Knot News

International Guild of Knot Tyers – Pacific Americas Branch

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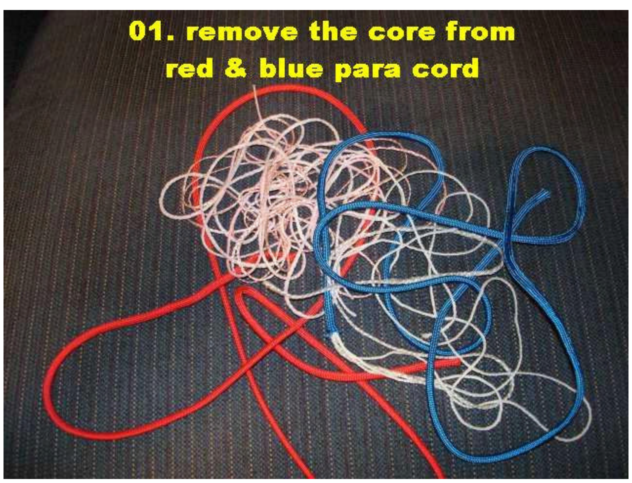
Making a Tri-Color Monkey Fist

Jimmy Ray Williams

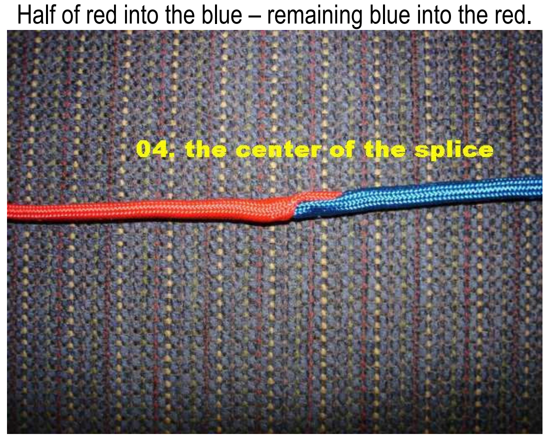
Scissors, xacto knife, hemostats, tissue forceps, splicing wire.

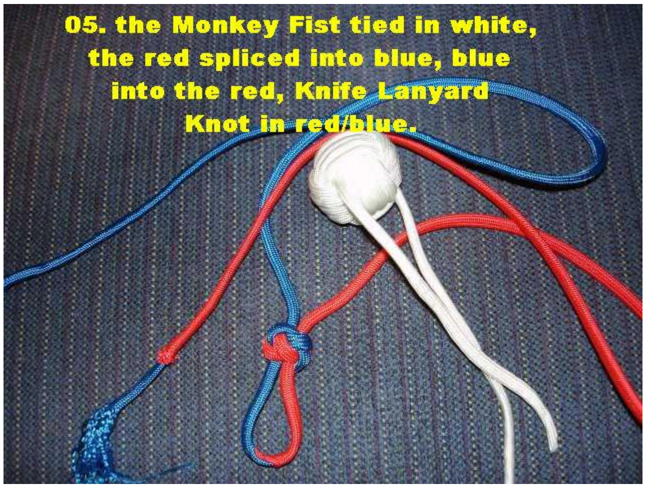


The core is in the process of being removed from the blue cord.

Just like working two pieces of hollow braid rope.

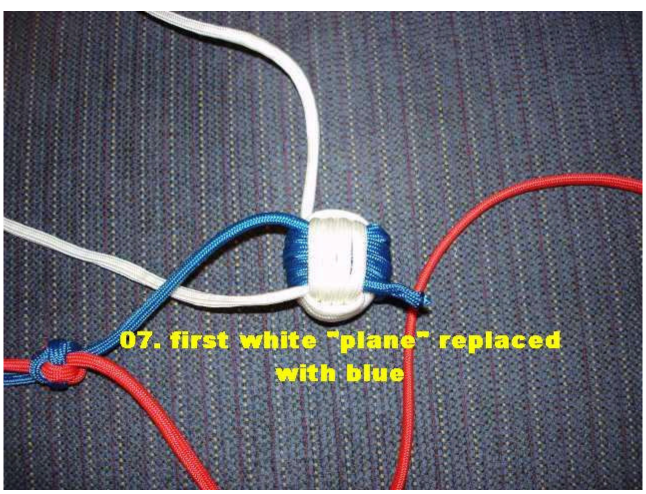
Half of red into the blue – remaining blue into the red.

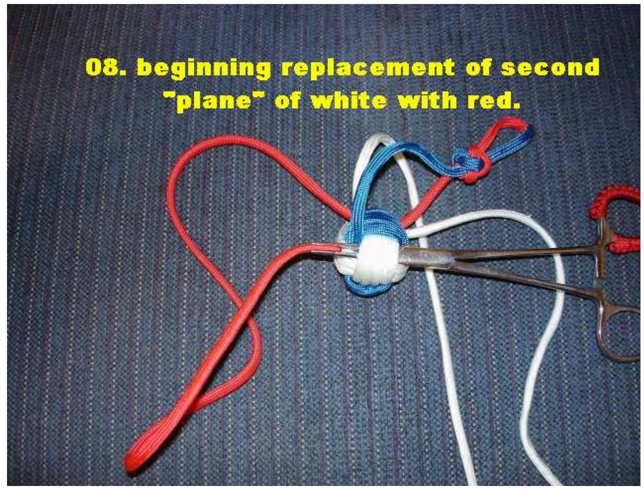




Knife Lanyard Knot is ABOK #787.
Monkey Fist is ABOK #2200.

One "plane" of the Monkey Fist is an opposing pair of faces.





The hemostats are prepared to place one ply with red cord.

Fair it up and remove bitter ends.

Pears and Avocados

Roy Chapman

As I looked at the article on Two Spheres I noticed some things I could clarify (and should) before we go forward.

A "panel" is a "gozover". It is easier for me to define coverings by discussing the number of panels rather than the Turk's Head Knot from which the knot is derived. After I close one end of a THK and pucker the other (a pear) then the parent knot is lost in the shuffle. (See sketch of "a panel" below.)

