

ARCTIC LANDS of the ESKIMOS

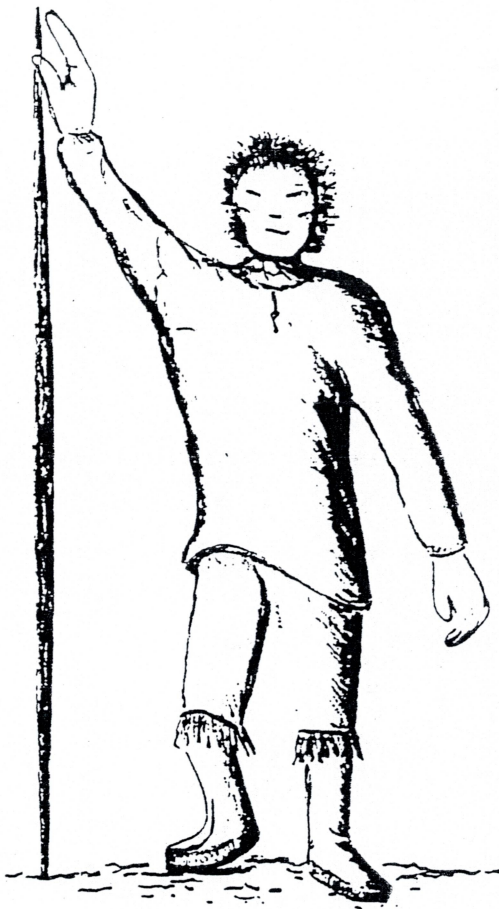
Personal History

I have been a woodworker nearly all my life (both in construction and building wooden sailboats), and a sea kayaker slightly less. In the Winter 1987 issue of *Sea Kayaker Magazine*, an article by John Heath got me fired up about making a custom fitted paddle and a distinctively styled one to boot! I proceeded to make several. Having taught classes in both woodworking and kayaking, I decided to teach others how to make these easy to build and use paddles. Then, after numerous calls and letters to John, I began developing a program for teaching others how to make these uniquely styled paddles. For the program to be a success it had to be geared towards those having little or no woodworking experience. So, the tools are limited to just a few common, everyday, NONPOWERED hand tools. These tools can also be readily used around the home (for repairs and perhaps building a kayak). One thing though, when making your paddle, your work area will quickly become ankle deep in wood shavings and sawdust. For me this is no problem; at home I work outdoors, in the shade of some large trees. The shavings and sawdust just pile up on the ground and become mulch. You'll have to work that one out for yourself.

This book follows the same format I use during my live classes. By following the steps outlined here, you should be able to complete a paddle in about 10 to 12 hours, but then there's no need to hurry.

Historical Background

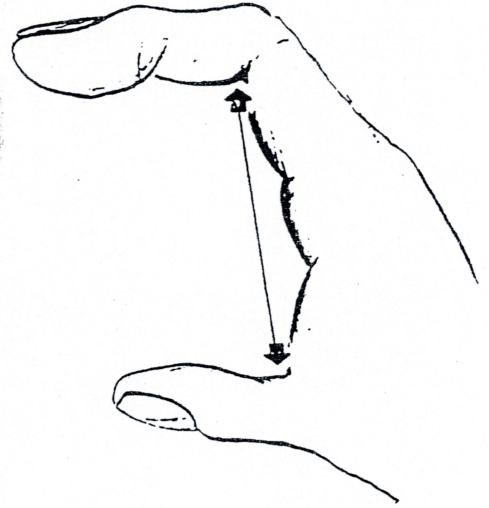
The design of this paddle is hundreds of years old. It comes to us from kayak hunters living along the southwest coast of Greenland. These people were, and still are called INUIT (others groups include: Aleut, Yupick). Growing up, I called all the peoples of the Arctic - ESKIMOS. They prefer not to be called Eskimo - it is a rather derogatory remark given them by Indians, meaning "eaters of raw meat". Because of the overwhelming "Euro" influence they have had to accept the term. The Inuit were part of the third wave of peoples crossing the then existing land-bridge from Siberia to Alaska. Once into Alaska they began a trek that lasted nine hundred years. During the trek they traveled from Alaska across the Barrens of Canada, finally landing in Greenland. For further reading and learning more about these interested people see the bibliography at the end.



(fig 2.1A)



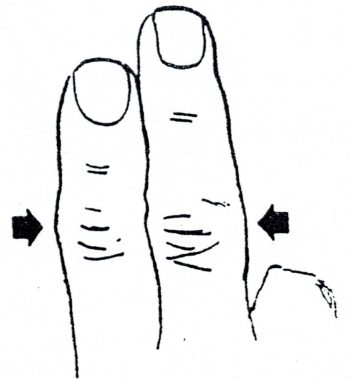
(fig 2.1B)



(fig 2.2)



(FIG 2.3A)



(FIG2.3B)

Section two - Determining the Size & Shape

* NOTE - The paddle described here is intended to be used with a long narrow hulled kayak; one 16 feet or longer, having a maximum width or beam no wider than 23 inches, and a low volume (your elbows MUST NOT touch the deck when seated in the cockpit).

Because the Inuit were small in stature, this system for dimensioning a paddle works best for people 5 foot 10 inches in height or less. If you are taller than this you probably need to get in touch with me and together we will extrapolate a set of figures just for you.

Common means for taking measurements among aboriginal groups was done *anthropometrically*. This is a big word meaning you use your body parts to determine sizes. So that whatever you measure will always be in direct relation to your physical characteristics. A number of our current units of measurement come from the very same type of a system, for example a foot was equivalent to the length of the king's right foot, an inch was the length of the first joint of the king's right thumb, a fathom equaled the King's armspan, and the list goes on.

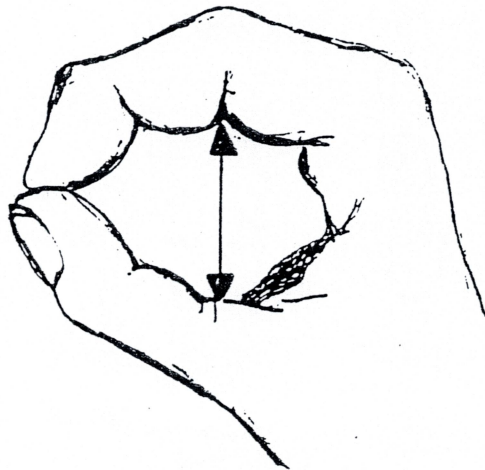
The High Reach, The Length Overall, or end-to-end length of the paddle. It is normally written as LOA. This is determined by measuring the distance up from the ground to the tips of your upraised hand (fig 2.1). *Try not to stretch too far.*

The Big "C" The Outer blade width. Many of the Greenland paddling techniques and rolls require the paddler to slide the blades back and forth through their hands. The maximum or outer blade width is the span between the second joint of the thumb and the second joint of the index finger while forming a large C with your hand (fig 2.2) This ends up being a comfortable width.

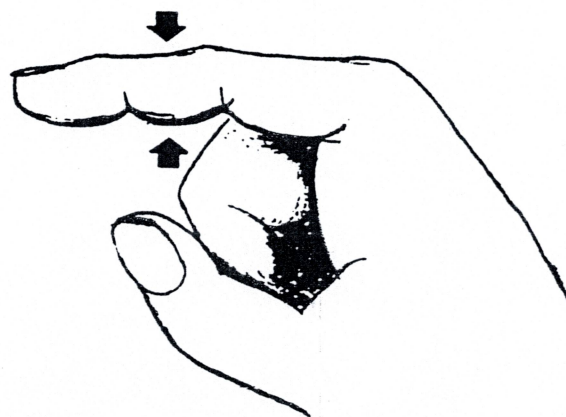
The Casual Shrug, The Loom Length. (I and a number of paddle builders use the term *loom* instead of shaft). This is a hand-to-hand span, measured with your hands hanging in a normal relaxed position at your sides (fig 2.3a). PLUS - two finger widths (fig 2.3b). This measurement can be tricky so take it several times to insure some degree of accuracy. I find a yard stick is the best tool for the job.

