Five Practical Handsaw Exercises and Introducing Sashigane

There are as many ways to use handsaws as there are individual crafts people, and reasons for cutting wood. Skill in sawing takes years to develop; based on questions put to me over the years, I suggest these exercises as a guide. It is inevitable that various circumstances and needs will demand modifications in the following program - but only you know what changes to make. Why would you choose to use a handsaw? Power saws have an advantage where repetitive cuts exceed some number. And the limits of power saws might be acceptable when the work is constrained by budget or design. The effectiveness of handsaws is limited by skill, and human scale. The advantage of handsaws is wield - ability. To make the most of this wield - ability, the weight and stability of cast iron must be replaced with hand - eye coordination, balance, and physical training. Although these exercises could be finished in a couple of days by someone with highly developed skills and tools, they are intended to be repeated several times over several years. The order they are presented is merely from large to small, so that no wood is wasted, and because you can see things with a big saw that are not so obvious with a fine saw. The goal is for the tools and the material to train the human being. As with all learned abilities, it is only possible to do this by making extensive redundant connections between previously unconnected levels and tissues within one's own being. Relax. Be kind. Give yourself time.

I assume some skill with the plane or kanna , and with layout (and drafting), and with chisel; indeed , I assume a feel for wood, and a love of wood. Given these tools, some space and time, six or seven years of age is the youngest one can begin to develop and refine this work. In my own case, this explanation of saws, at that age, would have been like wind on fire.

The first time through, though, each exercise is impossible. The second time through, each exercise is more possible, and more difficult, because one's perspective has changed. The third time through, one is grounded, and the fourth, one is rooted. The sixth year one comes fully to fruition (given good weather, fruits and nuts will come every year except for untimely frosts or pests).

There are some rules which are indispensable.

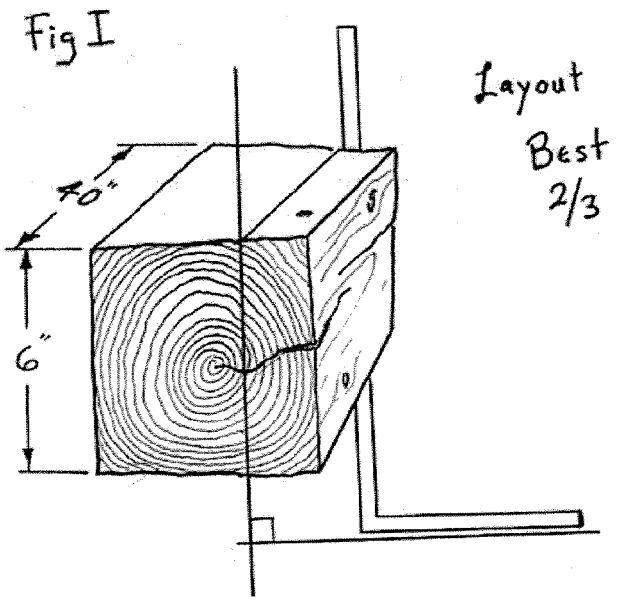
- Before disposing of scrap wood, mark a line on it, and practice cutting to the line
- Examine the resulting pieces to see what happened, like examining the shavings from a plane.
- Support the wood so it doesn't move or vibrate.
- Use sharp saws.
- Composure. Speed comes latter , after a full measure of control is in hand. Cut only as fast as you can stay on plane and on line. You can't rush this acquiring of skill - except by increasing the frequency of practice.

- Lift the weight of the saw off the teeth on the return stroke, just as you would when using a plane or file, to keep it sharp longer.
- Clean wood only - no previously sanded wood etc.
- A Sharp saw set up to cut too fast for the wood being cut is as bad as a dull saw, because they are both out of control, just like a sharp anything else set up too cut to fast.
- For precision choose the smallest saw that will do, and for speed choose the biggest saw that will do. After alot of experience, you'll pickup the middlest saw.

These are basic to all tools and crafts; as for nokogiri , keep these thoughts in mind: If you can understand the problems of cross cutting wood with the point of a knife, you can understand the problems of cross cutting or mitering wood with yokobiki nokogiri. Likewise if you can understand the problems of cutting wood with a plane or chisel, you can understand the problems of ripping wood with tatebiki nokogiri . Imagine whittling a narrow, deep grove using a knife point when crosscutting. Imagine planning a narrow, deep grove with a thin chisel when ripping.

