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WELCOME

Inspiration. Where does yours come from? Is it from history? From the clever joinery of Ming dynasty China, the intricate carvings of Jacobean England or the pared-back designs of the mid-20th century? Is it from nature, from the scenes you see around you or from the wood you're working with, bringing out the stories it has to tell? Or could your inspiration come from your craft itself, with the knowledge of what you can do with your tools and materials?

Throughout this issue, we celebrate the joining of modern and historic influences, of traditional and 21st-century techniques, of art and nature. We meet Robert Barnby, who creates pared-back, functional, mid-century-style pieces for homes designed to be lived in. New Jersey-based Brian Holcombe shares his passion for Ming-dynasty Chinese and Japanese sashimono design and shows how to create a dovetailed trestle bench. We meet England's Tree of the Year – the mighty Allerton Oak in Liverpool – and explore the history and properties of this popular wood. And cover star Joseph La Macchia tells how he saves fallen trees and gives them a long afterlife as pieces of furniture.

If you're looking to boost your skillset, look no further. From gilding to checking your pillar drill and from historic-style carving to cross-banding, you'll find it in these pages. Plus we've got features on how to boost your social media profile, learn computer-assisted design software and use restraints to enhance your creativity.

Inspiration is all around you – enjoy your craft!

'A tree is our most intimate contact with nature.'

GEORGE NAKASHIMA

CONTENTS

F&C ISSUE 290

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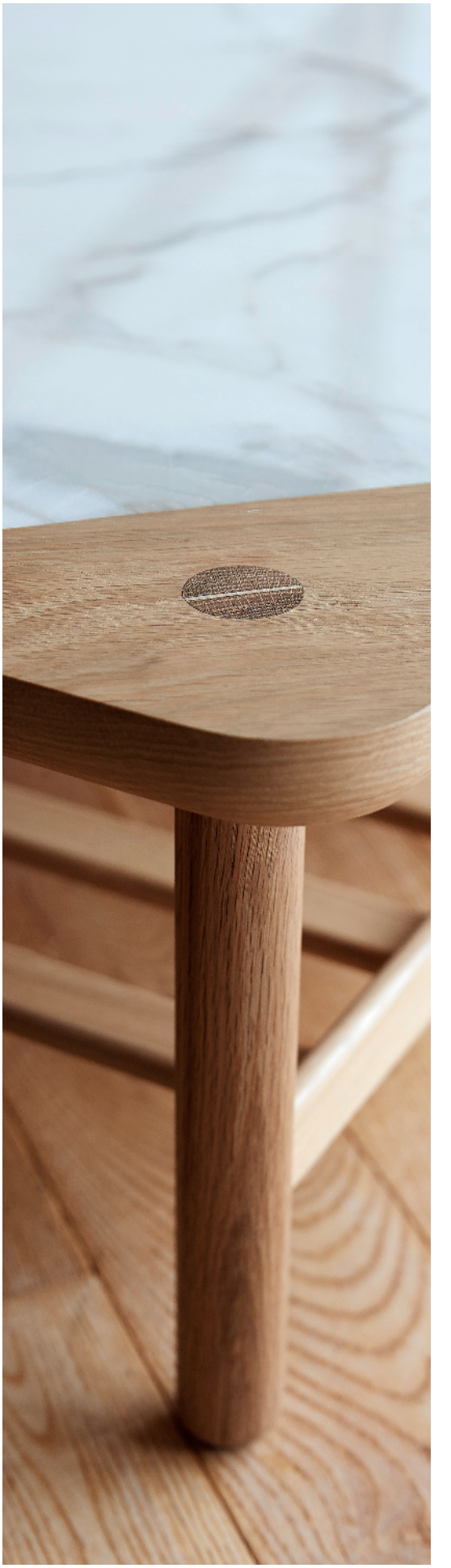
COVER PHOTOGRAPH Sara Stathas

Woodworking is an inherently dangerous pursuit. Readers should not attempt the procedures described herein without seeking training and information on the safe use of tools and machines, and all readers should observe current safety legislation.



FURNITURE & CABINETMAKING

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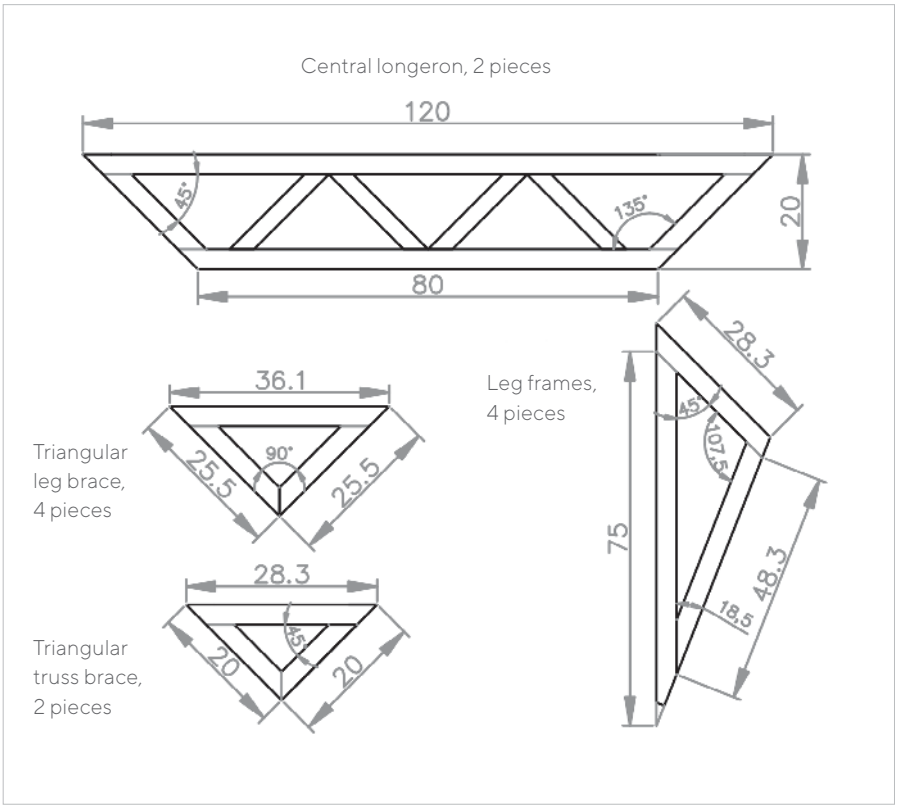
A REALE TRIBUTE

THE CAVALLINA TABLE PAYS HOMAGE TO AN HISTORIC PIECE OF ITALIAN DESIGN. **RENATO MAZZUCCO** EXPLAINS HOW TO MAKE YOUR OWN VERSION

The Cavallina table was designed by the architects Francesca Braga Rosa and Ivano Vianello as a tribute to the great master of 20th-century Italian design, Carlo Mollino, and to his famous Reale table from 1946. An elegant oak structure topped by a sheet of crystal glass with bevelled edges, the Reale table combines a sophisticated wooden base of aeronautical inspiration with a 15mm-thick elegant crystal glass top.

The Cavallina table, although it differs in construction and geometry from the Reale table, retains the original's reticular structure with oak slats. In this case the slats have been combined to create four types of frames, which are repeated to form the structure. In total there are 12 elements that support the glass top. The frames are triangular, with two 45° angles and one 90° angle, with the exception of the frames used for the legs, which require different angles due to the longer length. The glass top is supported by a horizontal truss, formed by two identical frames (longerons), connected and held apart by two triangular frames (transoms). Everything is supported by the legs and four triangles connected to them, responsible for supporting the truss towards the table ends. The frames are interconnected by screws and threaded dowel pins.

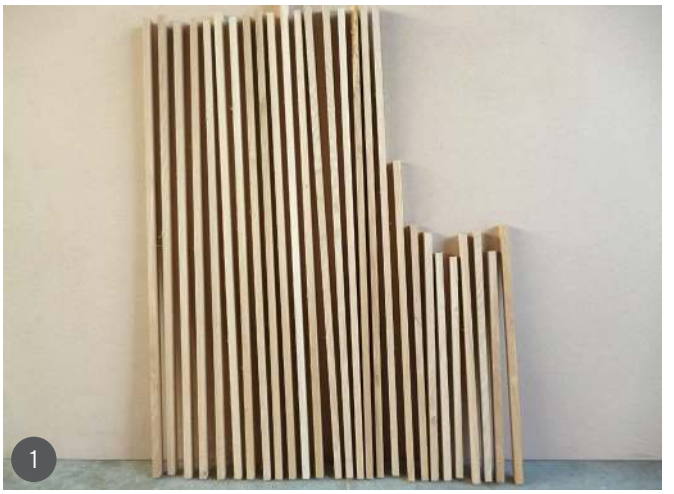


ABOVE, RIGHT: The Reale table by Carlo Mollino is a classic Italian furniture design

RIGHT: The structure of the Cavallina table is formed by four different types of frames; in the diagram the number, function, internal angles and measurements of each frame are marked

The finished measurement of this table is 1600 x 700 x 720mm, but the geometrical structure means the dimensions can be easily changed; the length can be increased, for example, if you increase the length of the truss, and the width can be increased by replacing the two triangles (transoms) with two trapezoidal shapes.

