

# Art Nouveau coffee table base – part 1

In part 1 of this series of articles, Dennis Zongker makes the base for his Art Nouveau table



PHOTOGRAPHS BY DENNIS ZONGKER

## The Art Nouveau period

Art Nouveau was considered the beginning of the modern style of furniture making. It began around 1890 and hit its peak in France around 1910. It was the first original style, which took inspiration from its surroundings, not history.

Wood was twisted into bizarre shapes and was based on nature, not only in decorative design but in the structure

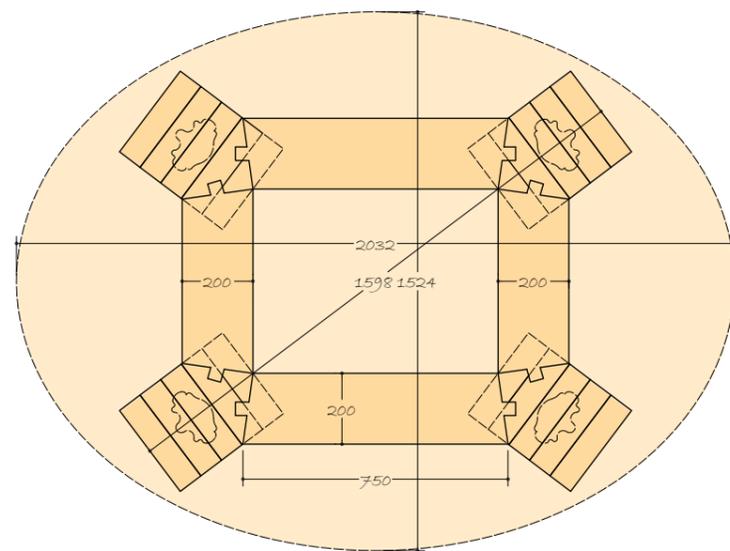
of the entire piece or room. It has the look of rising and falling lines of tree or plant vines twisted and spread across the furniture piece. The chairs and tables seem as if they were moulded in a taffy-like substance. Straight lines are erased wherever possible, flowing into one another to maintain as much of a continuous line as possible.

This coffee table is 560mm tall × 1,525mm wide × 2,030mm long.

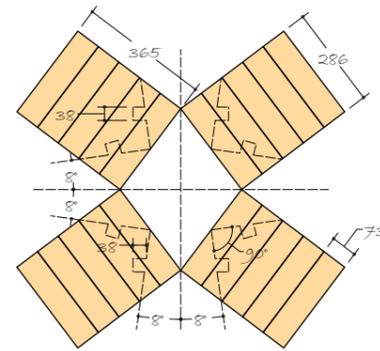
It is large enough to seat eight people with Maloof-style rocking chairs around it. For gluing up such a large base system with four legs and four runners, I needed a hardwood where I could buy a large stock without knots or voids. I purchased 300 board foot of 75mm solid African mahogany (*Khaya ivorensis*). This is also a great wood for staining dark colours, which I needed to achieve to match the decor in the room.

The coffee table was designed and made for a customer with a large cigar room. He wanted the base to resemble the natural form of trees with the top marquetrie to reflect the beauty of oak (*Quercus spp.*) trees shining off a lake. When designing this coffee table, the Art Nouveau style was a perfect fit to the customer's request. Back when Art Nouveau was at its zenith there were many designer-makers with their own style. One of my personal favourites is Eugene Vallin. My goal for this design was to be original with my own personal style. ▶

