Knot News

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Hjalmar Öhrvall on Knots (2)
Kindling Knot Knowledge Management

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> *Nothing before had ever made me thoroughly realize, though I had read various scientific books, that science consists in grouping facts so that general laws or conclusions may be drawn from them.*
>
> Charles Darwin, 1832

Prologue

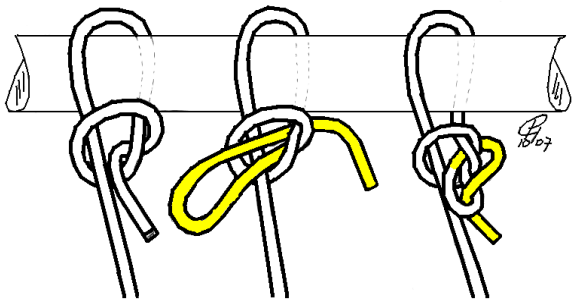
In Part I we presented an overview of Hjalmar Öhrvall's knot-works. Here we describe how he launched Knot Knowledge Management (**KKM**). In general knowledge management is concerned with the processes of collecting, storing and making available of information. Often information is enriched with experience to deliver useful knowledge in the problem-solving context.

We commence our journey by seeking the roots to Öhrvall's writings, i.e. get grips on his fieldwork and sources. Unless otherwise indicated, we shall work from the second edition of *Om Knutar*, for which we can safely assert that it stands for a representative impression of his netted knot-catch.

Fieldwork

An interesting question to pose is wherefrom Hjalmar Öhrvall obtained his knots? Gathering structures is how most knotters commence their collections. For Öhrvall the start appears to have been in his sailing interest [20, p51], but it rapidly spread and extended from rope-working techniques to all sorts of knots – in use by miscellaneous user groups. The foundation for his fieldwork came to cover a diverse set of sources. He collected knots during his vacations and during engagements with ad-hoc informants. His works are interspersed with footnotes from his casual talks and experiments.

Examples are easily given. In Swedish there is a *grimskaft knut* – the Halter Hitch. On several occasions Öhrvall notes there may be ethnographical significance with respect to its usage and tying methods [19, p34], [21]. He also offers an example of the evolutionary nature of this hitch-solution. The left-most image shows how it is usually deployed. A first stumbling block is that the structure may jam. One may prevent jamming by slipping the wend. However, this introduces a new scenario in which the animal may untie itself by tugging the bitter end. The right-most image illustrates how to outwit clever horses. Öhrvall was given this structure by a farmer he chanced to speak. Clearly we have a set of progressive improvements of a solution to a rope-problem.



Another example is given by the encounter his children had with roaming gypsies in 1902. The nomads taught Öhrvall's children how they used Two Half Hitches to tether their cattle. During a later holiday in the Swedish Dalarne the children had to stand corrected when they were confronted with the Halter Hitch as the officially accepted hitch for tethering horses. Opinionated Öhrvall, without proof, states that Two Half Hitches and the Bowline are better than a Halter Hitch – as hitch – *because* they are the sailor's preferred hitches [16, p28]. Again without proof he states that the Bowline is

occasionally used in coastal regions due to Mariner influences [21]. Around 1900 the Two Half Hitches were generally accredited to the Mariners user-group. For example G.A. Scholten's bricklayer handbook calls them "zeemansknoop", i.e. "seaman's knot" in translation [13, p147, fig.51b].

Another of Hjalmar Öhrvall´s favorite knot-sources were museums. He frequented Sweden's National Museum's Ethnographical Collection and describes rope samples [19, p10]. In the Gothenburg Museum he noted a "neat kind of belay" on a samisen, which is a Japanese musical instrument [16, p102], [19, p189]. We shall return to this structure more extensively in Part III.

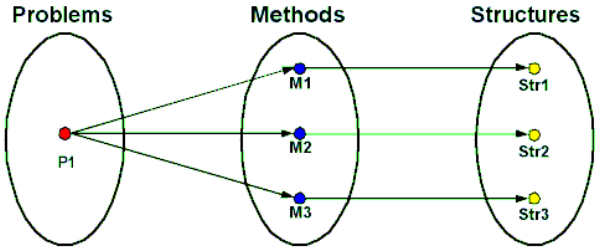
Öhrvall also profited from a network of informants, which supplied him with international knot knowledge. In his *Svenska Dagbladet* article he mentions how Prof. Skottsberg, brought 21 different knots to Sweden from an expedition to the Pacific Ocean for investigation. They were made by a Chilean sailor, whose set only contained one structure, which was unknown to Öhrvall [21]. Tantalizingly, details were omitted. His friend Dr. Thorild Wulff brings in knot-related folklore snippets from his father's days at sea [19, p212] and excursions to Iceland [19, p7]. He also sent Oriental Button Knots from Nagasaki in spring 1914, which tempted Öhrvall to offer his opinions [19, p134]. In short, there are many occasions where he writes about aspects of his fieldwork.

KKM-processes

Ever wondered why there are knots, which can be observed? Aside from all philosophical connotations, their existence plainly boils down to the fact that there exists a **structure-generation process**. The reason structures are generated is usually due to a problem-solving demand. Given the nature of the problem, and the frequency with which it occurs, there will be incentives to trigger something like a **knowledge-generation process**, as it shows that experience is gained by usage. That in turn forces a **knowledge-preservation process** to commence. So far we have a lot of invisible activities shrouding a simple knot, don't you think so? However, we need all of them to explain how knots get into books.

Problem-solving in a knotting environ can be modeled by three abstract sets: problems, tying methods and resulting structures.

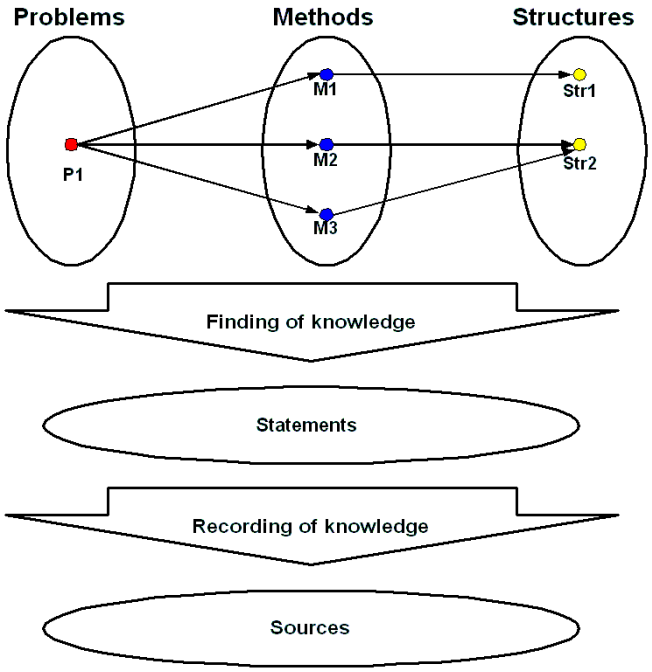
We say that a problem is attacked by a rope-user tangling the medium in an attempt to solve it. A "satisfactory" solution to the problem results in a structure, which eliminates the problem. The *structure* is an object which has sufficient stability to become observable. The *method*, leading up to the structure, lacks that durability and is, therefore, often ignored.



