



Newsletter

June 2007

President's Chipbox

The Woodworkers just finished up the Hallsville Heritage Festival. We had a good time in spite of the heat. A lot of little kids have smiling faces with cars that they help make. We also had a great turnout of turners a total of 5 to my recollection. We will be doing Coyote Hills workshop on Saturday June 23 at 09:00 AM. Hopefully the kids will be making an adjustable book rack. I hope to see everyone at the June meeting Monday evening June 25, 2007 at Boone County Millworks.

Mike

The Midwest Woodworkers' Association did not hold its regular meeting in May 2007 due to the club's annual picnic. Therefore, there are no minutes to report in this Newsletter.

Reducing Woodworking Mistakes

Howard D. Ruttan

Mistakes are a reality of every aspect of life. How we handle them is at least as important as the new knowledge we gain. Every woodworker makes mistakes - from the most experienced right down to the novice. The only real difference is that the experienced woodworker makes fewer mistakes because he has learned what to do to avoid them. An experienced woodworker also knows how to recover, which is a different subject for a different day.

My purpose here is to enlighten you as to some of the tricks involved in reducing the number, and quite possibly the severity, of the mistakes you make. There are a number of skills or methods to be used that can help. Understanding and employing them repeatedly in all woodworking tasks should produce a significant improvement in your woodworking and overall temperament.

Here we go:

- Maintain your tools and machinery.
- Start out with straight, square stock.
- Use a sharp pencil or marking knife.
- Use the same tape measure throughout the entire project.
- Better yet, don't measure at all!
- The story pole alternative to plans and measuring.
- Make all measurements from the same face side and edge.
- Measure twice, cut once.
- Triangle marking or marking pieces to keep the same orientation.
- Account for the thickness of the blade.
- Don't cut all the parts at once.

Maintain your tools and machinery. The accuracy of your cuts is only as good as your machinery is properly set up. Now there is some debate here as to how accurate things must actually be. Some people try to set up their table saws or jointers to within 0.001 of an inch of perfect. You must remember this. Wood is a natural material. It moves and grows with changes in the environment. It is not perfect and your machinery need not be perfect either. I am not going to set specifications as to how accurate your tools really need be. However, if you are using handplanes, take the time to flatten the sole and ensure that the chip breaker is honed to fit flat against the blade. Make sure that your planes, chisels and other edge tools are sharp. Some say you have to be able to shave hairs off your arms with them but the important thing to remember is that you have the best edge you can get. Practice will improve your edge too. After a while, especially if you are maintaining the edge on your tools regularly, you will find that a freshly sharpened tool will reduce your mistakes and speed up your work. It will then become second nature.

Be sure that your power tools and machinery are set up as per the specifications in your manual. Maintaining your table saw so that the blade and fence are parallel to the miter slots will increase your accuracy. Make sure that your jointer is properly set up so that you get straight clean cuts every time. Make sure that you have the blade sharpened when it needs it and that you know how to remove and replace them properly. Maintain the proper adjustment on your thickness planer

tables to minimize snipe. Make sure that the blades in your saws are sharp and true. Warped blades produce inconsistent cuts. Buy the best blades you can afford as they are the most important part of your saws. Make sure that the surfaces of your tools are free of rust and smooth. Johnson's paste wax is the best thing for this in my opinion. It seals the surfaces of your machinery so that rust cannot penetrate. It is ideal as a lubricant for table saws and jointers as well. It will not foul finishes and dries completely so it won't attract sawdust. Your tools are a big investment. A little time every week spent tuning or sharpening your tools will pay off. Don't leave it all for spring or whatever as it becomes too large a job and gets put off. Besides, your woodworking will be less accurate and more frustrating in the time before you do your "spring cleaning".

