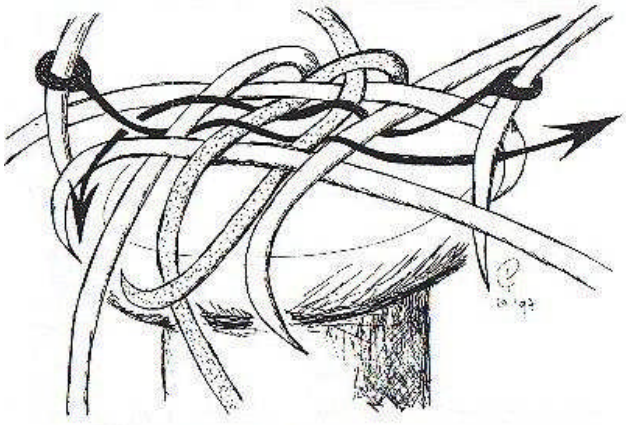
We now return to our LLK construction site. After the mouse an 8-stranded Wall is made. Let all strands make an extra tuck and emerge at the top.



Select 4 out of the 8 strands by alternately skipping one. Make a 4-strand Crown. Then we start the crossfidarching business. Make the first set of cross-arcs as shown below.



The tough part comes now. The second set of crossarcs is to be put in place. Traditionally this is the part where most errors creep in. Ensure that *all* 4 remaining strands have indeed crossfidarched.

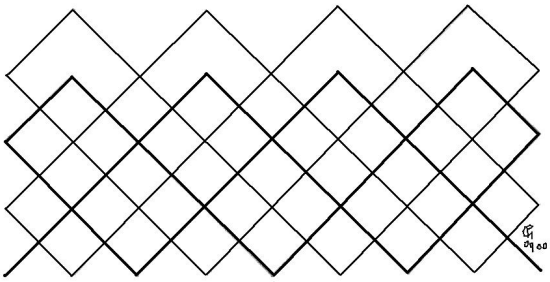


If all has gone well, each of the eight wends will link up with one of the eight starts of the bottom part of the LLK. You may now multiply the weave. By the way, if you seek more detailed instructions I gladly refer you to Dan Callahan's website [3]. Nobody has produced better instructions yet.

LLK analysis

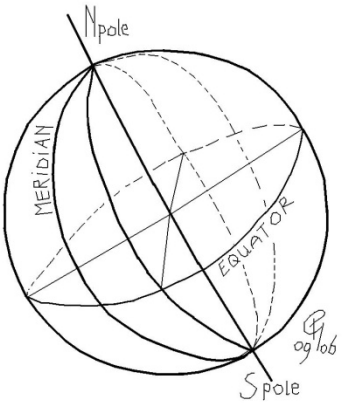
We submitted Clifford Ashley's Knob Knots to some analysis. We will do the same here. The LLK is obviously more than a solution to a covering problem. It solves a covering and a padding problem. Here we are going to dissect the LLK *covering* further by taking a better look at the grid-diagram. If you try to capture the LLK weave in a grid-diagram it looks like what is shown below. It is a peculiar weave, which although made with 8 strands only needs 5 to

complete! Try locate the 8 places where wends and stends linkup.



We introduce some navigational terminology to help explain what we are talking about in the following.

On a globe position determination relies on meridians and parallels. Let us first align our sphere by driving an axis through its center and two antipodal positions. Having agreed on an alignment, the entry and exit points of our axis are two of such prominent positions that we name them **poles**. The circles connecting the poles are meridians. The Equator is the only parallel, which is the same size as any meridian. We can cut the sphere into equal halves, so-called **hemispheres**. A slice along any meridian, or the Equator, yields 2 hemispheres.



When covering a sphere there are many ways to create a weave. The most obvious way is to try and get a piece of Regular Grid (*p/b*) to fit along the Equator. Of course this will not work, because cylindrical surfaces are bent in *one* direction. A spherical surface is bent in *all* directions. Moreover, you will always obtain a Polar Openness of order *b*, which may not be what you want.

Spherical surfaces can be covered with so-called Nested Grids. But in any Knob Knot a chunk of rope exits the sphere. We require nothing short from full-fledged Punctured Sphere Coverings (**PSC**). That immediately lands a few problems on our desk. How to make a simple one – with as many strands as we want to?