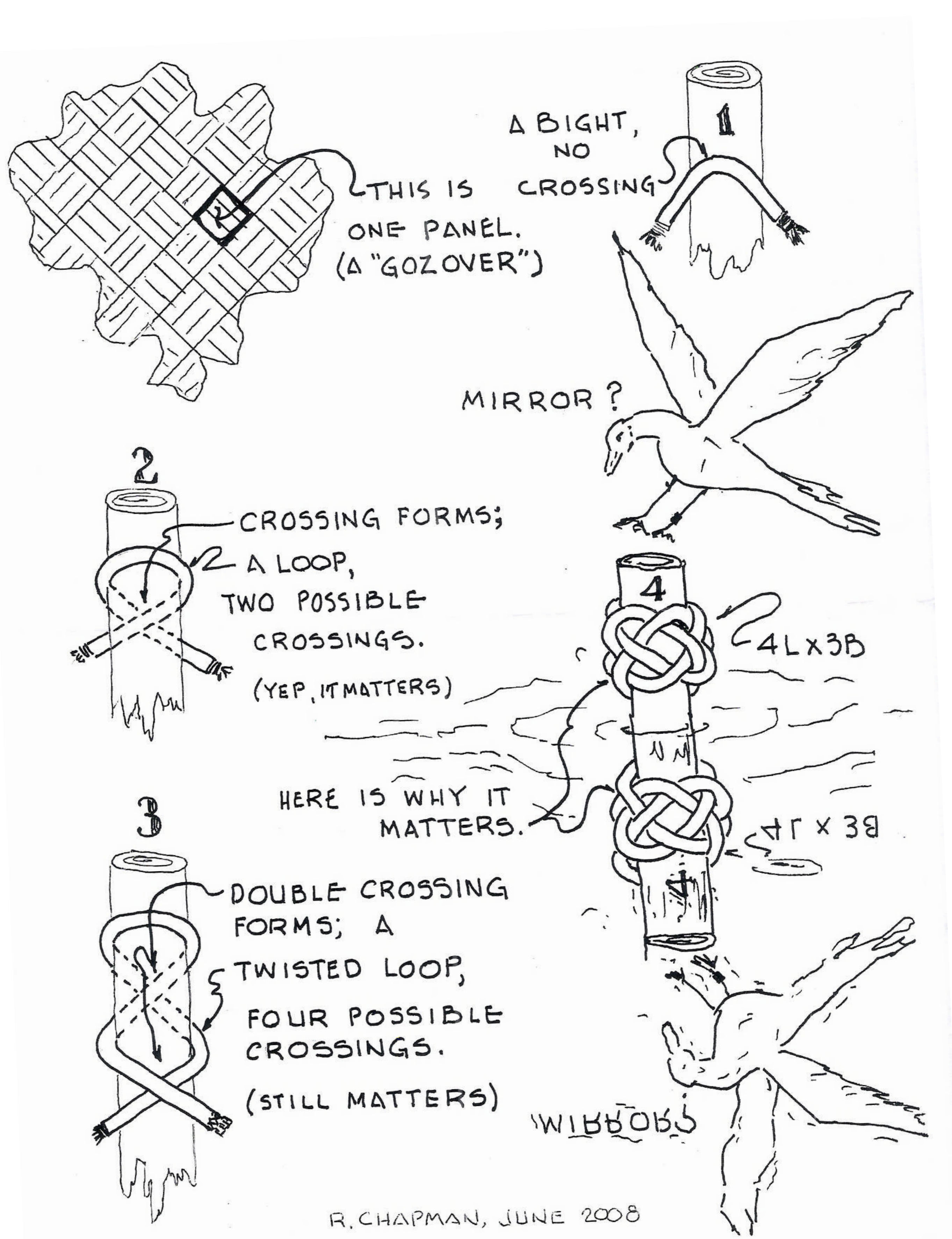
I also omitted a discussion of bights and crossings. Fig 1 through Fig 4 shows a bight, shows it when wrapped to a crossing and wrapped again to be double crossed. It depends if it is crossed over or under and causes variations that will cause confusion if ignored. I don't want to invent a vocabulary and only mention it as it matters in creating coverings and THK variations. Note in Fig 4 that two THKs, both 4L x 3B knots, are mirror images of each other. Blending each with a multi-panel knot will result in two differently shaped knots. Note also that turning each of these THKs inside out does not change their structure, they still remain mirror structures. Note also that this is not true of all THKs. For example a 3L x 5B knot will invert if turned inside out (as you would a sock) but also inverts if turned end for end. This inversion swaps the "gozovers and gozunders". This may help keep you working on single strand structures.

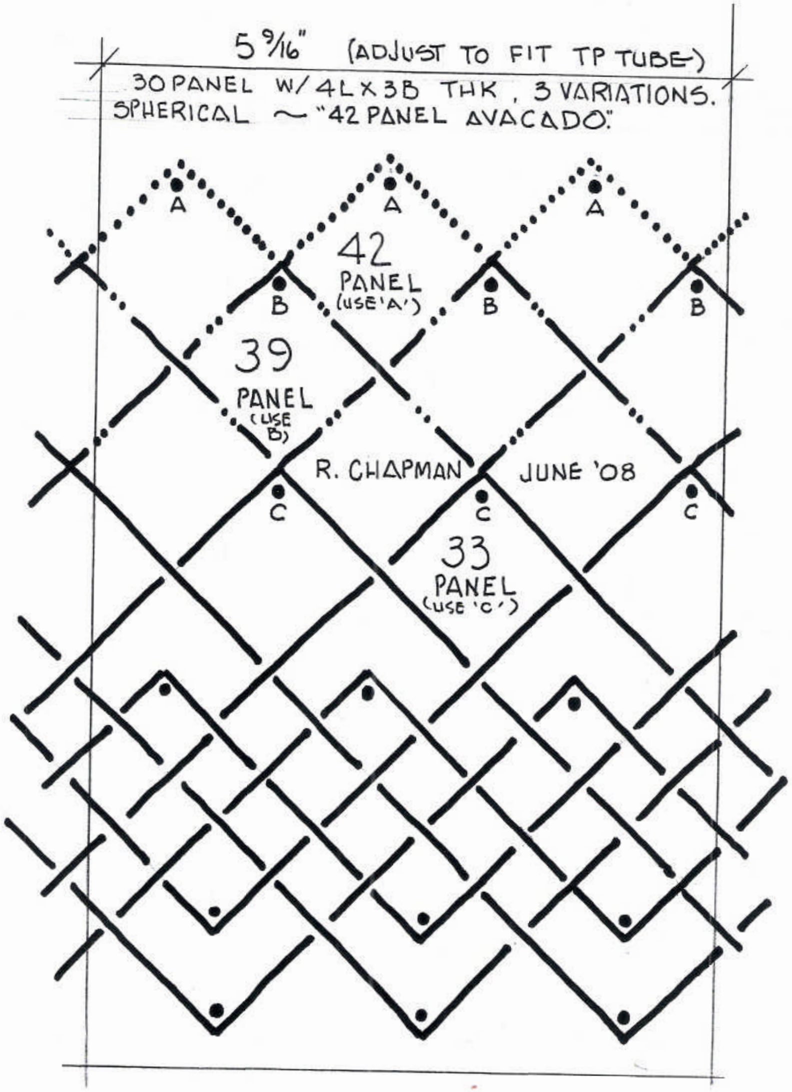
For me all this comes back to ABOK #1397: "Projections of such knots can be varied and, if desired, additional arms may be projected from other compartments. An easy way to build up elaborate knots of this sort is to cut the bights of several knots and then tie the ends together to form a single large knot. When completed, substitute a single cord for the knotted cord. However, unless care is observed, more than one cord will be required." Wow! CWA says "an easy way"! I haven't found it yet. But it can be done. If you are having trouble avoiding the multiple cord structures try the inverted or mirror structure of the second knot. I find it easier to tie the parent knots and slip them on a grid and don't actually cut the bights but use the two as a "clue", following the over and under pattern. When satisfied I then remove the parent knots, sketch the knot on the mandrel and have a new grid for a "new" knot.

