

Knot



News

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On Fisherman Knots

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On a highly sophisticated trawler there may be only a few people with experience of how to make and mend netting.

Prof. Dr. Andras von Brandt 1972.

Prologue

Industrial fishermen use lots of knots. Not so much driving their ships to and from the fishing grounds, but mainly in actual fishing processes. However, remarkably little is known about the knotted structures they use during their workday. In this small series of three articles we focus on knots used in the offshore fishery by industrial fishermen from all over the world. There will, however, be a slight focus on the North Atlantic basin, as my experiences stem from that region. Note that this outline excludes knotted structures used in angling and general seamanship. First we offer an overview of the ethnological and archaeological records which discuss knot-aspects. This approach intends to be indicative of where we shall be looking and what we can expect to find. In the second part we focus on longliner and gillnetting knots. The third installment shall be concerned with knots used by trawlermen and their netting activities.

Initial overview

The usage of rope implies the presence of knots. Catching a fish, however, does not imply the use of any knottable medium. As a matter of fact the ancient Greeks and Romans came to employ the

trident to symbolize their fishing activities [3, p112] and many peoples all around the world nowadays still catch fish without using anything knottable. It can only be surmised *when* knottable media entered the fishing scene and *how* they were put to use in devising fish-catching methods. The outcome of this complex process shaped the knots we are to observe.

Checking out the major knot monographs, sections presenting fishing knots can be found [1], [6]. Sadly the knots are frequently presented out of context. Judging from bibliographic references early authors could not retrieve much information either as they merely found J.C Wilcocks and O.T. Olsen's works [12], [21]. In fact the latter sources are more specific on seamanship knots than knots related to fishing. Monographs on the fishing knot-subject are poor extracts with more of a marketing purpose or dedication to aspects of netmaking in mind, rather than the knots used by deep-sea fishermen.

Very little is written about the actual knot usage by blue-water fishermen. From a knot-research point of view this is both fortunate and strange. Fortunate in that it affords a huge and unexplored research area. Strange, as industrial fishermen of all times not only are large-scale consumers of knots, but also employ a great variety of *different* knots. How did this peculiar situation arise?

Fishermen do not belong to the Mariner groups where recorded knowledge was traditionally propagated, such as naval academies and

merchant navy educational institutions. Even though fishery schools have been turning out skippers and mates for almost a century by now, well-educated in seamanship, navigation, fish-processing hygiene and even netmending skills [4], many people employed in that economic sector continue to learn hands-on. Often crew boards ship with little or no rope-working training. A telling example stems from the Scottish ship surgeon Robert Robertson. He describes how up to the 1950's Shetlanders were recruited to crew the Dundee whaling ships bound for Antarctica, because "*they could splice a rope and not panic in a gale*" [15, p26]. This is still very recognizable even today. Many crew members, complete illiterates in any ropeworking technique, will find their shipboard jobs being the operating of winches, gutting the catch, stacking of fish boxes, baiting and coiling longlines and so forth. They suffer shipboard life for the money and may get on well without ever having to actually tie a knot.

So, fishermen themselves do not care very much either about recording the knots they use. This is strange, but can be understood once some study into the knotting practices and their traceable histories is undertaken. Early fishermen certainly needed to know how to make many (different) knots. These same knots were also often required in other realms of their daily lives. For that reason much cross-fertilization between rural and marine knotting can be found.

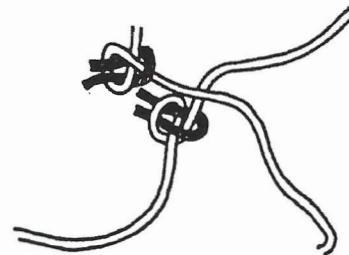
Study shows us that the evolutionary origins are very different, compared to the situation encountered in contemporary industrial blue-water fishing. Fisherman knot knowledge turns out to be notoriously diffuse for a number of reasons. It is often unstructured, hard to find and even harder to record unambiguously. Let's start by viewing the most objective of available information.