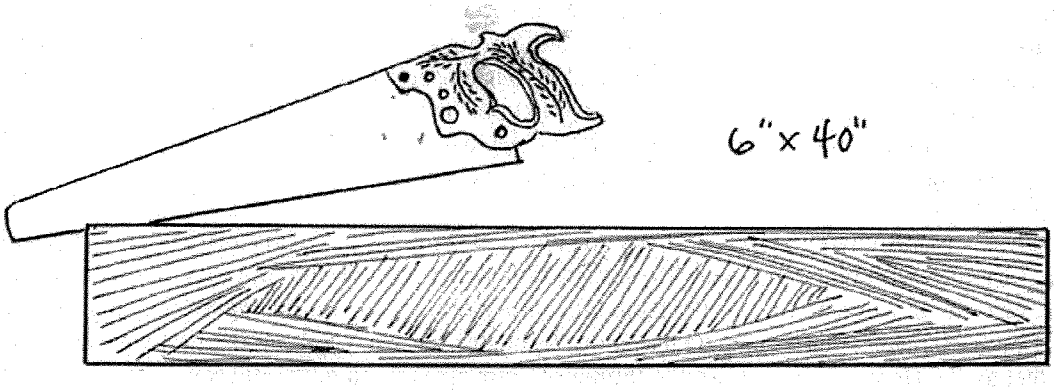
I - RIPPING PLANKS FROM A POST

Use soft, fragrant, knotty Western White Cedar posts, 6" x 6" x 40", and a 4 - 5 pitch ripsaw, or a is 10 inch or bigger tatebiki noko . Doug Fir is not the wood for beginners. Try to set up the piece so that you can be in a comfortable position, and can move freely, and the shavings and chips can fall out of the gullets between the teeth. On the ends, mark black, uniform lines, parallel to each other as shown in fig. one.



Connect them on both top and bottom surfaces, creating a continuos line all around . These lines should be

used to imagine a plane extending as far from the work as the saw can move. (To do this at least two sides of the work must be in view). The goal is to cut a flat, plane surface as close to the line as possible, without going into or over it. There are at least two ways to make this cut. One is by cutting a grove all the way around at least 3/4" deep, varying the angle of the saw to the wood, and forming a guide so that one cut could be made with the saw from end to end. This is most commonly done cross-cutting, though the drawing below indicates a rip cut. Peter Trubig told me he cut 3/8" boards from a big piece of cedar, marking them all, and going around cutting all the boards at once as he went round and round. He used a big rip Kataba (single edge) nokogiri I had worked on. The saw below is John Altholtz's 28" Disston, remade from a 8 point x-cut to a 4 point rip.



A second approach is more appropriate to resawing boards in clear wood. One hand holds the work at one end, and the other end of the work rests on the ground (or benchtop) , and one hand holds the saw. A series of cuts is made as in fig. 2, flipping the work front to back repeatedly. After cutting a board, plane the work smooth and flat, and mark a line with a marking gage all the way around, and cut another board. It is possible to cut 1/4 x 6 x 30+" boards this way with a 210 mm ryoba noko (in a soft wood like kiri).

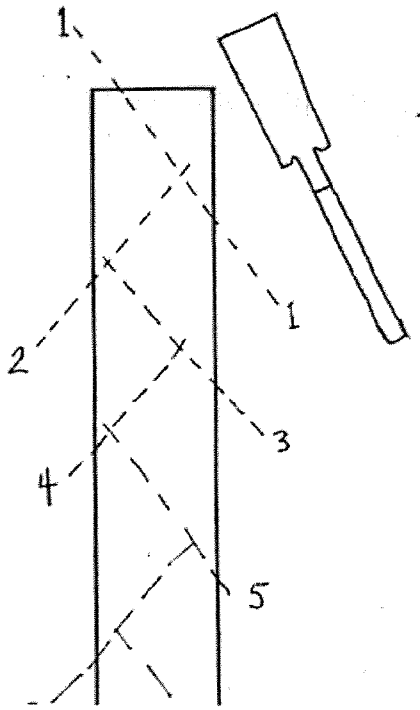
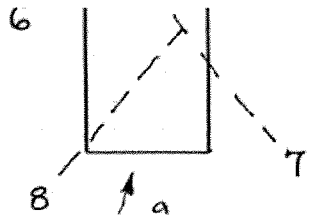


Fig II
Resawing
6"x40"



By cutting through knots and cracks on a big piece of wood, what is learned? It's like plowing with draft horse on foot. Plow too deep and one horse isn't enough; big stones will stop the plow and the horse and you. Plow to shallow and you're out of the ground. Your muscles learn to sense the angles. Your fingers learn to sense the changes in density of the wood, and your body learns what stable is. Your sense of the saw increases. With a good quality saw, after 12 hr. or so, you can feel see it wandering off line, following the path of least resistance, which is the first indication the saw is getting dull.