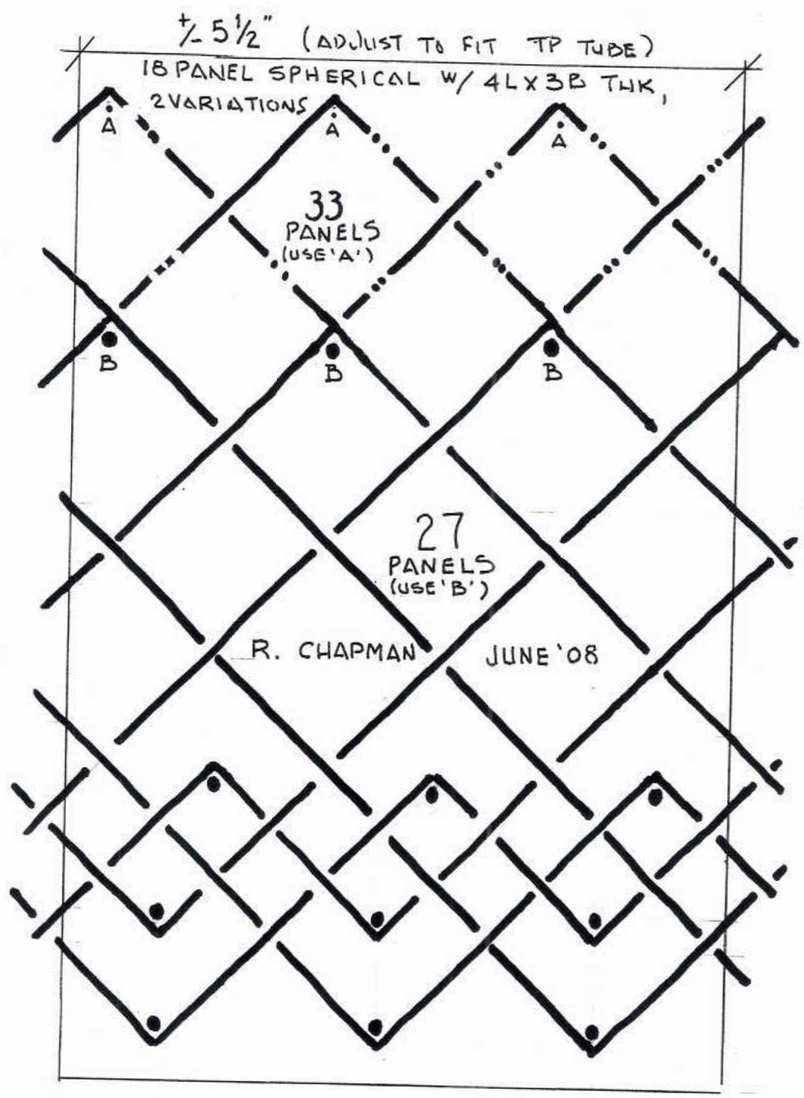
You will find attached two grids, one for a 27 panel pear shaped covering (derived from an 18 panel sphere with a 4L x 3B THK) the other for a 42 panel avocado shaped knot (derived from a 30 panel sphere with a 4L x 3B THK). You can change the size of the collar by putting pins at the alternative positions shown. The grids aren't perfect in alignment but the crossings are correct (and besides you may have smaller towel tubes than I do). One of our talented contacts (Jimbo) from the East Coast suggests not filling the tube but wrapping layers of paper around it to hold the pins. That also gives you more adjustment in circumference to fit your tube. I am thinking of "scrimshawing" the grid onto PVC pipe for my most often used grids. Patrick Ducey would undoubtedly CAD draft nicer grids… but these will get you started on these two knots and hopefully on to making grids of your own (and, besides, I can't CAD draft).

The attached photo shows one of each knot on my carpenter's scratch awl (50 years service as a knotting tool, I thought it deserved some bright new jackets). Also pictured is the 4x4 gear shift knob for my Ford. That knob is HUGE before the knot! In the photo it is temporarily displayed on a "Blood Wood" fid (which Jimbo was kind enough to make for me). I will add that the fid has about ½ the length without taper, which I find makes a nicely balanced tool. Before covering the knob I pulled the little "2H-4H-N-4L" button out of the knob so that I can tie a flat mat with the button as the center, then glue the button to the dashboard. To avoid this on customer knobs, I am thinking of not closing the top of the sphere so that the shift pattern icon can be read.

It is in this context of "knotted coverings" that I bring up the subject of mirror image knots. I have deliberately avoided "handedness" or references to clocks as causing more confusion than clarification. Brighter minds than mine can work out the vocabulary. For our purposes it is sufficient to recognize that there is a mirror structure and that it often will change the sequence of over and under to allow a "new" or, at least, different knot.


THIS IS ONE PANEL. (A "GOZOVER")
1
A BIGHT, NO CROSSING
MIRROR?
2
CROSSING FORMS;
A LOOP, TWO POSSIBLE CROSSINGS.
(YEP, IT MATTERS)
4
4L X 3B
HERE IS WHY IT MATTERS.
3
DOUBLE CROSSING FORMS; A
TWISTED LOOP, FOUR POSSIBLE CROSSINGS.
(STILL MATTERS)
R. CHAPMAN, JUNE 2008


5 9/16" (ADJUST TO FIT TP TUBE)
30 PANEL W/ 4L X 3B THK, 3 VARIATIONS.
SPHERICAL ~ "42 PANEL AVACADO."
A
A
A
42 PANEL (USE 'A')
B
B
B
39 PANEL (USE B)
R. CHAPMAN
JUNE '08
C
C
C
33 PANEL (USE 'C')


+/- 5 1/2" (ADJUST TO FIT TP TUBE)
18 PANEL SPHERICAL W/ 4L X 3B THK,
2 VARIATIONS
A
A
A
33 PANELS (USE 'A')
B
B
B
27 PANELS (USE 'B')
R. CHAPMAN
JUNE '08

The Wee Blasting Mat

Maggie Machado

Photographs by Tom Mortell

This article has been in the making for about a year. I learned the technique in July '07 during the Guild's 10th Anniversary Celebration of the Pacific Americas Branch (IGKT-PAB). And I would gladly take credit for this brilliantly simple method of four-selvedge mat construction, but the credit must go to long-standing PAB member, Joe Soanes. It was he who designed the blasting mat, which has made its way to the current use for rope doormats and deck mats. Using the blasting mat principle, José Hernández-Juviel was inspired to create a mini-version for which he invented a simple portable jig. We know it now as the "Wee Blasting Mat".

One might say that I was third in line in the progression of the Wee Blasting Mat as it has evolved. Having a background in fiber arts: ornamental knotting, needlecrafts, basketry– I knew a good thing when I saw it! This unique design has unlimited creative potential.