The archaeological record

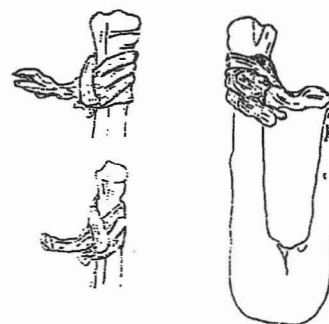
There are Mesolithic pottery fragments from the Kiukais Kapell in the Abo valley in Finland, with what seems to have been identified as imprints of Sheet Bends, a well-known netknot, [13, p543], [22, p64], [7, p127, fig.3], but there is no general agreement on this matter [20].

However, identifiable remains of real knots have been found in the southeast of Finland too. An

interesting coincidence for our story is that they are not only the oldest known knots in the world, but also were found in a fishing context. In 1913 workers digging a ditch in Antrea came across the remains of what appeared to be the wreckage of a Mesolithic gillnet fishing craft and equipment. Sakari Pälvi excavated this find and fortunately managed to identify and document some of the netknots [14]. His drawing is shown below. Sinkers were attached with wood shavings. Consult Uuno Sirelius for such methods of attachment [16, tab.47, fig.217; tab.48, fig 221-114]. No data on how the floats were hitched onto the netting has survived. Later researchers have conducted investigations in order to timestamp the Antrea find. They found the sample to be about 10,000 years old [20].



In 1980 S.H. Andersen, excavating at Tybrind Vig in Denmark, found a late-Mesolithic fishing tackle. This 6000 year old fishing device consisted of a bone fish hook with a 5 mm long section of line still attached [8, p37].



Considering these artifacts, what can we expect to find? Surely no industrial fishing as we know it. On the other hand, this phenomenon did not come falling from the sky, but started somewhere. The big question is where? It must

have evolved from small scale fishing, which in turn must have started with less primitive fishing technologies than the ones from the archaeological record.

Primitive fishing technologies

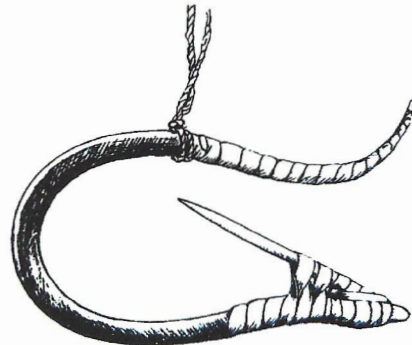
Most knowledge about prehistoric fishing is lost in the past [10]. However, if you want to form an impression of this harsh kind of life, primitive knotting technology has to be resurrected. The act of reinventing it, also known as experimental archaeology, brings one in head-on collision with obvious technical issues. Problems our ancestors encountered too.

Prehistoric fishing is comparable to contemporary outdoor life or survival [17]. You must use your wits to survive without the availability of modern tools. After you have decided to catch a fish, questions start pouring in. Survival reduces to answering questions like how to manufacture knottable media, reliable knots, nets, a hook? How to produce twine strong enough to hold a fish, how to prepare the fish for eating?

The first step in problem-solving seems to be restricting the fish's movement in order to catch it. Building dams helps. Fish swim where the water goes, but you still must find means of getting them out of their element. Entrapment structures based on systematic elaborating patterns, inspired by spider's web or dense shrub may lead to netting. This also appears to have been the first development in fishing technology.

The other way is catching the fish in some ingenious fashion: get it to swallow a hook, baited for enticement. This requires a switch in technology from spearing, or grabbing, the fish. You need something like "twine" and "hook"-materials, or (access to) the technology to produce it.

What could have been the first fishing knots to be used in this context? Given coarse material Half Hitches certainly would suffice, Clove Hitch and Lark's Head Knot would be obvious candidates. Prehistoric fishing articles give little clues. Experimental archaeology, such as applied in the North American Indian fishing methods, comes to our aid. In the illustration below a beautiful steam-bent yew wood hook with bone barb and cedar root lashing is illustrated [18, p38].