Imagine the saw blade staying in exactly the same plane as it moves back and forth, not deviating at all. The only slop (rhymes with glop, and means to slither, rather than to slide (not defined this way in my dictionary) would be where the set of the teeth take out excess wood. At the beginning, where the cut is shallow, Daiku (japanese for carpenter) use short, light strokes when making the first strokes, barely audible from 10 feet away. Here at the start use the thumb of your off hand to guide the saw to the line, or use a block of wood as a guide/support. (Daiku also use precision Japanese electric saws; but they didn't start with electric saws, they start with nokogiri. They also make big cuts with nokogiri that can't be made with electric saws.

If you're not watching them, you don't know when they started sawing - the sound enters your awareness only after their saw is in the grove. They do this because a little more care here means allot less clean-up later with a chisel or slick, given a high standard of work. If your arm moves the saw off the two dimensional plane, (or your body moves your arm) slop increases - which is why it's good to kneel or sit when ever possible. The more slop, (rhymes with glop, and means to slither along an excessively loose track) the further off the line you have to start, and clean up later with other tools. The Earth is moving, but it's stable; It's balanced pretty well ..... mainly .

II - SQUARE BUILDING BLOCKS

Use the smaller cut off from the above exercise. A 240 mm or smaller ryoba or equivalent size saw, a small block of wood squared on all sides, and a square are needed. Cut out the knots and checks, and make as many equal sized square section straight sticks as possible. Mark lines to make cubes from these sticks. The goal is to make at least 9 "perfect" cubes. Layout is by either one's own devising, or by convention, and is covered elsewhere.

Cutting a line in half means controlling 70 - 140 knife points, on the edge of a thin flexible saw so that the line is reduced in thickness by half while not removing any excess wood. Thus the start of the cut is crucial. There is the guide block, or there is the thumb; then there is a short shallow groove; then there is a kerf as deep as the teeth are tall; then there is from left to right: half the line, the left shoulder of the kerf, a gap, the left side of the blade, the right side of the blade, a gap, and the right shoulder of the kerf. The saw returns, then rests against one shoulder of the kerf as it cuts and returns, then rests against the other shoulder of the kerf and returns. This cycle is repeated until the saw is 3/4" into the cut. It keeps the kerf from twisting. Finish the cut with gaps on either side of the blade equal - that is, with the blade centered in the kerf, 90' to the work.

At the beginning there is another consideration - the weight of the saw. It is about 3 times to much. Take off at least 2/3 the weight. As more teeth join in the cutting, let more weight fall into the cut. As the line is covered by sawdust, advance the thumb to a position where it acts as a reference/guide, and at the same time advance the whole picture further forward on the workpeice, keeping the two dimensional plane extended to the limit of saw movement. Cut a grove 3/8" deep all around, girdling the work, then cut down and through. What is learned from making cubes? First, the drawing of lines, then cutting lines in half; and finally the placing of lines.

III - LOW HORSES (aka BAMBA)

This is a simple wood connection of great strength. Use the 4 x 6 x 40" pieces from fig. I to make these supports. Square the wood, removing wind and curves, so that you have (for a pair) 3 equal (in cross section) pieces. Use a 240 mm ryoba or comparable saw.

