

# Making a West Greenland Paddle

by Chuck Holst

## **The Greenland paddle**

The Greenland paddle has become increasingly popular among sea kayakers in North America, Europe, and other parts of the world. Apart from its romantic association with the people who taught Europeans to kayak and to roll, the narrow-bladed Greenland paddle is popular because it is easy to brace and roll with and is not very susceptible to strong winds. Also, because it slips a little at the beginning of a stroke, it is easier on the muscles, and thus less fatiguing on day-long trips than wide-bladed “Euro”-style paddles.

A further benefit for northern kayakers is that the Greenland paddle is adapted for paddling in freezing conditions. The shoulders where the blades and loom meet

Inuit paddles across the Davis Strait, the loom is not carved in any way that would interfere with the sliding stroke. Traditional Greenland paddles have bone tips, and usually bone edges, to protect them from sea ice, but outside Greenland and even in Greenland itself, most modern replicas are made entirely of wood.

A Greenland paddle is narrow so the hand can grasp the blade near the end without having to grasp the tip, which on a traditional paddle is connected to the blade by a mortise and tenon joint. So the extreme width of a Greenland blade should be no wider than the paddler can grasp between the web of the thumb and the second joint of the forefinger. A paddle that has a blade too wide to grasp is not a Greenland paddle, because it cannot be used like one.



Fig. 1. East Greenland paddle.



Fig. 2. West Greenland paddle.

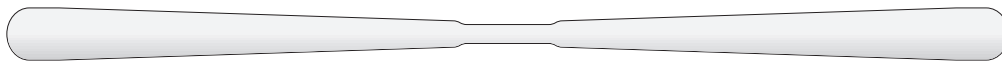


Fig. 3. Storm paddle.

make an ice-coated loom easier to grip, while the narrow ends of the blades, which are immersed in water while paddling, offer an ice-free grip for emergency braces and rolls.

The Greenland paddle is also popular because it is very easy and inexpensive to make with simple tools in a home workshop, which is the subject of this article.

Working entirely with hand tools, it is possible to make a Greenland paddle with less than \$10 worth of materials and 24 hours of labor.

## **What is a Greenland paddle?**

A Greenland paddle is a paddle in the style of those traditionally used by the Inuit of Greenland. It is characterized by long, narrow, tapering blades and a relatively short loom, or shaft, that is typically one-quarter and no more than one-third the length of the paddle. Unlike

## **Greenland paddle styles**

In Greenland there are two basic paddle styles and many variations in between. On the east coast of Greenland, in the Angmagssalik (or Ammassilik) district, the wood part of the paddle flares gradually from the loom to the end of the blade (Fig. 1). The edges of the blades are made from whale ribs, the ends of which create shoulders that mark the ends of the blades. The tips of the blades are carved from the jawbones of whales. Typically, they are made a little wider than the rest of the blade, possibly to keep the hand from sliding off the end when the paddle is used in the extended position. However, when used with the normal forward stroke, this style tip is noisier than the West Greenland style tip. This is the paddle style used by members of the British Arctic Air Route Expeditions of 1930–33, led by Gino Watkins, who was taught to kayak by

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Manasse Mathaussen, who at his death in 1989 was the most skilled kayaker in Greenland.

On the west coast of Greenland, paddles typically have a shoulder carved into the wood where the blade meets the loom, bone edges are usually shorter and faired into the blade, and the bone tips are more likely to be the same width as the rest of the blade (Fig. 2). However, since there was a great deal of movement between the east and west coasts, especially during the twentieth century, there are many intermediate styles as well. Manasse Mathaussen himself learned to kayak on the east coast, but spent most of his kayaking career on the west coast.

A third type of paddle is called the storm paddle, because its primary use is in high winds. The storm paddle resembles a standard Greenland paddle, except that the loom is only about as long as two fists, while the blades are of normal length. The total length is about the height of the paddler. This paddle is used only with a full sliding stroke, which buries the blade deep in the water while exposing little of the upper end to the winds. I carry mine as a spare on my foredeck, where it is easy to grab and roll up with should I lose my standard Greenland paddle in a capsize. Because the storm paddle is easier than the standard paddle to move underwater, many prefer it for rolling.