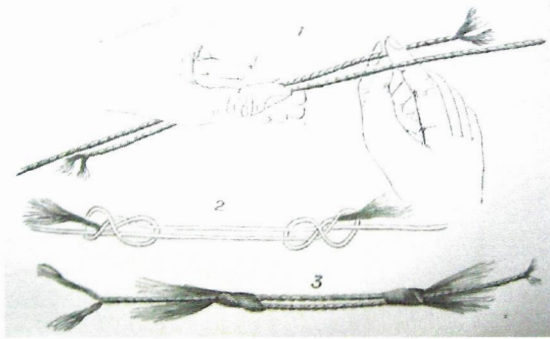
Obviously even the production of rudimentary technology, such as lashing together sticks with twine, needs design. The better your design, the better your chances of survival.

The sociological record

Our stated goal is a discussion of the knots from the industrial fishing field. What makes industrial fishing "industrial"? Where does it start? What sources do we have? Can we describe the transition? After the previous section it must be clear that once the process of technological improvement is triggered, the transition from inshore fishery to industrial fishing is no longer based on the materials. Materials for the sea hunters are always a few dimensions up. We must seek our change driven from the mainly sociological factors. We must go and obtain information from ethnographical records.

Farming and fishing has not been an uncommon combination along the North Western shores of Europe over the past 1000 years. The inhabitants of the Scottish Hebrides, Faroes [19] and Iceland [9] have a seasonal work cycle at sea and the farmland with elements dating well back to Viking days.

Samples are easily found. For example making horsehair lines with a nossil cock spinner and knotting them with a Double Fisherman Bend, as shown below [21]. This qualifies as a typical fishing activity with a rural origin, as horses would not be readily available onboard any fishing boat.



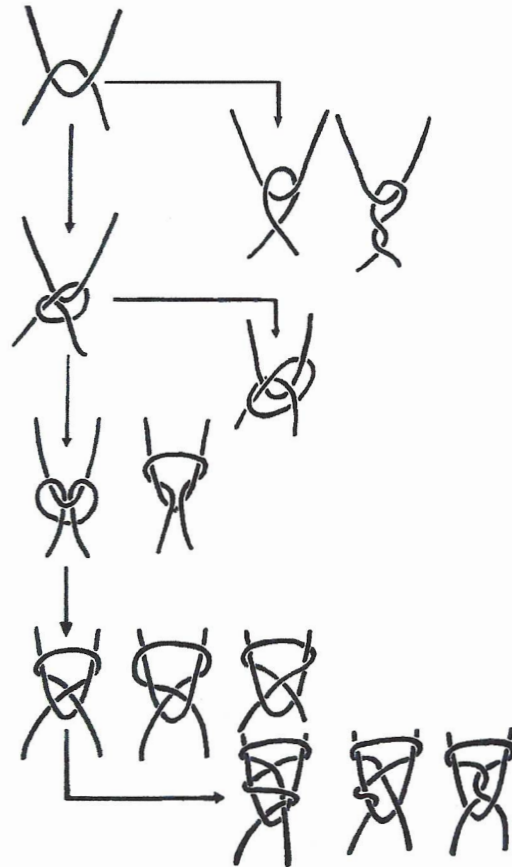
On the North American continent much of this technology was brought along by pioneers and immigrants from the Old World and elsewhere.

Rural fishing turns into industry at some point in time. Helped by the industrial revolution, this occurred in the UK and all countries around the North Sea. Concurrent technological advances play a role. Hooks require metal-working skills aided by the discovery of metallurgical processes, due to an increase of technological knowledge. Likewise developments at the ropewalk lead to better basic fishing tools. It is noteworthy though, that even on remote islands communities, ropes were rather made on site instead of being reliant upon import.

It is along these lines that Industrial fishing started to take off. There are indications that longlines are very old, as British fishermen operating the banks off the Canadian east coast around the 1450's were using them. Trawls are late inventions, coming onto the scene around the 1600's.

Industrial fishing developments

In the previous section we have seen that industrial fishing evolved from inshore fishing activity. This can be backed up by the following documented examples. The development of industrial fishing in the Thames Estuary, supplying Londoners with fresh fish in the 19th century, is neatly described by Edgar March in his classic work, *Sailing Trawlers* [11]. Another interesting 19th century example comes from Peter Dorleijn, who describes the start-up of the industrial fishing under sail in the Dutch IJsselmeer region [5].