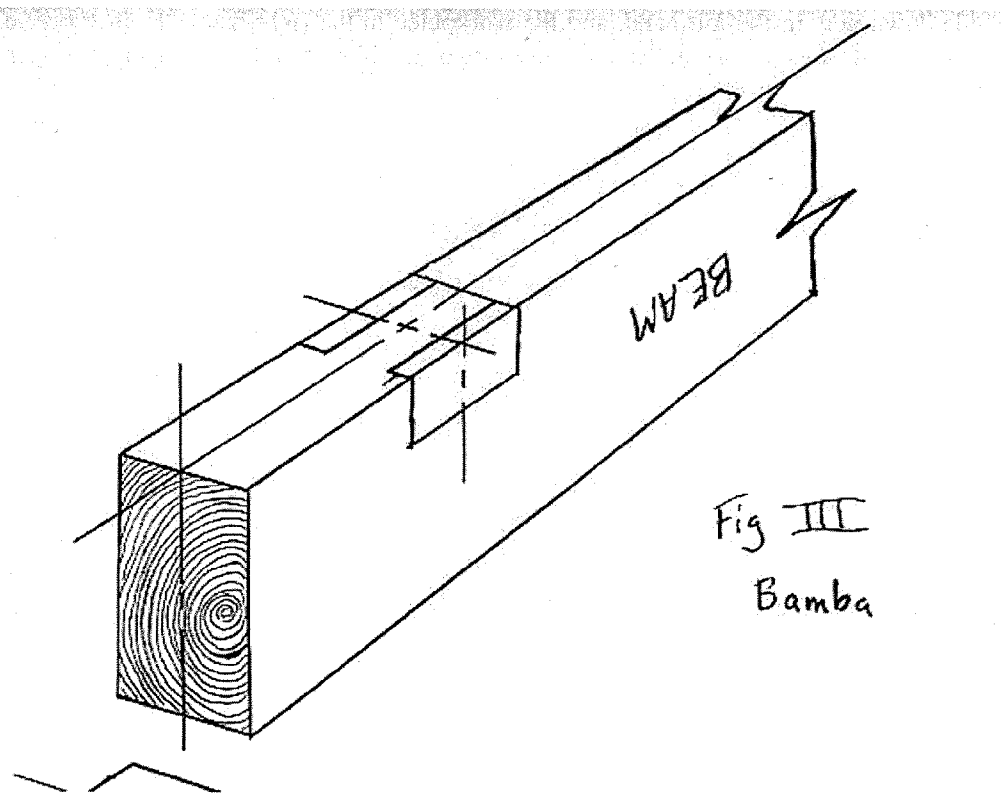
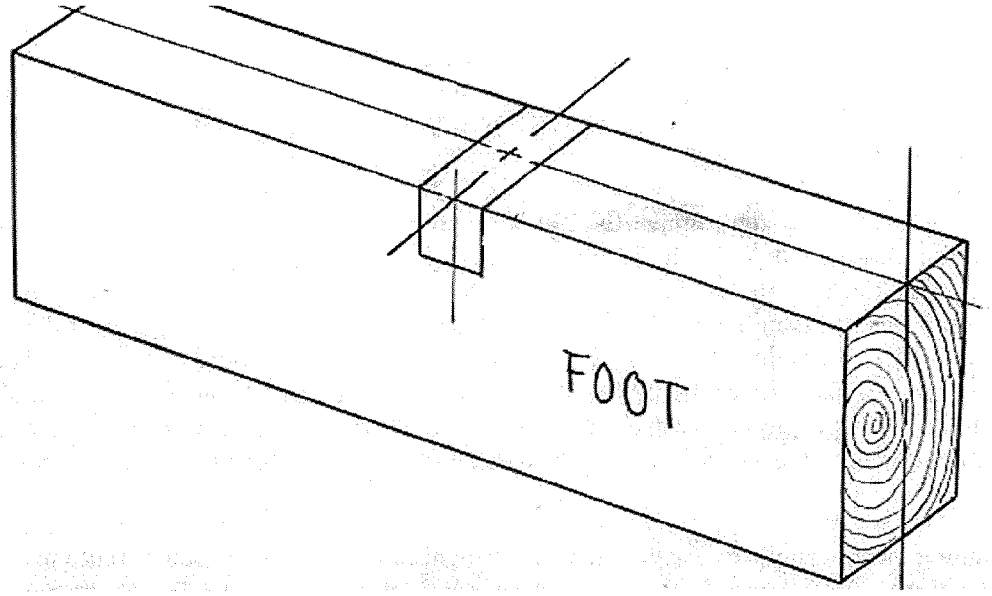


Fig III
Bamba



The goal is to make force fit joints. Draw center lines and measure from these as in fig. III. If the layout is off, the fit will be too tight or too loose. Mark and cut away the waste, leaving 1/2 of the line. Chamfer the edges to a 45' angle to ease assembly. You want to use a heavy hammer or mallet with a piece of scrap to cushion the blows. No need to use screws, glue, or nails. What is learned by making bamba ? The possibility of storing Energy and Understanding in wood connections.