The construction of the Cavallina table requires less material than a traditional table, or rather, the project has been conceived to reduce thicknesses to a minimum, producing a very light structure. If you can buy the slats at the correct thickness, you just need a pillar drill, mitre saw and a cordless drill to make the table.



Allow the oak slats to settle for a few weeks after the cuts

The cardboard template with the centre of the hole and the length of the dowels marked. It is necessary to visualise the position of the holes, which vary accordingly to the joint's angle (usually 45°)

Considering the small dimension of the slats, the drilling has to be well positioned in order to avoid accidental through holes!

The joint strength under pressure exceeded my expectations. The collapse happened because of the wood fracture, not due to the dowels breaking or detaching

YOU WILL NEED

- 32m of sessile oak slats, section 35 x 20mm
- Multifunction woodworking machine (5 in 1)
- Pillar drill
- Countersunk head screws M6x30
- Threaded dowel pins M6
- 8 x 30mm wooden dowels
- No.5 10mm bushings with internal diameter 8mm

CHOOSING THE MATERIAL

For the structure I decided to use a hardwood with a very strong grain, sessile oak is ideal. For the given dimensions, you need approximately 32m in length of slats with 35 x 20mm section. This will give you more timber than you need but means you can select the best material for the different sections. Choose slats with straight grain for the longest sections as these will be most stable. For the shorter sections, you can use those that are more 'nervous' during cutting.

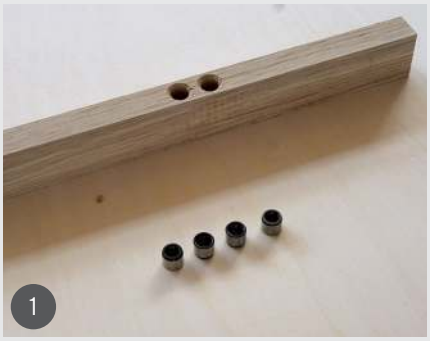
Before starting to put them together, the slats need to rest for a few weeks, because, even if the wood is well-seasoned, after being cut in shorter sections it can produce internal tensions that might cause deformation in the wood. After resting, discard any twisted or deformed slats, leaving just a few to make the jigs, which will improve the precision of the drilling during the build.

THE JOINING SYSTEM

The structure of the Cavallina table can be quickly assembled using tools such as a Domino or dowel jointer. If you don't have these tools, you can use a drill with a jig. With the jig, you can join the slats precisely using two dowels (see facing page for a step-by-step guide to making the jig).

In addition to the jig it is useful to make a cardboard template on which to reproduce the centre and the size of the dowels. This will be useful to mark the centre of the holes into the slats, which will need to be marked one by one due to the small section of the slats and because of the different angles of the joints.

To make sure the structure is solid before progressing with the construction, test the joint strength by bonding two pieces together and then putting them under strain. In my test, the joint collapsed only under high pressure due to the fracture of the material surrounding the dowels, so it passed the test.



LEFT: The bushings to make the jig. These ones are 10mm long. To give a good guide to the drill bit I have used four, inserting two for each hole, but if you can find 20mm-long bushings, you can use just two

MAKING THE JIG

1 To make the jig you need a waste slat 300mm long and some hardened steel bushings 20mm long (usually easy to find in a mechanical workshop). You can use shorter ones if you overlap them in the holes, in any case the internal diameter has to be the same as the drill bit.

2 Using the pillar drill, with a bit the same diameter as the external diameter of the bushing, make two through holes, with 20mm centre distance, on the thinner side of the slat. Considering the small support base, the slat has to be fixed to a guide, such as the 80 x 80mm wood rail that can be seen in the photo, well squared and fixed to the footplate drill.

3 To insert the steel bushings and facilitate the chip discharge while you're working with the jig, deep countersink the holes (depending on the length of the bushings).

4 Press fit the bushings in the holes with a hammer. Mark a line in a central position relative to the holes; this line will be used to help align the pieces when they are drilled. The marking has to be precise, otherwise when you use the jig any errors will be compounded.

5 Measure the distance between the two holes and divide it in two with a visible mark on the edge.

6 To complete the work, screw the slat to a wooden panel which defines the support base of the jig. To test the precision of the jig, make a few trials with some waste slats.

7 Place two slats aligned by the end grain and mark them perfectly in the centre as a reference. The mark needs to match with the mark on the jig. Fix everything with a clamp and drill a slat at a time.

8 Once the two pieces are drilled, join them with the dowels and check the alignment. If this is not perfect, move the reference point on the jig, left or right, half of the distance between the centres of the reference marks on the two slats.

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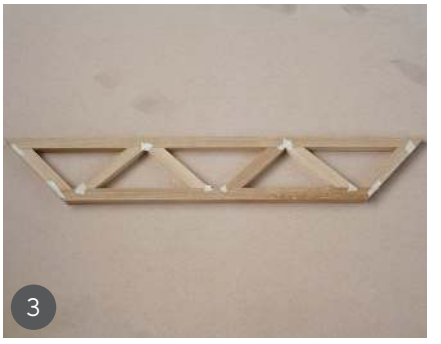
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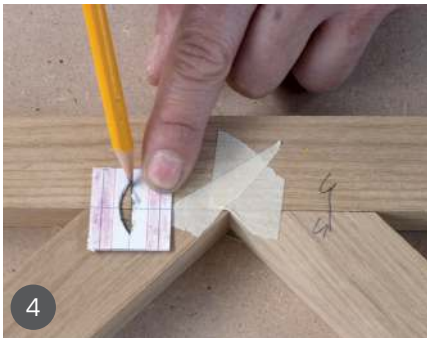
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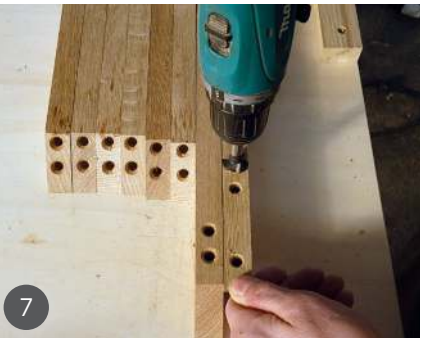
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THE CENTRAL TRUSS

The construction of the truss that supports the top starts from the two trapezoidal frames. To join the four slats with a thread cutting, you could calculate and set the bisector at 45° and 135° angles on the mitre saw, however this can be impractical. To simplify the job, cut all the slats at the same 45° angle and compose the frame by fitting together the braces between the upper chord and lower chord. This way, the dimension of the external braces is the same as those of the internal ones.

Once all the pieces are cut, assemble the frames using masking tape to verify the dimensions and mark the reference points for drilling the hole for the dowels. Now use the template to mark the size of the dowels, 30 x 8mm each, that will be used for all the joints. The template is useful for avoiding any mistake in positioning the centre for the holes.

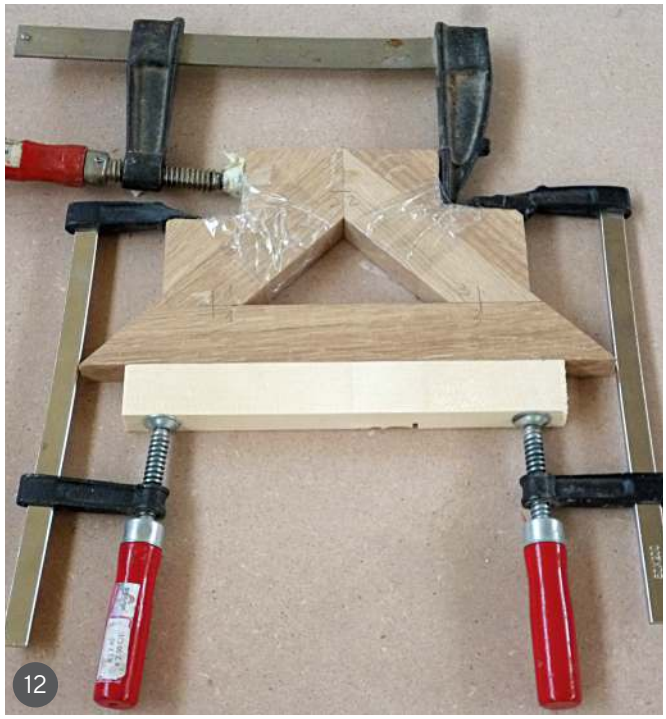
Only one joint will have just one dowel, which is the joint between the lower chord and the external brace. For all the holes, set a depth of 16mm, leaving a margin the length of the dowels. The next phase is countersinking the holes, to facilitate the insertion of the dowel and make a container for the glue that will settle in there.