### History of the Greenland paddle

No one knows how old the Greenland paddle is, but it is unlikely to be the thousands of years that are sometimes claimed. The ancestors of today's Greenlanders, known as the Thule culture, moved east from Alaska and northern Canada only about a thousand years ago, about the same time that Eric the Red was settling southwest Greenland. Since a different style of paddle with a longer loom and much shorter, leaf-shaped blades was used until recently by many Inuit west of Greenland, the Greenland paddle may have evolved after the Thule Inuit reached Greenland.

There is one ambiguous clue that the Greenland paddle may be only a few hundred years old. The oldest known surviving Greenland kayak, collected in 1613, has been on display at Trinity House in Hull, Humberside, England since the early 17th century; however, the paddle that accompanies it is of the older leaf-bladed style. John Brand, who took the lines of the kayak and documented it in his *Little Kayak Book*, speculates that the development of the Greenland paddle may have been influenced by the shape of European oars. However, the oars used with Greenland *umiaks*, or open boats, have relatively wide blades, unlike either European oars or

Greenland paddles, and I question whether the European example would influence one and not the other.

My own guess is that the Greenland paddle and the sliding stroke evolved together. The unadorned shape and dimensions of the paddle make it easy to slide the paddle back and forth in the hands, and in fact, Greenlanders typically slide both hands out onto one blade for leverage when bracing, rolling, and making sweep turns. Also, many Greenlanders incorporate a sliding stroke into their forward stroke.

### The sliding stroke

In the sliding stroke, the paddle slides back and forth through the hands as the kayaker strokes first on one side, then the other. You might call it the Greenland version of the marathon canoe racer's sit n' switch style, except that the hands never leave the paddle.

In the full sliding stroke, which is used mostly with the storm paddle, the paddler begins a stroke with one hand near the middle of the loom and the other on the upper blade about a shoulder width away. During the recovery phase, the top hand slides down the blade to meet the bottom hand, and the bottom hand then slides out onto the other blade to become the top hand for the next stroke.

In what I call the short sliding stroke, the paddler begins a stroke with the bottom hand grasping the loom and the root of the bottom blade and the top hand grasping the top blade about six inches from the loom. During the recovery phase, the top hand slides down the blade to the loom, and the bottom hand then slides out about six inches onto the other blade to become the top hand. This stroke was formerly practiced in the Angmagssalik district of Greenland, and perhaps in other districts as well. In the film *Palos Brudafaerd (Palo's Wedding)*, filmed by Knud Rasmussen in Angmagssalik in 1932, all the kayakers can be seen using this stroke.

In *Watkin's Last Expedition*, F. Spencer Chapman, who learned to kayak in Angmagssalik a year or two before *Palos Brudafaerd* was filmed, says: "When you are paddling a kayak you keep on passing the paddle to and fro in your hands so that as much of the blade as possible is under water at each stroke." Extending the paddle by moving it between the hands like this allows more control and makes bracing quicker and easier. Since the kayaker is used to sliding the paddle, it is easy to turn a short extension of the paddle into a long one when conditions warrant. It is because of the sliding stroke that I sometimes call the Greenland paddle the "variable-length paddle."

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### Making a West Greenland paddle

Though it is now easier to buy a ready-made Greenland paddle than it used to be, it is far less expensive and much more satisfying to make your own. One reason to make your own is that the cost of materials for a Greenland paddle is only about \$10 to \$20, compared to \$120 to \$220 for a ready-made version. Another reason is that you can custom-fit the paddle to your dimensions; many ready-made paddles have looms that are too long or blades that are too wide for the average paddler. A third reason is that many paddles sold as Greenland paddles are not as authentic as one you can make yourself.

This article describes how to carve a West Greenland kayak paddle from a two-by-four. It is based on John Heath's article, "The Do-It-Yourselfer's Greenland Paddle," in the Winter 1987 issue of *Sea Kayaker* and on my own paddle-making experience. As you refer to the step-by-step illustrations in Fig. 7, keep in mind that the column on the right shows approximately what the paddle would look like if you cut it through the center after each step, while the bottom row shows sections of the completed paddle.