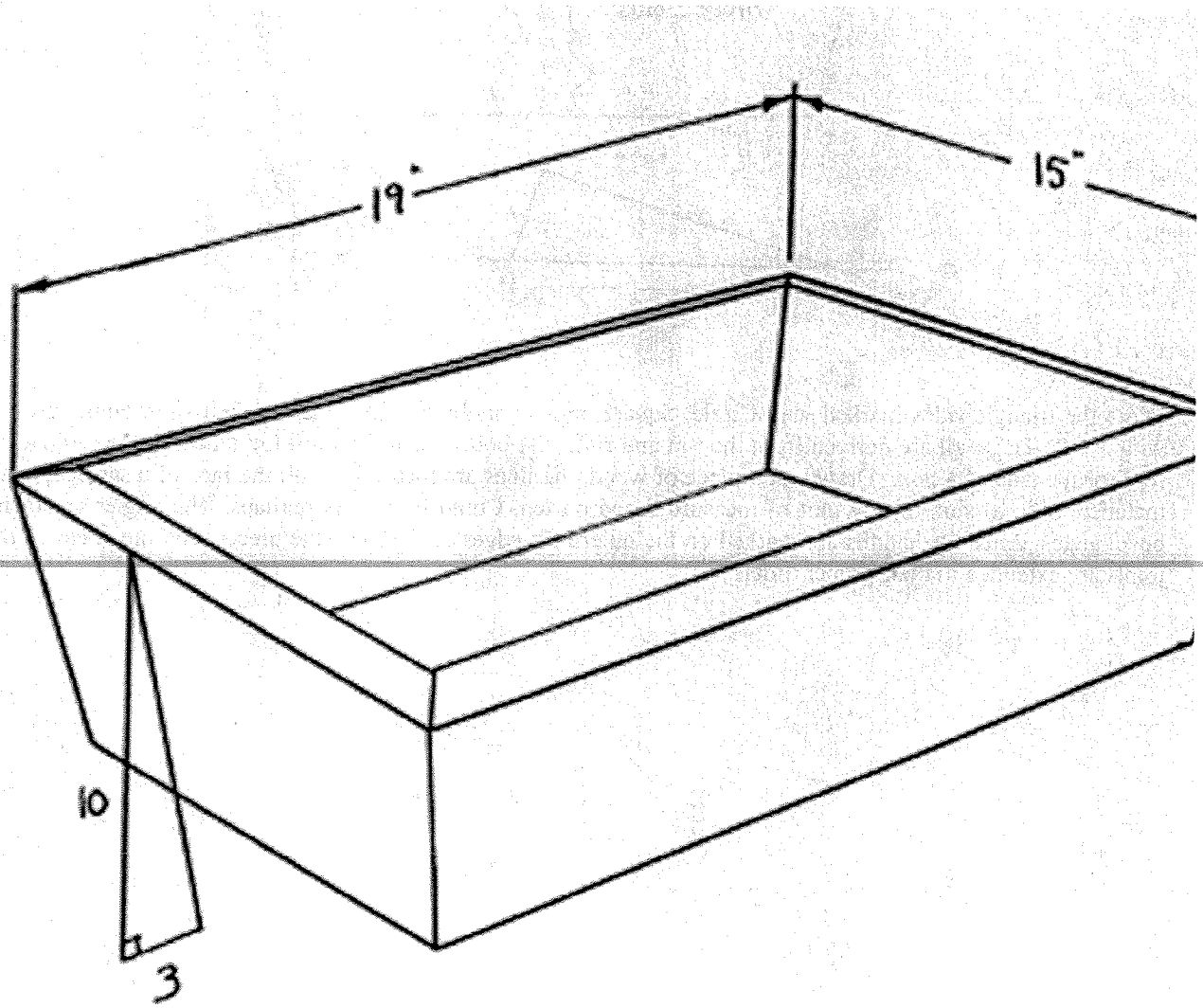
IV - RIPPING TO THREADS

Use your smallest rip saw, and beginning with a board with a stop (dai or "stand") to work on, and 1/2 x 1/2" x 6" Cedar, Basswood, or Poplar. Split with a saw into quarters on the dai. Split these as well. Holding the saw upside down now in the left hand, and the workpeice in the right hand. Hold it between the thumb and second finger which also act as guides on either side of the blade, and use your index finger on top of the workpeice at

next page

the end. Draw the work over the teeth and gradually move along the work as it is separated into threads. What is learned by ripping to threads? The optimal cutting speed, when exceeded, results in an immediate deterioration of accuracy. Also, teeth don't cut well one or two or three at a time. The goal is to feel the wandering tendency of a saw at this stage of shallow kerf cutting. Correlatively, you learn how the teeth can support and guide each other to your great advantage. And if your saw is less than sharp, you will see and feel why dull saws don't cut straight.