The Big "O" The Diameter of the Loom. The loom needs to fit comfortably into your hands. To accomplish this measure the span from the second joint of the thumb to the second joint of the index finger while forming a circle by touching the ends of the thumb and index finger (fig 2.4).

Getting the Finger The Inner Blade Width. This is the blade width at the WRIST, - the Wrist is the juncture of the loom and the blade. It is determined by the thickness of the second section of your index finger (fig 2.5).



(fig 2.4)



(fig 2.5)

Section three - Selecting the wood

Selecting the wood for your paddle

Early on when I began telling people about these skinny paddles, one of the most common remarks from the many detractors was that the Eskimo could only make them that size because that is all they had for wood. NOT TRUE! The Inuit used Sitka or Black Spruce to make their kayaks and paddles. Spruce trees of the northwestern United States grow to over 200 feet in height and 10 to 15 feet in diameter (fig 3.1). When they die or are knocked over for one reason or another, rains wash them down into rivers and beyond to the sea where they are dispersed along the coastline. If you ever see a photo of the Pacific or Arctic coastline from California to Greenland you will see beaches stacked up with a multitude of driftwood logs. The Inuit, using stone tools, split these huge driftwood logs into workable sizes. So the size of the wood definitely did not determine the size of their paddles.

Sitka Spruce is an almost white or creamy colored wood having a very fine grain, good strength, and light weight. You're probably asking "If it's so great, why aren't we making paddles with Sitka Spruce?" Frankly I would, but at today's prices it's up there with gold. Here in Florida, my wood of choice is Douglas Fir, another conifer that grows to 200 feet. Douglas Fir is light, not as light as Sitka Spruce, but it is stronger. Plus it is available and reasonably priced.

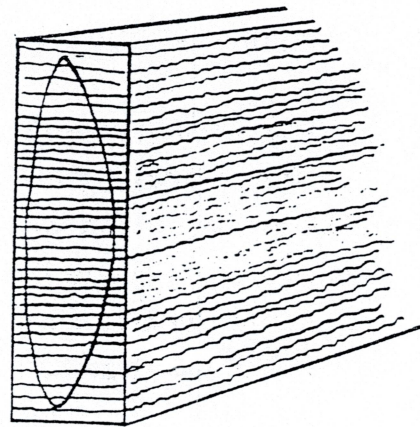
I find quarter-sawn Douglas Fir to be the wood most commonly used by woodworking shops and window and door manufacturers. Because these types of businesses use large quantities of wood, you may be able to find what you need and at a reasonable price. In your location you may be able to find other woods nearly equal to Sitka Spruce or Douglas Fir.



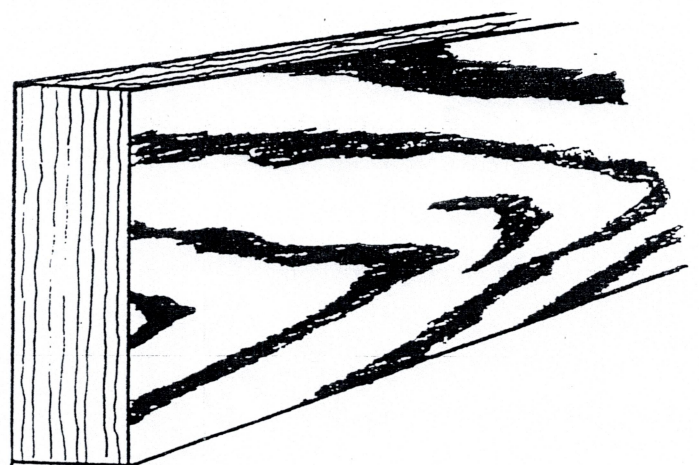
(fig 3.1)



(fig 3.2)



(fig 3.3)



(fig 3.4)

* NOTE - When discussing the grain of a wood, what I am talking about is its *growth rings*. Look at the end of any sawn piece of wood and you will notice alternating light and dark lines. These are the growth rings. The light rings represent rapid growth & light density. The darker rings indicate slow growth & heavy density. One light and one dark ring constitute one year's growth (fig 3.2). Count up the years of growth on your paddle blank. Just think - what you're holding is only a small section of the original tree!

Wood for paddles should be of *spar quality*; it should have fine, straight grain and be nearly free from knots. Wood like that will present no surprises and be easy to work. In order to have the greatest strength in the direction of the greatest stress, the wood-grain of your paddle must run from front-to-back (fig 3.3). It is called *vertical-grained* or *quarter-sawn wood*.

The grain of the lumber most commonly found in lumber yards or building supply houses runs from top-to-bottom (fig 3.4). It is weaker because the alternating layers can and will break down when placed under continual stress - such as paddling.

I like to be able to trim back to my finished size, so what I prefer is a rough sawn plank 8 feet long, 2 inches thick, and 6 inches wide. If you are 6 feet or more tall you will require a longer, wider plank. The ends usually have small cracks, wax or some other sealer, and the sides may be discolored, so I always plan on having to cut off at least 3 inches or more from each end. The thickness will need to be reduced to the loom diameter.

* NOTE - If buying a 2 inch by 6 inch piece of finished wood, it will actually measure $1 \frac{5}{8}$ inches thick, by $5 \frac{1}{2}$ inches wide.

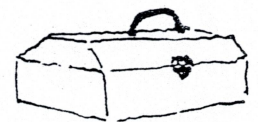
Section four - Selecting your tools

A WORD OF CAUTION - be wary of well intentioned friends who are woodworkers or those willing to lend you some of their tools (drawknife, spokeshave, or perhaps power tools). Unless you are familiar with a tool, I strongly advise against using it. I have had people from my classes take home a partially completed paddle, (an expensive piece of wood) only to call me later and ask me to get them another paddle blank. Through the use of unfamiliar tools they had ruined their paddle. The tools listed here will do a good job for you with a minimum outlay of money. Remember this program is planned so that NO woodworking experience is necessary.

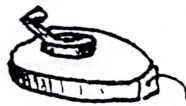
Your inventory of non-powered tools will consist of: layout tools, cutting tools, finishing tools, and some tools you may like to have in addition. You will need a box to keep all your tools in, this can be anything from a cardboard box to a fancy wooden tool case.

Layout Tools

First into your toolbox will be those tools which you will be using to measure and draw out the lines on your wood blank: a tape measure - 3/4 inches wide and 15 to 25 feet long (fig 4.1), a short chalkline with a supply of blue chalk, you will use this to make the long lines with (fig 4.2), a yard stick, one that is legible & STRAIGHT, this you'll use for the shorter lines (metal ones are nicer and aren't that expensive (fig 4.3), a square (plastic is okay), this is for making perpendicular lines (fig 4.4 & 4.5), some number 2 pencils, sharpened, and a pencil sharpener, nothing fancy, the little plastic school type will do (fig 4.6). A notepad will certainly come in handy when you need to make calculations.



