

## STUDENT PROJECT

## Double drum coffee table

**Peter Sefton's student Paul McAnenny reflects on the problems and new techniques involved in his first design project**



PHOTOGRAPHS BY PETER SEFTON

**T**raining at Peter Sefton's Furniture School has been an enjoyable experience for me and having learnt the basics on a series of set projects during the first term, I was ready to make something of my own design from start to finish.

I found initial inspiration when one of my peers drew out a shape for a veneer hammer head we were in the process of making, which was, in essence, two overlapping circles. After sketching out some designs, I came up with a basic idea for a coffee table. I wanted a challenge and to try something new so decided to add two drawers that would require curved fronts; a concept we had only previously talked about in the classroom. In order to get a grasp of the whole design and creation process we would be doing everything to complete the piece from the initial technical drawings to sourcing our own timbers.

### Designing & mocking up

After drawing my initial design, and talking through ideas with Peter and my fellow students, I decided to make a full size mock up of my table to get an idea of scale and proportion. After researching average coffee table heights, I found that most coffee tables were 305-460mm high, so as a starting point I decided to make the top table 460mm high and the lower

table 305mm. The mock up gave me a chance to assess the structure and overcome any issues with balance in regard to the position of the legs. This process highlighted the need to add a spacer between the two tables to give some support.