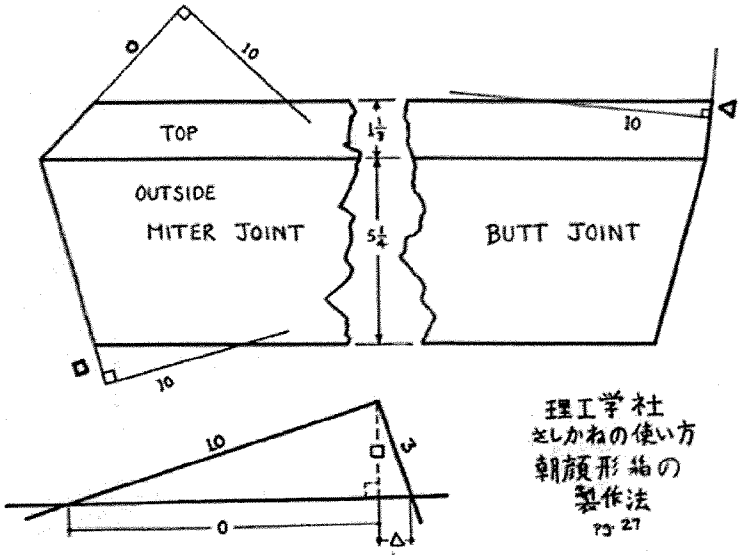
V - MORNING GLORY SHAPED WOOD BOX
ASA GAO KEI KI BAKO



The drawing above shows an incline of 3 units running and 10 units rising, in perspective.

This is from a Japanese Carpenters training manual on the square, or sashigane, published by Riko Gaku Shahen , Sashigane no Tsukai Kata , or "The Methods of Using the Sashigane " pg. 27. This is the first of three exercises a Diaku must execute before receiving the basic level license, and the title Daiku. [The other two exercises that must

be executed are a Splayed Leg Saw Horse, and a Hip Rafter Assembly] One may go further and get to one higher level that I know of. {"Those who have mastered "The One" may go on to "The Two" - attributed to Woody Allen}



Note the triangle sides marked with Circle, Square, and Triangle, and the sides to their right angle, each marked with a "10" These all are derived from the run and rise. At bottom is a figure of the return of the run and rise of a roof, or the side of a box. Drawn on a piece of wood, the lines are measured with the face of a sashigane, and then matched with 10 sun, or any unit of measure based on ten. Could be meters perhaps. The angles are then set on bevel gages. After the lengths are marked on the outermost edges of the four side pieces, and the edges of the miter joints are extended in their proper order.