Deep-sea fishing soon grows into a field with special demands to the knots used. We can state three, which we shall find returning in our subsequent articles:

1. Knots have to fulfill criteria in their production, man-handling and maintenance.

In industrial fishing the sheer numerical magnitude of the times a knot has to be realized, plays a role. It follows that fishermen will seek out extremely simple yet effective solutions to their rope problems.

2. Dynamics of the fishing system's requires knots to remain open able.

This is often accomplished by means of slipping the working ends. In general such an elaboration does not negatively affect the working of the knot. It rather offers locking facilities, like we see in the case of the Codline Knot.

3. **Impact of synthetics.** The illustration by von Brandt above clearly shows how net knots have been subjected to change in order to cope with increasingly smoother knotting media [2, p249].

Epilogue

We have laid a foundation stretching over time, sociology and technology to understand the origins of the knot species which are employed in current industrial fishing.

Our introduction to fisherman knots shows they are recorded in obscure places, or not at all. The crucial observation seems to be that fishermen from all over the world do not feel themselves tied down by recorded best practices. They allow their creativity to devise knots as they see fit in the problem-solving process. Doing so, they generate a bewildering array of unrecorded structures. In industrial fishing there are filtering mechanisms causing standard structures to come into and remain in use.

In the sequel to this article we shall focus on the knots stemming from three specific areas of industrial offshore fishery, being longlining, gillnetting and trawling.

References

- 1 C.W. **Ashley**, *The Ashley Book of Knots*, Doubleday, New York, 1944.
- 2 A. von **Brandt**, "Zur Knotenkonstanz von Fischnetzen", *Arch. für Fischerei Wissen.*, Vol.9, pp244-265, 1958.
- 3 A. von **Brandt**, "Art of Net Making", *Fish Catching Methods of the World*, Fishing News Books Ltd., 1972, republ., pp112-117, 1972.
- 4 J. **Dekker**, *Handleiding bij het breien en boeten van trawlnetten*, Scheveningsche boekhandel Eijkman, 1917.
- 5 P. **Dorleijn**: *Van Gaand en Staand Want*, isbn 90-609-1223-3, Bussum, 1982-83.
- 6 R. **Graumont** and J. **Hensel**, *Encyclopedia of Knots and Fancy Ropework*, Cornell Maritime Press, 1939.
- 7 A. **Hackman**, "Vorgeschichtliche Forschung in Finnland 1910-1912", *Prähistorische Zeitschrift*, Vol.6, 1914.
- 8 G. van der **Kleij**, "On knots and Swamps", *History and Science of Knots*, pp31-42, isbn 981-02-2469-9, World Scientific Publishing Company, Singapore, 1996.
- 9 L. **Kristjánsson**, *Íslenskir Sjávarhættir*, Bókautgáfa Menningarsjóðs, Reykjavík, 1980.
- 10 K. **Lampert**, "Prähistorische Fischerei und Fischerei Geräte", *Archiv für Fischereigeschichte*, Vol.2, pp93-108, 1914.
- 11 E.J. **March**, *Sailing Trawlers: The Story of Deep-Sea Fishing with Long Line and Trawl*, Percival Marshall, London, 1953.
- 12 O.T. **Olsen**, *The fisherman's seamanship*, Grimsby, 1885.
- 13 S. **Pälsi**, "Kalastuksesta suomessa kivikaudella", *Aiki*, pp539-546, Helsinki 1912.
- 14 S. **Pälsi**, "Ein Steinzeitlicher Moorfund", *Suomen Muinaismuistoyhdistyksen Aikakauskirja*, Vol.28, No.2 pp1-19, Helsinki, 1920.
- 15 R.B. **Robertson**, *Of Whales and Men*, London 1956.
- 16 U.T. **Sirelius**: "Jagd und Fischerei in Finnland", *Die Volks Kultur Finnlands*, Vol.1, Berlin, 1934.
- 17 **Society of Primitive Technology**, PO Box 905, Rexburg, ID 83440, <http://www.primitive.org>.
- 18 H. **Stewart**, *Indian Fishing – early methods on the North West coast*, University of Washington Press, isbn, 0-295-95556-2, Seattle 1977.
- 19 J.C. **Swabo**, *Indberetninger fra en Reise i Færø 1781-1782*, published by N.Djuurhuus. Selskabet til udgivelse af Færøske kildeskrifter og studier, København, 1959.
- 20 J.P. **Taavitsainen** and M. **Huurre**: "The Net Discovery of Antrea", National Board of Antiquities, Department of Archaeology, Helsinki, undated.
- 21 J.C. **Wilcocks**, *The sea-fisherman or fishing pilotage comprising the chief methods of hook and line fishing in the British and other seas, a glance at nets and marks on boats and boating*, Guernsey, 1865.
- 22 H. **Öhrvall**, *Om Knutar*, Albert Bonniers Förlag, Stockholm, 2nd edition 1916.