Let's approximate a PSC. For our purposes we shall discern cylinders and two types of caps, i.e. caps with and caps without a hole. We shall call the latter 1-holey caps. For our purposes caps will be Hemispherical Grids. You can obtain PSC by gluing the caps onto the cylinder at so-called **transition-points**, which are the rim bights of the components. Let's zoom in on them. We first pick up the central cylindrical segments connecting both caps, the so-called Equatorial Grid Section.

Equatorial Grid

Like any Regular Grid, the Equatorial Grid has a length and a width. The length is determined by the number of bights. The width is determined by the number of parts. On a sphere the Equatorial Grid's width can vary across some interval. Its length, however, is more or less fixed by the sphere's radius. That is to say, esthetics tells you there is an optimum between sphere radius and grid-edge length.

Polar Cap

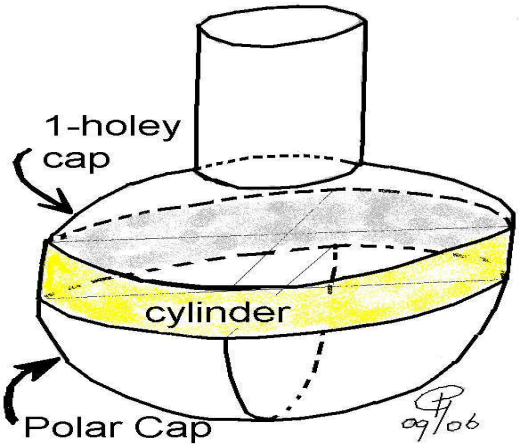
The Hemispherical Grids are more of a problem. They are essentially rims from Nested Grids, which are characterized by the nesting number (*A*) and the number of nests (*B*). A necessary condition, which *must* be met, is that the product of *A* and *B* matches the length of the Equatorial Grid in bights. Otherwise there will be orphan transition points on either of the Hemispherical Grids or the Equatorial Grid

This matching length-demand has an interesting consequence. The length of the Equatorial Grid need not factor into the same *A* and *B* for both Polar Weaves! Different A and B values on either rim of the Nested Grid leads to Asymmetric Nested Grids also known as punctured spheres.

1-Holey Cap

As mentioned in *Knot News* issue 57, unless you want to cover a perfect spherical surface, there often is no point in placing order 4 Polar Grids on both sides of the Equatorial Grid [6]. Most practical jobs need a puncture somewhere in the Symmetric Nested Grid. The Hemispherical Grid section with the puncture is called the 1-holey cap. This can be accomplished by either making an Asymmetric Nested Grid, or trimming away one of the rims of a Symmetric Nested Grid. An operation I propose to call Hooding [6, p4.]

If we piece all three components together along our *AB* transition points we can construct our PSC. The illustration below shows the various parts we have been discussing.



Now return to our LLK. Notice that it consists of an Equatorial Grid plus an order 4 Polar Cap along 8 transition points. It completely lacks the 1-Holey Cap. In fact an LLK is an Asymmetric Nested Grid (4/2, 6/0, 8/1). The LLK is thus a cylinder with an 8-stranded version of #913. Classifying it as one of the simplest PSC's in this universe.

Epilogue

Having analyzed all life out of the poor LLK, let us get our ducks in a row. We established a principal grid-structure which can lead us through the complexities of creating a PSC. The components are obviously cap, cylinder and punctured cap.

Grids may help construct extremely complex Knob Knots, but dimensional increases come at a price. Large PSC demand a mouse for support, which traditionally is not part of a Knob Knot.

Only the grid dimensions are relevant. Coding can be applied at leisure and interweaves be accommodated afterwards.

In successive installments to this overture we shall meet further aspects of PSC. We shall show that the principle behind the LLK Hemispherical Cap is quite universally applicable. Its deployment merely depends on the number of strands you intend to use in your design. As Roy found out for himself: there is indeed a whole new avenue to explore!

Tying any PSC is always a project in its own right, warranting a separate article. I had the audacity to name an assortment of this knot-family after some of my cherished North Atlantic Islands; Rockall Ruby, Skye Sapphire, Bontekoe Brilliant and the Svalbard Smaragd. For that reason I called them North Atlantic Gem Knots – Nagem Knots for short.