You're now ready to glue the frame, a stage that is better performed in two phases: first bond the sloping elements with the lower chord, then add the upper chord. To assist with the bonding, you need to make some suitable jigs, which are used to position and tighten the clamps.

Fix the jig to the brace using paper masking tape, you can also use a small clamp to block its position. Some dowels are inserted without glue to maintain the right alignment with the upper chord. When the glue is dry, turn the jigs and fix them again with masking tape, you can also glue the upper chord.

Once the two trapezoidal frames are ready, we can build the triangular ones that are needed to complete the truss. They are two right-angled equilateral triangles, with sides 200mm long and hypotenuse 283mm. Considering the similarity with the triangular frames that will be fixed in the upper part of the legs – a bit bigger, with sides of 255mm and hypotenuse of 361mm – you will work simultaneously on all of them.

To keep things simpler and avoid having to calculate complex angles and fractions of a degree, cut all the angles at 45°. For the drilling, use the same method with the template and the jig made previously.



1 To compose the trapezoidal frame, all the pieces are cut at a 45° angle.

2 Cutting the internal pieces of the trapezoidal frame. As they are small, to keep them still you should use a pushstick if your machine doesn't have the proper clamp.

3 The frame held together with paper masking tape.

4 Marking the centre for the holes with the template and numbering the pieces.

5 The benefit of the template is clear in this picture where you can see one of the perimetral joints of the lower chord. The template makes it clear that the space available is not enough to position the two dowels; in this case I will use just one.

6 For all the holes you need to get the reference marks to match the mark in the middle of the jig with that of the slat. To set the drilling depth at 16mm, I used a spacer inserted in the bit.

7 The following hole countersinking is used to facilitate the insertion of the dowel and for the glue to settle in a small container.

8 The jig to aid gluing the frame is made from a waste slat cut with a bandsaw. All the angles are at 45°.

9 Bonding the brace with the lower chord. To maintain the correct alignment with the upper chord, insert some of the dowels without glue.

10 Once the glue is dry, turn the jigs and complete the frame, gluing the upper chord.

11 The template is also used for marking the centres for drilling and gluing the triangular elements.

12 Using jigs allows you to apply pressure to the joint line with clamps.

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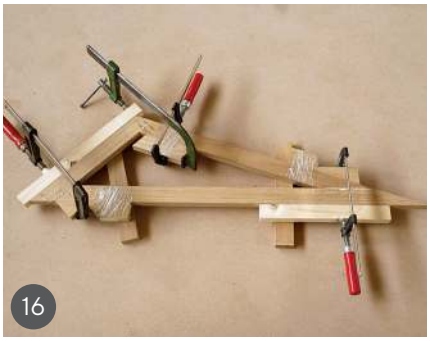
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THE LEGS

The long frame for the legs is the most difficult part to cut, as the internal angles are very acute. The triangle has a 750mm long hypotenuse, with the corresponding angles at 45° and 18.5°, the shorter side is 283mm long, with angles at 45° and 26.5°. The longest side is adapted to the previous two, in this case 483mm long and angles at 18.5°and 26.5°.

The first cuts are made with the mitre saw at 18.5°, but to be able to do this you need to build a guide to fix to the mitre saw. With the help of a small piece of timber cut at a complementary angle of 71.5°, screw a wooden square section support on it, overhanging from the piece of timber previously cut, so that you're able to lock the piece with a clamp.

Once finished, the other cuts don't need an additional guide. The process for joining them is the same: the pieces are put together with various pieces of masking tape and then the centres are marked for drilling.

The joint with dowels, at 20mm centres, works well for all joints except those with a cut at 26.5°, which requires 15mm centres distance. In fact, it is better not to use only one dowel, as the frame strength may be compromised. In order not to waste time constructing another jig, mark two reference points on the pieces and work using only one hole of the jig. Even for this frame, you need to build some appropriate jigs to be able to bond it with the standard clamps.

13 The jig for the 18.5° angle cut is made by a slat screwed to a piece of timber cut at a 71.5° angle. The piece of timber is clamped at the base of the mitre saw with a second clamp that keeps the piece to cut in position.

14 One of the legs put together to mark the holes for the dowels.

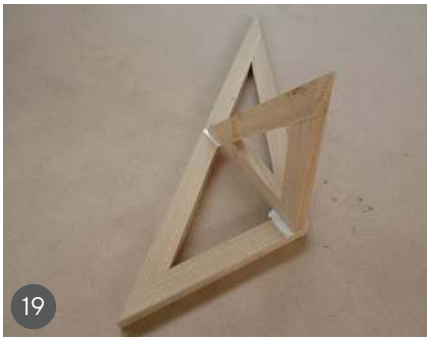
15 The holes of the pieces with a 26.5° angle require a 1mm centre distance.

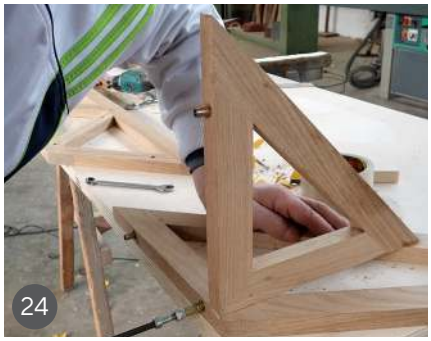
16 Bonding the leg. The jig inserted in the obtuse angle is kept in position by a second clamp.

THREADED DOWEL PIN

To join the different frames, we have used only one type of dismountable joint. This is made by a special type of dowel pin called threaded dowel pin; this is longer than the normal ones and is partially threaded outside.

The threaded part is screwed into the wood, the smooth part stays outside as a guide for the other piece to be joined. This is drilled in a mirrored way to accommodate the smooth part, the pin, on one side. On the opposite side is inserted the threaded section with the countersink part so that when it's screwed into the dowel pin, it locks the two elements together. The beauty of this joint is that you can drill both elements with an 8mm drill bit.





THE JOINTS BETWEEN THE FRAMES

Once you've noted the position of the dowels, to avoid weakening the structure with drilling for the dowel pin exactly in those locations, start to assemble the structure starting with the legs.

The procedure is easy: drill a frame (in this case the bigger one of the legs) and use the same one as a guide for the drill bit in the mirror drilling to perform in the second frame. This should establish the relative position of the two elements; use some double-sided tape to try the position a few times, until you find the right one. At this point everything is fixed securely to the bench and you can prepare to drill the second frame.

The drill bit is driven, not just by the first frame, but by a jig similar to those built for the dowels but only with a hole.

Once the drilling is completed and the frames are separated, insert the pins in the smaller triangular frame after the holes have been countersunk (this way the countersinking helps to facilitate the insertion of the dowel pin and avoids chipping the wood). The holes in the leg are also countersunk on the side where the screws will be inserted. At this point you only need to screw together the two frames and repeat the same steps for the following ones.

17 Marking the centres on the legs to drill with the pillar drill and an 8mm drill bit.

18 These holes will house the smooth section of the dowel pin.

19 Double-sided tape helps to fix the two frames to the bench with the clamps.

20 Then the drill, guided by a jig and by the drilling performed earlier on the leg, drills the second triangular frame.

21 Hole countersinking limits the wood chipping when you're screwing the dowel pins.

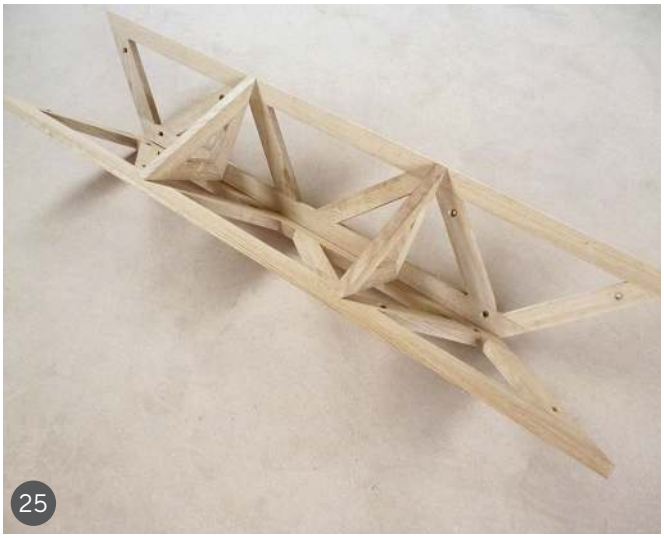
22 Once the dowel pins are in place, continue to fix the leg to the smaller triangle with the Allen screws.