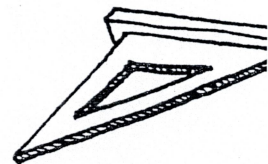
(fig 4.1)



(fig 4.2)



(fig 4.3)



(fig 4.4)

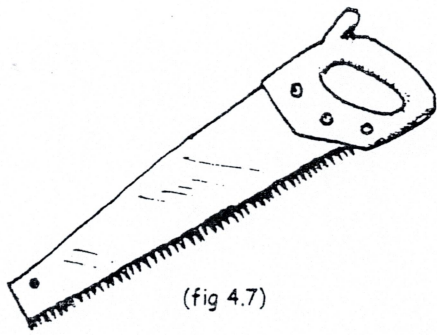


(fig 4.5)

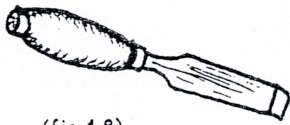


(fig 4.6)

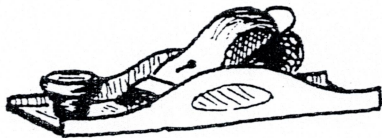
Cutting & Rough Shaping Tools



(fig 4.7)



(fig 4.8)



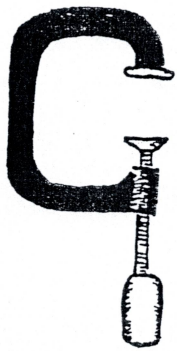
(fig 4.9)



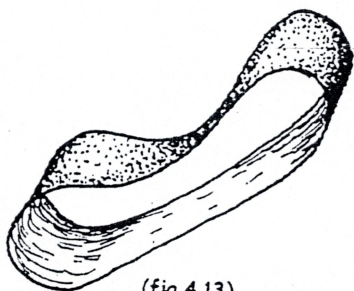
(fig 4.10)



(fig 4.11)



(fig 4.12)



(fig 4.13)

These are the tools with which you will carve and shape the paddle from the wooden blank starting up at you from the workbench, the one with all the lines on it. These tools are sharp - they will cut you just as easily as wood, so be careful. Take your time, speed will come with the experience you will gain as you progress. Adding to your toolbox you will need: A handsaw, any fine toothed, cross cut saw will do. I prefer the short Stanley "Tool-Box Saw" (fig 4.7). A wood chisel about 3/4 inch wide, with metal bound wood handles, but a plastic handle will do (fig 4.8). A block plane, this will be about 6 to 9 inches long, get one with thumbscrew blade adjustment (fig 4.9). A good block plane is well worth the money as it can be a lifetime tool. I also recommend you get a replacement blade for it (fig 4.10). That way, when the blade gets dull, you won't have to wait for it be resharpened. If you want to, the spare blade can be used in lieu of a chisel. You will need to securely hold your paddle to whatever you will be using for a workbench. I normally use 24 inch long sliding clamps (fig 4.11). I have also used 6 inch "C" clamps with success (fig 4.12).

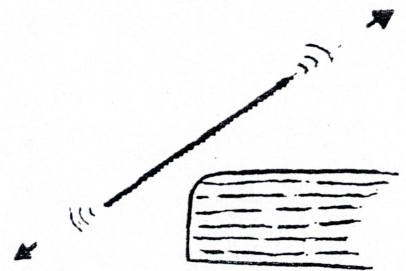
Finishing Tools

With these tools you will take your wood blank from a rough semblance to its finalized state. Before starting on your paddle, the first thing you get to make is a *Cabinet Maker's Sander*. In my shop, I have a power belt-sander. So, naturally, I use the same size belts on my sanding block. The sanding belt is 3 inches wide and 24 inches long (fig 4.13). You will need to buy at least one belt in each sanding grit - fine, medium & coarse. The *Cabinet Maker's Sander* is made from any piece of inexpensive white wood 1 inch thick, 4 inches wide, and 20 inches long.

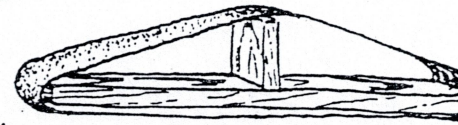
* NOTE - nominal sizes in finished wood are not as indicated - 1 inch thickness will actually measure $\frac{3}{4}$ inch, 4 inches width will measure $3 \frac{5}{8}$ inches.

First, reduce the white wood block to the width of your sanding block belt using your new block plane. Then measure and mark off two blocks, one $11 \frac{1}{8}$ inches long, the other $1 \frac{1}{4}$ inches long. Use your new saw to cut off the two blocks, sawing square to the wood. Using sandpaper, slightly round-over the ends of the longer block (fig 4.14). This will allow the belt to slide on, and to be tensioned easier. Now slip a coarse sanding belt over the longer block. Then slide the shorter block inside the sanding belt (fig 4.15). It may be a snug fit - that's okay, the belt will lengthen as you use it. Turn the short block perpendicular to the other block - this will be difficult at first. As it loosens up you will need to slide the short block towards one end of the long one to tension the belt (fig 4.16). This is cheap wood so you may want to buy a longer piece and make three sanding blocks, one for each grit. Sheet sandpaper, get three sheets of fine (220 grit), two sheets of medium (120 grit) and coarse (80 grit). PLUS - 2 sheets of wet-or-dry 400 grit sandpaper. Now you get to make a sanding block (fig 4.17).

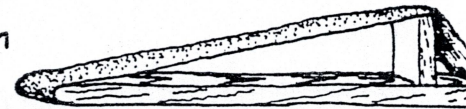
You should have some leftover wood from the wood block you started with. Cut off a block about 4 inches long. Round over all the edges with sandpaper. Use this sanding block with the sheet sandpaper. Tear a full-sized sheet of sandpaper first in equal halves, then quarters, ending up with eighths. These $\frac{1}{8}$ sheets will be what you use with the small sanding block, hand-held in place.



(fig 4.14)



(fig 4.15)

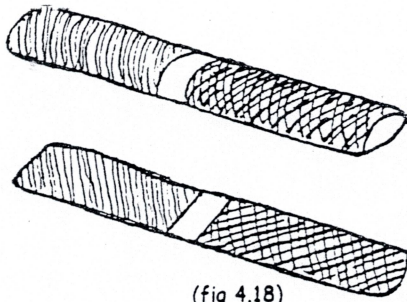


(fig 4.16)



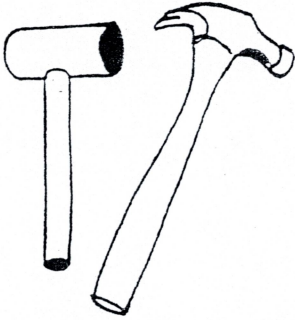
(fig 4.17)

Other Tools



(fig 4.18)

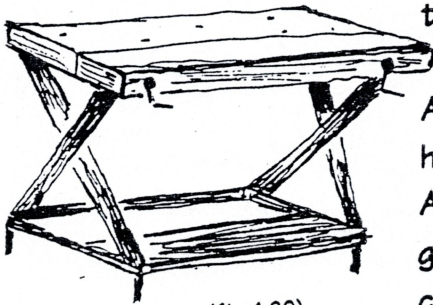
Wood rasp - the one to have for this project is called a *four-in-hand* or a *four patterned wood rasp* (fig 4.18). One side is flat, the other is slightly rounded. It has a both medium and coarse tooth patterns on each of the two sides. This can come in handy when shaping the wrist.



(fig 4.19)

A hammer is useful for pounding on your chisel or plane blade. One weighing less than 16 ounces, a wood one will do just fine (fig 4.19).

For a workbench, when I'm on the road, I use a *workmate* folding bench (fig 4.20). Two young ladies from one of my classes used a picnic table for a workbench, and instead of clamps used rope, tying their paddle blanks to the table. Hey, whatever works - use your imagination!