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2.90%
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is much better than the paltry rate most other banks are offering. That's really all we wanted to say. Looks like we have some room left over. Here's how to tie a square knot.

figure 1 figure 2

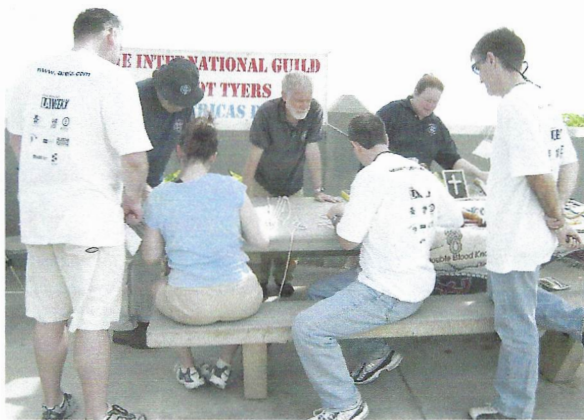
figure 3 figure 4

square knot

Race/LA

Earlier this year, the PAB was contacted by Mr. John Hennessy, the producer of Race/LA. This event is a city-wide, day-long scavenger hunt based loosely on and inspired by the CBS show, *The Amazing Race*. In Race/LA, teams of two spend a day traveling around greater Los Angeles competing against each other while searching for clues leading them to their destinations and ultimately across the finish line. Teams often need to perform some type of task at each location before receiving their next clue.

The PAB was asked to participate in one of the locations. As "knot experts", we would have each team tie a designated knot (supplying the required cord) and then judge it for completeness and correctness. Once the knot is approved, the team is given the clue for the next destination.



Teams get their cords and cards

It was decided to have our stop at the Point Fermin Light. Lily Morales, Tom Mortell and Joe Soanes were on hand to take part. The teams had to tie one of four knots from a picture: Bowline, Sheet Bend, Fisherman's Bend or Carrick Bend. Joe Soanes was the final judge for the each team's efforts.

"It was interesting", said Tom Mortell "to see people tie a Bowline in new and strange ways! One person looked at the picture of the Carrick Bend for five seconds and correctly tied it straight away from two lines laid out on the table, with no hesitation or errors.

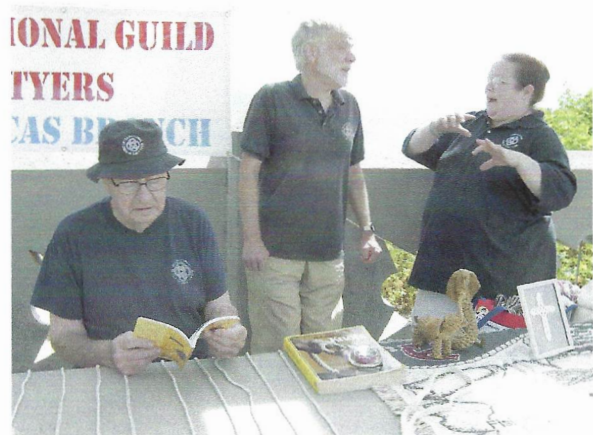
Afterwards, I wore my Race/LA shirt around town and when people asked me if I ran in the marathon, I would say: 'No, I was one of the obstacles!'



Over, under, over, under?