Of course there are many methods which may give rise to any given structure. The structure cannot come forth without some tying method. Therefore one thing is certain: any structure is *always* the result of some tying method. Note that there is an implication: there will also always exist an *untying* method for any structure. Any structure can be made to disappear by untying it – simply by letting the wend back-track itself till it reaches the stend.

From now on, let us apply an analytical view from the problem-solving context and consider knotted **structures** as solutions to rope-problems [6]. This view corresponds closely to one of the chapters in both of Öhrvall's books, where he offers links between the various problems and possible solutions [16, pp104-109], [19, pp225-253]!

How do most knot-enthusiasts start their craze? One way is by simply collecting individual instantiations of structures. More realistic and useful results, however, come forth when subjecting the structure to actual usage. This process will result in experience and knowledge on the structure's properties. This will spawn and transmit tacit knowledge among user-groups [11]. In order to propagate such knowledge, containers are required. In the following we shall refer to them as **statements**. Typically statements may cover tying methods, whether or not a structure can be employed as a Hitch, Bend or Loop Knot or how it stands up to loading (strength, stability and security). The knowledge-generation process results in experiences and beliefs, which are shared within the community. Statements are held as tacit knowledge by those who tie knots. The image below illustrates how such knowledge on a specific structure may become recorded in **sources**.

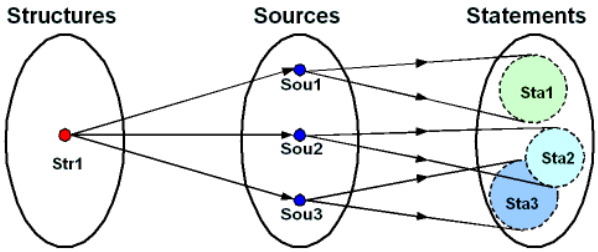


Taking a helicopter-view of the information beast's nature, what can we now say? Components of the set of KKM-processes obviously include structures, sources and statements. I propose to call this approach the **Triple-S Model** to KKM.

Initial fieldwork processes mainly concern the collecting of structures. Later they are accompanied by statements on tying method and application. That is (1) structure S can be obtained by tangling the medium so and so and (2) you can solve problem X by means of structure S. In short, fieldwork is nothing other than collecting tacit knowledge and formalizing it, i.e. writing it down in some format and seeking its publication. This process is easier presented as a show of conviction than rigorous description.

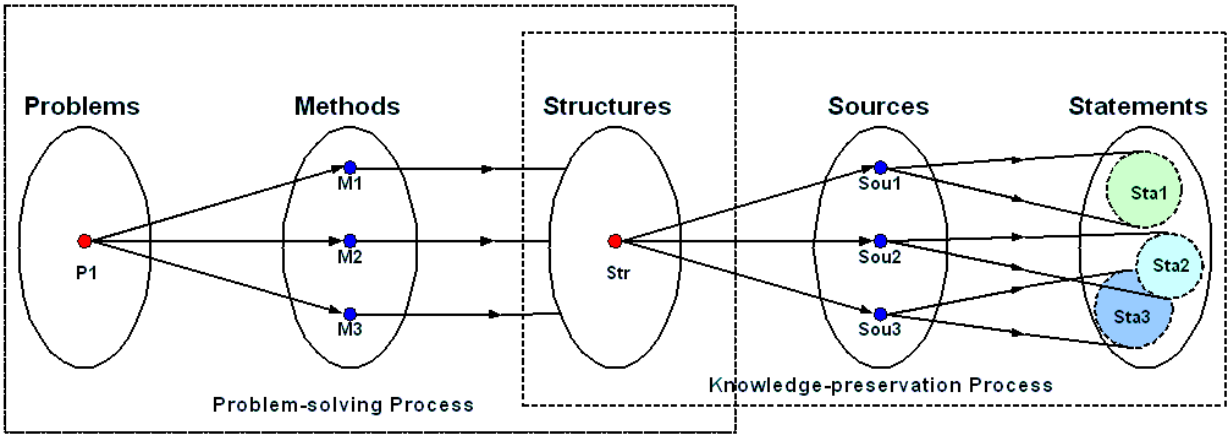
This intuitive model raises many questions. How to ensure that theory stays in touch with reality? Many knot authors artificially expand the set of structures, cosmetically enhance previous statements and produce a new source.

When it comes to studying statements, there usually is a different approach, which is illustrated below. In the early stages of theory generation, retrospective analysis of existing data in sources is a relatively low cost way to refine a theory, rather than having to reinvent the wheel.



In this approach, usually lacking feedback from practical experience, is it legitimate to inquire into the purpose of artificial expansion of knowledge? After all, what controls the quality of statements? They may suddenly range from opinions, lacking any support for their plausibility, to assertions, which are delivered with concrete proof.

Knotters, at least knot-authors, amass structures and statements from sources. An interesting question pops up; why do they uncritically copy their predecessors and contemporaries? The subject in a practical sense is very limited in its scope. Artificial expansion is believed to be justified when the absolute structure count plays a role – the more the merrier. If psychologists are ever seeking untrodden territory, they can encounter some challenging research leads in the knotting business.



How does all of the foregoing apply to Hjalmar Öhrvall's endeavors? Öhrvall conducted his fieldwork, formalized oral knowledge and put it into his published writings. Although the transition from tacit knowledge (in the heads of rope-workers) to getting it in print is a necessary requirement to enable others to gain access to this information, we shall see that Öhrvall's formalization activities were not equally well-received. He was aware that his work stood for a new approach to the subject of knots [16, p3]. In his monograph's first edition he was somewhat apologetic about his activities, but by 1916 the excuses had evaporated.

Hjalmar Öhrvall, a trained scientist, knew that no scientific work is ever conducted in isolation, ideally it continues to build on top of that delivered by others. The next logical step in his studies was finding ways into formalized knowledge, i.e. to see which part of the intellectual territory was mapped. That meant retrieving books to satisfy his hunger for information on knots.

Sources

In his 1908-edition of *Om Knutar* Hjalmar Öhrvall already listed a selection of referenced publications and distinguished between Swedish and foreign language sources [16, p114]. In the 1916 edition he enlarged both lists by appending 4 and 6 items respectively [19, p258]. This increase witnesses of the fact that he progressively learnt more about the written sources of knots. His Swedish language sources were:

1. V. **Linder**, *Lärobok i sjömanskap*, 1896.
2. *Undervisning för manskapet vid flottan*. II. Sjömanskap, 1882, 1904.
3. **Dahlman**, *Utkast til et Sjölexicon*, 1765.
4. **Calwagen**, *Svenskt, Engelskt och Franskt samt Engelskt och Svenskt Sjölexicon*, 1851.
5. **Ekbohrn**, *Nautisk Ordbok*, 1840.
6. A. **Ekelöf**, *Svensk nautisk ordlista*, 1899.
7. C. **Smith**, *Om båtar och båtsegling*, 1873.
8. C. **Smith,** *Båtsegling*, 1889.
9. C. **Smith***, Båtseglarordbok*, 1899.
10. *Uppfinningarnas bok*.
11. *Nord.Fam.Bok*, artiklarna Knop, Påslagning, Stek.
12. R. **Lundberg**, *Fiske med metspö,* 1889.
13. E. **Smith**, *Nautisk Ordbok*, 1914–1916.
14. N. R. **Comét**, *Fullständig framställning av sjömansknopen*, 1908.
15. Hj. **Öhrvall**, *De viktigaste knutarna*, Verdandis Småskrifter nr. 185, 1912.