Start out with straight, square stock. Let me start off by saying that going to Home Depot and buying pre-surfaced stock is not going to accomplish this for you. In order to really cut down on much of the inaccuracy of your work you must mill your own stock four square. It is important that you start out with material that is perfectly flat with all sides at 90 degrees to each other. You need at least two flat faces that are at 90 degrees to each other for reference edges. From this point you can mill the stock to a consistent thickness and rip a parallel edge on the table saw or with a hand saw. The point is that you can go into Home Depot or your local lumber store and buy pre-surfaced lumber, but that lumber has simply been run through a planer to take off the rough stuff. No attention has been made to ensure that it started off with 2 flat sides at 90 degrees, they just ran it through the planer and flipped it over. The problem is that a thickness planer is designed to make two opposite faces parallel but only across the width of the board that happens to be under the knives. If the next bit that runs through the knives is thicker, the whole board will be thicker - just parallel across the width. Proper use of a jointer or hand plane must be made first to ensure that the face that rides on the table is flat along its length with no undulations (which are transferred through the board if left untouched). Just running the board's edges over the jointer without attention to the appropriate order of operations will not make the edges parallel to each other or even at 90 degrees to the face.

Also, wood should be prepped immediately before working on it. There is no telling how long it sat in Home Depot before you purchased it. Once you buy it, it should sit in the workshop for at least two weeks to acclimate and adjust to your specific humidity. Only after stabilizing can it be milled, and then it should be worked and finished quickly before changes in season or local climate cause the wood to change shape further.

Use a sharp pencil or marking knife. Any layout marks you make on the wood must be crisp and sharp. You can't use a dull pencil that can make a mark as wide, if not wider than, 1/16th of an inch and then cut along the mark to produce an accurate cut. The width of your mark is your margin of error. If it is 1/16th wide, then your margin of error is 1/16th of an inch. Add this up over a number of pieces assembled together and you can have a sizeable error. The key then is to produce a visible mark that is as narrow as humanly possible. The only way to do this with a pencil is to ensure that it is sharp as you can make it. A much better way is to use a marking knife. Any old pocket knife will do, but it is best to use one that is meant for the job. You can buy them at Woodcraft or Lee Valley, or you can make one. I use a chip carving knife with a rectangular blade that is beveled only on one side. Sharpened and used properly the cut edge provides a reference that is perfectly flush with the desired cut edge.

Use the same tape measure throughout the entire project. Most woodworkers probably use a tape measure for their projects. Actually the tape measure, aside from an old yardstick, is

probably the least accurate measuring device. A folding rule is better, and a precision steel rule is even better than that. It will cost you dearly though. One of the causes of the inaccuracy on tape measures is that the companies that manufacture them are not making them to be precision measuring devices. This is not a big deal when building a house, but the error involved can wreak havoc on the accuracy of your 17th century armoire. Every tape will be slightly different from the last. The other cause is the sliding hook on the end. It slides to compensate for it's own thickness when changing between hooking it on the outside of something being measured and pushing it against the interior of something for an interior measurement. Is this insurmountable? Absolutely not. As I said above, woodworking is far from an exact enterprise. There are two key points to remember to avoid inaccuracy when using a tape measure. First, avoid using the hook on the end. Try to start at the one inch mark, but remember to subtract that extra inch for the correct measurement. The second and most important thing is to use the same tape measure for every measurement in the project. This will cancel out the variations between tapes. And if you do use the hook, use it for ALL the measurements.

Better yet, don't measure at all! For most measurements, try not to use a measuring device. However, if you are making a drawer box, use the completed opening of the carcass to measure it. If it turns out a little snug a couple passes with a plane, or a quick pass over the jointer will make the drawer slide more easily. Using completed components or already milled parts to mark out new parts will ensure that any little error you made before will be cancelled out, instead of compounded. When cutting parts, try to use the completed components as your guide rather than your plans. Plans are a great guideline but they can have mistakes. I remember making a buffet server from plans in a magazine once and I cut out the drawers to fit the dimensions as specified on the plan. They turned out to be way too narrow and had to be put in the scrap pile. The mostly complete buffet was sitting on the shop floor not 5 feet from the plans and I could have used the existing openings as my guide and done it right the first time.