### Materials

The Greenland Inuit made paddles from anything that washed up on shore. John Heath recommends pine, fir, spruce, or ash. George Gronseth recommends cedar because it is easy to work and has soft splinters. I prefer cedar for its light weight, though it does mar more easily than some other woods. Choose a two-by-four that is at least 1-1/2 inches by 3-1/2 inches in section and 7 to 8 feet in length. It should be seasoned and straight. Ask for clear finish-grade wood. In cedar, this would be A- or B-grade. However, not all lumber yards carry finish-grade lumber, so you might have to sort through stacks of standard construction-grade lumber to find something usable. Most lumber yards will let you do this, if you are reasonably neat about it.

The grain should be fine, straight, and more or less parallel to the sides of the plank. Knotholes should be small and few, if not absent entirely. Sometimes you can find a long enough clear section in a 12-foot two-by-four when you can't find a clear 8-foot one. Expect to spend about eight dollars at your local lumber yard for an 8-foot standard-grade cedar two-by-four, or twice as much for a clear A-grade cedar two-by-four.

### Required Tools

The following instructions assume that you have at least a hand saw, and preferably a band saw, to cut out

the blank. Further shaping can be done with any combination of the following tools: a knife, a drawknife, a plane, a spoke shave, Surform-type perforated metal tools, and sandpaper. Whatever you use, make sure it is sharp.

Since I don't have a band saw, I usually cut out the blank with a handsaw, then smooth the cuts with a plane before marking the blank and removing more wood. I do most of the rough shaping with a drawknife and a spoke shave. For fine finishing, I use a spoke shave, sandpaper, and 0000 grade steel wool.

### A note on shaping the paddle

Carving a curved surface from a rectangular piece of wood, such as a two-by-four, is done by making successive approximations of the final shape. Using guidelines drawn on the wood, you will cut out a blank that, in section, has four corners and sides. You will then draw additional guidelines on the blank and cut away the corners between them to create, in section, a shape with eight corners and sides. This is as far as the guidelines in Fig. 7 will take you. After that, you are on your own as you cut away the eight corners to make 16, then the 16 corners to make 32, and so forth.

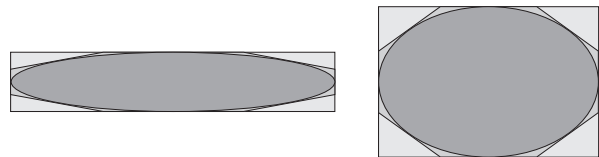


Fig. 4. Approximating the shape within.

It might help when shaping the paddle to imagine that there is a shape inside that you are trying to free. The guidelines in step 4 of Fig. 7 are designed to create facets on the blank that touch the curved surface of the hidden shape in approximately the center of each facet (see Fig. 4). As you create additional facets, try to follow the same principle. Don't be mechanistic about it, however, for the form underlying the facets is rarely symmetrical. Look at the sections at the bottom of Fig. 7 to see how the shape changes between the loom and the tip of the blade, and use touch and sight to create an organic shape that flows together and looks and feels right to you.

### Go with the grain

When carving wood, always cut with the grain; otherwise, you are likely to gouge the wood. To see what is meant by cutting with the grain, look at Fig. 5. Note that the grain of the wood meets the surface that is

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being shaped at an acute angle. Viewed from the side, the surface of the wood and the wood grain make a series of wedges that point in the direction you should cut (heavy lines in Fig. 5). If you cut against the grain, as in Fig. 6, your blade will try to follow the grain into the wood. Even if the blade cannot go far into the wood because it is held in a plane or a spoke shave, it may still tear the wood rather than cut it.