Fig IIII Top and Side Angles 3-10 Rise

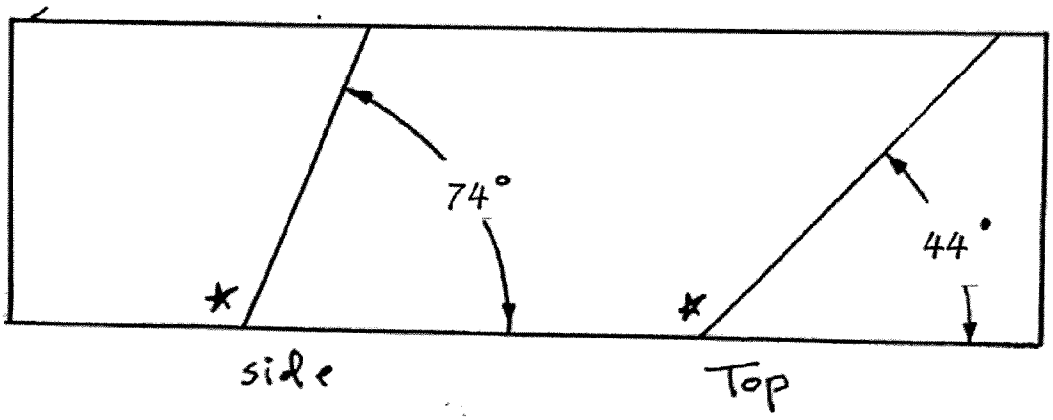
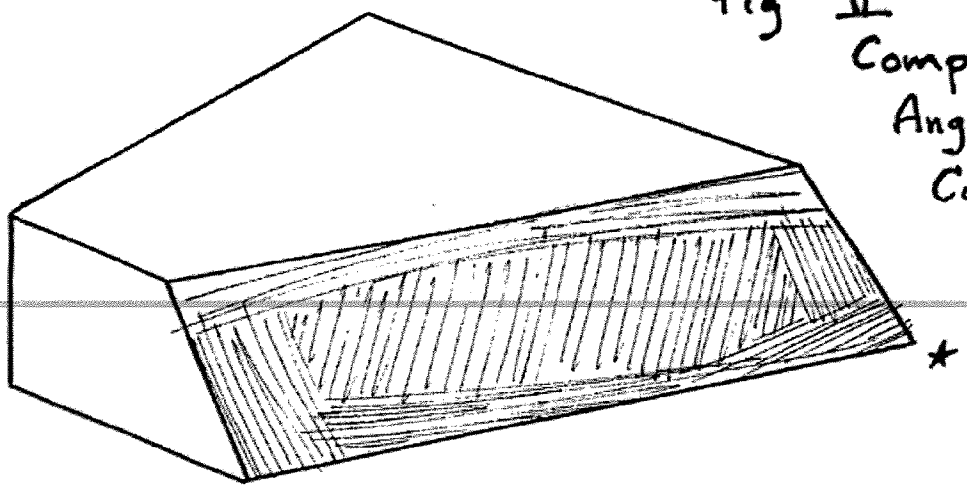
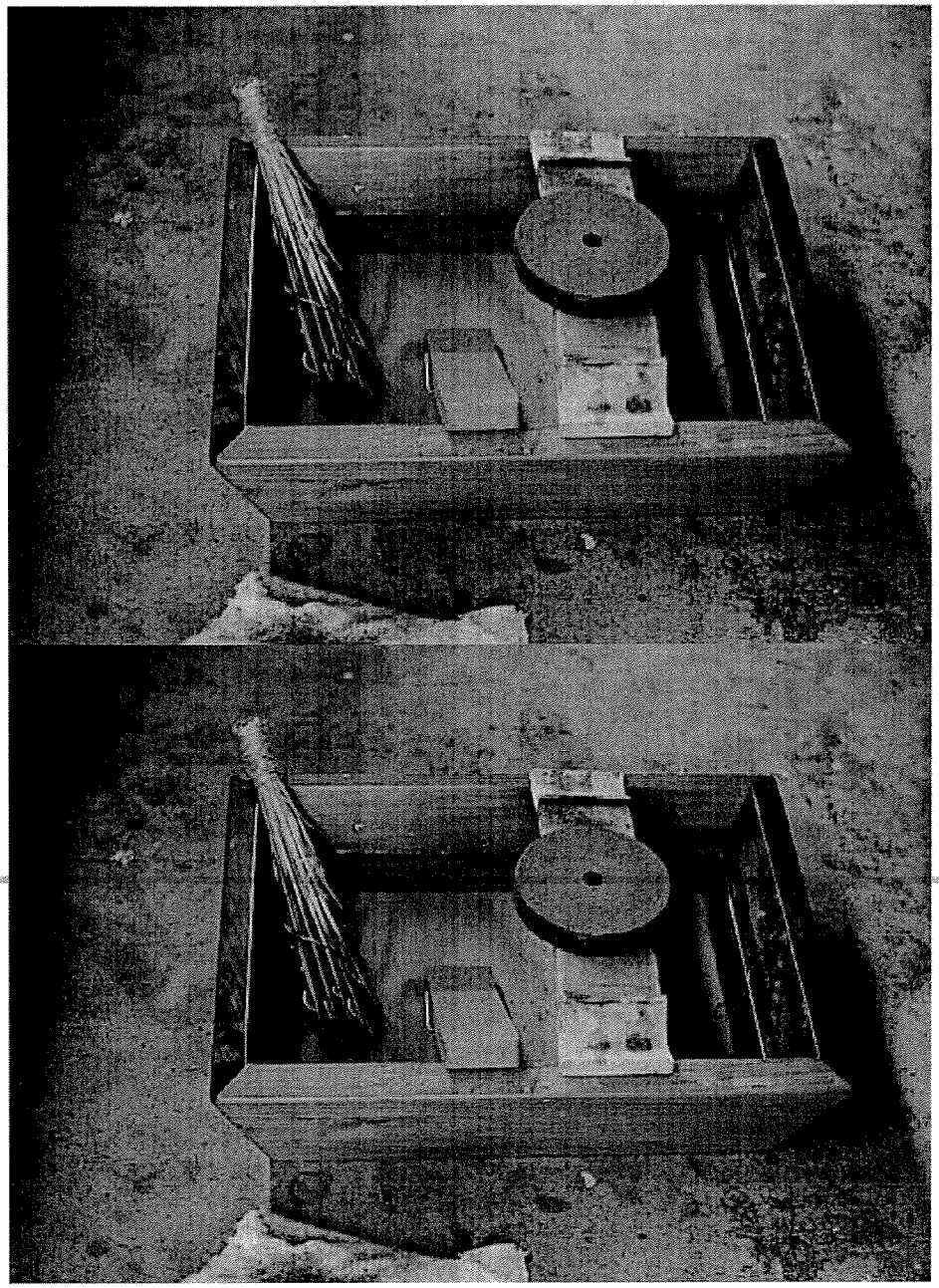