José, Doug and Maggie with the Wee Blasting Mat

José walked me through the making of my own rope mat and I took it from there. My husband, Doug, and I had taken detailed notes and soon we were constructing various sized jigs, as well as experimenting with not only rope, but with every fiber I could find.

For your interest and creative pleasure, my fellow PAB members, here are my directions for the Wee Blasting Mat – a Woven Four-Selvedge Rope Doormat.

Materials for one doormat:

Approximately 200 feet of 3/8" manila rope

Materials for the jig:

17 wooden dowels 3/8" in diameter x 24" long

17 lengths of CPVC pipe, ½" in diameter x 24" long

Board for base – 2" x 4" x 30" long

Other supplies:

3/8" wood bit

2 C-clamps

Masking tape

Waxed twine or thread

Directions for making jig:

Saw CPVC and dowels according to above lengths. Make 17 marks, 1½" apart and centered on the board (wider side). Drill 3/8" holes into each mark, to a depth of about 1¼" (do not drill all the way through). Use a drill press to assure perpendicular holes. After tapering the ends, push each dowel into a hole. No glue is necessary; the dowels can be removed for storage. Slide a pipe over each dowel. That's it! The jig is complete.

Attach the jig to a table or workbench with the C-clamps.

Measure and tape the rope:

Tape the end of the rope to prevent fraying. If using rope from a continuous coil, do not precut.

Tape the end to an end pipe:

Begin the weaving by lightly taping the rope to the outside of an end pipe. The tip of the rope points upward and extends to the top of the pipe. Tape at the bottom as well (this tape is removed as the weaving progresses).

Warp the jig:

Weave the rope in and out between the pipes from one side of the jig to the other. When the last pipe is reached, loop around it and weave in from the other direction (the weave will alternate between pipes). The bottom tape can now be removed. Weave back and forth until there are 53 horizontal rows of weaving. Stop weaving. (The last row terminates on the opposite side from the starting pipe).

Building the warp

Measure to replace the pipes:

Continuing with the remaining rope, approximate the amount of rope needed for finishing by generously measuring the width (height) of the woven structure, then adding about 2" at each pipe; multiply that number by 17 pipes. This measurement represents the amount of additional material needed to replace the pipes, thus completing the project. If you began with a 200 foot precut rope, use the remaining piece to finish (measure to be sure there's enough). If using a continuous coil, measure off the amount needed (be generous), then (holding your breath)… CUT it! Tape the end tightly for about an inch or more.

Before removing the jig:

Slide the weaving-covered pipes upward (as a unit) about 2". Steadying it with one hand, use a hammer or mallet to tap each pipe downward until it is nearly centered on the weaving; this insures that the weaving will not fall off the pipes.

Remove the jig:

Release the clamps, allowing the whole piece to lie horizontally. Carefully slide out the base/dowels from the pipes.

Removing the jig

Weave the weft:

Feed the taped end of the rope through the closest end pipe, bringing it out the other side. As it emerges, pull both the pipe and the rope out. Slip off the pipe from the rope, pulling the remaining rope through the channel. Snug it up slightly, but not so much as to distort the mat. Thread the end through the next pipe (opposite direction), removing each pipe as you go. Continue until you have replaced all the pipes. Removing the last pipe creates the only row having two lines – the beginning and the end! You have completed a unique Four-Selvedge Mat – the Wee Blasting Mat!

Weaving the weft

Pulling out a pipe

Finish the ends:

Using sturdy thread or twine, wrap each rope close to weaving to prevent ends from fraying. Cut close to wrap, or if preferred, leaving a 2" to 3" extension beyond the wrap, un-ply the ends and fray.

Throughout the past year I have demonstrated this principle of mat construction at weaving and basketry guilds, fiber art studios and art shows. I continue to give workshops and sell finished mats, emphasizing the use of recycled materials.

A booklet, *Introducing the Wee Blasting Mat Principle of Woven Four-Selvedge Mats*, will be available soon. Along with the Wee Blasting Mat, it details the preparation and use of several other materials, as well as suggestions for projects.

Questions and comments are always welcome… email me: knotworker@centurytel.net.

An open letter to the Guild

From Mike Storch

Some cultures have a habit of introducing a flaw into their handicrafts as a way to acknowledge that mankind is imperfect, and therefore cannot produce perfect work. There is a humble quality about this attitude that I can appreciate. Locally, some of the Navajo Indians still follow this practice. The things they weave begin years in advance with the raising of their own sheep for wool. They shear the sheep by hand, clean, dye and spin the wool. A horse blanket, from the raising of the sheep to the finished product, may take years to produce. Every step in the process is taken with the same care. But then introducing an imperfection into their weaving – a thread of yarn in one corner may be knotted, or perhaps an irregularity in the color of a single yarn might be introduced somewhere into the blanket – a tiny imperfection, difficult to find, but there none-the-less.

I accept this attitude. What I have grown to dislike is its opposite: the self proclaimed expert. This type will tell anyone who will listen how great his work is. Just ask him. (He is usually a windbag.) Rather, I accept that there is always room to learn and improve. I think of myself as a serious student. For me, the difficult part is that I am self taught. There are errors and guesswork in most, is not all, of my work. Acknowledging that allows me to work more towards perfection, which, the closer I get, the more elusive I realize it is. What all this means is that your finished work will reflect the attitude you bring to it, kind of a “Zen and the Art of Braiding”. An honest yet humble attitude always allows room for improvement.

I began tying knots in the ‘70s; I began braiding in the ‘90s. I still have a long way to go. My advice to Guild members is this: learn and enjoy your craft. Accept that there is always room for improvement and improvement will naturally follow. And should you meet a sincere and kindred spirit following in your steps, pass on what you can in a clear, caring and honest way. This way they too can improve. In this same spirit, contribute whatever you can in an article for this newsletter. It doesn’t have to be fancy or highly advanced. In fact, the easier to understand, the more it will be read and enjoyed. There are others that may need just that little bit of knowledge you have earned along the way to take their next step forward. This is what the Guild is all about: learning, sharing, improving and preserving our craft.

, Utah
August 2008

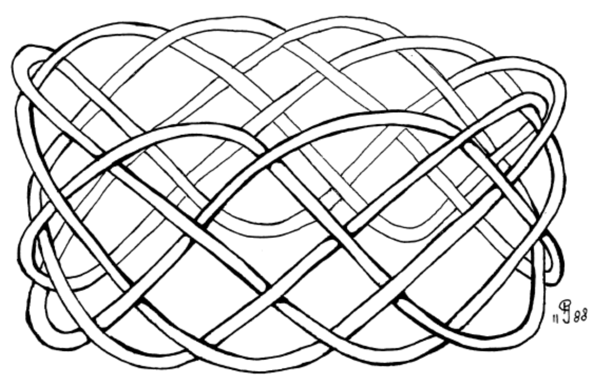
Computer-Aided Decorative Knot Design

Pieter van de Griend

Despite my lifelong knot fascination, I cannot say they make the hi-tech grade. Knots are viewed as primitive technology. Working them, and the media in which they can be realized, requires uncomplicated tools. What causes knots to be classified among the makeshift technological toolkits makes for an interesting question. After all, they can display pretty treacherous and complex behavior. But the goal of this article is not so much knots but the tools we use to make them. Would it be possible to apply computers as modern knotting tools? If so, then how? That was a question posed by myself at the beginning of the 1980s and I have spent the next two and a half decades answering it (more off than on, I admit). In this article I would like to share some ideas, which may help others working in this field. After all, why invent the wheel again and again?