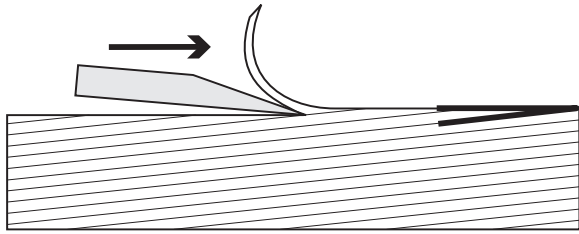


Fig. 5. Cutting with the grain.

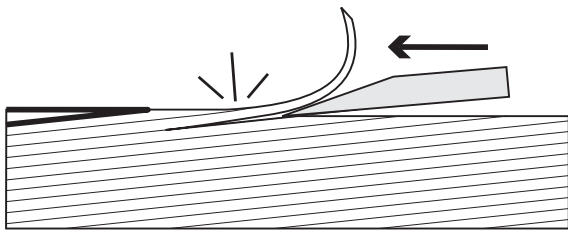


Fig. 6. Cutting against the grain.

### Step 1

The first step in making a Greenland paddle is to calculate the paddle's dimensions, which are based on your own dimensions. Note, however, that the traditional Greenland paddle is proportioned for the traditional Greenland kayak. Traditional proportions should work fine for similar-sized modern kayaks, but if you have a wide kayak (over 22 inches) or an unusually high foredeck or seat, you might need to lengthen the paddle slightly. As you read the following descriptions, please refer to step 1 in Fig. 7.

**Overall length (L).** The overall length of the paddle should equal an arm span and the distance from the elbow to the wrist. For a slightly longer paddle, which was preferred by some Greenlanders for cruising, measure an arm span and a cubit (which is the distance from the elbow to the fingertips), or as high as the paddler can reach with the fingers hooked over the end of the paddle. For me, both methods yield 85 inches overall for the longer paddle. None of the Greenland paddles I have seen documented exceed 82 inches, though paddles in Baffin Island could reach 110 inches.

Note that the method of measuring a paddle by reaching up while standing is affected by the length of the paddler's legs, which has nothing to do with his seated height.

**Length of the loom (S).** The length of the loom, or shaft, should be about the width of the shoulders or the span of the grip with the paddler's elbows against the ribs and the forearms straight out. Normally, the thumbs and index fingers grasp the ends of the loom while the last three fingers grasp the roots of the blades, so your measurement using the second method should be from center finger to center finger. For me, both methods yield about 18 inches, though 20 inches seems to be fairly common among documented paddles.

If in doubt, err on the short side. Then, if experience shows that the loom is too short, it can be lengthened by whittling away part of the blade roots—or you can use the sliding stroke.

**Thickness of the loom (T).** In section, the loom is a rounded rectangle or oval with the long axis perpendicular to the plane of the blades. Make the long axis of the oval equal to the thickness of the two-by-four, which is about 1-1/2 inches. **T** is the other axis of the oval (the short axis). Heath suggests making it 1-1/8 inches to 1-1/4 inches, though 1 inch by 1-1/2 inches seems most common among the documented traditional paddles. If in doubt, use the larger figure, since you can always reduce it later. The resulting loom should fit into the oval formed by touching the tip of your forefinger to the ball of your thumb.

**Width of the blades (W).** Make a wide C with your index finger and thumb. To use the paddle in the extended position, the maximum width of the blades should be no more than you can grasp comfortably between the second joint of the index finger and the web of the thumb. For me that is about 3-3/8 inches. Few authentic blades exceeded 3 inches and many were less. The blades taper to half the maximum width at the blade roots.

**Procedure.** Begin by trimming your two-by-four to the overall length (**L**). Draw reference lines at right angles to each other down the center of each face. One set of reference lines will be midway between the ends. Draw lines across the two-by-four to mark the ends of the loom (**S**).