It's pronounced "bow-linn"



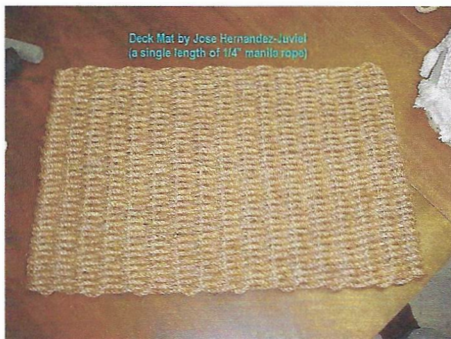
Joe Soanes, Tom Mortell & Lily Morales

Branch Bits

The PAB members in Southern California meet once a month at the Los Angeles Maritime Institute in San Pedro. The number of people that show up varies, and the faces are not always the same, but someone is bound to bring something for show and tell for their fellow knot tyers to enjoy. Here is just a sampling from past gatherings to show what our members do in their spare time.



Bottle coverings by Charlie Bell

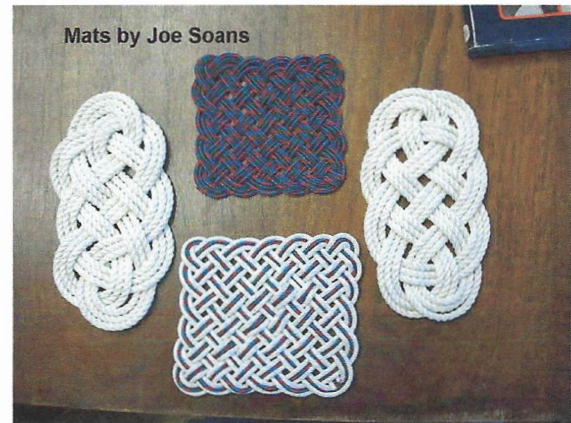


Sword Mat by Jose Hernandez-Juviel

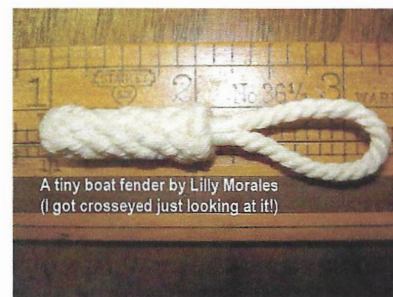


Bottle (jar/tube) coverings by Lily Morales

The tool containers of Lily Morales
The coverings tell what tools are inside.



Various ornamental mats by Joe Soanes



An amazingly tiny fender by Lily Morales



A net (ABOK #3803) as done by Darrell Aushman



A knotboard from the collection of Lindsey Philpott

From the Mailbag

Richard Hopkins of England wrote this interesting letter: "As I have told you, my knotting interests incline more to the practical than the ornamental but sometimes these work together. I was volunteered (by Brian Field, our then Guild President) to help with the reconstruction of an Iron Age chariot for a television program. No nails or metal fastenings had been found in the archaeological site that inspired the reconstruction, funded by the British Museum and the BBC. It was decided to lash everything together with rawhide. The wheelwright came up with an idea for a suspension floor and I had to put the ideas into practice. Looking at the photos of the finished chariot I have to admit to a certain satisfaction, not least because it all held together when going at quite a speed. All the dark brown bits are painted rawhide as is the lattice floor and some of the other ties, which have not yet been painted.

Interestingly, the Iron Age Britons were able to shrink tires onto wheels but this art seems to have been lost and not rediscovered until the mid 1700's. In the meantime they nailed or bolted strakes onto the rims.

I have now been involved with several chariots from different periods in history, the latest was a Roman racing chariot that differs in many ways from those used in the Ben Hur film. Much lighter for a start. There were also some errors in the film but the best is that nine chariots started the race, six crashed but four managed to pass the finish line. Somewhere the sums don't add up!

The IGKT-NAB became involved when my wheelwright friend took all the pieces for a new chariot to the Museum of the Horse in Kentucky. They provided four knotters to do the tying once the new chariot was assembled. It is, I believe, still in Kentucky.



Iron Age Chariot