FIXING THE LEGS TO THE TRUSS FRAMES

Once the four legs are assembled, use the same method to fix them to the two truss frames: the parts are aligned and temporarily fixed with double-sided tape and subsequently, with some clamps, to the bench. The drilling is performed using the jig already built. The fixing to the trapezoidal frame is split between the leg and the triangular frame connected to it, with three holes.

23 The trapezoidal frame has to be fixed to the assembled structure of the leg in three points: two on the leg and one on the triangular frame screwed to it. Even in this instance, the drill is guided by a jig.

24 Inserting three dowel pins in the leg structure requires a screw and a double bolt. Using a long Allen key helps keep it perpendicular to the faces.



ASSEMBLING THE CENTRAL TRUSS

Once you've checked the connections with the legs, you can assemble the central truss. To make things easier, the legs need to be detached from the two trapezoidal frames, which can then be assembled through the internal triangular frames, held in position with double-sided tape.

Once you've localised the connection points, drill the two trapezoidal frames with the pillar drill. The truss is reassembled to drill the triangles, working on one side first, tightening the pieces together, then on the other side.

25 The central truss.

26 Assembling the central truss is performed in two phases: first, fix the internal triangular frames to one of the trapezoidal frames.

27 In order to do this, the legs need to be removed.

LEVELLING THE LEGS

You can now reassemble the four legs to see the base in its entirety for the first time. Now is the best time to level the support points on the floor. To do this, attach some sandpaper with double-sided tape to a plywood offcut and rub it on the longer legs.

28 The Cavallina table stands on four points, which makes levelling the legs on the ground easy – it can be sorted with some sandpaper fixed to a plywood offcut.

SANDING AND FINISHING

29 Sanding the frames with an orbital sander.

30 The first coat of oil laid on with the brush. This type of finishing impregnates the wood and there should be none left on the surface.

31 The excess oil is removed 15 minutes later with a dry, clean cotton cloth.


29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32 Rub with an abrasive cloth to smooth the surfaces before applying the second coat of oil.

33 Wiping down the excess oil completes the finishing, giving warmth and a good tactile feeling to the oak.

The finishing process involves:

- Smoothing the wood with 220 grit abrasive
- Appling the first coat of oil and removing the excess after 15 minutes
- The following day: sanding the surfaces with very fine non-woven abrasive pad
- Applying the second coat of oil

Sand the table with 120 grit sandpaper and refine it with 220 grit. This phase should never be rushed, even if it is very boring; the more you sand the better the finished result.

To bring out the characteristics of the oak and give it warmth, use a natural oil applied with a brush. Leave it for 15 minutes until the product is absorbed, then remove the excess oil on the surface with a cotton cloth.

Twenty-four hours later, reassemble the structure, rub it with a non-woven abrasive pad, medium or fine grit, then apply the second coat of oil as before and the table is ready.

CRAFTING THE FUTURE

THE YOUNG FURNITURE MAKERS AWARDS HAVE BEEN SPOTTING THE BEST AND BRIGHTEST YOUNG DESIGNERS AND CRAFTSPEOPLE FOR MORE THAN A DECADE

Who will be shaping the furniture of the future? More than 10 years ago the Furniture Makers' Company launched the Young Furniture Makers Awards to help answer that question and give a helping hand to schoolchildren, students and graduates entering the field.

This year some 150 young designers exhibited their cutting-edge furniture and lighting to around 1,000 people at Furniture Makers' Hall and the Dutch Church in Austin Friars, London. The event was sponsored by Axminster Tools & Machinery and supported by Anti Copying in Design, Blum, Celtheath Contract Furniture, the January Furniture Show and The Furniture Ombudsman.

There are three categories: the Bespoke, Design and Innovation awards. Designer and furniture maker Rupert Senior has been a judge for the awards for several years. He tells *F&C*: 'For the Design Awards I am looking for coherent ideas that perhaps address the way we live today in a new way, and of course the ability to be cost-effectively produced in numbers. For the Bespoke Awards I apply the same criteria I apply when judging the Livery's coveted Bespoke Guild Mark awards: design, materials, craftsmanship and function – is the work exceptional in these four areas?

'This is really challenging for the applicants for the Bespoke Awards, as not only are the judges looking for good proportions and functionality, but the selection of materials is also important here, and then there is the craftsmanship. The piece doesn't need to be complicated but all these aspects need to come together to form a complete idea.

Young Furniture Makers Innovation Award and Blum Best in Show Prize: Huw Evans for the Concertina Collection

FROM LEFT TO RIGHT: Nina Naveršnik, Millie Harper and Sapphire Hales

'For the Innovation Award I am looking for original thinking, whether it's a technically clever use of materials or a new, more effective design. The judges are looking for this across all the entries.'

Special guest furniture designer and maker Sebastian Cox presented the prizes, including to Huw Evans, who won this year's Innovation category as well as the overall Best in Show prize for his Concertina Collection. Huw exhibited his Concertina Chair, part of a larger furniture and lighting collection. He explains: 'This Concertina Collection plays with the fluidity of wood, cutting timber in varying thicknesses, lengths and frequencies and allowing the natural splay to dictate the designs. The founding research of the collection began relatively early in my third year, it was a gradual process of trial and error to fully understand the limitations of the timber.' Huw, who has been interested in design from a young age and studied 3D design at the University of Plymouth, says his collection shows that rudimentary machines like the bandsaw can still offer new ways to create contemporary furniture, and it also has a commercial application.

He says: 'My working ethos isn't definitive at this early stage of my career, though my design process starts with the raw material and the rest follows. Where possible, my work aims to enhance not only the material but also accentuate the making method. For instance, Concertina products emphasise a typically frowned-upon feature – bandsaw marks. These are commonly sanded away but instead, I finished only the exterior of the timber, leaving the inside faces in raw form.'

For Huw the awards were a great way to make business contacts as well as getting in touch with other talented young designers. He has begun a part-time internship with The Conran Shop, while developing his own designs in a small home workshop. 'Finding a career that integrates designing and making is the intention, however this is certainly a challenge,' he says. 'Having focused predominantly on making during my time at university, directing my attention towards design for manufacture may be my next step. The one aspect I do know for certain is that I'm taking each opportunity as it arises.'

Ten outstanding pieces from the exhibition will go on show at the 2020 January Furniture Show at Birmingham's NEC from January 19-22.

THIS YEAR'S WINNERS

Young Furniture Makers Bespoke Award:
Matthew Hensby for the Kent Stick Chair
Young Furniture Makers Design Award:
Nina Naveršnik for the Lucy Light
Young Furniture Makers Innovation Award:
Huw Evans for the Concertina Collection
National School Design Prize: Millie Harper for the Egg Cot
Blum Best in Show Prize:
Huw Evans for the Concertina Collection

Young Furniture Makers Bespoke Award:
Matthew Hensby for the Kent Stick Chair

PHOTOGRAPHS COURTESY OF THE FURNITURE MAKERS' COMPANY

WHAT THEY'RE SAYING

Dids Macdonald OBE, Master of The Furniture Makers' Company
'Each year, the Young Furniture Makers exhibition surpasses design standards through excellence and this year's event was no exception. New designers had a unique opportunity to access and speak to key influencers within the sector in one-to-one dialogue and there was a tangible buzz and excitement. For new designers, Furniture Makers' Hall is fast becoming the "it place" for networking and connecting with other young, creative designer-makers who are looking to make an impact on the sector.'

Sebastian Cox, designer and furniture maker
'The Young Furniture Makers exhibition is an important platform for designer-makers at the start of their career. The exhibition provided a great opportunity for these incredibly talented makers to demonstrate their passion to key people within the UK design community. It was a real pleasure to see the exhibitors' work, hear their enthusiasm and reward some truly outstanding designs.'

Paul von der Heyde, chairman of exhibition sponsor Axminster Tools & Machinery
'The show presented a wonderful picture of the creativity and talent of the next generation of furniture makers. The enormous attendance and energy at the awards session was inspirational. It was a thrill to be associated with such a vibrant and inspiring event.'

TRADITIONALLY MODERN

ABDOLLAH AND KATE NAFISI FROM NAFISI STUDIO EXPLAIN HOW THEY COMBINE TRADITIONAL CRAFTSMANSHIP WITH MODERN DESIGN – AND IN DOING SO CREATE AN ART FORM

Nafisi Studio is a British luxury bespoke art furniture and sculpture studio based in Horsham, West Sussex. It is run by husband-and-wife team Abdollah and Kate Nafisi and every handmade piece has a story, fusing progressive and heritage craftsmanship. 'The craft industry would not be where it is today without the hard work of the pioneers who came before us,' they say. 'We stand on their shoulders and seek to safeguard old techniques in order to learn from them and continue passing them on.'