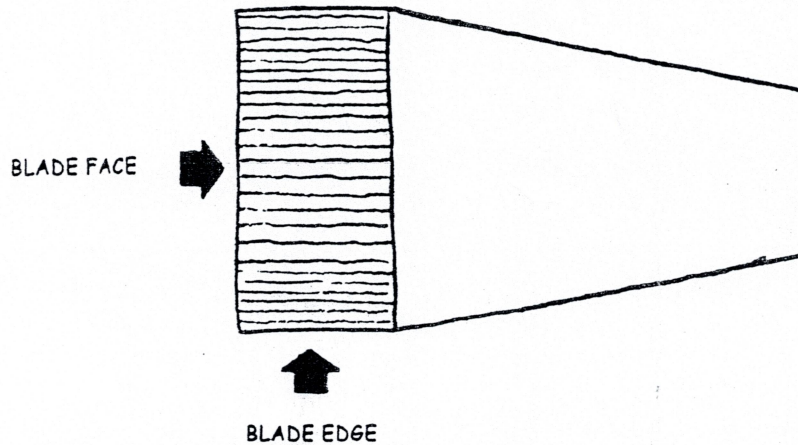


(fig 4.20)

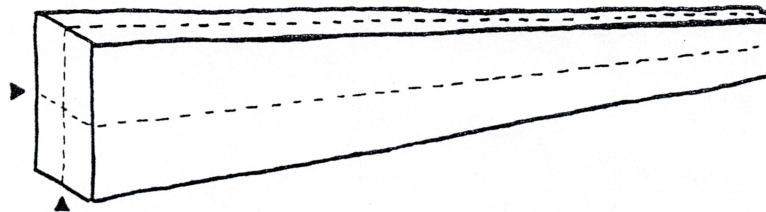
Any and all of these tools may be found in most hardware stores, building supply stores, even K-Mart. And if you look, they can be found at flea markets and garage sales. Depending on the source and condition, the cost can run from downright cheap to full retail. I always recommend you buy good tools.

Section Five - Laying out the Reference Lines

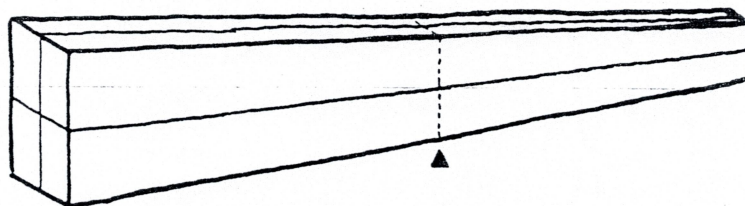
* NOTE - The wide side of the blank will be referred to as the Blade Face. The narrow side of the blank will be referred to as the Blade Edge.



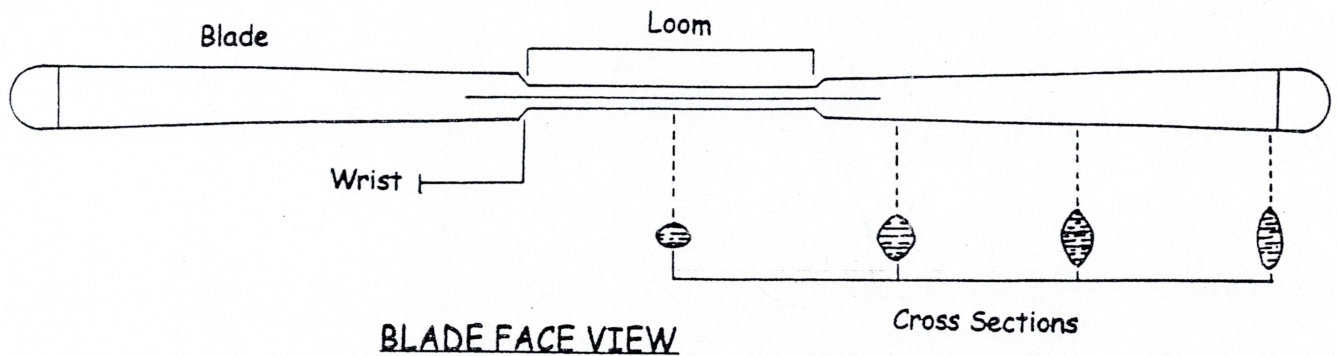
CENTERLINES - (measure from edge-to-edge, line runs end-to-end)
On each end, and on all four sides locate and mark the edge-to-edge center. Use your chalkline to strike a Centerline the entire length on all four sides. Then use your straightedge and a pencil trace over the chalk lines so they become more permanent. Also be sure to also draw them across the ends.



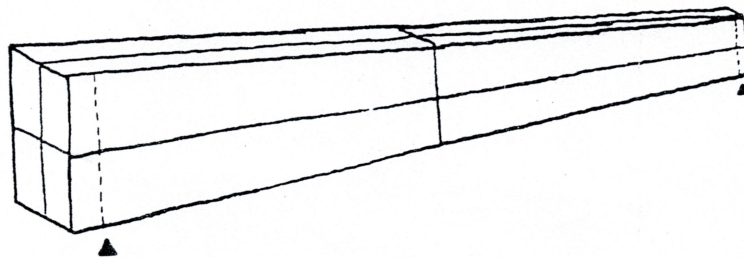
MIDLINES - (measure from end-to-end, the line runs edge-to-edge)
Measure and mark the center of the end to end length. Make one continuous line around all four sides. This is the MIDLINE.



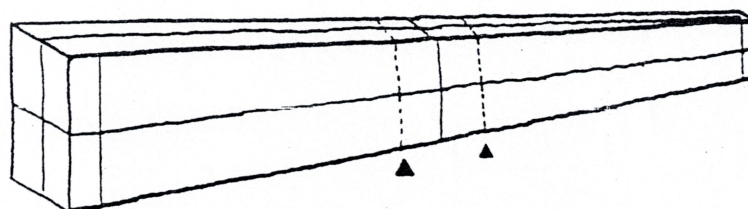
ANTHROPOMETRIC LINES (now you add to the existing lines your anthropometric measurements)



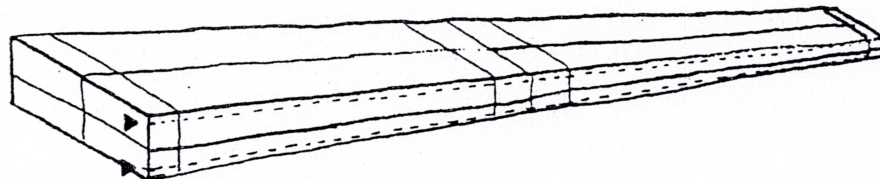
LOA (length overall) - We will begin on the Blade-face. Starting from the MIDLINE outward, measure and mark off half of your reach (see fig 2.1). Now do this to the other end. Use your square to make each of these measurements continuous lines around the entire blank at both ends. You have now defined the ends of the paddle blades and the LOA (Length Overall) of your paddle.



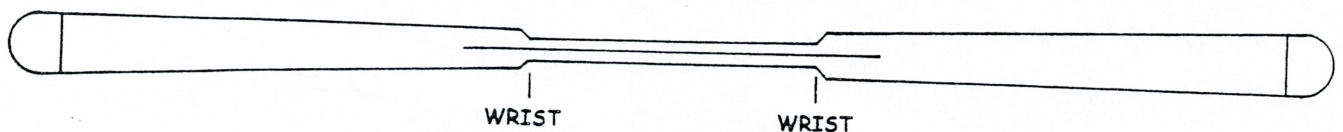
Loom Length - Remaining on the Blade-face. Starting from the MIDLINE outward, measure and mark off half of your hand-to-hand measurement (fig 2.3a&b). Now do this to the other end. Use your square to make each of these marks a continuous line around the entire blank. You have now defined the length of the Loom and the length of the paddle blades.