Fig II Compound Angle Cutoff



Choose wood that clear or with tight knots. Layout cuts in clear wood; 1 1/4" x 6" x 20 - 28" for sides, 14 - 20" long for end; flat, square, straight. Set two bevel gages to the angles provided, and draw the lines around all sides so they connect, forming a flat cutting plane. A girdling cut is made as the workpeice is rotated. Start the cut by placing the piece on a non-skid, flat surface, and rotate the cutting plane so it's vertical. After cutting in 3/4 " , rotate the wood a quarter turn, and elevate one end. Cut the side of the piece, and rotate another quarter turn. Suspend the other end, and cut the other side, rotate, and cut down and through. The cut should look like the toolmarks in fig. 5. when finished.

I put a bottom in my first box, applied four coats of spar varnish, and use it as a stone pond.



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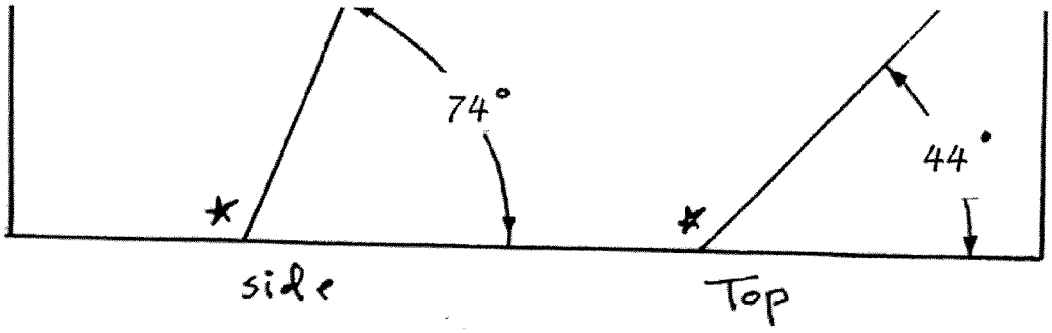

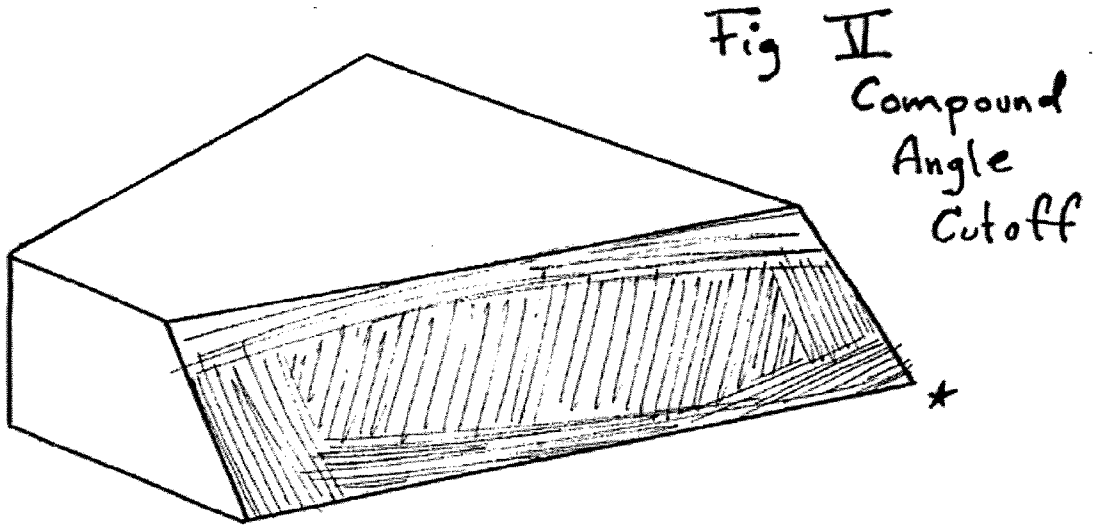

The goal is to saw to the line, without cutting into it, leaving a minimum of wood to dress with a chisel, plane, or knife. What is learned by making this cut? The joy of the freedom that comes from the discipline of high standards of skill. You are no longer confined to ninety degree angles, only to the angles your work piece can support. You can make compound angle mortise and tennon joints, with speed. Once you can execute this cut, you can make any joint in the Eastern or Western traditions, or any joint you can lay out. At this point, the handsaw is a sculptural tool for you. Like all tools, it has its limits and its place. Together with the sashigane, nokogiri open possibilities for establishing new traditions of woodworking, and the possibility of preserving more of the traditions of our forebears.

Splayed Leg Saw Horse Coming Soon !