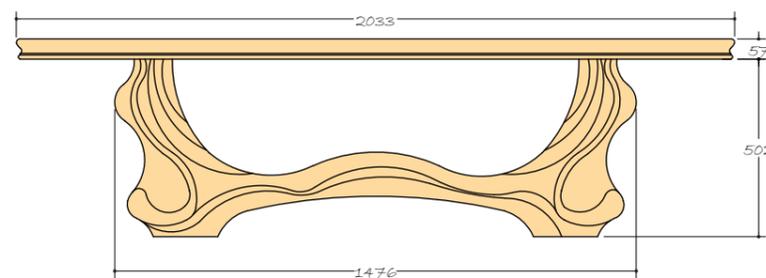




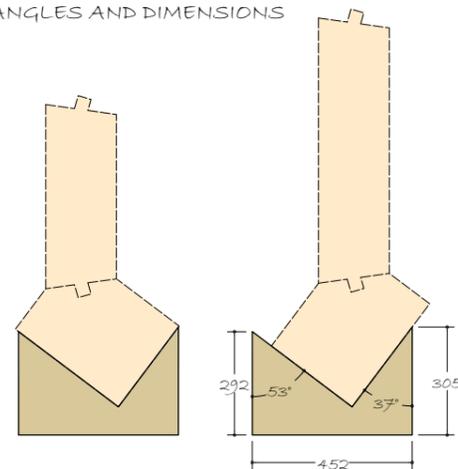
PLAN  
Scale 1 to 20



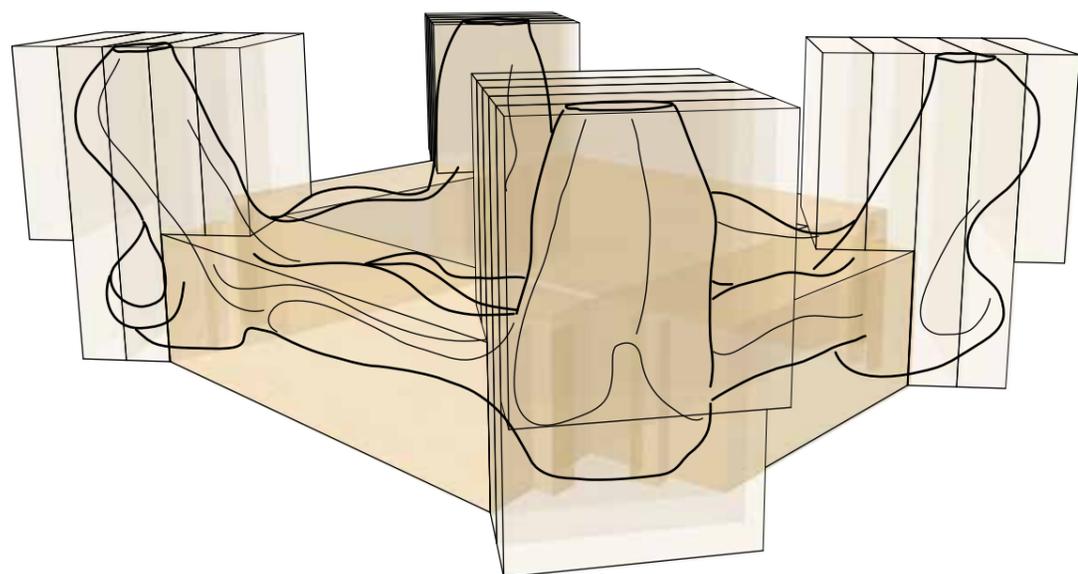
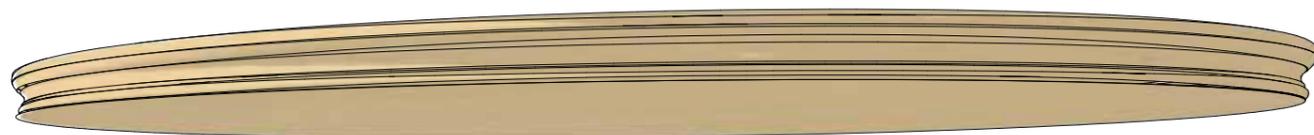
PLAN SHOWING LEG  
ANGLES AND DIMENSIONS



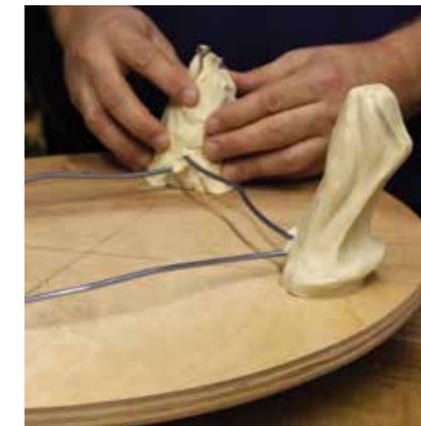
SIDE ELEVATION  
Scale 1 to 20



DRILL PRESS JIG LAYOUT



1 One of the elliptical shapes that resembles the top of the table



2 Using oil clay to determine the shape and design of the legs



3 The completed clay model

### Clay model

To get started with the design, I used oil clay to mould a ¼ scale model of the table base. I cut out two elliptical shapes measuring 380 × 510mm long out of plywood: one for mounting the armatures and clay and one to resemble the top. This

helps me determine how close the legs need to be to the top edge of the table.

By using oil clay, you don't have to worry about the clay ever drying up and can also be reused on your next project. This will give you as much time as you need to find the shape you are looking for. Sometimes this

design stage can take a few days, depending on your vision, transforming the correct shaped around armatures. The finished clay model of the table base can now help to figure out the glue ups and where to locate the best place for mortise and tenon joints for connecting the legs to the runners.