In forthcoming papers we will meet these Nagem Knots to discuss aspects of decorative knotting, such as design, construction and tension. The papers are dedicated to the memory of the late Harold Scott, a respected North Atlantic trawlerman and master knotter.

References

1 C.W. **Ashley**, *The Ashley Book of Knots*, New York, 1944**.**
2 T.R. **Blankley**, *A Naval Expositor*, London, 1750.
3 D.**Callahan**, `www.knotical-arts.com.`
4 R**. Chapman**, "Thinking of Knotting", *Knot News*, issn 1554-1843, no.36, December 2002.
5 R. **Graumont** and J**. Hensel**, *The Encyclopedia of Knots and Fancy Rope Work*, originally 1939, Cornell Maritime Press, isbn 0-87033-21-7, 6th printing 1977.
6 P.v.d. **Griend**, "Aspects of Sphere Covering Knots", *Knot News*, issn 1554-1843, no.57, September 2006.
7 P.P.O. **Harrison**, *The Harrison Book of Knots*, Brown, Son and Ferguson Ltd, Glasgow, isbn 0-85174-095-2, 1978.

Book Review: by Paul Nagle-McNaughton of WA

The Higher Power of Lucky by Susan Patron with illustrations by Matt Phelan
Atheneum Books for Young Readers, © 2006

My eleven-year-old son recently received *The Higher Power of Lucky* by Susan Patron as a birthday gift. The main reason his grandmother purchased the book for his gift is because the International Guild of Knot Tyers is mentioned in the story summary on the inside flap of the book cover. The rest of the book's summary sounded appealing, and she figured having the IGKT mentioned was an added bonus that was sure to please me.

The book's primary audience is 9 to 11 year-olds. The story involves a 10 year-old girl and aspiring scientist named Lucky Trimble, her beloved dog, HMS Beagle, Lucky's French guardian, Brigitte, and her pal, Lincoln. Lincoln's mother has a strong desire for him "to grow up to be the President of the United States." Whatever Lincoln's mother's career aspirations are for him, they do not weight too heavily on his mind. Lincoln is more concerned about "how to get enough money to go to the annual convention of the International Guild of Knot Tyers in England, and then how to make his parents agree to let him go."

The books is a very sweet story about loss, finding a family when you have none, what it means to be part of a community, finding your "Higher Power," whatever that might be, and the strong connections forged between friends. For a story aimed at young readers, it paints a very poignant picture of life in the rural American west. The story alternates between light humor and the painful feelings Lucky struggles with over the loss of her mother and the absence of her father.

In one very touching section, Lincoln tosses a "Ten-Strand Round knot" to Lucky who is upset about discovering some new information about her father. She describes the knot as a "large and complicated looking, made from blue and green silky cords…It looked like a piece of jewelry, intricate and beautiful." This simple gift makes Lucky reflect on her friend Lincoln who many think of as "kind of clueless."

> Never before had Lucky realized that Lincoln's knot-tying brain secretions give him such a special way of seeing. She had thought he tied knots for practical reasons, in case there was ever a boat that needed to be tied to a dock, or a swing to be hung from a tree. Now she knew that Lincoln was really an artist, who could see the heart of a knot. Lucky wished she were an artist too, and could organize all of the complicated strands of her life…and weave them into a beautiful ten-strand knot.

I was especially pleased to see that Lindsey Philpott, President of the Pacific America's Branch of the International Guild of Knot Tyers, is included in the "Acknowledgements" section for providing "crucial technical support."

If you have a youngster in your life and you are looking for a great gift, consider purchasing a copy of *The Higher Power of Lucky*. Read him (or her) the story out loud. You will be sharing a very touching story and you may help your young friend to discover that there are many reasons for tying knots. Some practical, some KNOT.

Pacific America's Branch 10th Anniversary AGM Report

Well, our 10Th anniversary Annual General Meeting was a resounding success!