His foreign literature covered.

1. G. F. **Krogh**, *Lærebog i Sømandskab*, 1884.
2. T.E. **Biddle**, *How to make knots, bends and splices*, London (utan årtal).
3. T. **Bowling**, (I Bonwick), *The book of knots*, Edinburgh 1866, 1904.
4. *Encyclopædia britannica*, 9 ed. 1882, art. Knots, Sailor's Knots.
5. G. **Belitz**, *Seglers Taschenbuch*, 1903.
6. *Grand dictionnaire Larousse*, 1874, art, Nœud m. fl.
7. *Nouveau Larousse illustré*, art. Nœud.
8. *La grande encyclopédie*, utg. av Berthelot m. fl., art. Nœud.
9. E. **Bobrik**, *Allgemeines nautisches Wörterbuch*, Erste Abth., Leipzig, 1850.
10. **Dabovich**, *Dizionario technico e nautico di Marina*, Pola, 1883.
11. J. **Kusk Jensen**, *Haandbog i praktisk sømanskap*. Anden Udg. Köpenhagen, 1907.
12. J.T. **Burgess**, *Knots, Ties and Splices*, London.
13. *Captain Alston´s Seamanship*, Fourth Edition, Portsmouth, 1902.
14. Captain **Jutsum**, Cardiff, *Knots, bends, splices*, Glasgow, 1914.

Hjalmar Öhrvall scattered approximately 50 additional sources throughout his writings, well-hidden in footnotes and the text body. For example he refers to Henry Manwayring's 1670 *The Seaman's Dictionary* and Captain John Smith's 1652 *The Seaman's Grammar* [19, p21]. Why he opted for bibliographical incompleteness is unclear. It appears like he was unable to get all of his sources lined up for presentation. Undoubtedly he had many others, which he did not mention. Moreover, there are sources in the first edition, which were removed from the 1916 edition [9], [16, p2].

Apparently Hjalmar Öhrvall was not aware of Joseph Tom Burgess' work in 1908. A study into factors, which drive availability of and access into sources, would make for an interesting KKM-paper. Note that Öhrvall relied heavily on Mariner sources. Had he lived today, and used the online medical search-engine Medline, he might have believed surgeons were the forestay knotters

What can these sources tell us? The listed ones are mainly Mariner-related and the majority of the strewn-out sources are non-Mariner. By combining these contexts and indiscriminately discussing all structures which he could lay his hands on, Hjalmar Öhrvall became an isolated experiment in the aggregation of distributed knowledge.

Statements

In a sense structures and sources are absolute things. A source either illustrates an individual structure or it does not. When it comes to statements, however, things are less clear-cut. For example, note

that a tying method is a statement on how to produce a specific structure. Observational correctness, linguistics and applicational context team up to shape its formulation. Is knowledge the superset of all statements? I do not know, but publishing provably correct knot-related statements is already a formidable challenge.

What, in general, characterizes the nature of Hjalmar Öhrvall's innovations in terms of statements? As a sailor Öhrvall reflected a conservative bias. Mariners tend to have strict protocols, which allow little leeway for variation, for their shipboard activities. Öhrvall picked up a twang of knot-related sailor supremacy. In his *Eranos* article he noted that Oribasius' presentation was application-oriented. This remained the modus operandi for a long time in knotting sources. Although Öhrvall followed, in that respect, he was quite name-oriented and we have seen that he collected many. In particular for the Reef Knot he has in excess of 20 names. This shows that *identifying* the objects of his study had considerable focus. Hjalmar Öhrvall also critically examined knots' behavior to form an understanding of their workings. During these investigations he discovered many surprising and unrecorded interrelationships. Many of them went into his works as statements. In Hjalmar Öhrvall's case we see an academic with an undeniable pragmatic flair and, of course, sailorman. How to match pragmatism and his love for the written word to teach the masses? In the following paragraphs we detail some of the more general aspects Hjalmar Öhrvall covered.

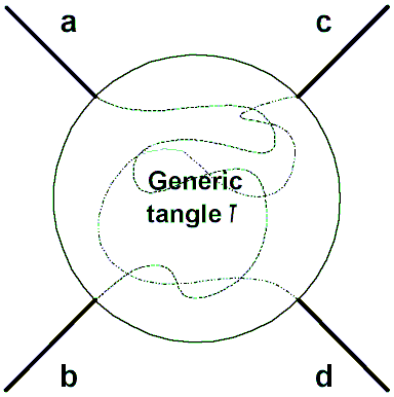
Relationships and Proximities

Obvious questions, to pose about knots, inquire into their intrinsic properties, i.e. their nature. How do they react to shifting application? How to classify them? Most knot books tend to look at application and dismiss relationships due to deformation. In particular those which leave topological properties invariant (the so-called isotopical deformations). Yet those aspects can be observed and thus belong to real-life knot behavior. As both perspectives depend on load configuration, let us undertake an attempt to define that term.

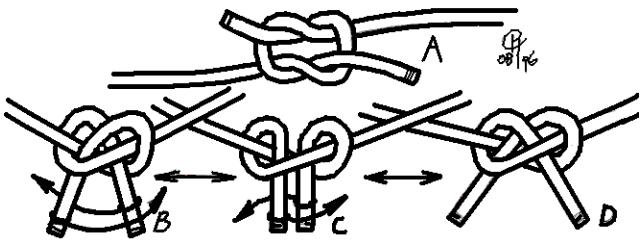
Structure-recognition allows knotters to recognize structures in a pragmatic manner. So, the structures are typically recorded in the way knotters encounter them. The method, which is the actual solution to the originating rope problem, is more important yet seldom recorded. The concept of a "solution" is in fact a package-deal in which learning plays a major role. The distinction appears to lie across know-how and know-what, but would lead us too far astray for our purposes. For further information query Google on the science of knowledge or epistemological research [12], [15].