Working on all types of bespoke commissions, big and small, Nafisi Studio designs and creates wardrobes, cabinets, kitchens, shelving, storage and a range of tables. 'Tables form the intimate social interactions between people in our spaces, from a short coffee break, a meal, to a lengthy meaningful discussion.' The couple also say that traditional Japanese joinery is a core part of their work, and they continue a legacy of joinery and high-end cabinetry in their pieces.

Nafisi Studio likes to fuse this traditional craftsmanship with contemporary and new design approaches to create unique works of art. They also employ the tradition of steam bending found in old boat building and barrel making, pulling it into small features such as handles and rails. 'Blurring the boundary between art and furniture is our sweet spot.'

UNIQUE BESPOKE FURNITURE

Kate continues: 'Our most recent project was designing and making a bespoke bed for a young couple in London who were moving into their first home together. They wanted something low to the ground with a Japanese vibe, but also something that was earthy, raw and simple. The bed we created for them has a playful lock box at the back for stowing items, using a traditional Kanawa Tsugi Japanese joint to form the door of the peg lock.'

The stunning finished bed (shown here) is also the result of a new inspiring collaboration between Nafisi Studio and an oboe craftsman. 'We had an open day at our studio and this wonderful man, a famous oboist who owns Howarth of London, one of the oldest oboe and saxophone shops in the country, came along. He loved our work and asked if, somehow, we'd be interested in using his wood dust waste. Abdollah and I visited his manufacturing workshop, a beautiful old place in Brighton, and we collected a few buckets of dust from this black African wood and took it home. It's very exotic wood, and completely black, and where the grain in the commissioned bed was naturally bowed, we filled it with oboe dust. The bed is our most recent piece of work, and something we're very proud of.'

As well as exquisite grains, the bed has simple joints designed by the studio, which gives its owners easy access to their flat linen sheets. 'There is good circulation of air around the mattress and a large rim edge to sit on. The wood speaks for itself. High quality, very stable, this piece will be an heirloom for the next generation.'

Nafisi Studio recently collaborated with provenance.org, a digital platform that aligns with the couple's values. 'The origin of materials is important to us,' Kate explains. 'Having trust in fellow local businesses for our workshop tools and wood gives us confidence in the ethical and sustainable roots of the products we make. We seek to increase our knowledge of provenance where we can, such as where the trees have been grown and the people who felled them. We know all the makers of the British tools we use.'

Japanese-style bed

PHOTOGRAPHS COURTESY OF NAFISI STUDIO

Kate continues: 'Linking up now with Provenance is exciting. They help businesses to make the supply chain of their manufacturing transparent. When a company says it uses recycled wood or non-toxic glue, that it supports the local community or any other kind of sustainability claim, Provenance will actually go and verify the claim, they'll back it up. They assist businesses, making it easier for them to share their making process, what goes on behind the scenes, all that information that often customers don't know about, or don't know if they can trust. Having Provenance affirm that our bed was made with extreme care is a positive step towards greater transparency.'

The couple who now sleep on the air-dried Japanese-style bed are equally thrilled, claiming that 'the bed is us. It's a great feeling to look at it and feel an extension of ourselves... The design is beyond anything we could articulate and yet feels like home. And it has anchored our home in warmth.'

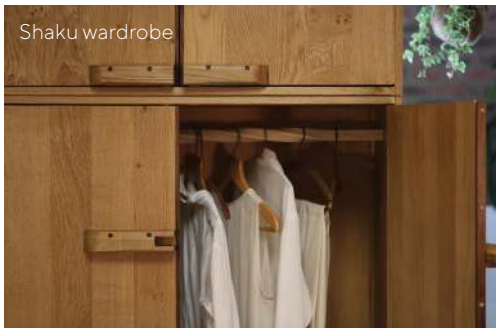
TEAMWORK

Abdollah and Kate came together from two diverse and rich backgrounds. Abdollah is a designer craftsman at Nafisi Studio, with over 15 years' experience in woodworking. He has created luxury furnishings and artwork for the home, as well as outdoor sculptural works. As a member of the Guild of Master Craftsmen, a Freeman member of the Worshipful Company of Furniture Makers and a TV star from the BBC2 series *The Victorian House of Arts and Crafts*, he likes to contribute to the craft industry and inspire others.

Originally from Iran, where he ran his own woodworking workshop for four years, Abdollah relocated to the UK in 2011, and in 2013 set up his workshop in Horsham to produce bespoke commissioned pieces. Abdollah is passionate about raising the quality bar of each of his pieces, as well as in his field, to make the British handmade luxury industry proud. He also teaches woodworking courses and lectures in design


Shaku wardrobe


Sussex Table


Shaku wardrobe

at West Dean College, and additionally offers local businesses and charities pro bono work.

Kate is a designer and maker. She has been a software designer for 10 years and also an art and design talk series curator. Born and bred in London, she started out in both fine and interactive art, leading her to digital touchscreen user experience and finally to UI/UX and service design for digital products. Kate's passion for human interaction and early attraction to participatory art make furniture design and sculpture a natural extension of her skill set. When Kate designs, she assesses the user experience first and foremost, paying great attention to ergonomics and function, ensuring every piece satisfies the client's needs. Kate also manages the studio and deals with communication and marketing operations as well as organising steam bending woodworking courses.

Nafisi Studio cares deeply about the provenance of materials, and makes sure the studio reduces and recycles as much as it can, right from the start of the design process. 'Sustainability is a central part of the Nafisi way of making,' Kate says. 'The workshop's heating and lighting is supplied by 100 per cent renewable energy due to the farm's biomass boiler system and solar panels on the roof of the workshop. We also use local timber yards for our FSC wood stock, and regularly purchase off-cuts instead of new timbers.'

The pair's talent and creativity, their passion for producing top-quality work and their respect for the environment and world around them is evident for all to see. Now they are members of The Guild of Master Craftsmen, Abdollah and Kate hope to showcase their skills to a wider audience. 'When something is good quality, a person can instantly connect to and feel sympathy for what beauty means in the mind of the artist.'

nafisi.design

WORDS: LORNA COWAN

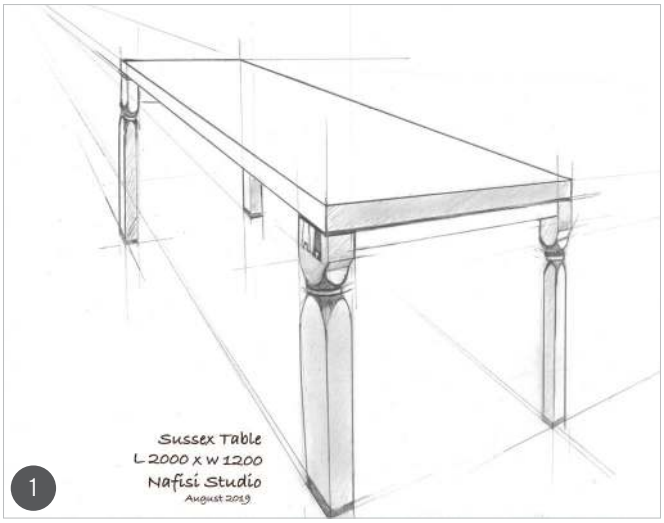
THE SUSSEX TABLE

ABDOLLAH NAFISI DECONSTRUCTS THE UNIQUE JOINERY HE CREATED FOR THIS COMMISSION

I've always considered tables to be a great opportunity to showcase the marriage of craftsmanship and natural materials, a large canvas on which to express the beauty of contemporary form and intricate structure. For this project the requirement from the client was to design and construct a thick, solid timber dining table to accommodate 10 people with maximum unobstructed legroom. The design also needed to allow for the piece to be fitted through multiple small doorways to get to its new home. With these needs in mind, I created the table in eight parts that could then be assembled in the client's home without the need for any glue or finishing on-site. (**See photos 1 and 2**)

SHAPING AND TURNING THE LEGS

Once I had milled and planed up the oak timber for the legs, I squared off the bottom of the legs on the bandsaw, then finished up with a curve at the top, leaving a wider section to use when I joined the legs to the frame. After sanding the bandsawn side to 150 grit, I then centred the leg on the lathe and turned a ring equal in diameter to the squared timber. I wanted to use turnings in my design to pay tribute to traditional English craft next to my more playful contemporary design elements. As a finishing touch to the legs and in keeping with my design for the table top, I Domino jointed walnut



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PHOTOGRAPHS COURTESY OF NAFISI STUDIO

end grain tips to each leg to give the table an almost airborne appearance against the dark floor of its new home. (**See photos 3 and 4**)

DESIGNING THE SUSSEX JOINT

The Sussex joint is essentially an inversion of a traditional houndstooth dovetail cut into a large leg joint. I believe the inversion of the design provides greater strength to the joint when used in this particular context, ensuring an incredibly sturdy connection between the legs and the walnut stretchers that connect them at each end of the table. (**See photo 5**)

The challenge was to create an inverted double dovetail joint in contrasting woods to strengthen the table and also achieve a complex decorative detail.