4 Sanding the blocks or the legs with a sanding block



5 Rolling glue onto the surfaces

### Preparing the legs

The first step is to cut the 75mm African mahogany to width on the tablesaw, then to length on the mitre saw. To glue up one leg, I needed four pieces at 73mm-thick × 300mm wide × 500mm tall and one smaller piece at 305mm tall for the top front legs.

When cutting the hardwood, for gluing up the legs, it is best to have all the grain running in the same direction so that when you are carving through the layers the grain matches up and to also get a smooth clean cut. Before I glue up the legs, I sand with 80 grit block; this is to make sure the blocks are flat and it also helps the glue penetrate into the wood pores for a better glue bond.

Before rolling the glue onto both surfaces, that get glued and clamped together, I make sure to use an air nozzle to blow off any dust then wipe the faces clean with a rag.



6 Clamping up the leg blocks

### Clamping the legs

For clamping the legs together, I cut six clamping blocks at 38 × 38mm square × 292mm long. These blocks are clamped to the sides and ends of the leg block along with two plywood cauls to protect the faces of the legs. Once all the clamps are tight to the 38mm square blocks, this will keep everything square, then I clamp and tighten with bar clamps the leg faces tight together. Once the glue dries, I then add and glue on the smaller 305mm top face of the leg.

Next, I glue up the runner's two long blocks at 200mm deep × 209mm wide × 915mm long and two short blocks at 200mm deep × 209mm wide × 635mm long.

### Cleats

Before you can cut in the mortise and tenons, which connect the runners to the legs, first cut in a 45° angle on both lower back sides of all four legs. For cutting in those large cuts, I use a handsaw with a triple cutting teeth blade, which cuts faster and very accurate.

Next, cut some birch hardwood at 20mm thick × 38mm wide to be used as cleats, which will be pin nailed to the legs. First, draw in the sections that need to be cut out, then cut to length. Also, cut the cleats on the two side cleats at an 8° on the long edge with a tablesaw. Next, I pin nail a frame around one 45° corner. These cleats are used as a following guide for the handsaw blade to follow.

Starting at the bottom of the leg and cutting the long edge of the corner, I then cut into the side of the leg following the cleats. The corner block should just pop right out once both cuts are complete. Then repeat and cut out the opposite side and the last three legs.



7 Cutting a 45° angle on both lower back sides of all four legs



8 Drilling into the side of each leg using a 38mm diameter Forstner bit



9 Cleaning out and flattening the bottom of the mortise



10 Laying out the base system to mark where each end and face will be located



11 Cutting out each tenon into the ends of the runners

### Mortises & tenons

Next you will need to make a jig for the drill press. Placing each leg into the jig will make the mortise parallel to the runners. The size of the mortise is 38 x 38 x 209mm long. Use a 38mm diameter Forstner bit locked into the drill press. Set the jig on a platform and drill into each side of the leg 38mm deep. After each cut, move the jig approximately 25mm straight forwards and

repeat cutting out each mortise. To finish squaring out the mortise pin nail 20mm-thick cleats to the edges of the mortise; this will help guide and keep your chisel flat. Use a mallet and tap your chisel straight to the bottom. The last thing is to clean out and flatten the bottom of the mortise by using your chisel upside down.

Before you can cut in the tenons you must lay out the base system with all four legs and

runners, then mark each end and face to indicate where they will be assembled.

Cutting out the tenons is just about the same as the angle cut before the mortises. First, draw out the exact size and centred location of the tenon, then pin nail the cleats to the end of the runners. To allow better control of the cutting, clamp the runners up to a sturdy bench or stand. Using a handsaw, cut out each tenon into the ends of the runners.



12 Using bar clamps screwed to areas where wood will be ground away



13 Once I have one leg looking good, then I transfer to the next leg and runner



14 Using a marker pen to go over all the pencil lines drawn on the base system

### Dry-fit

Next, dry fit all the legs and runners together. If you need to size the tenons to fit the mortise, use a small block plane or flat wood rasp. Once you have the whole base dry fitted and clamped together, make sure all the joints fit nicely so that you don't have any problems when gluing. Since this is a large

base system, it is best to glue up two legs and a runner at a time upside down. To get a good tight glue bond, I use blocks screwed to areas where I will be grinding away wood and use heavy-duty bar clamps.

After the base is completely dry, I flip it back over and place the clay model on top of one corner. Then, using a scale, I measure and

draw where the lines go. The clay model is at a 1/4 scale so I just multiply by four to get the correct size on the base, then I make paper templates. Once I have one leg looking good, then I transfer to the next leg and runner.

Once I have all my pencil lines drawn on, I use a black Sharpie pen to go over the lines so that the cut lines are easier to see.