What is significant is the fact that, during the knowledge reproduction phase, the structure, the method and the application are often (partially) copied erroneously. From a knot-research point of view this is fortunate, as "new knowledge" comes into play. On the other hand, however, most knotters experience the interplay as tremendously confusing. Interesting is to note that structure, method and application collaborate. If you allow isotopy, then many hitches lead to bends (and vice versa). Deforming loop knots, by pair-wise pulling parts emanating from the operative center, may lead to useful bends and/or hitches. What we require is something to denote this "active part" of the knotted structure. Henceforth we shall call it a "tangle". For our purposes tangles consist of two interacting parts. Hjalmar Öhrvall frequently indirectly refers to the tangle concept, but generally did not use it

In the image below the generic tangle notation is given. Note that there are 4 ends, indicated by *a*, *b*, *c* and *d*. We shall say that *ab* and *cd* form a component in any tangle. Bends thus come forth by pulling *ac*, *ad*, *bc* or *bd*. Hitches *may* come forth by assuming *ab* or *cd* is a non-deformable spar. That is to say, assume *ab* or *cd* is unknotted, i.e. either of these components can be stretched. Loop knots come forth by applying tension 2F to any part, taking its counterpart and any of the remaining two ends and applying tension F to them.

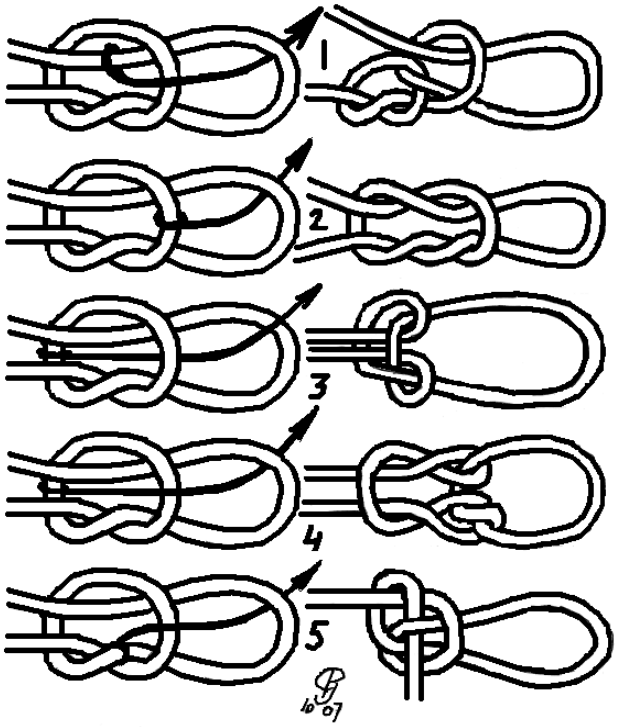


Behavior may also be due to isotopical deformation, in which the structure is deformed, within the laws of "physics". Topological equivalence of two distinct spatial configurations does not imply identical behavior. The schizophrenic character of the What Knot clearly indicates the dramatic effects this can take on [2, p258, #1406, #1407]. Under load the What Knot Structure in configuration D is stable and configuration B quite unreliable.



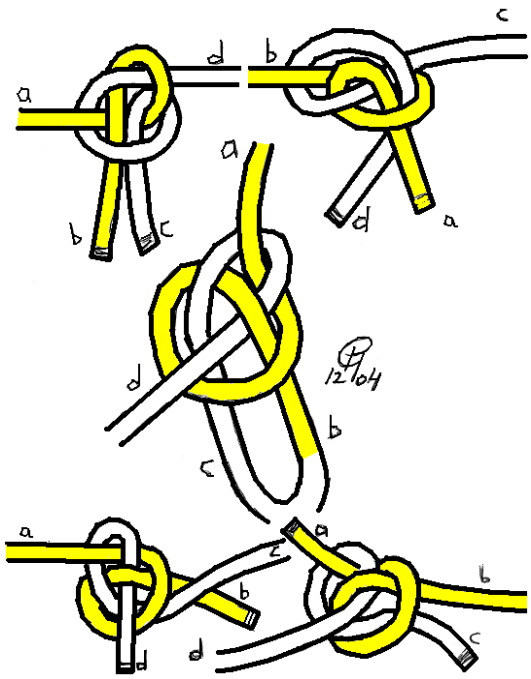
Relationships between structures always imply that there is a certain "distance" between the relatives. This distance can be in one (or more) of three types of relationship. I prefer to speak in terms proximity, rather than distance [7].

Algorithmical proximities. In Part I we have seen the linkage between the Anchor Bend and the Studding-sail Bend. The image below shows how Hjalmar Öhrvall exploited the Slip Knot to illustrate algorithmic proximities between five otherwise unrelated structures [19, p71].



Structural proximities. Unlike Ashley and Shaw Hjalmar Öhrvall does not explicitly mention this type of proximity anywhere [2, #1440], [14, p32]. Why he ignored it is a good question. The only exception is, perhaps implicit, in his description of the Reef and the Granny [16, p39].

Applicational proximities. Öhrvall has a few examples where he notes that the structure can be assigned different functionality, by re-assigning the tangle's load-configuration. Hjalmar Öhrvall mentions the Sheet Bend and Bowline [16, p49], the Reef and the Cow [19, p56] and the Granny and the Clove [19, p56]. He also mentions a less obvious transformation between the Capstan Loop Knot and the four Capstan Bends, but refrained from illustrating them [7, p5], [19, p74]. They are illustrated below.



Nomenclature

Whilst defining the concepts he needed, Hjalmar Öhrvall lists generic knot-properties. Among them he states that a knot can always be found in either of 2 forms, being its mirror images [16, p14]. In 1916 he speaks of "properties", "applications" and "tying methods" of knots – previously poorly identified concepts. Öhrvall embraces the classical approach to the word "knot", like Clifford Ashley's describes as the third and narrowest sense [2, p12, #11]. To Öhrvall the Swedish word *"knopar"*, meant a multi-strand structure worked into laid rope. He notes that splices are not knots (knopar) [16, p89], [19, p166]. Hitches, Bends and Loops are covered by the Swedish word *"stek"*. As noted earlier his classification is traditional, by application. The Table of Content is usually a good indicator for such an observation.

Öhrvall put in considerable effort to record the names of structures he encountered. He clearly assigned importance to identification nomenclature. Already in 1908 he gave an international knot-name overview covering Swedish, Norwegian, Danish, German, English and French and writes

> *Jag meddelar här en förteckning på några utländska benämningar på knutar, som visserligen är mycket ofullständig, men ändock synes mig äga ett visst intresse, och som i alla händelser kan tjäna som en första början till en utförligare sammanställning. En svårighet, som man vid ett dylikt försök alltid har at räkna med, är den, att termerna ofta äro något vacklande* [16, p110].
>
> Here I offer an overview of some foreign names for knots. The list is obviously very incomplete, but nevertheless it appears to me to have a certain interest. And in any case can serve as a start for a more comprehensive list. A difficulty with such an attempt, with which one must cater for, is that the concepts are somewhat shaky

Here I would like to say a few things on his Dutch knotnames. It is not clear wherefrom he extracted the information, but out of his 30 Dutch knotnames, 12 are to varying degree provably incorrect. A surprising result to say the least.

Another decidely innovative and remarkable aspect is Öhrvall's introduction of blunt **statistics**. In fact he claims a singular observation in that field gave rise to his books [16, p40], [19, p55]. He once observed that out of 26 bends, gathered from a random sample of packages, 18 were Grannies and only 8 were Reefs. He condemed the Grannies as being "erroneous" and wondered why people did not produce the "correct" (Reef) knot. In 1912, the Granny continues to be the most used landknot [18, p11]. It is surprising when he later contradicts himself by stating that the Reef Knot is the most used landknot and at sea that honor falls upon the Two Half Hitches [20, p65].