I first came across a houndstooth joint on a Moxon vice-making course led by Derek Jones. It really fascinated me, trying to work out how these exposed technical skills worked. I tried to make a new joint with a much longer dovetail that was structurally more complex to cut out and different in its decoration.

Both a houndstooth joint and a Sussex joint have an inner and outer dovetail. The key difference is that the Sussex joint's inner dovetail sits at the bottom of the outer dovetail and it sits upside down instead of the same direction as the outer trapezoid dovetail shape.

CUTTING THE SUSSEX JOINT

First I marked the machined walnut stretchers and cut the two tails with a hand saw and chisel, then cut the additional smaller dovetailed recesses with a chisel only. After the walnut stretchers had been prepared I marked out the pins on the top of the oak using the stretchers as a guide and prepared to cut the pins to a depth of 100mm. While I used hand tools for the walnut I chose to cut into the oak using my bandsaw – if you decide to give this a go, make sure your machine is running accurate and true and take plenty of time, otherwise it's impossible to achieve the accuracy required for this joint! Once I had done the bandsaw work, I gently filed the pins to achieve a fine finish. (**See photos 6, 7, 8 and 9**)


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PREPARING THE LONG RAISED STRETCHERS

Before I glued up the Sussex joint I first wanted to finish preparing all the parts of the table structure and cut the dovetails where the longer stretchers join the ones that connect the legs at each end of the table. These longer oak stretchers sit slightly proud of the rest of the frame, providing hidden support for the floating table top design. They sit into a dovetailed recess perpendicular to the walnut stretchers that join the legs to the frame on both ends of the table. I cut this joint with a hand saw and chisel without any glue because it was designed to be rejoined during assembly on-site. (**See photo 10**)

CHOOSING AND PREPARING TIMBERS FOR THE TABLE TOP

It took me a couple of days to choose timbers for the table top, the client had requested a wild and varied representation of grain orientation while creating a selection that worked together as a whole. I played around mixing quartersawn and flat-sawn variations for a playful effect and opted to add in a beautiful walnut stripe down the centre of the table, mirroring a boldly striped painting in the client's home. To ensure the table top would fit through the small entrances it was required to, I chose to join it in two halves to be slotted together on-site with a subtle dovetail joining the two halves of the table in the centre. (**See photo 11**)

GLUE-UP

Now that all the parts had been prepared it was time for the glue-up. I will say this, pressing the Sussex joint together was a high-pressure operation! I used a powerful table vice and took a very long time joining each leg to the frame, listening carefully to the wood as I slowly joined the oak and the walnut. Fortunately all four legs joined the stretchers perfectly and I could breathe a sigh of relief.

A couple of 'top tips' for the glue-up:

1. Do not use fast-drying glue during the operation as it might take much longer than you think – approximately 10 minutes up to 1 hour on each joint.
2. Have some WD40 handy as you are tightening up the clamps in case you have to cut the joints so accurately the friction can be a pain.
   (**See photos 12 and 13**)

I then moved on to gluing up the table top, a less stressful ordeal but important nonetheless. Each side of the table was Domino jointed together in a zig-zag pattern for maximum strength and I joined the walnut strip slightly raised above the oak so I could plane it to match the other side perfectly once assembled. (**See photo 14**)

SANDING AND FINISHING

Once the glue-up had gone successfully I pre-assembled the table in my workshop (**see photo 15**) and planed the central walnut strip to ensure a perfect fit between both sides of the table (**see photo 16**). I then gradually sanded the table top to 1000 grit before disassembling the table and double-checking every piece was sanded to perfection (**see photo 17**), and then finishing with five coats of Osmo oil leaving 24 hours in between, buffing gently with 1000 grit in between each coat. (**See photo 18**)

FINAL ASSEMBLY AND SECURING THE TABLE TOP

Now that I was happy with the finish on the piece and certain that it was going to go together perfectly on-site, it was time for delivery and final assembly. As planned, each of the parts I had constructed fitted through the small doorways in the building comfortably and the table came together perfectly in its


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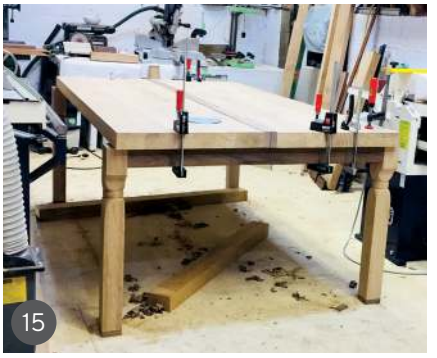
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new home. To secure the table top to the frame, I had welded up four brackets to be screwed into the end stretchers and then up into the table top. Once these had been fitted the project was officially complete and I could finally sit back and relax.

CONCLUSION

I really loved designing and creating this table, I take great pleasure in the juxtaposition of concepts, where dense, slow-grown timbers appear to be weightless and contemporary designs meet heritage details. In total it took me a month to design and make. It's very important to me to be playful within my designs, I'm always searching for beauty within the strength of functional form. The Sussex Table was a wonderful challenge and I look forward to every new opportunity there is to further hone my craft.


18

INSPIRATIONAL CRAFTSMEN

There are many craftsmen who have inspired me: Wendell Castle the father of the art furniture movement for his fearless decisions and forward thinking. Also Sam Maloof in more ways than one, firstly his sensational ability to improvise so fluidly as he worked and secondly for his work ethic, I strive to bring that much of my own character and lifestyle into my work. Charles Voysey, on the other hand, is another great influence on my work – the precision with which he drew, designed and delivered his work is something I will always push to emulate through my own. As far as more current influencers, Marc Fish and Joseph Walsh's constant pushing of boundaries and risk taking within their work is something I truly admire. I consider myself fortunate to be producing furniture in the same era alongside such talent.

THE OAK

PROUD, STRONG AND RESOLUTE, IT IS EASY TO SEE WHY THE OAK TREE HAS BEEN ADOPTED AS THE NATIONAL SYMBOL OF SO MANY COUNTRIES AROUND THE WORLD

The USA, England, France, Germany, many other European states from the Baltic to the Mediterranean, Jordan and even Cyprus have chosen various types of oak as their emblem.

Its influence cannot be underestimated – empires were literally built of oak. It was, and still is, used to construct homes, palaces, churches, ships and furniture. It is used for everything from flooring, fencing and the interiors of cathedrals to beer and wine barrels. Its bark plays a vital role in the tanning industry and oak galls can produce ink. It is even used as firewood and to make charcoal.

Perhaps unsurprisingly given its historical importance the tree has a strong cultural presence too. In Britain and across Europe towns, streets and pubs are named after the tree, you'll find oaks on coins, coats of arms and in the crests of sports clubs, it crops up in common sayings ('from tiny acorns...') and the yule log was made of oak.

Acorns bring good luck, mistletoe grows in the branches of the tree, Roman emperors wore wreaths of oak leaves. Native Americans made flour from acorns and used the tree in traditional medicine.

In England, in particular, the tree is entwined in folklore. King Arthur's round table was reputedly made of oak. In Sherwood Forest the iconic 'Major Oak' is said to have sheltered Robin Hood. Henry VIII and Anne Boleyn are said to have danced round an oak – which stood until 1991 – in Greenwich Park and Elizabeth I relaxed under the same tree's boughs. Later, Charles I hid in an oak after defeat during the Civil War, inadvertently inspiring one of the most popular names for a pub – The Royal Oak.

PHOTOGRAPHS: SHUTTERSTOCK.COM

RIGHT: Major Oak, Sherwood Forest

TYPES

There are more than 600 species in the genus *Quercus* but in Europe the best-known is *Quercus robur* – the common or pedunculate oak, which is also known as the European or English oak.

Also widespread in Europe is the sessile oak (*Quercus petraea*), and these two trees dominate woodlands from Scandinavia to the Mediterranean. They can grow to 40 metres in height and live for more than 1,000 years.

Across the Atlantic varieties of the American white oak (*Quercus alba* and others) and red oak (*Quercus rubra* and others) are commonly found.

Unsurprisingly, given its spread, oak has a key role in the environment. Well over 300 species of insect and more than 300 species of lichen rely on it. The roots have a symbiotic relationship with hundreds of fungi, and when they fall oak leaves break down to form a rich compost.

Woodland birds and mammals make their homes in the bark among the trees' twisted branches, and many rely on acorns and insects for food. Without oaks the countryside on both sides of the Atlantic would be a very different place.

PROPERTIES

The oak's size, stately profile and environmental importance are one thing, but it is the properties of the timber that made the oak so important to mankind.