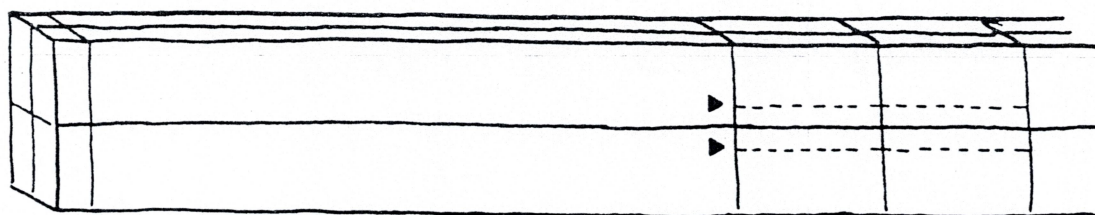
Maximum Loom Diameter - Now move on to the Blade Edge. At one and then the other blade end, from the Centerline outward, measure and mark off half of the Loom diameter. (fig 2.4). Use your chalkline for this. Repeat this on both sides of the Centerline. Turn the blank over to the other Blade-edge and repeat the entire procedure. Using the yard stick and a pencil, trace over the chalk lines making them more permanent. These lines not only define the maximum diameter of the Loom, they also define the maximum face-to-face thickness of the paddle.



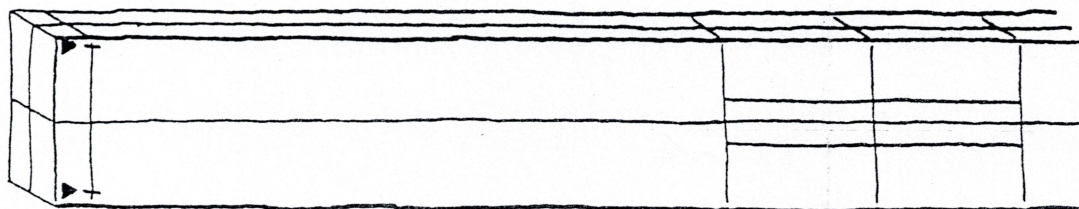
* NOTE - The juncture of the outer end of the loom and the inner end of the blade will be referred to as the WRIST.



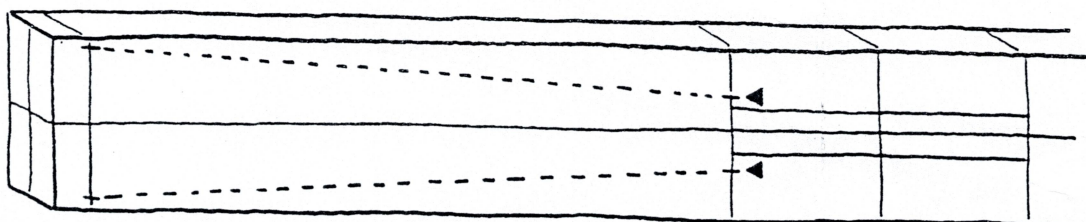
Minimum Loom Diameter - Now move back to the Blade-Face. At one of the Wrists, from the Centerline outward, measure and mark off half of the Loom diameter (see fig 2.4) - LESS 1/8 inch. Now on the same side of the Centerline, do the same thing at the other Wrist. Using your straightedge, connect the two marks. Then repeat this on the other side of the Centerline. Now turn the blank over to the other Blade-face and repeat the entire procedure. By doing this you make the Loom thinner top-to-bottom than front-to-back. This step will help you create that oval form that will fit so nicely in your hands.



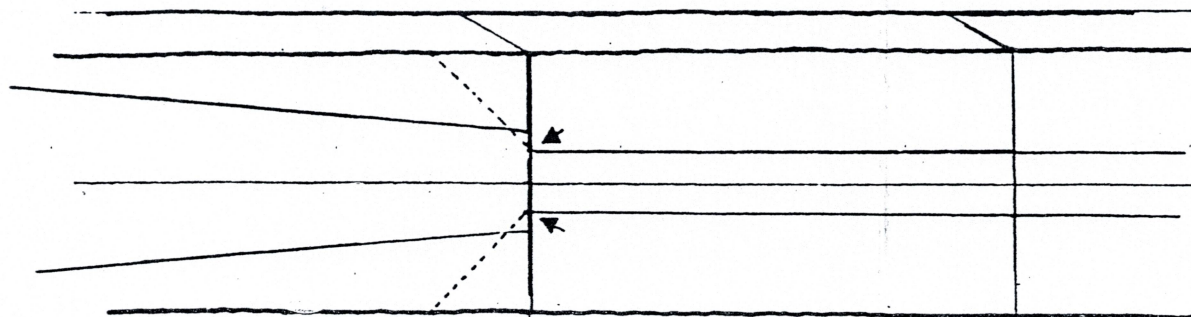
Outer Blade Width - Still on the Blade-Face, at each of the paddle's ends, from the Centerline outward measure and mark - half of the blade width (see fig 2.2), then the same to the other end. Now turn the paddle over to the other Blade-Face and do the same thing again. This defines the blade's outer width.



Inner Blade Width - On the Blade-face, at the end of the Loom, from the Loom Diameter Line outward, measure and mark off the thickness of your index finger (see fig 2.5). Do the same thing to the other side. Then to the other end of the loom. Repeat these steps onto the other Blade Face. This is the blade's narrowest width. Using your yard stick, draw a line connecting the blade's narrowest point to the blade's widest point. Do this to both sides and ends on one Blade Face. Then repeat the entire procedure to the other Blade Face. You have just drawn a rough outline of the paddle, and should be able to see the blades and the loom.

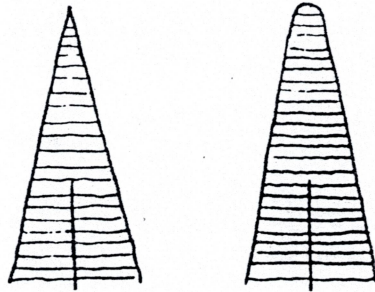


Wrist Angle - Rather than letting the Inner End of the Blade run straight up and down or 90° which is uncomfortable in the hands. Use your square to draw a 45° line outward from the point where the Blade End and the Loom diameter come together through to the blade Face. Do this to both sides of the Centerline and both Wrists. Now turn the blank over and repeat the procedure to the other Blade Face. This will feel much better on your hands, and give you excellent paddle control.

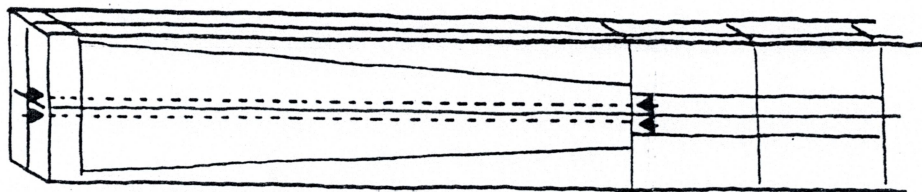


FINISHING LINES (these are the lines to which you will be cutting, shaping, and finishing to) Sharpen your pencils so you can draw some very fine lines.

* NOTE - If you were to cut and shape right up to the drawn lines, the edges of the blades and loom would be sharp and very uncomfortable in your hands. Instead to create softer, rounded edges, you will need to draw some lines parallel and close to many of your previously drawn lines. Pay close attention, because the span between these new lines and the reference lines will vary.

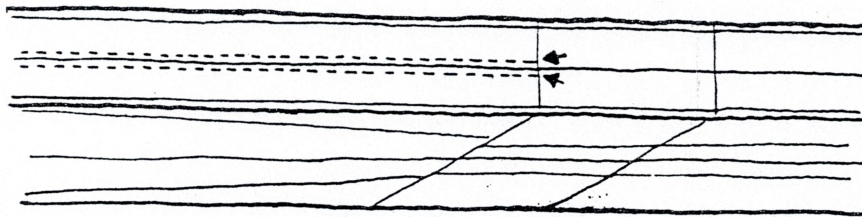


Blade Face - On the Blade Face at one, and then the other Outer Blade End, measure and mark off 1/4 inch outward from the Centerline. Then do the same at the wrist. Then draw a connecting line from the Outer Blade End to the Inner Blade End. Do this on both sides of the Centerline and to both ends of the paddle. Turn the paddle over and repeat the process to the other Blade Face. DO NOT draw these lines across the Loom. But, DO connect these new lines across both ends.
* NOTE - When finished, this will make a 1/2 inch wide flat on the Blade faces.