Computerized Knotting History

Is there any precedence of computers being involved in knotting? Yes, there are computer controlled net-making machines [5]. Aspects of roboknottic applications in micro-surgery are heavily investigated [1]. However, one of the most attractive areas, in my opinion, is where computers are used to visualize knot aspects. There are celebrity programs, such as Rob Scharein’s *KnotPlot* [8], which show the beauty of 3-dimensional knotted structures in all-of-their sparkling, ray-traced splendor.



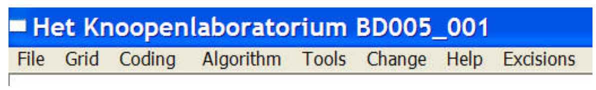
In the decorative knotting arena things are different and this is what I would like to focus on here. Let us look at how computers can be used to design decorative knots.

Considering the amount of decorative knotting it is sobering to note how little computers are put to use. Bruce Grant was one of the first to state that mathematicians investigated braided patterns, but he refrained from giving specific details [3, p440]. The monotonous Over Under half-cycles, the so-called **algorithms**, are sequences that are required to produce some desired knot. For example consider Grant's Double Gaucho Knot of three passes, which gives a clear braiding formula [3, p408]. These formulae can readily be computed as solutions to Diophantine Equations. This was shown by Schaake and Turner in the 1980s [6]. In fact, around 1988 they were among the first to speak of *automated* construction methods. New Zealander, David Segwick, who was part of their team, had written a DOS application which produced algorithms for some subsets of Regular Knots, such as Fan Knots.
However, the earliest attempts I have come across surfaced in the US. From letters in my correspondence I gather that around 1987 Jim Barcus and Tom Hall started working on a DOS implementation to produce braiding formula. However, till then nobody had any visuals of these grids. In 1989 I wrote a DOS application, which got named RK2.0 and allowed the user to feed parameters for parts and bights and choose any coding. The program drew the Regular Knot's so-called half-cycles on the PC monitor and ran off the corresponding algorithm, line by line. Some PAB members may have seen RK2.3 in action, as it was announced to be demoed in 1997 [9]. RK2.0 was simultaneously developed with NK1.0, which allowed the user to produce Nested Knots graphics. In RK3.0 and NK2.0 I extended functionality to create excisions in Regular- and Nested Grids, but found that a challenging task. At the beginning of this millennium work started on the Braid Designer (BD) Project from which I would like to share an impression.

BD Functional Requirements

Mathematics lovers constitute a minority in Knot World. Moreover, the subject is not overly appealing to most braiders for reasons unknown to this man. Therefore a tool is needed which (1) enables braiders to design grids, (2) helps to apply a permissible coding form, (3) produces algorithms and (4) stores and retrieves designs – all the while interactively showing the state of the design, or its reproduction. As considerable time can be wasted doing this type of design, computers can help decimate the effort expended there. Moreover, the things which turn up in the braided knot scene are well-suited for computers to churn out.

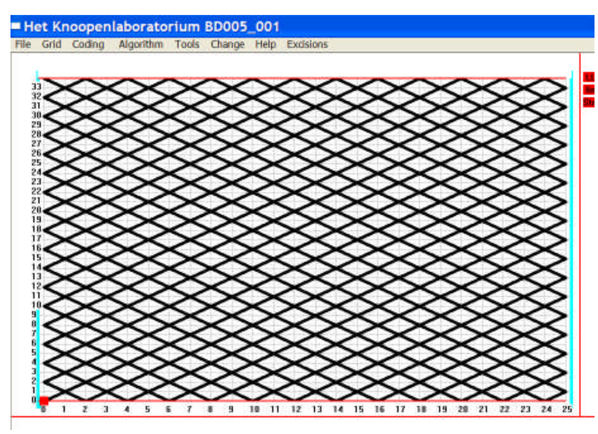
In the foregoing we have crudely formulated what we would like a computer to do, but do they cover all the functional requirements we must impose on the application we would like to develop? As that knowledge did not yet exist, I started by considering the design process of a Braided Knot and called that process a **Session**. There are some clear steps. First determine the grid type, then its dimensions, next its coding and finally run off one its possible algorithms. In the screenshot of BD005 you can see how the application menu will look like. Let us elaborate a little.



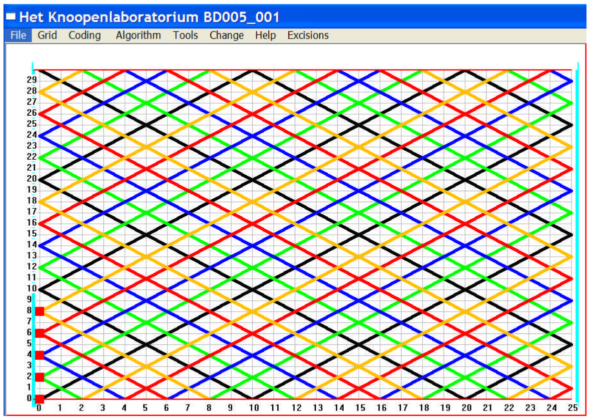
With respect to the **Grid** choice, there are two main classes: the so-called Cylindrical and Non-Cylindrical Braid Classes. The Non-Cylindrical Classes cover things like Regular Knots with one (or more) Moebius Twists [2], [7]. The most generic Cylindrical Braid Class is populated by, what I prefer to call, the X-Grids. Exactly like Nested Grids (B,A,x,y) are a generalization of Regular Grids (B,1,x,y) the X-Grids further generalize the Nested Grids. I shall return to these fascinating structures later. In this article my examples will be based on a famous subclass of the X-Grids. We have frequently met the Nested- and Regular Grids. During our handiwork, they occur most often in covering jobs. Let us step through a session creating specimen members.

Session Step 1: Our first concern touches the grid type choice. Five examples of how BD005 works with Regular and Nested **Grids** of the Symmetric and Asymmetric type are shown below.