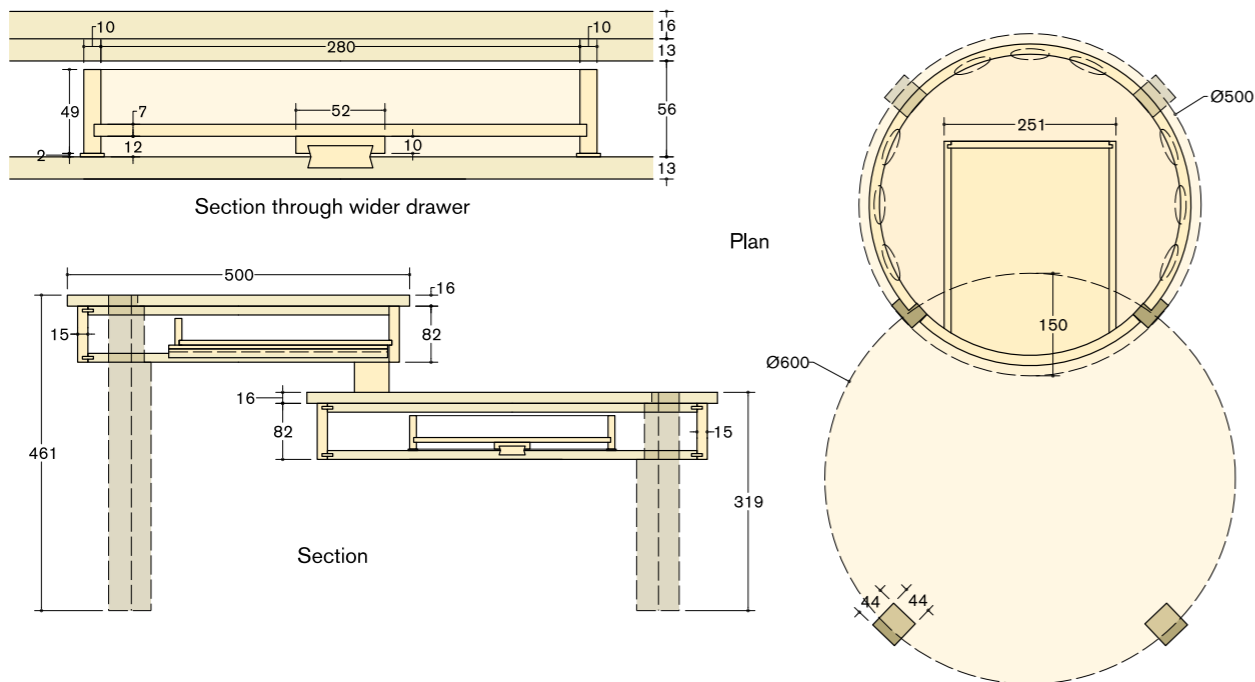
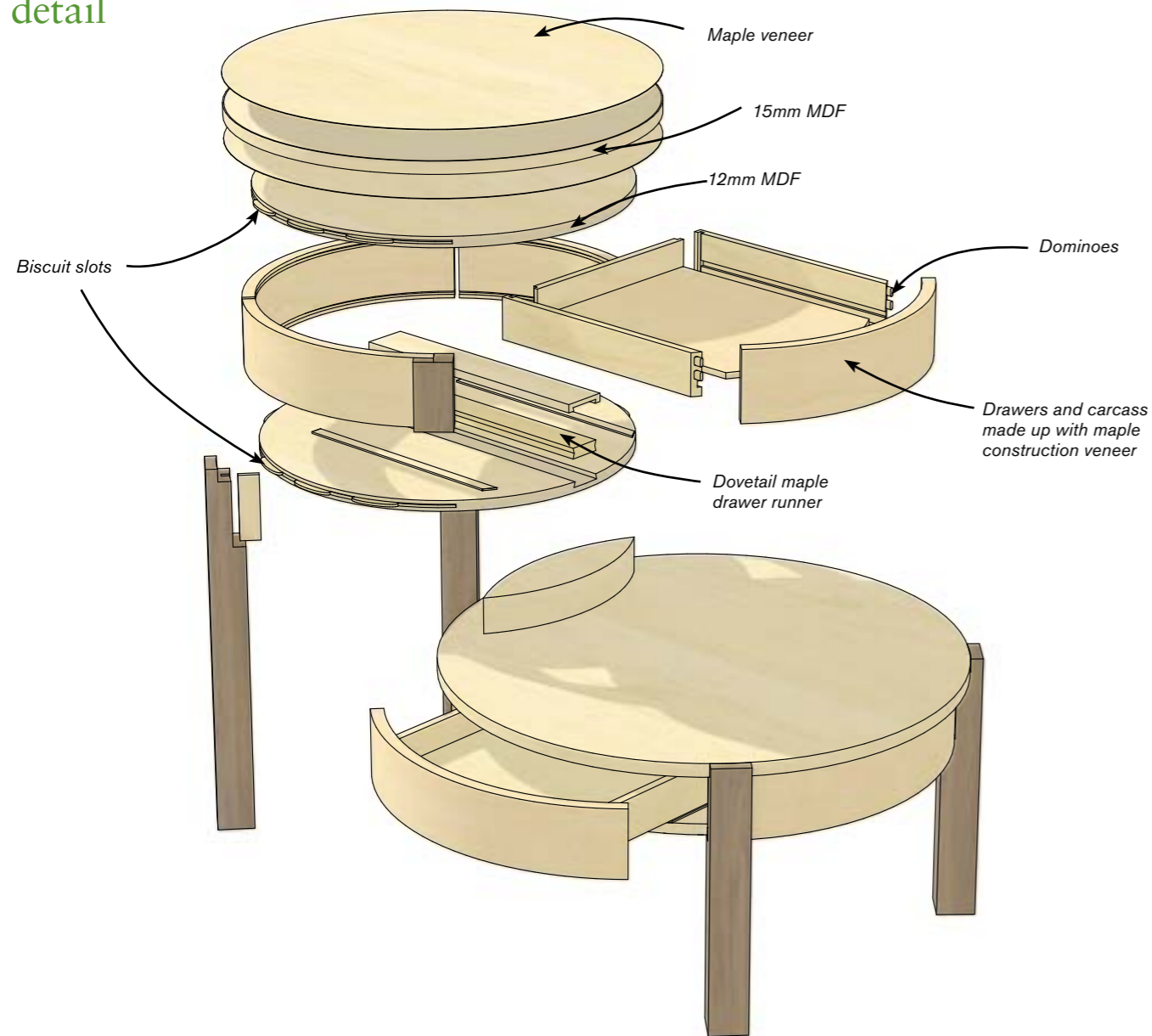
### Veneered table tops

I used 15mm MDF for the discs that were to be lipped and veneered to form the table tops and 12mm MDF to make the top and bottom framework for the drawers.