### Step 2

Refer to step 2 in Fig. 7. Establish the 1/2-inch thickness of the blade tips by drawing tick marks 1/4 inch from the center line at the ends of the narrow (1-1/2-inch-wide) faces. Draw straight lines from these tick marks to

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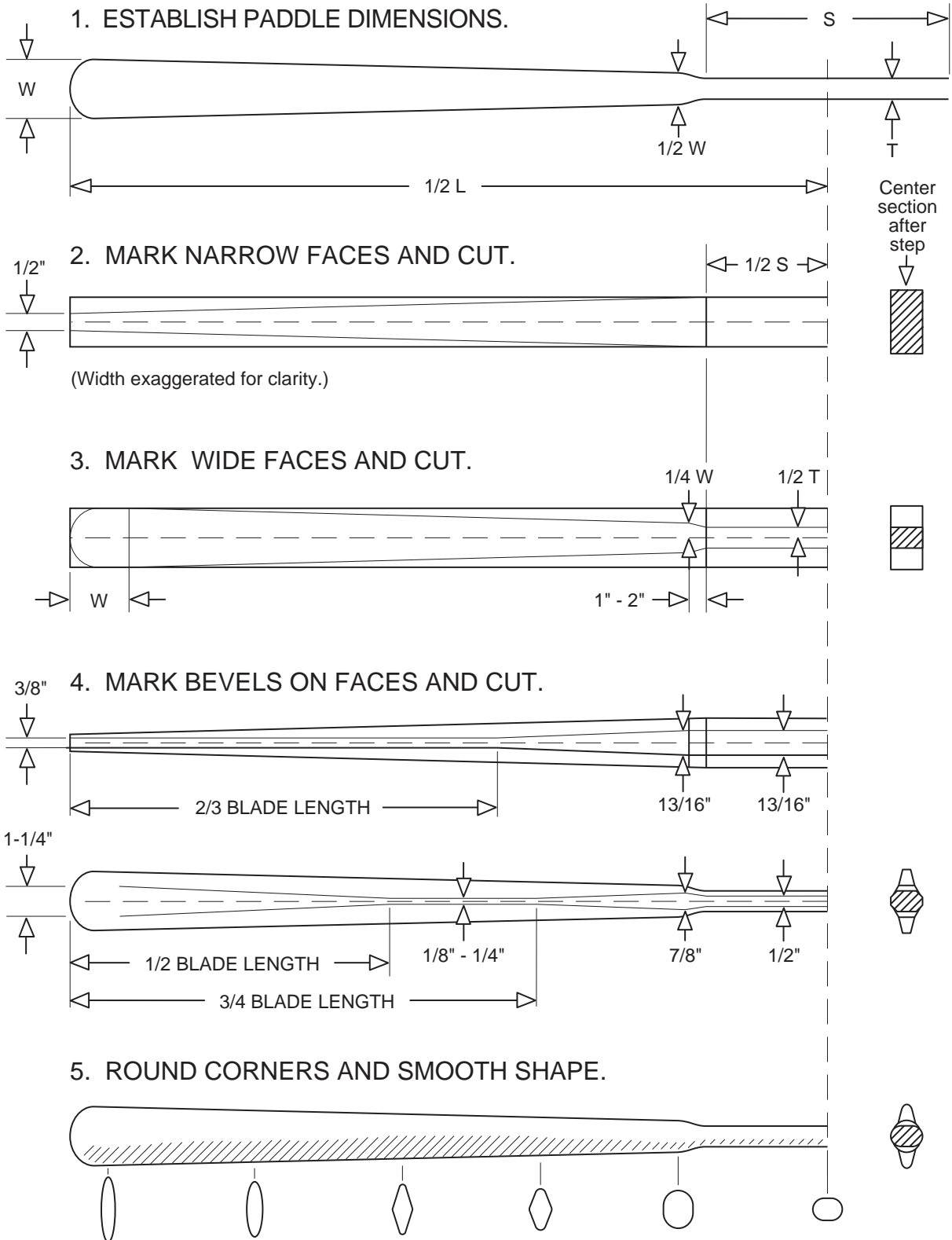


Fig. 7. Steps in making a Greenland paddle.

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the edges of the face at the ends of the loom. Saw along these lines to taper the blades. Then, if you like, smooth the cuts with a plane.

**Tip 1:** If you make the cut with a hand saw, to help stay outside the guide lines, cut a few inches on one side, then turn the paddle over and cut a few inches on the other side. Alternate sides every few inches until the cut is finished.