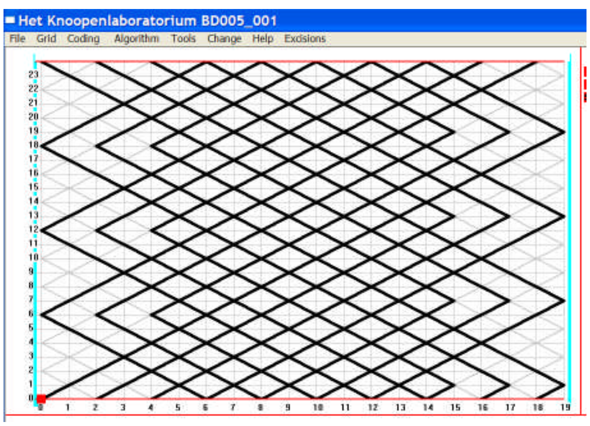
Example 1: We have a Regular Grid p/b=25/16, which is a single stringer, because p and b are co-prime, i.e. they share no other divisors other than 1.



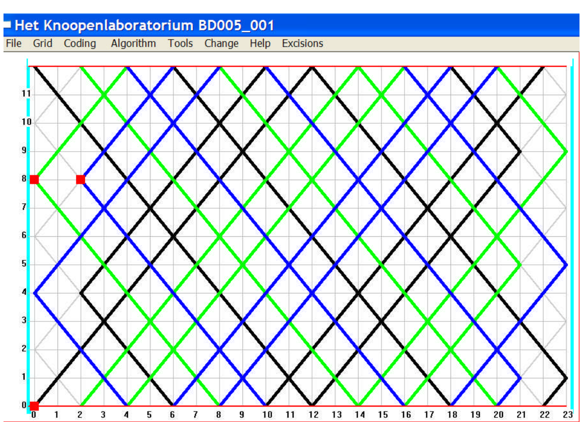
Example 2: Making the p/b=25/16 into a p/b=25/15 shows that 5 components can be identified.



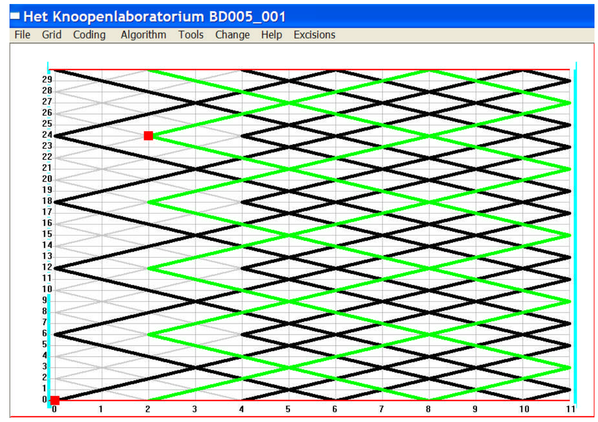
Example 3: Note that Symmetric Nested Grid (4,3,11,1) complies with the Law for the Single-Stranded Nested Grids [4]. Verify that we have P=2(3-1)+11=15. B=4, A=3 and y=1.



Example 4: Symmetric Nested Grid (3,2,19,1) does not pass for single-standedness. It has three components, which are shown below.



Example 5: The Asymmetric Nested Grid (4/3, 7/1, 15/1) shows an interweave of a Regular Grid onto an Asymmetric Grid.



So much for the grid examples.

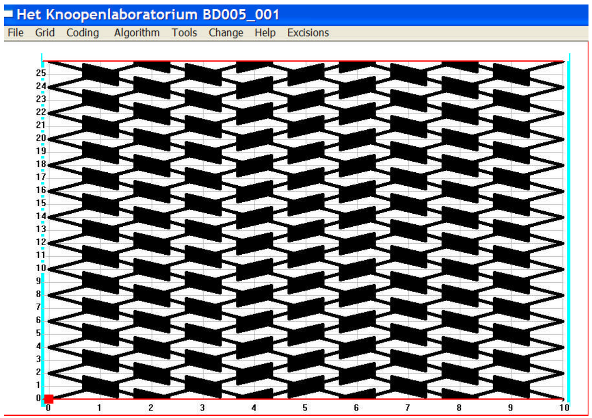
Session Step 2: This step affects the **Coding** which is applied to the grid. As the coding and starting point eventually determine the algorithm, we shall view some coding forms under the next Session Step.

Session Step 3: Any knot can be constructed in various manners. It all depends on where you start. Especially multi-component structures leave a lot of room for choice on the user's side. All of this means that there exist many algorithms to create some specific knot.

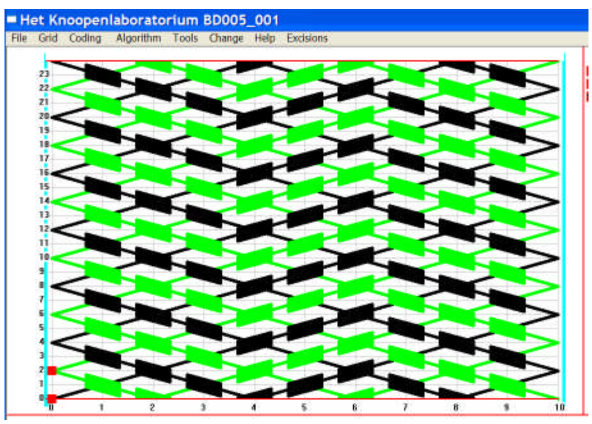
The BD005 Tools menu-item enables one to **Change** the application's domestic settings, such as the color palette for the components and currently run half-cycle. **Help** enables the user with some samples and **Excisions** caters for the cutting of holes in the grids. Mutilating grids is great fun and offers enormous scope for investigation. Finally, you must not only be able to design your work. Also storing and retrieving it at any design stage should be part of the initial requirements, which is done in the **File** menu item.
Let us consider some sessions.

Some Session Examples

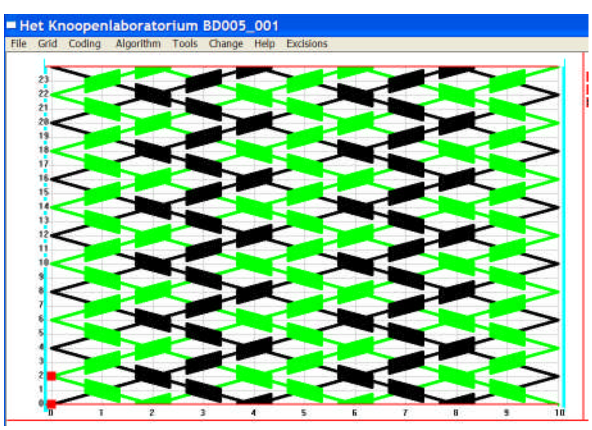
Assume we have a Regular Grid p/b=10/13. The well known Law of the Greatest Common Divisor tells us this grid must be a single stringer. As p-1=9, we can equip this grid with a 3-pass column code. As shown below.



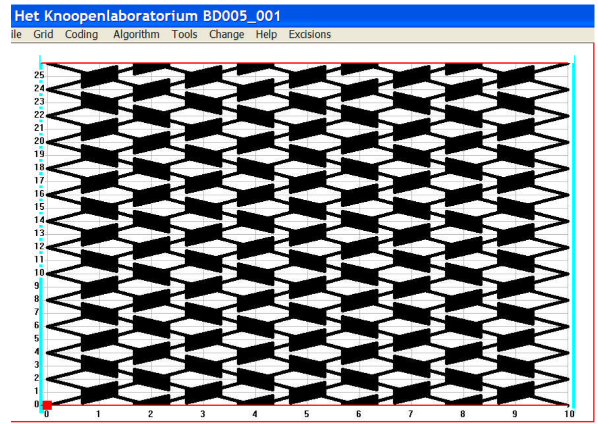
However, when b=12 it must have 2 components. What will the knot look like then?