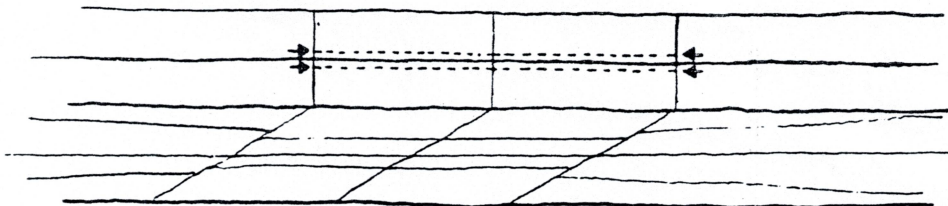
Blade Edge - On the Blade Edge at one and then the other Outer Blade End, measure and mark off 1/8 inch outward from the Centerline. Do the same at the other wrist. Then draw a connecting line from the Outer Blade End to the Inner Blade End. Then draw a connecting line from the Outer Blade End to the Inner Blade End. Do this on both sides of the Centerline and to both ends of the paddle. Turn the paddle over, and repeat the process to the other Blade Face. DO NOT draw these lines across the Loom. But, DO connect these new lines across both ends.

* NOTE -When finished this will make a 1/4 inch wide flat on the paddle's edge.



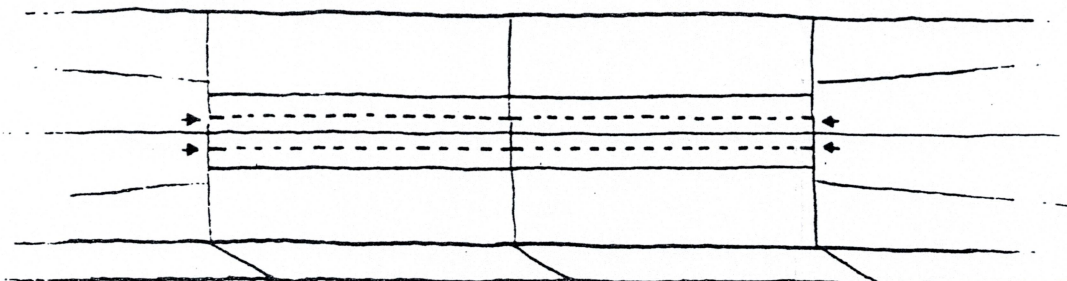
Loom - On the Blade Edge at one, and then the other Wrist, measure and mark off 1/4 inch outward from the Centerline. Then draw parallel lines connecting the marks on each side of the Centerline. Turn the paddle over, and repeat the entire procedure on the other Blade Edge.

* NOTE- When finished, this will make a 1/2 inch wide flat across the top and bottom of the Loom.



Loom - On the Blade Face at one, and then the other Wrist, measure and mark off 1/8 inch outward from the centerline. Do this on both sides of the Centerline. Then parallel lines connecting each side of the Centerline. Turn the paddle over, and repeat the process on the other Blade Face.

* NOTE - When finished, this will make a 1/4 inch wide flat across the front and back of the loom.

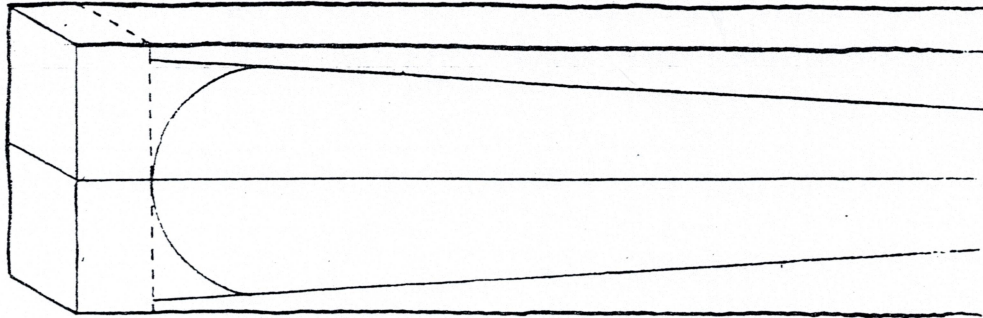


These dimensions are a good starting place. After you've made several paddles you will probably come up with your own ideas on what any of these dimensions should be. Keep this first paddle as a benchmark - DO NOT make any changes to it. Make changes on your future paddles.

By now your paddle blank has lines running all over it.

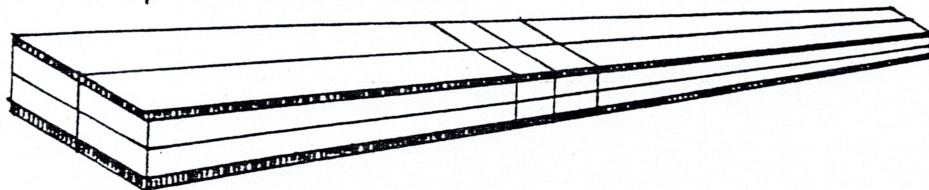
Section Six - Cutting Out & Rough Shaping

Blade End - This will be your first cut. * CAUTION - Make your cut square across the Blade End and square to the Blade Face. Cut close to but not right on the line. Later you will deal with rounding the Blade Ends; for now - just square them off.



If you remove any of the lines in the process
STOP and REESTABLISH ALL LINES

Paddle Thickness - The next step is to reduce the paddle blank to the maximum thickness of the Loom along the Blade-Edge. (see fig 2.3)
* If you have a blank that is already the thickness of the maximum Loom diameter then this step is not necessary. If not, let's proceed. This is not a good area to try and saw off the excess, so here I recommend you use your plane. You will be removing all the wood outside of the Loom Diameter Lines on the Blade Face from end to end. Because there is quite a bit of wood to remove, you will want to be somewhat aggressive with your wood removal. Be sure to securely clamp one end of the blank to your workbench. Use your square to ensure the surface remains flat and square. Keep checking. As you work, you will gain confidence and become more proficient and faster.

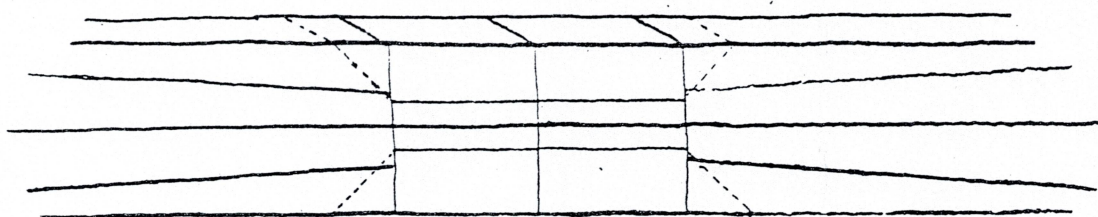


REMOVE SHADED AREA

you WILL remove a lot of your lines in this step
STOP and REESTABLISH ALL LINES

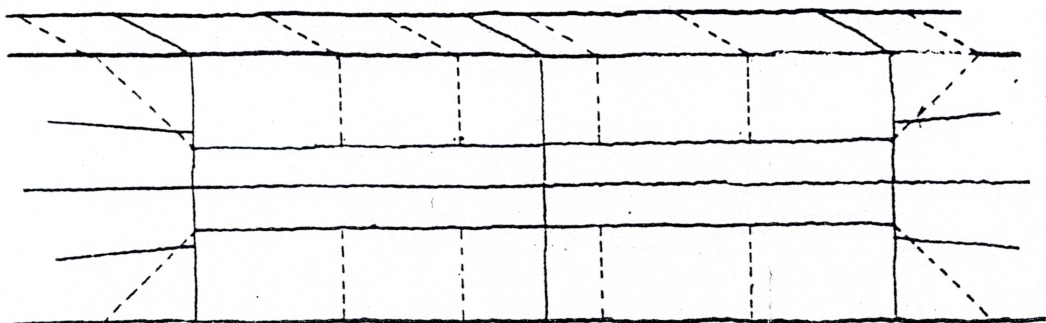
* NOTE - An alternative would be to take the blank with all the lines drawn on it to a woodworking shop or mill and have them do it for you on a large band saw. I checked around and most shops said they would do a job like that for twenty bucks or less. YOUR DECISION.