Knot Mechanics

In the 1800's it was fashionable for seamanship manuals to tabulate breaking strengths of ropes, cables and chains. Also in the mountaineering literature of the late 19th century such statements can be found. For the climbers they were more specific towards knots.

Already in 1908 Hjalmar Öhrvall, possibly inspired by Dr. J.Lehman, started looking into knot strengths [9, p26]. His approach is systematic. Rather than jumping head first into empiric determination of strengths, he offers specific formulæ and a methodical approach. He gives the friction formula for roundturns around a spar [16, p35]. This is a well-known formula from Statica classes in Physics, which explains how one roundturn can counteract 8 times the load. For two roundturns up to 64 times the load can be countered. Hjalmar Öhrvall stresses that the knotter should think about how to exploit this feature when making hitches. The return on this investment is obvious, the wend loses much of its stress. As Clifford Ashley puts it: "there is a lot of virtue in a roundturn" [2, p296, #1732].

Hjalmar Öhrvall also has a number of practical experiments. For example his very interesting tests on relative security [19, p81-82] and his investigations into *elongation* of moistened fibers [19, p13]. He required that experiment in order to explain the mechanics behind laid rope. More specifically he needed it to explain why wet rope *shrinks*. On several locations in his books he stresses that the reader should try to analyze the way knotted structures work.

Usergroup Boundaries

In Öhrvalll's days, knots were believed to belong to the sailors. Öhrvall himself is much infected with that view. However, when he published his studies' first results he was very well aware of the fact that knots were used on land too. Many of his samples show that the applicational boundaries of the actual knot structure were moved, away from Mariner context. He gives examples of knots used by farmers [16, p28], laboratories [16, p31, p38], chemists [16, p32], [17, pp151-152], [18, p9], [19, p40], surgeons [16, p43], kiters [19, p39] and the military [19, p52], to mention but a few. He even described the agricultural usage of Water Knots as they were produced by the mechanical binders of manufacturers Munktell, McCormick, Appleby and Woods [19, p29]. Doing so, he removed the structures from the Mariner context. His next step was to understand how the structures operate (behavior). In other words, the context for the knot was no longer relevant and isolated statements about classes of characteristics were. In short Hjalmar Öhrvall looked at the clinical structure, stripped from its context, and focused on its behavior. He aimed at creating a synthesis between contexts across structures. This kind of formalization is at the basis of KKM.

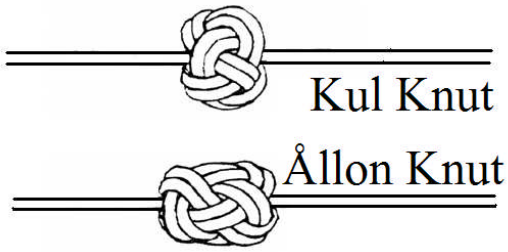
Newly Recorded Structures

In terms of structures Hjalmar Öhrvall offered many additions to the knowledge mass. He noted a delta between what he could find recorded and structures he *knew* existed, but could not find recorded. This implies that the recordings are "incomplete". His knots were often knot-research results, which had not yet appeared in other knotting sources. Here we give a selection of the knots Hjalmar Öhrvall believed were *not* previously discussed or identified in the literature.

Turks Head Knots. Hjalmar Öhrvall published unprecedented research into Turk's Heads and their possible forms [16, pp68-76], [19, pp110-140]. He started from what he calls *Valknutar*, which are

Turk´s Heads in disc-representation. They are often presented as mats. He links the disc representation to the grid representation, which he refers to as "*partkunta*", a word he traced all the way back to Dahlman's "kunta" [3, p33], [19, p129]. Öhrvall's scope does not extend beyond casa-coded (U1O1) regular grids. Hjalmar Öhrvall was by no means the only researcher into Turk's Head Knots, but he was the first to publish such a substantial set of results.

An interesting question is what drives knotters, in general, to explore this topic? What qualifies Turk's Head Knots for knot authors to incorporate them so excessively in their books? This type of decorative knot poses an easy challenge, as they are commonly found in various degrees of complexity. In Part III we shall return in more detail to Hjalmar Öhrvall's Turk's Head research and its impact on Clifford Ashley.

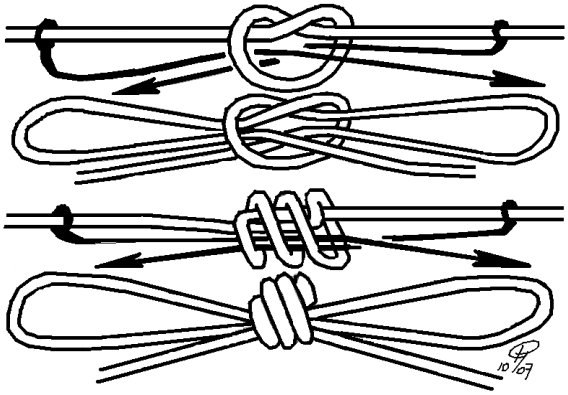


Hjalmar Öhrvall introduced two knots, which can be mentioned here. The first is the so-called ***Kulknut*** [19, p137, fig.166] and the other is a structure he christened **Ållonknut** [19, p139]. The word "ållon" has become extinct in the Swedish language and is replaced by "ollon", which means "acorn" or "beechnut". In terms of Regular Grids the Kul Knot is *p/b* =3/4 and the Ållon Knot *p/b* = 4/3. Öhrvall was downright flabbergasted by how neatly the latter could cover a spherical surface [19, p139, p133].

From a Slipped Half Hitch, Öhrvall arrives at a Slipped Multiple Tom Fool Knot, which he names something to the extent of **Slipped Multiple Overhand Knot.** He modestly formulated his find as:

> *Flerdubbel överhandsknut med ögler. Denna knut, som jag ingenstädes sett eller hört beskriven, göres på liknande sätt som…* [19, p41].
>
> Slipped Multiple Overhand Knot. This knot, which I have neither heard nor read about being mentioned, is made in a similar way as…

The image below illustrates the extended principle. Note that by careful construction, for any degree of multiplicity of the Overhand, the resulting structure can be tied on the bight. This is a sensitive tying method, as one single errant crossing will ruthlessly compromise the structure's on-bightedness! Hjalmar Öhrvall suggests that the structure can be used to handcuff a person or as a makeshift seat, to raise or lower a person, during a calamity [19, p41].

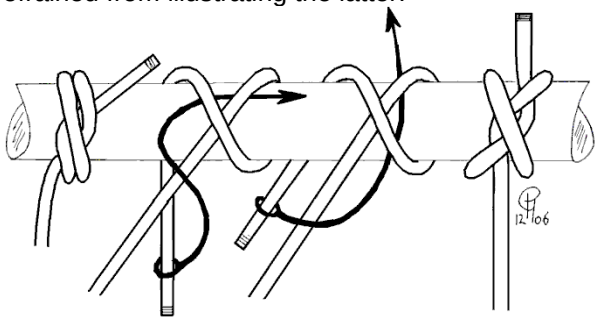


Hjalmar Öhrvall obtained many results from Jens Kusk Jensen's seaman's bible. He borrowed the Star Knot [8, p26, fig.129], [19, p160] and 2 methods for making the Jug Sling Knot, [8, p22, figs.111-112], [19, p96-104].