Next I had to create two formers from 18mm MDF sheet laminated together using Titebond. To stop the sheets slipping when pressed, I tacked the corners with a nail gun as I glued them together before placing them in the platen veneer press. Once set I routed out a half moon shape to the correct radius into the two stacks just deep enough to allow a bearing router cutter to be used later.

Whilst the router was set up as a trammel, I adjusted the radii and ➤

► In detail



Mock-up and rod drawing



Using a pin gun after applying Titebond glue with the gravity feed roller

also cut the discs out of the MDF to form my table tops and drum top and bottoms.

**Constructional veneers**

I needed to cut my maple (*Acer campestre*) constructional veneers down to size and started by cutting them to length on the tablesaw in bundles to save time. Finding it difficult to keep the bundles together I used masking tape and clamps to hold them in place. When cutting them to width I encountered more problems as the veneer was hard to keep flat – it jammed under the fence at one point and I had a lot of breakout. These problems were overcome by simply taping the veneer to a sacrificial piece of MDF.

At the same time I also produced 20mm strips of constructional veneer to be used as lippings around the table tops. These were held in place with band cramps around the edges of the discs, while the glue set.

**Laminated drum walls**

I prepared the constructional veneers to be laminated, along with a face veneer of rippled maple so the walls of the framework would equal the table tops in thickness. The veneers were left 20mm oversize to allow for any messy edges, poor edge gluing, and movement while being cramped. Using water-based Urea Formaldehyde Cascamite – UF glue

– spread evenly across each veneer, I then placed them in turn into the formers and left them for a day and a half to ensure the glue was fully set and the walls would hold their shape.

Next I prepared the veneer for the top and bottom of the discs 5mm oversize to ensure the veneer reached all edges – this was trimmed back later using a router with a bearing guided cutter. The veneer was fixed into place with two-part Urea Formaldehyde, and placed into the platen veneer press. Some of the edges of the veneer did not stick well, probably due to uneven glue application, so I applied some more UF and G-cramped the affected areas overnight to re-seal the flawed edges.

**Biscuiting the drum walls**

The walls and MDF framework were then grooved to accept biscuits for assembly. Before they could be glued, however, a dovetail cutter was used to form a housing into the MDF and matched with 10mm strips of maple that would be glued into the MDF to act as a runner for the drawer. All the internal faces needed sanding before they were glued in place prior to receiving a coat of shellac sanding sealer. Finally the drum walls were glued on the discs and held in place using band cramps and sash cramps.

**Constructing the drawers**

I now had time to re-plane the previously roughed out maple for my drawer sides;



Cutting through male and female formers on the bandsaw after the 15mm groove was made with the router on a tramrel



Paul is ousted to the outside when routing off the bandsaw MDF, using a template trim router cutter

Peter's tips on...

... laminating work

We use various methods and types of jigs for laminated work; the vacuum bag for larger panel type forms, G-cramps for small forms but for this job, the most appropriate cramping method was using sash cramps.

... making jigs

Paul's laminating jig needed to produce clean drum sides at 90mm high and 15mm thick. We glued together six sheets of 18mm MDF to make a jig 108mm thick and routed a 15mm wide groove at the correct radius to match the drawing, 10mm deep. We then separated the male and female sides on the bandsaw using two cuts, both just to the waste side of the routing in the formed groove. Then we used a 50mm long bearing template trim router cutter – bearing shaft end – to clean off the bandsaw waste down to the finished size and then flipped the MDF over and used a panel trim cutter – bearing on the bottom end – to transfer the shape across the square face of the jig. The former was then lightly sanded and coated with cellulose sanding sealer to harden the MDF and stop the hardened curve from gluing to the shape.

... why we use constructional veneer for laminating

We generally use commercially produced constructional veneer for laminate forming. Decorative 0.6mm veneer can be used for very tight curves, but on this occasion we used 10 consecutive 1.5mm veneers with an outer 0.6mm veneer to match the rest of the drum table's veneered finish – this matched the 15mm differential between the male/female formers. The advantage of using veneer is that when the veneer is produced there is no waste between the consecutive veneers, unlike shop made laminates which may lose 3-4mm – saw kerfs – between each lamini and which shows as interrupted grain when re-glued. The constructional veneer for this project was bought from Capital Crispin Veneer – www.capitalcrispin.com – and the ripple maple was from my stock.