**Tip 2:** If you make the cut with a band saw, place a squared block on the band saw table near the two-by-four. As you feed the two-by-four through the saw blade, using the block as a reference, tilt the two-by-four slightly toward the blade to ensure that the cut will fall outside the guide line on the hidden bottom side. When you have finished the cut, turn the piece over and run it through the blade again, trimming off any wood remaining between the guide line that is now on top and the opposite edge of the cut.

### Step 3

Refer to step 3 in Fig.7. You earlier drew two lines across each wide face to mark the loom ends. To mark the loom thickness, connect these lines by drawing two lines parallel to the center line and  $1/2$  T from it. Mark each loom end line with tick marks  $1/4$  W from the center line to establish the width of the blade roots. Put tick marks on each wide face that are W, that is, a blade width, from the end and  $1/2$  W from the center line. Connect the tick marks with straight lines to mark blade taper.

Now sketch the curve at each end of the paddle. (You can use one of the drawings on the last page as a template.) Also sketch in the shallow S-shapes of the blade shoulders. In Heath's drawing and photographs, they are about 1 inch long, but they can be 2 inches or more in length, if you wish a more gradual shoulder.

Lay the outlined plank on one of its wide faces, and cut along the lines with a hand saw, saber saw, or band saw. Smoothing the cut edges afterwards with a plane will make it easier to mark them in step 4.

### Step 4

Referring to step 4, mark the paddle blank as indicated. On the narrow faces, draw two parallel lines  $3/8$  inch apart for two-thirds the blade length, then gradually widen the lines to  $13/16$  inch apart at the blade root. On the wide faces, mark guidelines as shown. Also, draw parallel lines on the loom faces as shown.

To complete the blank, bevel the edges by removing the corner material between the lines. If you can do this

accurately with a power saw, more power to you, but since the bevels twist, a hand tool such as a draw knife or an ordinary knife may be easier, if somewhat slower. Taking the time to mark and cut these bevels helps to make a more symmetrical paddle.

### Step 5

Referring to step 5 in Fig. 7, trim the blank's corners in successive steps by cutting away each new corner until all corners are rounded and the shape is smoothed as shown in the sections at the bottom of the drawing. The front and back surfaces of the loom should be completely rounded, but the top and bottom surfaces may be flat or slightly curved. The blade roots should be oval in section, with the oval perpendicular to the oval section of the loom. The blade tips should be convex. Midway between, the blade should have a diamond-shaped section. All should blend smoothly together.

### Step 6

Try the paddle before you apply a finish to it. You may find, as I did, that you will want to reshape the loom slightly for comfort. Also, before the final sanding, you should wet the paddle to raise the grain. If you can't take the paddle out on a lake, take it into the shower with you (shower with a friend!).

### Step 7

Applying a finish is optional. Traditional paddles were smoothed with a knife or plane and left unfinished. I have tried everything from no finish to epoxy resin and spar varnish. I dislike the harder finishes because they feel like plastic, do not offer appreciably more protection against dings, and are harder to refinish when dings do occur. With no finish, the wood tends to roughen with weathering, which can be hard on bare hands, though fine for gloves. I usually fine-sand the paddle (220 grit), apply tung oil, and rub it lightly with 0000 grade steel wool for a silky finish. One advantage of a pure oil finish is that it is possible to erase minor dents by soaking the paddle in water.

**Tip:** If you use pure tung oil, add a little Japan dryer to speed the drying time.

### Making a storm paddle

To make a storm paddle, remember that the blades are about the same length as those on a standard paddle, but the loom is only about two fists long or less. To make a storm paddle, follow the instructions for the standard paddle, but shorten the overall length, L, as much as you shorten the loom length, S.

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### Adding “bone” tips

Though the all-wood paddle should be durable enough for most uses south of the Arctic Circle, Greenlanders usually put bone or ivory tips and edges on their paddles for protection from floe ice. See John Heath’s article, “The Do-It-Yourselfer’s Greenland Paddle” (*Sea Kayaker*, Winter 1987) if you would like to imitate them (I suggest using a white plastic instead of bone). You can order the article from *Sea Kayaker*, on sale at R.E.I., Midwest Mountaineering, and many bookstores.