Non-illustrated Structures

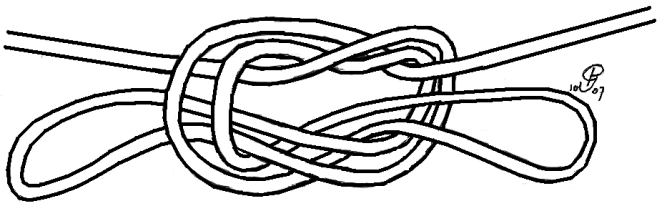
Here we will discuss the not-illustrated structures, as the illustrated structures speak for themselves for anybody paging through the Öhrvall works. The statements may be harder. A preference of text over graphics introduces the risk that your readership will not register your statement. This was Öhrvall's fate on many an occasion. Why did he resort to the written word in the first place? He prefered text, not that he deemed the visual component less important, but drawings and photographs were not his strongest side. Let us see which structures he left unillustrated.

The famous **Constrictor Knot**, which was mentioned as *Timmerknut* in his 1916 *Om Knutar*, escaped Elli Öhrvall's inkpen and has grown to become a fine piece of knotting lore [4, p116], [5, p111], [19, p78]. Öhrvall decorated the algorithmic proximity between the Strangle and the Constrictor with words, but refrained from illustrating the latter.

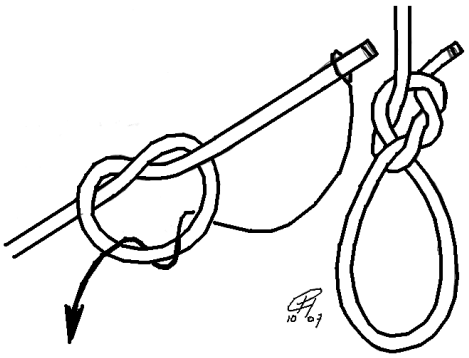


He wrote about the **Bowline on the Bight** being used to fool horsemen. Raskals would tie one in the

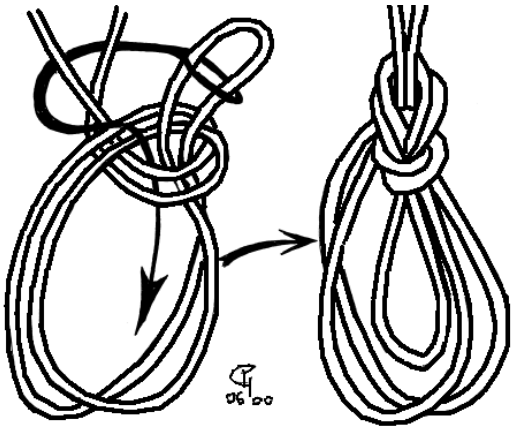
reins and enjoy the rider having to unharness in order to undo the structure [19, p67]. Tying under tension poses a special condition while hitching. For that reason, he states, Two Half Hitches are to be preferred [19, p83]. He offers many solutions to the rope shortening problem, such as the Drummer Boy Plait and a pleat-assortment, but illustrates none of them [19, p90]. The on-bight Reef Knot shortener, which Jens Kusk Jensen describes [8, p16, fig.76], and left without image by Öhrvall, was found to be unreliable by the latter [19, p93].



The fisherman **Öglenknuten**, is a simple method to make a fixed loop knot by fishermen. Öhrvall classifies it as *"lidt klumpet men pålitelig"* which means *"a bit lumpy, but reliable".* Although first illustrated by Lundberg, Öhrvall presented it in words [10, p34, fig.62], [16, p49], [19, p64]. This Loop Knot, which does not appear of much, is a monstrous example of how friction works. The reader should try and understand how it operates – without slipping or budging. It would make for an interesting wild knot hunt to find who succeeded in illustrating it after Öhrvall.



In *Strömningsfiske*, which was written by his friend Dr. Ivar Arwidsson, Öhrvall found mention of a Triple Loop Bowline [1, p40]. He took over the mention, but left the structure un-illustrated [19, p69]. This loop knot which locally, in the Skärsa area, is called *"dubbelt pålstek"*, translates into Double Bowline. It does not seem to feature in ABOK.



Note that this process, of creating the doubled version of a knot, can be done for any knot, merely take a bight and tie the desired knot.

Hjalmar Öhrvall described many structures without the benefit of a diagram. We shall meet others in Part III. He enjoyed offering textual descriptions, not deterred by verbally making a whipping and coiling rope [16, p12]. Doubtless his most daunting act covers part of his wire splicing instructions, which are delivered under dense prosaic camouflage, without any image to aid [19, pp175-178]. In a sense knot books are like certain saucy picture books in which the images tell a story.

Epilogue

In a way all early knot-researchers were taking inventory of the intellectual territory, wrote it down and at times added their own opinions. Apparently the reason for Hjalmar Öhrvall to undertake a study of knots lay in the fact that he encountered a bewildering diversity of structures. His actions were aimed at building a knowledge base on paper.

The directional shift towards KKM in the knotting literature at large, such as induced by Öhrvall's work, is complex to analyze and describe. However, here we have seen how Hjalmar Öhrvall's knotting knowledge was influenced by informants and sources. This caused him to be among the first to generalize the knotting context. He peeked outside of the knotting-box by extending the knowledge base and recording numerous previously unrecorded structures.

In the third and final part of this article we move to asses the impact of Hjalmar Öhrvall's knot-writing efforts. We shall do so by listing citations to his knot-works and chart the recorded reactions from his contemporaries and successors.

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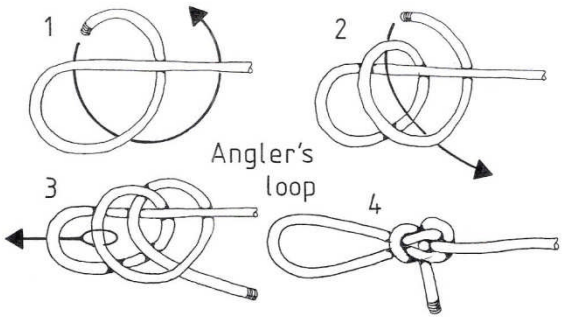
Stiphout October 2007.