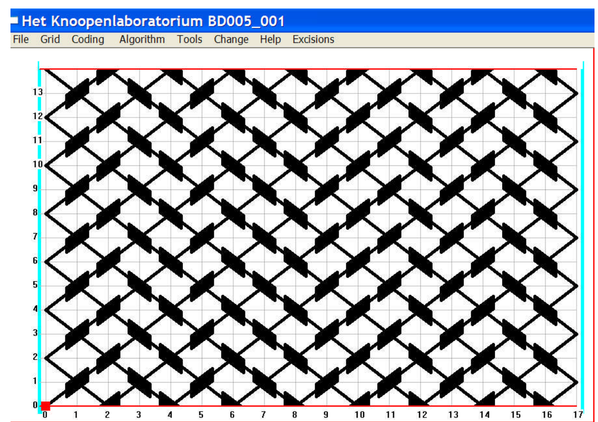
Changing the column coding to row coding we cannot get closer than the 2-pass option. It is shown below.



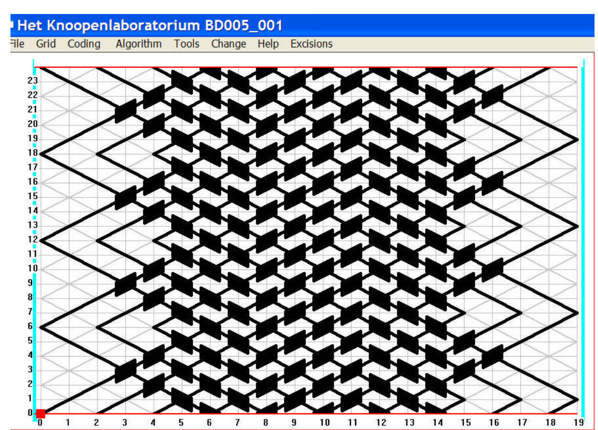
Bringing the regular Grid back to a single stringer p/b=10/13, may cause the image below.



Assume we want to have a user-defined column-coded Regular Grid to p/b=17/7. What would it look like? Well, that depends on what you choose. As we have 16 crossings to fill we may get:



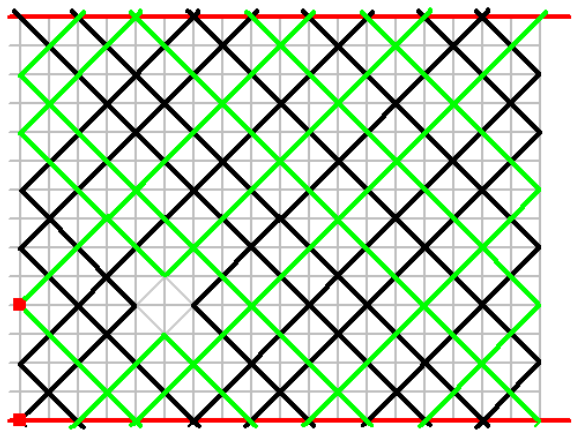
Likewise for (Symmetric) Nested Grids. A user-defined column coded example on (4,3,11,1) is given below.

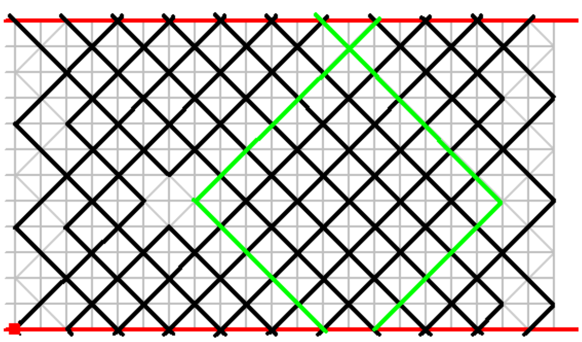


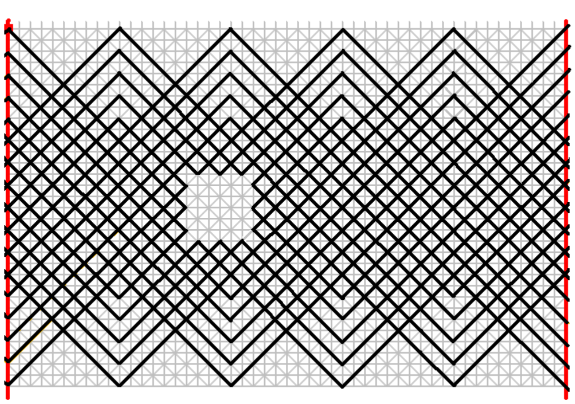
Mutilating Grids

By creating an excision in a grid the number of components may change in dramatic ways. Requirements are easily given, (1) cutting a hole is allowed anywhere in the grid, (2) the operation should be easy to perform and (3) its effect should be displayed immediately.

Until you start making excisions, the Regular Grid p/b=18/7 will consist of one single component. Likewise the Symmetric Nested Grid (3,2,19,1), which we met earlier, will alter its number of components. The 5 interwoven Regular Grids which make up (5,5,16,0), break down to a single component when a 3 by 3 hole is cut.







Data-Types and Objects

What does the BD005 machinery look like? Without drowning in detail let us say that the application's internals are programmed in C++ and Microsoft Windows MFC. Its design is entirely OO-based.

Any grid-type is an object, which is derived from a base-class which I have called GRID. This allows me to create elements of the cylindrical braid clad by simply inheriting from the grid-class. Objects are implemented as dynamic cyclic data-structures. Despite increased memory usage demanded by the machine, I have found it disproportionately easier to manipulate such a simulated object rather than programming its mathematical equivalent from formulae. This interactive model and simulation-approach leads to coding forms becoming a set of attributes and algorithms turn up as derivable properties. This is much easier than the free-for-all wrestling match caused by the usage of formulae. This holds particularly well when it comes to producing the algorithms. You need something, which I have come to call the Braiding State Machine. It tells you in which state your (partially) completed knot resides.

Conclusion

The use of computers for decorative knot design is quite attractive. Machine-support has offered me many startling and new insights into properties of these knot-classes. It surprises me that so little of this approach is available to the knotting community. Perhaps programmers are just too shy to demonstrate their results? The only problem I encountered, after all of this nanosecond interactive and overwhelming knot design, is the cascading cold shower during the actual tying of them. That realization alone plants your feet back on terra firma!