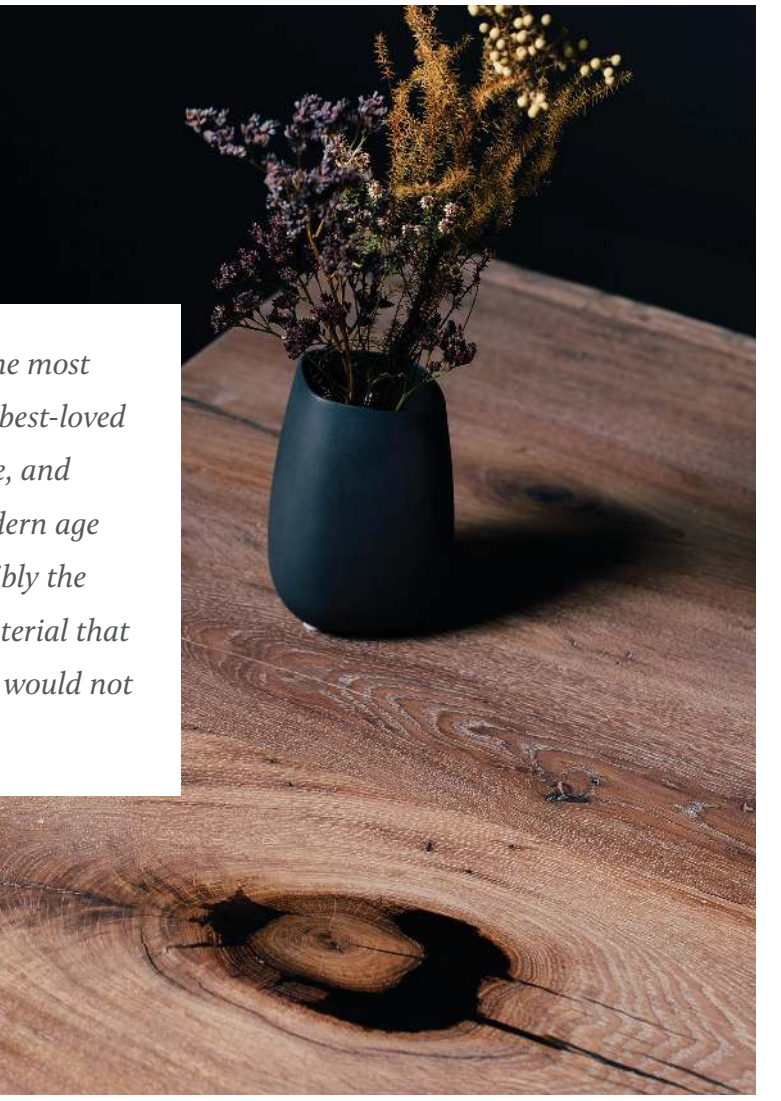
Oak trees are slow growing and long-lived, some specimens survive for 1,000 years, and the timber is strong, heavy and dense. Few other materials can match it.

When Captain James Cook first spied Norfolk Island in the South Pacific in 1774 he thought the gun-barrel straight pine trees that grew there could provide the British Navy with an endless supply of masts and spars – but the wood turned out to be useless, and oak remained the timber of choice for shipbuilders.

English oaks produce a very fine, hard timber used in furniture and architecture. English oak is renowned as the hardest, and the heartwood in particular can be hard to carve but is unsurpassed when it comes to house and shipbuilding.

Today American oaks are commonly available as they grow faster and while they do not have quite the same durability as the English variety, they are still sought after.

Red oaks, which have a darker wood, are most commonly used for furniture and flooring, but the wood's porous nature makes



Oak is one of the most important and best-loved woods available, and even in the modern age it remains possibly the one natural material that man could and would not do without.

them unsuitable for barrels, and white oaks are more commonly used for cooperage.

Generally oak woods respond well to steam-bending and can be glued, stained and finished. They have a distinctive, often uneven, grain – particularly when quarter sawn – and can range in colour from beige to brown or red depending on the variety used.

USES

There is evidence that oak was used for building as long as 9,000 years ago in Germany and 7,000 years ago in Ireland. Since medieval times oak has had a great impact on building in much of Europe, with timber-framed construction dominant until the late 17th century. Oak was the principal material used for furniture in many homes at that time, and has remained a key joinery, cabinetmaking and building material ever since. The chamber of the House of Commons is lined with oak panelling.

Today green oak is used for exposed timber framing on new housing, and seasoned oak for furniture making and cooperage.

Oak was the foundation of most navies until the introduction of iron ships in the 19th century. It is said that over 2,000 oak trees were used to build HMS *Victory*, Admiral Nelson's flagship in the Battle of Trafalgar in 1805 – and if that is any guide some 54,000 oak trees would have been used to make the 27 British ships that took part in the battle, and that doesn't include the opposing French and Spanish fleets. HMS *Victory* still survives today and can be visited at Portsmouth. Nearby is the Mary Rose Museum, dedicated to the Tudor warship, built 250 years earlier... also of oak.

In the 19th century it is estimated that 90,000 tons of oak bark was used for tanning a year, which required the felling of 500,000 tons of oak. This is a far greater amount than was used in both naval and mercantile shipping at the time, although smaller trees can provide the materials. In Cumbria, there is still a small market for oak poles that are peeled for bark to be used in the tanning industry. Tannic acid in the bark preserves the hide and leaves the leather flexible and durable. The bone-like poles are then used for making various items.

Oak is one of the most important and best-loved woods available, and even in the modern age it remains possibly the one natural material that man could and would not do without.

WORDS: JONATHAN HARWOOD

PHOTOGRAPHS BY JILL JENNINGS/WOODLAND TRUST

THE ALLERTON OAK

THIS ANCIENT OAK HAS WON THE TITLE OF ENGLAND'S TREE OF THE YEAR

The Allerton Oak tree in Liverpool's Calderstones Park has been voted England's Tree of the Year and will represent the UK at the 2020 European Tree of the Year awards.

The exact age of the tree is unknown – Allerton is mentioned in the Domesday book of 1086, and it's possible that it was already growing by then. In medieval times the local court, known as a 'Hundred Court' would meet under the oak's branches, as they lacked a courthouse. Local legend claims that the large crack down the side of the tree was formed in 1864 when the *Lotty Sleigh*, a ship carrying 11 tonnes of gunpowder, exploded. The ensuing shockwave smashed thousands of windows throughout Liverpool, and was heard over 30 miles away.

Today the tree is fenced off to protect it, and its heavy boughs are supported by metal poles. Liverpool City Council has been working in partnership with The Mersey Forest to preserve the lifespan of the Allerton Oak. This project will secure a new propping mechanism with built-in flexibility to adapt as the tree continues to grow and sustain it long term. The council is investing up to £80,000 in this project but the value of the tree is conservatively estimated at over £500,000.

The UK Tree of the Year competition is organised by the Woodland Trust. The European Tree of the Year awards celebrate trees with interesting stories. Voting begins in February 2020 and you can find out more here: **treeoftheyear.org**

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NEW WORLD ORDER

HOW FURNITURE DESIGN AND CONSTRUCTION WAS INFLUENCED IN THE PERIOD 1603-1625

Jacobean design, with its ornate forms and intricate carvings, is among the most distinctive historic woodworking styles and remains as popular – and as challenging for the craftsman – as ever.

It is a look that is familiar to most and remains sought after, having come back into fashion during the 20th century and informed later styles of architecture, furniture design, fashion and décor.

HISTORY

The Jacobean style emerged in the early 17th century during the reign of King James, a hugely significant period in the history of Britain.

Although he was only on the throne for 22 years, from 1603 to 1625, it was a time of profound social and cultural change as England emerged from the Tudor era, explored the New World and embraced the Renaissance. But such was the speed and magnitude of these changes that within 20 years of James's death the country was engulfed by civil war.

There was little sign of the turmoil ahead when Elizabeth, the last of the Tudors, died unmarried and childless in 1603 and the throne passed peacefully to her distant cousin, James VI of Scotland – the son of Mary, Queen of Scots. The Stuarts inherited a country that was on the rise. England was emerging as a European superpower: in the previous century the exploits of British explorers like Sir Francis Drake and Sir Walter Raleigh had given the nation a global outlook and England had built a powerful navy that held its own against the might of the Spanish. There were now established links with the New World, trade with the Far East was growing and England was establishing its cultural identity through the arts.

The first British settlements in North America were established using Jacobean techniques, and the original American Pilgrim style is based on the Jacobean.

In 1603 Shakespeare was in his pomp – *Othello*, *King Lear*, *Macbeth* and *The Tempest* were all written in the early years of James' reign – and 1611 saw the publication of the influential King James Bible. The influence of European artists and designers was also being felt, with Flemish and Renaissance styles informing domestic trends.