A Waist-Tie and Teather

written by 'Knotmaster'
illustrated by Geoffrey Budworth

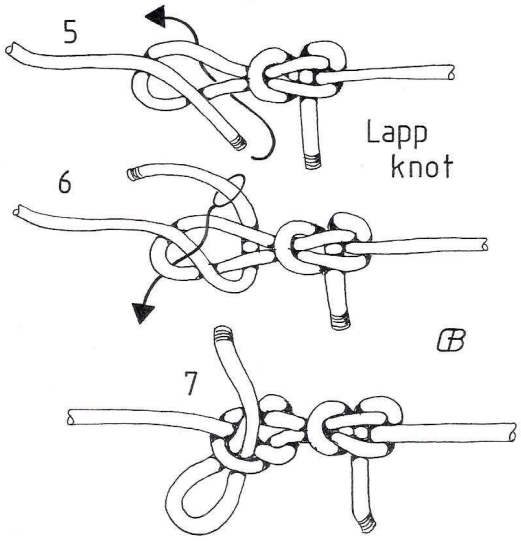
This waist and tie tether is an example of how seemingly unrelated knots, acquired haphazardly, can be assembled to create a useful bit of kit.

Take 6 feet (2 meters) or more of 1 ¾ inch circumference (10 mm diameter) braided rope and, with a twirl & tuck, tie an Angler's Loop in one end of it.



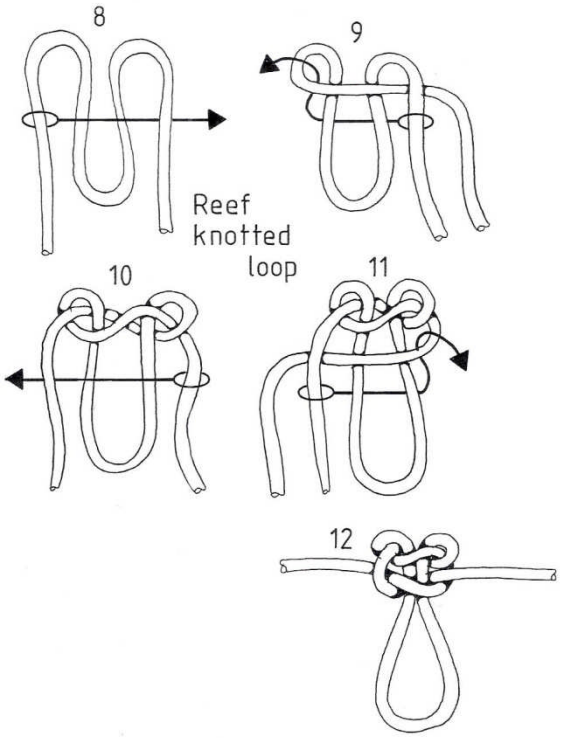
Figs's 1 to 4

To secure it around your waist, apply a Lapp Knot with draw-loop, carefully locating the working end so that it emerges from (and is securly nipped by) the center of the three-part crown that is a feature of the completed knot.



Fig's 5 to 7

Prior to wear, as an optional extra, add this reef-knotted loop a few inches from the angler's loop, into which tools can be tucked or items of hardware such as shackles or carbiners may be clipped.



Fig's 8 to 12

In these health and safety conscious times, enforced by litigious ambulance chasing tort lawyers, it is advisable to rely upon factory-made, tested and certified harnesses for work and leisure activities that involve forseeable hazards; but self-sufficient knot tyers know there will be situations where *ad hoc* cordage improvisation is better than nothing, and this tie and tather has provided me with peace of mind more than once.

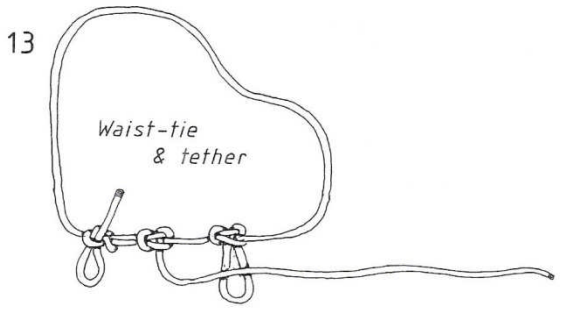


Fig 13

By contriving a long end from the side of the angler's loop. I have attached myself to a light sailing dinghy when single-handed in gusting winds so that, if I toppled overboard, it would not sail away without me. Alternatively, from the deck of a crewed yacht, the Lapp Knot (which spills and lets go with one tug of the short end) would save whoever was wearing it from being towed underwater and drowned... leaving others to execute an overboard recovery.

You could even tether a pet animal or young child by your side.

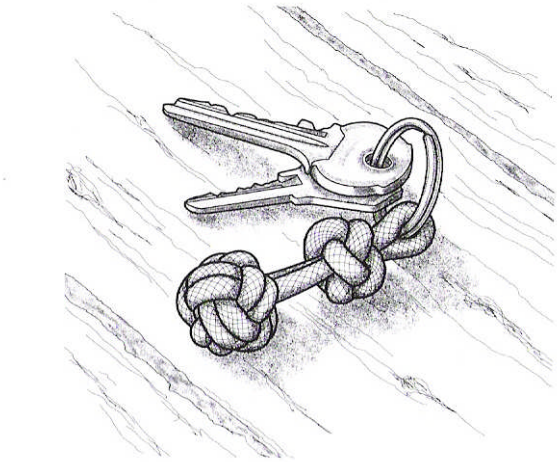
DO NOT secure yourself like this where a fall from a height – masthead, ladder or scaffolding – is possible as, while the fall itself may be harmless, the abrupt stop at the end could kill or injure.

⌘

More Knotting Fun

by Joe Schmidbauer

Every year the Orange County (California) chapter of the American Red Cross has an Annual Recognition Dinner to honor their many volunteers. My wife, Linda, was a member of this year's organizing committee. She had the idea of giving away knotted key fobs to each person attending as a gesture of thanks. It started out with the idea to make "a white key fob kind of thing with a red Turk's Head in the middle". This sounded reasonable until I learned that I needed to make between 150 and 200 of these items! Obviously with this many to make I needed to keep it simple, something that wouldn't need a lot of cordage and was easy to do. I gave it some thought, looked in my knot library, and finally settled on an idea suggested in *Des Pawson's Knot Craft* (Thanks Des!) a "Simple Key Ring".



This is a a fob consisting of a singled Boatswain's Whistle Lanyard Knot followed by the same knot doubled. Elegant in design, something that looks complicated but is fairly quick to make. I say "fairly quickly" because no matter how you make them, you still need to work the darn slack out of eack knot. Having made so many, I almost admit that I could do them with eyes closed or behind my back (it seemed I even dreamed them). Doing this project helped clear out my cordage locker somewhat with trying to find enough white cord to fill the bill. The fobs came out in different sizes and textures because of this mixture of string I used. Our PAB Secretary, Mr. Jimmy Ray Williams, also came through with the generous donation of a spool of red paracord so I could make the opposite color fob.

The American Red Cross, Orange County Chapter would like to acknowledge the following companies and individuals for their generous in-kind donations to our Volunteer Recognition Luncheon.