### Grinding

Before I start grinding away the hardwood, I put up a clear plastic tarp on all four sides of me to make a 4.5sq.m. room. Also, I wear heavy-duty work gloves and a full body suit. Then, for my breathing, I use a finish respirator for protection against the sawdust – health and safety is a very important consideration here.

The next step is to place four tall, heavy-duty metal rubbish bins under each leg and a large wooden block on top of the bins, so that the grinder won't hit them. This allows me to grind in a completely comfortable position, which is less stressful on my back.

Using a hand-held grinder with a chainsaw blade, my first cuts are depth cuts up to the lines. This helps guide me to where I need to go but also removes a lot of waste

hardwood along the way. The next step is to keep grinding away, using a grinding wheel which has coarse teeth made out of durable tungsten carbide. Here, I am always keeping my hands in a safe position and pressing into the hardwood and slowly moving up and down or side to side grinding up to the cut lines. Using this method allows me to remove a lot of wood at a fairly fast pace. Focusing on one leg at a time, I will repeat these same steps to remove the back side of the leg.

With the way I had the base set up, I was able to stand in the centre of the table base to carry out the grinding.

For grinding the bottom of the coffee table base, I flip the table over, with the help of three others. I start by grinding the bottom of the legs to reach the radius shape that I had on the

clay model. Next, I move on to the bottom of the runners using the chainsaw blade to add depth cuts and to remove the waste wood.

I then switch back to the coarse grinding wheel to remove the bulk of the wood. I apply medium pressure with a slight angle, moving back and forth. I always try to keep my body and hand placement at a safe distance at all times. After the bottom is rough ground, it's time to flip the base back over, right side up. Again, using a black Sharpie pen, I redraw the lines back onto the base – this time the lines are closer to the true shape of the base. At this stage, you can either use the paper templates or use the scale model to draw free-hand, which I find works well because of the natural un-uniform shapes.



18 Using a grinding wheel with durable tungsten carbide with my hands in a safe position



19 Grinding one leg at a time to remove the back side of the leg



20 Grinding the bottom of the legs to reach the radius shape



21 Adding depth cuts to the bottom of the runners

## PROJECTS & TECHNIQUES

### Coffee table base – part 1



**22** Using the coarse grinding wheel to remove the bulk of the wood



**23** Redrawing the lines back onto the base so they are closer to the true shape

### Carving in details

By using the grinding wheel, I am able to start carving in details. I use the black lines on the top, sides and face of the legs to blend the shapes together. This is the best time to start being artistic and creative because there is no wrong or right way and it doesn't have to be perfect. This is one of the greatest aspects of the Art Nouveau style as it is a natural form. As long as the legs look similar in shape, it is not supposed to be a perfect mirror image. Continue rounding the outside edges of the corner of the legs and blending the different shapes together.

After the outside shape of the runner and legs are carved, draw in the next set of lines to where the deeper cuts of the free-form will blend together with the legs and runners. To get the twisted, turning, wave-looking

shape to the legs and runners, use the side of the grinding wheel to cut as deep as you can into the hardwood. This may take a few passes so just take your time and always keep your hands and body in a safe position.

Once you have cut the twist and waves into the wood, start to blend the high and low areas together. You can do this by riding the face/edge of the grinding wheel onto the higher lines until they meet together with the wave cuts. Once the shape looks like it is flowing together and most of the waste wood has been removed, I change the coarse wheel to the medium grinding wheel. Next, I start blending all the twists, waves and turnings together and smooth out the entire base.

After the majority of the heavy grinding is completed, I keep smoothing out the curves

and twists together by using a smaller grinder with a medium 50mm diameter grinding wheel. This makes it easier to smooth the wood in the concave sections of the legs and lower areas.

For scraping off the grinding wheel cuts, I use a gooseneck scraper. This method is a real time saver when it comes to sanding. It is perfect for this project because of all the radius and twisting wood.

The last step before staining and finishing is to hand-sand the entire base system using 80 grit abrasive, then move to the 150 grit. This lower grit will leave the African mahogany very smooth and will also open up the wood pores better, which will make it easier for the toner and stain to penetrate into the mahogany and will allow you to achieve a darker colour.



**24** Carving in details to mimic the Art Nouveau style



**25** Draw in the next set of lines to where the deeper cuts will blend with the legs and runners



**26** Using the side of the grinding wheel to cut into the hardwood



**27** Smoothing out the curves and twists using a smaller grinder with a medium 50mm diameter grinding wheel



**28** Hand-sanding the entire base system

### Next month...

In part 2, Dennis will be staining the table base and applying marquetry and lacquer techniques to the table top *F&C*