Loom - On the Blade-Face, at one and then the other Wrist, make a cut following the 45° angled line going from the outer edge of the wood blank inward to the Loom-Line. Again - make sure you cut square across the wood, and DO NOT make these cuts too close to the line; give yourself at least a 1/16 inch clearance. If you feel a little unsure, make it a 1/4 inch. The excess can always be taken off with the plane or sander.

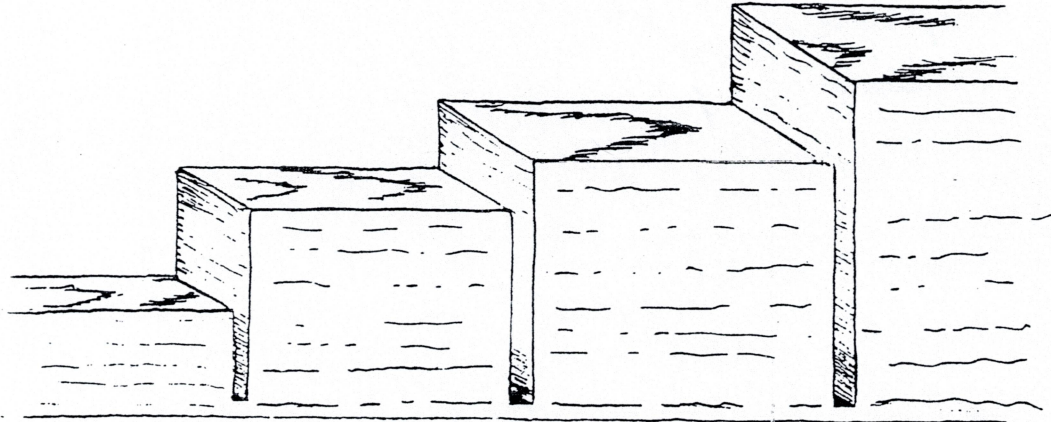


If you remove any of the lines in the process
STOP and REESTABLISH ALL LINES

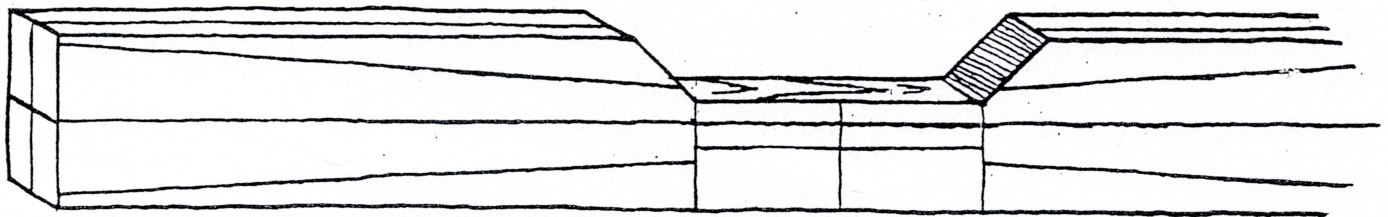
* REMEMBER - It's easier to leave too much wood and trim back, than to take off too much and have to figure out IF you can replace it. Do this to both sides of the Loom. You should now have four angular cuts. In between these cuts make 3 to 4 saw cuts going from the Blade Edge inward to within an 1/8 inch of the Loom Line.



Using a clamp, fasten one end of the blank to your workbench, then using the chisel or the blade from the plane make shallow horizontal cuts, removing a little of the wood each pass. As you become more familiar with the technique, you will begin taking off more.

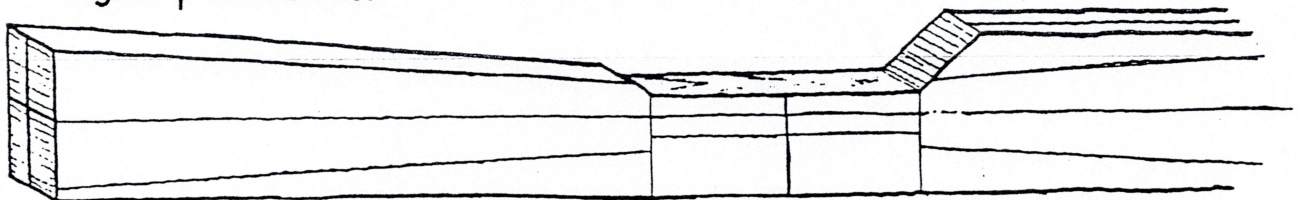


The vertical cuts allow you to take off layers of wood without going beyond the end cuts or below the Loom Line. When completed, use your chisel to smooth out the surface.



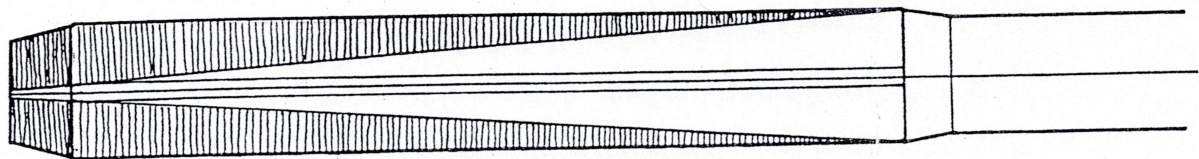
STOP and REESTABLISH ALL LINES

Blades - Next, on the Blade-Face cut along the line going from the Outer Blade End to the Inner Blade End. Again - be sure to make your cuts square across the wood and don't cut too close to the line; give yourself at least a 1/16 inch clearance. If still a little unsure, make it a 1/4 inch. The excess can always be taken off with the plane or sander. Repeat until all four Blade Edges have been cut. When completed use your plane to smooth and straighten out the edges, taking the edges right up to the line.



STOP & REESTABLISH ALL LINES

Blade Taper - The next step is to change those thick, flat blade surfaces to tapering ones. Working on the Blade Face, I usually work from the Wrist outward towards the end. It will be full thickness at the wrist sloping down to those 1/8 inch lines each side of the Centerline at the blade's end. On the same side do both blade faces, then turn the blank over and repeat the procedure on the other side. Work slowly making sure the surface remains flat and square.