The story pole alternative to plans and measuring. For centuries woodworkers, bricklayers and other trades, have been using story poles as measuring devices. The benefit of a story pole is that it is 1:1 or a full scale representation of the project. A smooth, straight 1x2 or similar sized scrap ripped from a wider make sure that it is a little longer than the longest measurement (you can extend them with other sticks if you don't have one that long, for example as in a kitchen cabinet job). Use one side to record the full size heights of the project, one side for the widths and one side for the depth measurements. They are great when measuring up for a kitchen cabinet job. Grab a handful of sticks and take them to the site. Snap a chalk line and nail to the wall. Using a plumb bob you can measure out the locations of all the plumbing rough-ins and electrical boxes. Take them back to the shop and you have a full size record of the exact placement of things. Then make a second set with the cabinet specs on it. Hold them together to show where the rough-ins must be let in to the cabinets. If you have never done it this way you'll wonder why. If you are building furniture, select a pole then - working one plane at a time - begin transferring all of the measurements of the piece onto the pole. Remember to square up the end and start right at the end. I prefer to work from the bottom up and do the height measurements first. I draw in all the places where a horizontal member intersects the side wall and mark in the details of the joint. These include the stock thickness and the angles and depth of the dovetail, or whatever details the joint calls for. When this is complete, I flip the stick and work left to right to mark all of the width measurements and joinery details. I save the depth for last. All measurements are transferred as

shown on the plan. The neat thing is I usually catch any errors I made in drawing up the plan before I have even milled my first piece of wood.

The advantages of a full size pattern are obvious. Trying to gauge whether measurements are correct on a tiny drawing is nearly impossible. The process is a great deal more intuitive on a full size pattern. Besides, the story sticks can be saved to replicate the project. All the details can be recorded including stock thickness, width of drawer openings, length and width of component parts, and details of the joinery. To check our finished parts you can hold them against the story pole to see right away if any mistakes have been made. Besides, they are cheap to make, fast to use, much more accurate than transferring measurements with a tape measure and more efficient to use than anything else. You can even color code things like the difference between plumbing and electrical rough-ins, and windows and doors. An extra tip is that I prefer, especially when using a 1x2 scrap, to place the height and width measurements on the wide sides leaving the depth measurements on one of the thin sides. There is less detail required for depth measurements so you can use the wider sides for the measurements that require more annotations.

Make all measurements from the same face side and edge. As discussed above, it is important to start with stock that is milled four square, or straight, smooth stock where all the edges are at 90 degrees to their neighbors. To do this you usually start by milling one face side flat on the jointer. Once it is flat it becomes your face side. I always mark the face side with a squiggle with the tail pointing toward a specific edge, the face edge. The face edge is produced by placing the newly flat face side against the jointer fence, then truing up that edge so that it is perfectly flat and at 90 degrees to the face side. Then it is also marked.

At this point I would run the piece through the thickness planer to make the side opposite the face side parallel to it, but that is the subject of another page on this site. The importance of this is that all measurements of thickness or width, or any joinery details, should be measured from either the face side or face edge, whichever is appropriate for that particular measurement. This way any variations in stock thickness or width are not compounded by measuring from any old side that comes along. The consistency helps to ensure that your joints are tight and accurately milled. I prefer to keep my face sides as the outside, or visible face of the piece, and the face edge as the edge on which I will mill my joints.

Measure twice, cut once. Whenever you go ahead with a milling operation on a piece it is wise to take off your measurements and mark your layout, but go back and double check your figures one more time to make sure. One warning about this is that you shouldn't triple and quadruple check. Too many checks create doubt in your mind and get confusing - it really won't help at all. This is where the story pole will come in really handy. A quick double check is afforded by holding the piece up to the story pole and you can see if you have it by eye.

Triangle marking or marking pieces to keep the same orientation. As a discerning woodworker you probably spend some time deciding on which face of your parts will be the visible face and what the orientation of the parts will be. It can be very frustrating to spend this amount of time and then forget how you had the pieces oriented. It can also cause some problems with getting the appropriate joints milled properly. The system that has become known as the Triangle Marking System helps out with this. The system is basically a way of marking the face sides of the boards so that you can reassemble them in the correct orientation easily and mill your joints in the proper places. The tip of the triangle is up on vertical surfaces. It points away from you on horizontal surfaces. I would then proceed around the piece clockwise looking from the top. The

second side has a line under the triangle. The line designates that this panel is different from the front pieces. It would be terribly easy to mistake the stiles from the front assembly with the edge boards on one of the side panels. Remember always to mark on the finished (visible) face. The open ends of the triangle point towards the edges that require joinery. That way you don't cut mortises in the wrong edge. This is great for face frames, glue-ups, drawer boxes, and even table legs.