Peter's tips on...

... why we use urea formaldehyde

For veneer and laminate work we like to use urea formaldehyde – Cascamite – glue; either powder mixed with water or, better still, powder-mixed with resin as we find this gives the best results for this type of work that you do not wish to creep. The powder/resin mixture will go off after an hour or so, in our cold Platen press. Epoxy resin like the WEST SYSTEM will also give very good results, but it is expensive.

... options for drawers in round carcasses

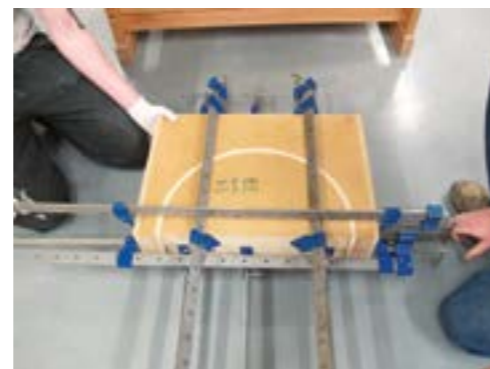
As this carcass was made from veneered MDF this was not a suitable running surface for drawers as it would wear through the veneer far too quickly. Because making a traditional drawer runner, kicker and guide within this round construction would not be appropriate, we opted for the far more contemporary construction of a sliding dovetailed central drawer muntin, hidden under the drawer bottom.

... gluing up teak

Teak was used for the legs which is a naturally greasy timber and can cause problems when being glued. The oil in the timber can repel the glue leaving a weak glue line. A few tricks to improve gluing are to try to glue up the job within 24 hours of cutting the joints before the oil rises to the surface. If the surface feels oily then wipe it with acetone 10 minutes before glue up. Also, epoxy is a good glue to use with teak.



Paul uses the gravity feed roller to apply urea formaldehyde to the constructional veneer to make the drum sides



Paul and Garry cramp up the drum sides in the MDF former

once planed down to size I could cut a 6mm groove vertically along the back edge of the drawer sides. These grooves would later house barefaced tenons from the drawer backs, and this was a much quicker and simpler way of constructing the drawers than using dovetails, and it suited the clean-cut contemporary feel of the table.

Using the router, I also cut grooves along all bottom edges of the drawer sides and backs, which would accept the drawer base. The drawer-bases were made from veneered 6mm MDF. The barefaced tenons for the drawer backs were cut on the router table, using a rebate cutter, and the rebates were cut into both ends of the drawer backs. After completing all grooves and rebates a dry fit was carried out to test the fit of the tenons and drawer bases and confirm that the overall dimensions were correct.

The backs of the drawers fitted perfectly, but the bases were a little stiff to push in and required a little extra sanding of the veneer before fitting perfectly. It was at this stage that I cut the front of the drawer-sides down to length; this cut had to be on an angle that would suit the internal radii of the drawer fronts. I did this on the tablesaw, with the blade initially angled at 30°. After checking the ends of the sides against the face of

the front, I noticed the angle was not right and after a little trial and error, achieved the correct angle of 33°. As the drawer bases were still square at the front, the next task was to cut a curve across both the base fronts, so they would fit directly into the drawer fronts. I marked the position of the front of the drawer sides, then placed the drawer fronts 4mm forward of these marks and drew along the back edge of the drawer fronts. I cut these on the bandsaw as close to the line as possible, and as these would never be seen, little tidying was required.

Using Domino joints for the drawer fronts

I had to consider how the drawer sides would attach to the drawer-front and after a long discussion with Peter he suggested the best option, although a little fiddly, would be to use Domino joints.

First I marked out where the Dominoes would go, then I gripped the drawer front in the bench-vice, lining up the marks in the correct place. I also added a 'U' shaped piece of MDF, to act as a stop to make sure the Domino was in the correct place.