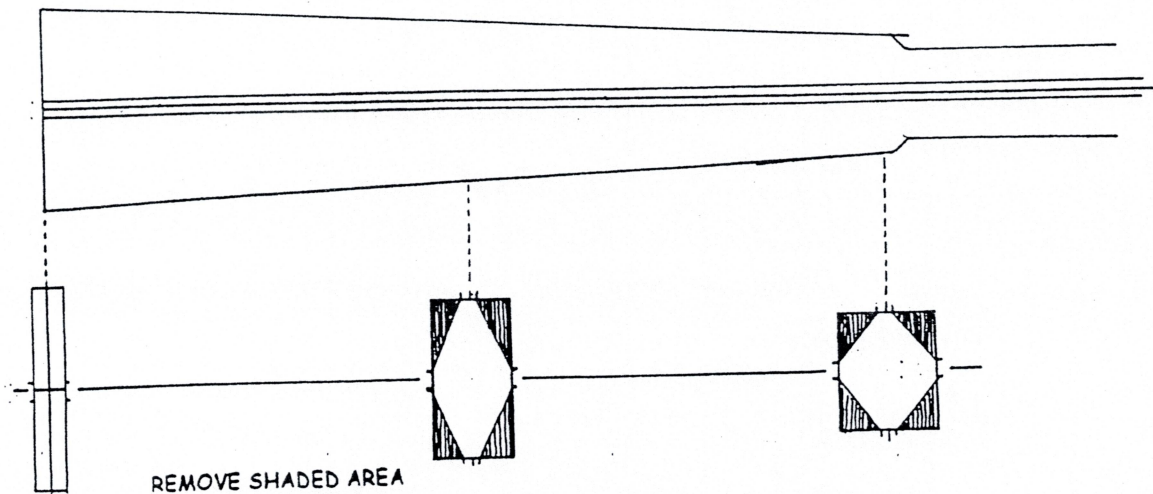


REMOVE SHADED AREA

REESTABLISH ALL LINES

Once the blank is profile shaped, the fun begins. Using a clamp, fasten one end of the blank to your workbench, you may want to put a piece of wood between the blade face and your workbench and another piece of wood between the clamp and the blade; this will prevent tool marks. Using your chalkline, on the Blade face, refresh the Centerline on both sides. Then refresh the parallel lines 1/4 inch each side of the centerline. Do the same thing to the other Blade Face side. Now Break out your block plane.

The goal is to make an angular flat surface running the length of each side of the blade, extending out from the 1/4 inch Finishing Lines on the Blade Face to the 1/8 inch Finishing Lines on the Blade Edge. Try not cross over the lines.



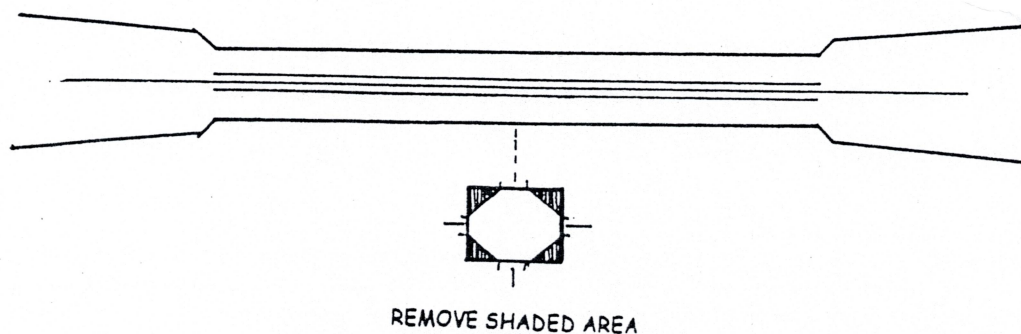
REMOVE SHADED AREA

REESTABLISH ALL LINES

Take your time, learn how to use the tools and become familiar with the wood. Don't work to completion, just take it close to the Finishing Lines. Then move on to the other side of the same blade face. Proceed to the other end on the same Blade Face side and repeat the process. When one entire Blade Face side is completed, turn the blank over and repeat the entire procedure. By now you should have the blank to the point where it is recognizable a paddle. When you've done all that, then turn the paddle over and start over where you began. Only now, you should be working right up to the finishing lines. When you have completed that step on all involved faces, critically look at the paddle as a whole and make whatever adjustments you feel are needed.

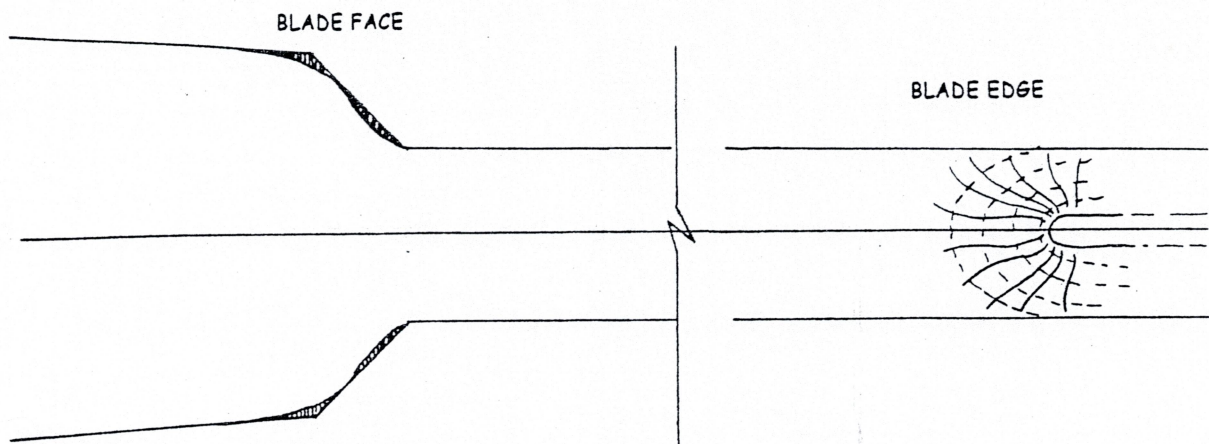
Now would be a good time to check and
REESTABLISH ALL LINES

LOOM - This will be similar to shaping the blades. Because the length is rather short, you will be working with your chisel or plane-blade. On the Blade-Edge, work from the 1/4 inch lines each side of the Loom's Centerline down and outward to the 1/8 inch lines each side of the Blade Face Centerline. This will give you a 1/2 inch flat surface on both Blade-Edges and a 1/4 inch flat surface on both Blade-Faces. What you are doing is making a somewhat diamond shape having the widest part of the Loom on the Blade-Edges and the narrowest part on the Blade-Faces.



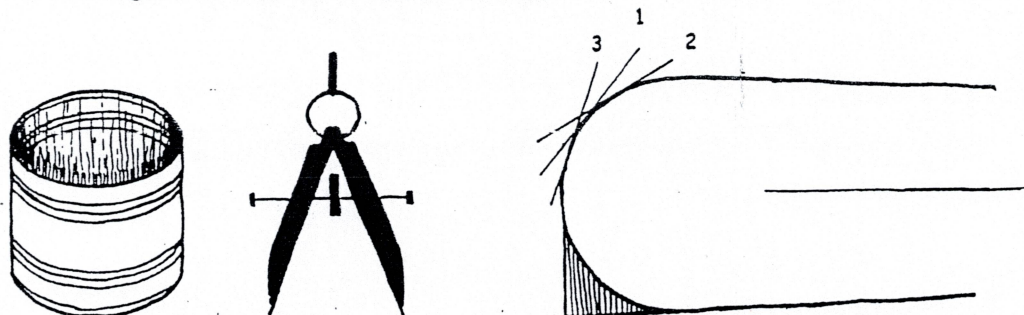
REESTABLISH ALL LINES

WRIST - Lets move on to shaping the wrist. This will be a blending of the inner blade end into the loom. Because this is the place your hands will be the greatest amount of time, make it as fluid as possible. This is the area you will really be carving. Use your chisel or plane-blade. Should you decide to, this is the place to use that *four-in-hand* wood rasp. You may want to wear gloves. Carefully shape the wrist until it looks similar to the drawing below. Work carefully and slowly.



REESTABLISH ALL LINES

Rounding the Blade Ends - I find a one pound coffee can makes a pleasing curvature for drawing the blade ends. Alternatively you could use coffee cans ranging from two pounds to three pounds, or even a one gallon paint can. If you want to be more precise, you could use a compass to make a radlused end. Again, this is up to you. Once you have decided on a curvature and drawn it, cut it out. Use your saw to make several short cuts along the line of the curve. Then use the Cabinet Maker's Sander with a coarse grit belt to make it round. Change to a medium grit belt and smooth it out.



REESTABLISH ALL LINES