Account for the thickness of the blade. Remember that whether you are using a hand saw or a table saw, the movement of the blade through the material will cut a slot of a certain width. Make sure that the slot is on the waste side of the line. For example, a normal table saw has a 1/8 inch kerf. This means that it will cut a slot 1/8th in width. Make sure you don't inadvertently shorten the piece you are milling by cutting on the wrong side of the line. To avoid this I always place a small 'X' on the waste side of the line so that I know which side the saw blade has to go on.

Sometimes, such as when hand sawing dovetails, your blade shouldn't exactly be on the waste side of the line. I cut the pins of the dovetail first. Then I use the pins to mark out the tails on the joining board. In this case, the pencil line is a little too far away from the joint for me so I saw on the pencil line and try to leave half of the line on the waste side. This tends to make my dovetails fit just a bit tighter.

Don't cut all the parts at once. A mistake I made as a novice was to get a pattern, then cut out all of the parts for it at once so I could have one big assembly party of it. This is not the best thing to do, and for a couple of really important reasons. The first reason is that there could be mistakes in the pattern or plan. If you cut out all of the parts first, and there is more than one mistake, you will have several good quality bits of firewood at your disposal for winter! It is better to do things in stages and learn that the plan is riddled with mistakes first.

The second problem is with wood movement. Proper woodworking requires that the wood be milled four square (as discussed above) before working it. Assuming that the wood has acclimated in your shop for a couple of weeks already, it should be stable. However, changes in humidity and temperature can cause the wood to warp after being cut. This will affect all of your joinery. The best way to counteract this is to break the project down into stages. For example, an end table could be broken down into 4 stages: the carcass, the face frame, the top and the drawers. Each stage would have the parts milled four square separately. Then the joints would be milled and the stage assembled. Once assembled, the affect of movement isn't of great concern and any movement that does occur can be allowed for when measuring and laying out the parts for the next stage.

It is important to mill the parts four square then mill the joints and assemble as quickly as possible before environmental changes take their toll. Then start over with the next stage. This also minimizes the errors incurred with a poorly drawn up plan because, as mentioned before, you can measure your drawers off of the completed opening rather than the plan. The same works for measuring up the face frame parts using the completed carcass. This tip is especially important for the hobbyist, or "recreational woodworker" as I like to call myself, because if you only have a few hours each weekend to work wood, milling all of the parts one weekend will leave you with nothing but warped parts next weekend. This leads to an invariable increase in blood pressure followed by copious quantities of fermented barley and hops, or the invention of new and exciting curse words, or a bonfire, perhaps a depressing and stressful weekend, or all of the above. Using stages will allow you to stretch a project over a longer time with less concern for wood movement.

**Tentative Schedule of Future Events
Midwest Woodworkers' Association**

Date	Day	Time	Event
July 23, 2007	Monday	7:00 PM	MWA monthly meeting at Boone County Millwork
August 27, 2007	Monday	7:00 PM	MWA monthly meeting at Boone County Millwork
September 15 and 16, 2007	Saturday and Sunday	Sat: 10 AM -5 PM Sun: 10 AM-5 PM	Club Display at Nifong Heritage Days, Nifong Park
September 24, 2007	Monday	7:00 PM	MWA monthly meeting at Boone County Millwork
October 13 and 14, 2007	Saturday and Sunday	Sat: 10 AM to 5 PM Sun: 11 Am to 5 PM	Club display at Hartsburg Pumpkin Festival
October 22, 2007	Monday	7:00 PM	MWA monthly meeting at Boone County Millwork
November 26, 2007	Monday	7:00 PM	MWA monthly meeting at Boone County Millwork