The final drawer construction step was to cut a groove in the back of the drawer fronts to accept the drawer base. This was a little trickier as they were curved and also because the



The router has a pair of fences with a round section screwed to the bottom one, to hold and guide the drawer front as the stopped groove is cut for the drawer bottom



A band cramp and corner blocks pulls the drawer together whilst the sash cramps stops the drawer front from bowing out from the pressure of the band cramps' pull

drawer front would sit lower than the rest of the drawer making them flush with the underside of the table – they would also have to be stopped grooves.

These were cut with a router using a pair of fences to hold the drawer front in place with a curved guide screwed in place to stop the drawer front being pushed away as the router was plunged in. With the grooves completed the drawers were again dry fitted to be sure of a good fit, which thankfully they were. The drawer components were all glued together using a band cramp around the whole drawer and a sash cramp in two places to pull the barefaced tenons at the back in, as well as the centre of the drawer front into the base.

Overcoming a problem

In the final stages of this project I focused on the legs, which I had decided to make out of teak (*Tectona grandis*), as I felt walnut (*Juglans spp.*)

would be too dark, and at this stage I noticed that I had glued up one of the frameworks incorrectly. This was something of a major problem as the legs were intended to hide the joints in the drum walls. After careful consideration, Peter and I decided that by repositioning the top table and by having four legs instead of the planned three, it would overcome the problem while retaining the overall effect I was after. It would also make the structure more rigid and stable.

Jointing the legs

I moved on to cut the legs to their approximate size, and then proceeded to cut away sections at the top, so they would fit flush to the walls and table tops. To disguise the drawers, I cut up some 'L' shaped pieces from the waste timber to use as drawer corner blocks; they were glued on at the same time as the legs, using band cramps and sash cramps. I also inserted the drawers for this glue-up to put pressure on the

drawer corner blocks so they held firm against the walls.

Now everything was glued up some finishing touches were needed; the drawers were fitted by planing off high spots on the top and bottom of the drawer fronts as well as trimming the sides of the drawer fronts so they fitted flush to the framework. The tops were then glued on and the table was finished with a water-based lacquer.

I have thoroughly enjoyed making this project. When I started this course at Peter Sefton Furniture School, I was looking for a career change and I had never done any woodworking. Now at the end of this course I have designed and made my very own piece of furniture, and I'm hungry for more. Next project... coasters!

Paul's table and the work of the other long course students will be at the Furniture School's annual end of year Exhibition and Open Day on 13 July, 2013. *F&C*



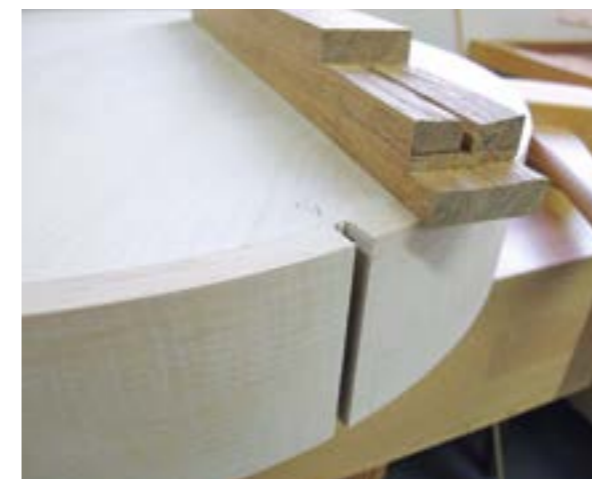
The carcass sides and base have been routed using a 4mm slotting cutter to accept biscuits. The dickie bow-shaped drawer runner is routed and glued in place whilst the drawer muntin is routed and cleaned to run the drawer square into the round carcass



Gluing up the drum sides to the base and top using the MDF offcuts kept from the earlier jig making process. Always keep them as they will come in useful



The Domino was used to make the joints between the drawer fronts and sides, using the vice and bench top as a tangent



The teak legs were mortised to accept an MDF tongue, fixing them to the table's drum side



With the drawer in position, the legs and teak mouldings are glued on using the trusty band and sash cramps