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2. G. Budworth, "The 4 Lead x 14 Bight Mobius Turk's Head", *Knot News*, issn 1554-1843, nr. 57, pp6-7, Sept 2006.
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5. **Nichimo** Co Ltd, Chyoda-ku, Tokyo, Japan.
6. A.G. **Schaake**, J.C. **Turner** and D.A. **Sedgwick,** Braiding – Regular Knots. Book 1/1 series of books on braiding. Department of Matematics and Statistics, University of Waikato, Hamilton, New Zealand, isbn 0-908830-00-9, 1988.
7. A.G. **Schaake** and J.C. **Turner**, "On Tying Moebius Braids", *Knotting Matters*, issn 0959-2881, nr. 32, pp16-18, July 1990.
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9. J. **Schmidbauer**, announcement of RK2.3 demo, *Knot News*, issn 1554-1843, nr. 8, p3, Feb 1998.

Un Vide-Pouche

Norbert Trupiano aka Nono – Juillet 2008

Salut les amis.
Il m'est venu une lueur d'inspiration.
Vous voulez une petite nouveauté?
Que diriez-vous d'un beau vide poche?

Mode d'emploi :

1. Imprimer le schéma sur une page A4

2. Enrouler sur un tube carton (astuce : mettre le schéma dans une page MSWord en mode paysage et régler la largeur à l'aide de la règle pour la circonférence adéquate)

3. Faire le parcours avec un guide-fil (fil de voile souple)

4. Vérifier s'il n'y a pas d'erreur…

5. Passer un cordon assez rigide et faire trios passes

6. Serrer doucement

Grand merci à Pat Ducey qui reste grande source d'inspiration…

A Pouch to Empty Your Pockets In

Norbert Trupiano aka Nono – July 2008

Hello Friends.
I got an inspiration.
Do you want something new?
What about a pouch to empty your pockets in?

User instructions:

1. Print the diagram on A4 page.

2. Wrap around a cardboard tube (tip: put the diagram in an MSWord page, using landscape disposition and tweak the width with the ruler so that it agrees with your tube perimeter)

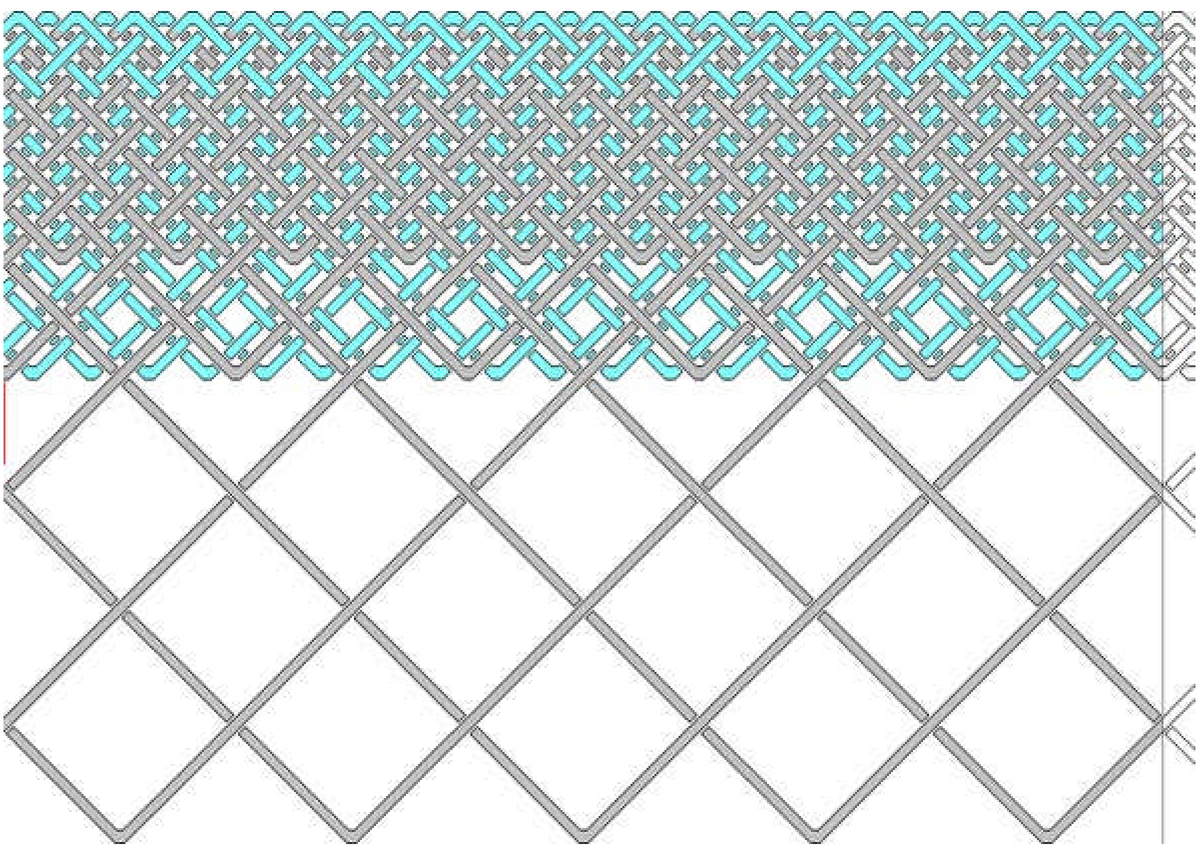
3. Put in place the tracing using a fine thread (sail thread)

4. Hunt for any mistake…

5. Now using the cordage (a bit rigid) you want for your final work. Triple it.

6. Tighten very gently.

A great thank you to Pat Ducey who is my greatest source of inspiration…



I always carry a folding knife, and very often two of them. Which of the dozen or so that I choose depends on my needs for the day. Without fail, one of them will be a “Swiss Army Knife”. Over the years I have used several of their different models, all of which worked well, and some of which I favor over others. A new one I recently bought is quite interesting (for an army knife), and I am now in the process of field testing it. It is called the “Helmsman”. It’s most interesting feature is the marlinspike. It is not a large or robust spike, and is certainly not meant for serious rope work. What it does work for is un-doing knots in light line such as parachute cord, or webbing. In fact I would call it a “knot prick” rather than a marlinspike. Still it does well on light lines, and in the field that might mean not having to cut a line. It has an easy shape to get used to. On a casual level, such as camping/hiking/climbing, it might have its place. In a year from now, after some more field-testing, I might have more feedback on this knife. For now it looks promising.

Mike Storch
Moab, Utah

Helmsman

A Knotty Problem

Knot Puzzle

Mike Storch and Brian Kidd

Middle a length of cord, then middle it again. On one end you will have two bights and on the other a bight and two ends. With this tie a 4 strand Diamond Knot, a Matthew Walker Knot, and another 4 strand Diamond Knot. The only clue I have to offer is that it will take an understanding of both nautical knotting as well as experience with landward knotting to work it out. I sent four of these knotted cords out to widely separated people to see how difficult others might find it. The first with the solution was Brian Kidd, a PAB member. It didn’t take him long. In fact he enjoyed it so much he did a sketch of it so together we could present it to all members as a challenge. Have fun.