Arbonne International
BJ's Restaurant
In-N-Out Burger
International Guild of Knot Tyers
Janet Whitcomb
Jerry's Dogs
Long Hai Restaurant
Olive Garden Restaurant
Orchard Supply Hardware
Polly's Pies Incorporated
Pomodoro Restaurant
Regency Theaters
Renzi Men's Retailer
Rosie Hoomana
Sand by Therese
Surf and Sand Resort
Tulsa Rib Company
Ultimate Custom Car Care

Some Observations on Handedness

by Frank Brown

For the past few years I have been carrying out small, infrequent studies on the structure of knots. I have been trying to establish the characteristics that can be used in knot identification. I noted, as had many before, that knots appeared to be composed of just a few fundamental structures that were interwoven with each other to produce specific final structures. It seemed that a couple of Thumb Knots and Half Hitches or Half Knots, a few Turns and a Tuck or two can be cobbled together to produce a series of knobbly nodules of different appearance and properties depending on the method and order of generation. Simply put, complicated knots are made up from a few simple knots. This revelation was easily grasped by me as my view of the universe is one of a great complicated tangle of material all composed of a few fundamental particles. Meantime, back on the ground, I considered that the "handedness" of these simple knots, which I call "Elements", could be used in the indentification process. The handedness I am talking about here is the way the material in a knot is twisted around an adjacent length. Right handed or left handed as in threads on a bolt or screw. I apologize if I seem to be stating the obvious, but the English language is used a bit differently in different English speaking cultures. I speak fluent Aus, understand a lot of Pom and quite a bit of Yank).

I have observed that in some methods of tying, an Element may be generated in one piece of material and applied to another, 1.e. a Half Hitch is constructed with one piece around another. As part of the construction method, the piece making the Half Hitch Hitch is drawn straight out and so generates a Corrsponding Half Hitch in the other cord. Wow! The interesting part of this earth shattering discovery is that if you start with a Right Handed Half Hitch, you generate a Right Handed Half Hitch in the previous Standing Part. Figs 1 and 2 demonstrate this phenomenon more clearly than words.

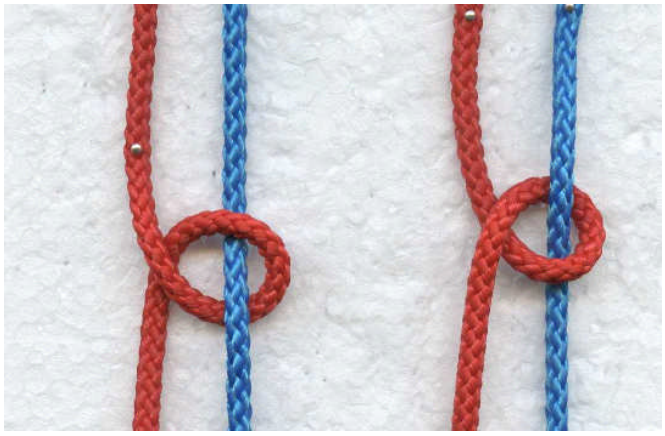


Fig1

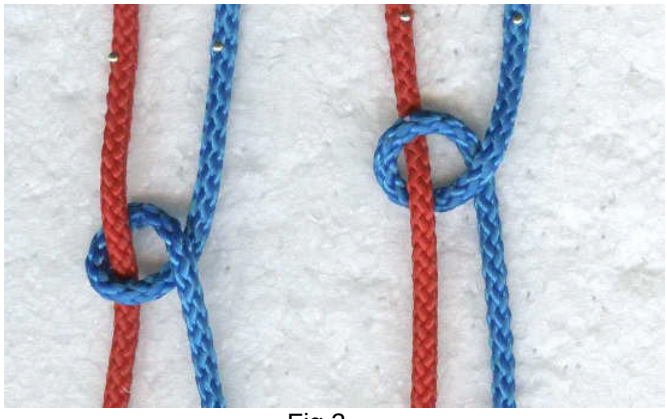


Fig 2

I have no idea of this observation is of any value, but may be of interest to other sad cases who spend hours playing with string. I assume Topologists are familiar with the mechanism and may even have a name for it, e.g. Conservation of Directional Helical Distortion.

The other fscinating phenomenon I have studied with varying success is the morphing of the Figure Eight Knot.

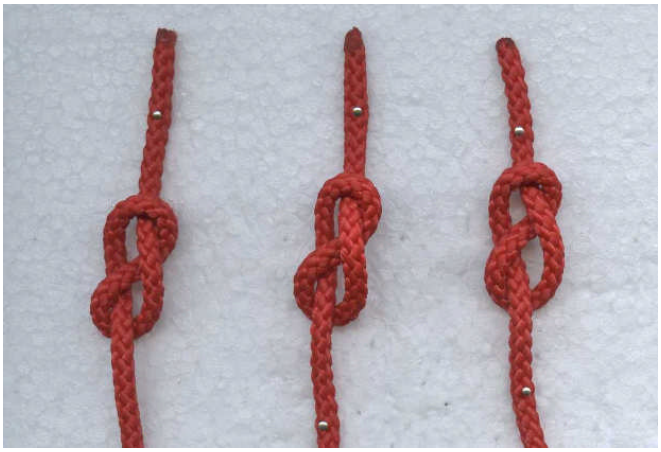


Fig 3

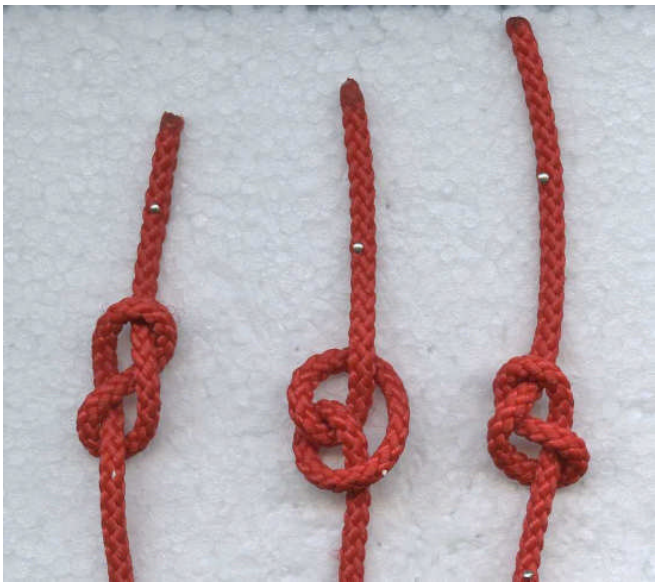


Fig 4

To demonstrate what I am rambling on about, Fig 3 shows three identical, well near identical, Figure Eight Knots. In Fig 4 I have manipulated the knot without untying – trust me – to form a Pretzel Knot shown centrally. I have continued with my manipulations to form another Figure Eight from the Pretzel as seen on the right in Fig 4. The resultant knot is different in appearance as shown, but is actually just the original knot inverted. Another Wow! What I find interesting is the handedness of the Hald Hitch Elements making up the knots.

Staying with Fig 4, you can see a Left and Right handed Half Hitch in the first knot on the left. In the Pretzel we now have two Right Handed Half Hitches. Third Wow! What happened to the Conservation of Directional Helical Distortion? I am sure a friendly Topologist could explain what happens, but I am not sure what I know. I like mysteries.

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Fishing floats

More fishing float mesh-hitching

Mr. Roy Chapman