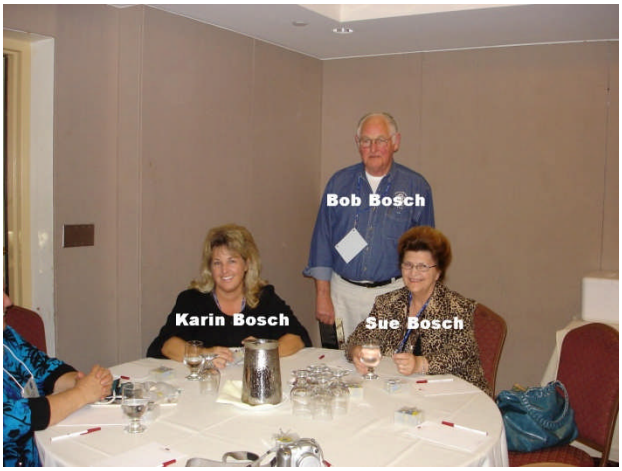
We got an early start with our "3 hour tour" on Thursday. We had 33 members/guests on board (I think there were more, but I must have missed them). Of course there were crew members and Captain Pat Cassidy. The crew and Captain did an excellent job of *providing a good wind for sailing* as well as taking care of all of us "land lubbers". (To quote the Captain, "This is the best wind for sailing that we've had for several weeks!)

I like the picture below because of the flag and the *Irving Johnson* is the ship to our stern. (We are still docked here, with Captain Pat giving us the "run down" on ships behavior.)

Pictured below is Jose passing on some kind of "WHOPPER" to Larry and Charlie! We are "at sea", being past the breakwater.

At Friday afternoon's "meet & greet", Lily Morales took charge. We really must thank Lily for all her hard work chasing down donations for our raffles, preparing the AGM directory and much too much more work to be listed here.

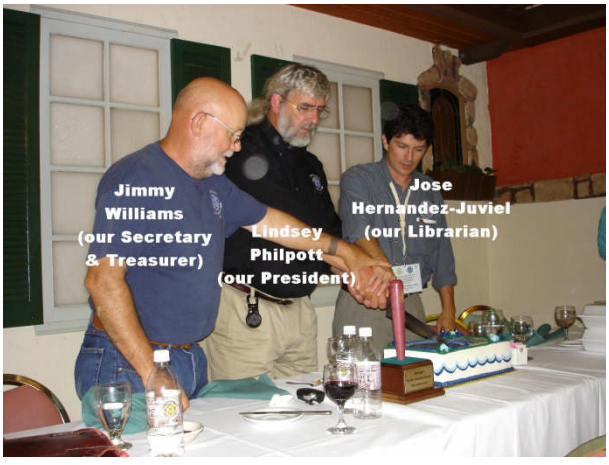
The Bosch's (below) donated 20(or more) cases of bottled spring water for our use during the event. It was sorely needed and greatly appreciated in the famous (infamous?) Southern California sun! I'll try to take a pic of the label on the bottles and add it at the end.



And Gordon presented a very interesting talk on various aspects and types of rope . . .

Then, of course, at dinner we had our 10Th Anniversary cake (provided by "The Knot Guy"). . .

The PAB officers attending were required to make the first cut in the cake . . .



The fid in the above pic was turned from Purple Heart wood and has the IGKT logo in gold on it. It's in a walnut stand with "1997 – 2007 Pacific Americas Branch 10Th anniversary" on the plaque. We presented one to Lindsey Philpott and one to Joe Schmidbauer in recognition of their selfless contributions to our branch over the past 10 years. I can say without doubt, "If it weren't for Joe and Lindsey, the PAB would not exist!" (For some reason, I did not get a good picture of the fids?)

I should also note at this point that there were many personal donations of time, money and effort made by Lindsey (AKA The Knot Guy) and Kim in support of our 10Th Anniversary AGM. We really appreciate their sacrifices for us.

Above is a "Friendship Rope" made and sent to the PAB as an Anniversary Gift by the members of Des Pawson's branch in the UK. Those members made all the decorative knotting attached to the rope, as well as the rope itself. It is truly a gesture we appreciate.

I can only apologize that I haven't included more pictures and especially for the pictures I did not get. This was indeed a once in a lifetime event and I want to extend a heartfelt thank you to all involved. If you were unable to attend, I know you wanted to be with us. What a unique set of individuals I have met as a result of an interest in simply tying a knot!

Master Rigger Joe Soanes working a Liverpool Splice

Jose Hernadez-Juviel did a demonstration of WORMING, PARCELING, and SERVING a line.
(photo by Darrell Ausherman)

Maggie Machado made a door mat using Jose Hernandez-Juviel's "jig".
(Photo by Tom Mortell.)

Lots of Knots on Parade.

World's smallest bellrope?