### Greenland paddling style

Many kayakers who buy or make a Greenland paddle make the mistake of trying to use it with a standard “Euro” paddling style. For maximum enjoyment you should use a Greenland paddling style with your Greenland paddle.

For the basic Greenland stroke, hold the paddle at the roots of the blades as described above. Hold it low, almost in your lap. The upper arms hang loosely with the elbows close to the ribs. The forearms are approximately at right angles to the upper arms, and remain bent throughout the stroke. As you make a stroke, turn your torso in the direction of the stroke—that’s where

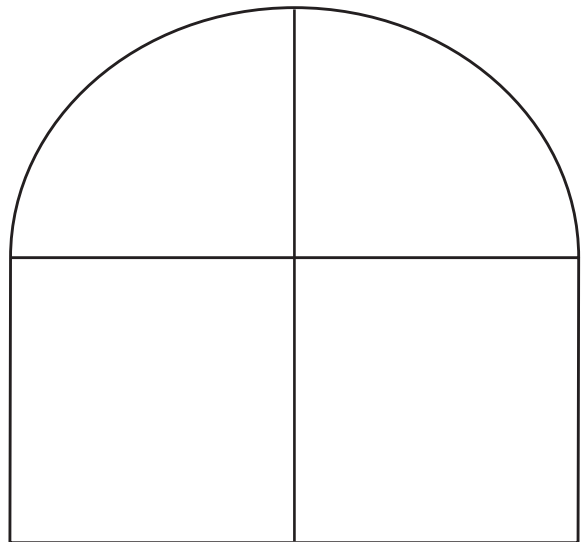
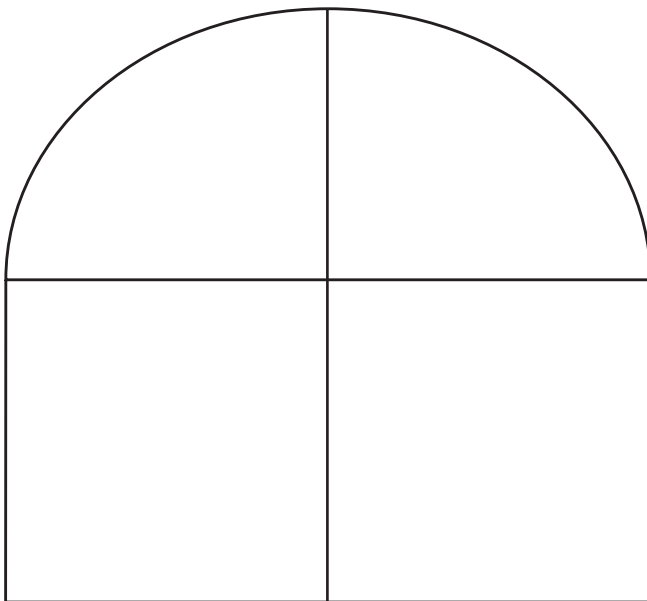
your power comes from. The arms swing back and forth, not outward. The stroke should be short, quick, and circular, with a cadence of about 60 strokes a minute.

To make a full sliding stroke, begin with both hands together in the middle of the loom, thumbs touching. Slide one hand about a shoulder width out onto a blade and stroke on the opposite side. During the recovery, slide the top hand back to the center and the bottom hand out onto the blade for the next stroke. This is the only stroke you can use with the storm paddle.

You can also use the short sliding stroke in which the hands start the normal distance apart and slide only a short distance. The length of the slide may vary with conditions and the need for a slight course correction or a momentary brace.

The ability to shift quickly to an extended or partially extended grip is one of the advantages of the Greenland paddle. Greenland kayakers shift effortlessly among all three strokes as conditions warrant, though the full sliding stroke is used mostly for power strokes and to extend the paddle for braces, rolls, and sweeps.

Remember: if you can’t paddle Greenland style with it it’s not a Greenland paddle.



width of your paddle.