This cultural vibrancy was also apparent in the spheres of architecture and the crafts, as Inigo Jones introduced classical Roman and Renaissance designs to England. The panelling of the Banqueting House in Westminster is a shrine to Jacobean woodworking style.

JACOBEAN STYLE

Jacobean design did not emerge fully formed, but evolved out of the Tudor style. The remnants of the Gothic finally disappeared in the early 17th century and decoration became more restrained, although ornate relief carvings remained a key pillar of the Jacobean style. Arabesque and floral designs were popular, as were marine motifs – reflecting the nation's seafaring exploits.

Items of furniture remained large and heavy as they had been in the previous century, and oak was still the most commonly used wood. Other materials were used, including walnut, cherry, pear and cypress, while more exotic materials began to appear from Asia.

Chairs of the time remained very upright and the legs on tables and chairs were fundamentally straight. But bobbin turning was common on the legs and finials of chairs, tables and banisters, for example. Turned and baluster legs were a key ingredient of Jacobean furniture design.

As trade with Asia grew, so materials from far-flung corners of the world were incorporated into designs. Mother of pearl and silver were often used as embellishments. Exotic woods such as ebony were also used and some pieces were painted black to replicate the look.

Panelling, as seen in the Westminster Banqueting House, was everywhere and beautifully carved. Linenfold, arabesque, floral and marine designs were all popular. These motifs were also seen on chests and cupboards and the frames of mirrors, which became increasingly popular in the 17th century.

Beds, benches and cupboards were built into panelled walls, adding to the three-dimensional nature of the designs.

Furnishings and clothing were brightly coloured in the Jacobean era, and furniture was also coloured, although few examples remain. Carpets became more common, but despite the use of textiles elsewhere upholstery remained relatively unusual, and few items of furniture were cushioned in the early part of the 17th century. One exception is the Farthingale chair, an upholstered armless chair that grew in popularity to accommodate women wearing hooped skirts who could not sit in traditional wainscot chairs.

JACOBEAN WOODWORKING SKILLS

While a new style emerged, the methods of creating furniture and wooden items did not change dramatically in the Jacobean era. Mortise and tenon joints were the cornerstones of most furniture construction.

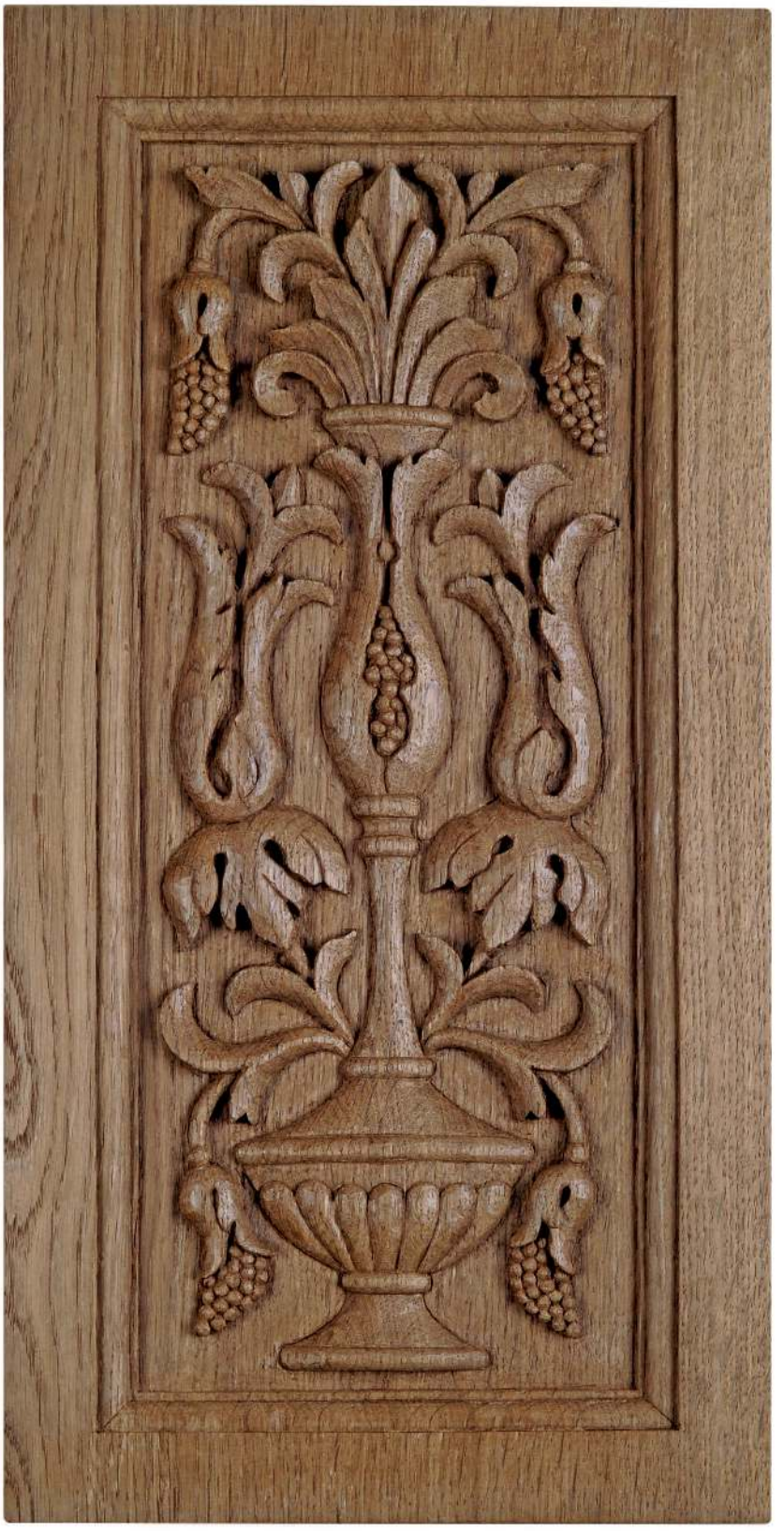
To recreate the look with trademark turned legs, spools and bobbins, good lathe skills are required.

Excellent hand tool skills are needed for the creation of relief patterns on chests, chair backs and lintels.

PHOTOGRAPH: ALAMY.COM

RENAISSANCE-STYLE PANEL

STEVE BISCO CARVES A DECORATIVE PANEL IN OAK



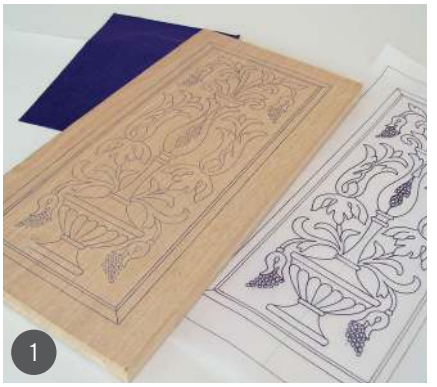
PHOTOGRAPHS BY GMC/STEVE BISCO

When the barbarians overran the Roman Empire in the 5th century it seemed like the classical world would disappear forever. It sank into oblivion for a thousand years, barely remembered even where its visible ruins showed above the surface. Then, in the 15th and 16th centuries, little by little, it started to re-emerge in what became known as the Renaissance (literally, 'rebirth').

The Renaissance started in Italy, appropriately. As people explored the subterranean ruins, they started to adopt the styles of architecture and decoration they found there. Gradually the Gothic of the medieval world was displaced by the order and sophistication of classical decoration, and steadily it spread beyond its native Italy to conquer Europe once again.

It was slow to get going in England due to a little local difficulty. Following the big bust-up between Henry VIII and the Pope, England was not on speaking terms with Italy and anything Italian was treated with suspicion. So the Renaissance crept into England gradually in the 16th century through the influence of Flemish craftsmen. But Scotland enjoyed better relations, and when James VI of Scotland became James I of England in 1603, the Renaissance finally got into full swing.

Apart from the obvious columns and capitals, Renaissance design found expression in a particular form which is the subject of this project – the carved panels that decorated doors, chests and pilasters. Linenfold and strapwork panelling had been a feature of grand houses for many years but now it burst into an exuberant display of classical vases sprouting arabesque swirls of foliage, with cherubs and other figures. This endured through the Stuart period in this oaken form, before reinventing itself as moulded plasterwork in the 18th-century classical revival. It continued to flourish in Victorian times as one of their many 'revivals', and some truly outstanding Victorian Renaissance carved panels can be seen at Alnwick Castle in Northumberland.



I have put together this design from a variety of sources, one of which was a Victorian brass fingerplate. It could fit into any period from 1500 to 1900, but I think that it sits best in the early 17th century, so I have fumed the oak to a Jacobean chocolate brown. If you prefer to leave it in its natural state, just leave it to darken naturally over the next 400 years!

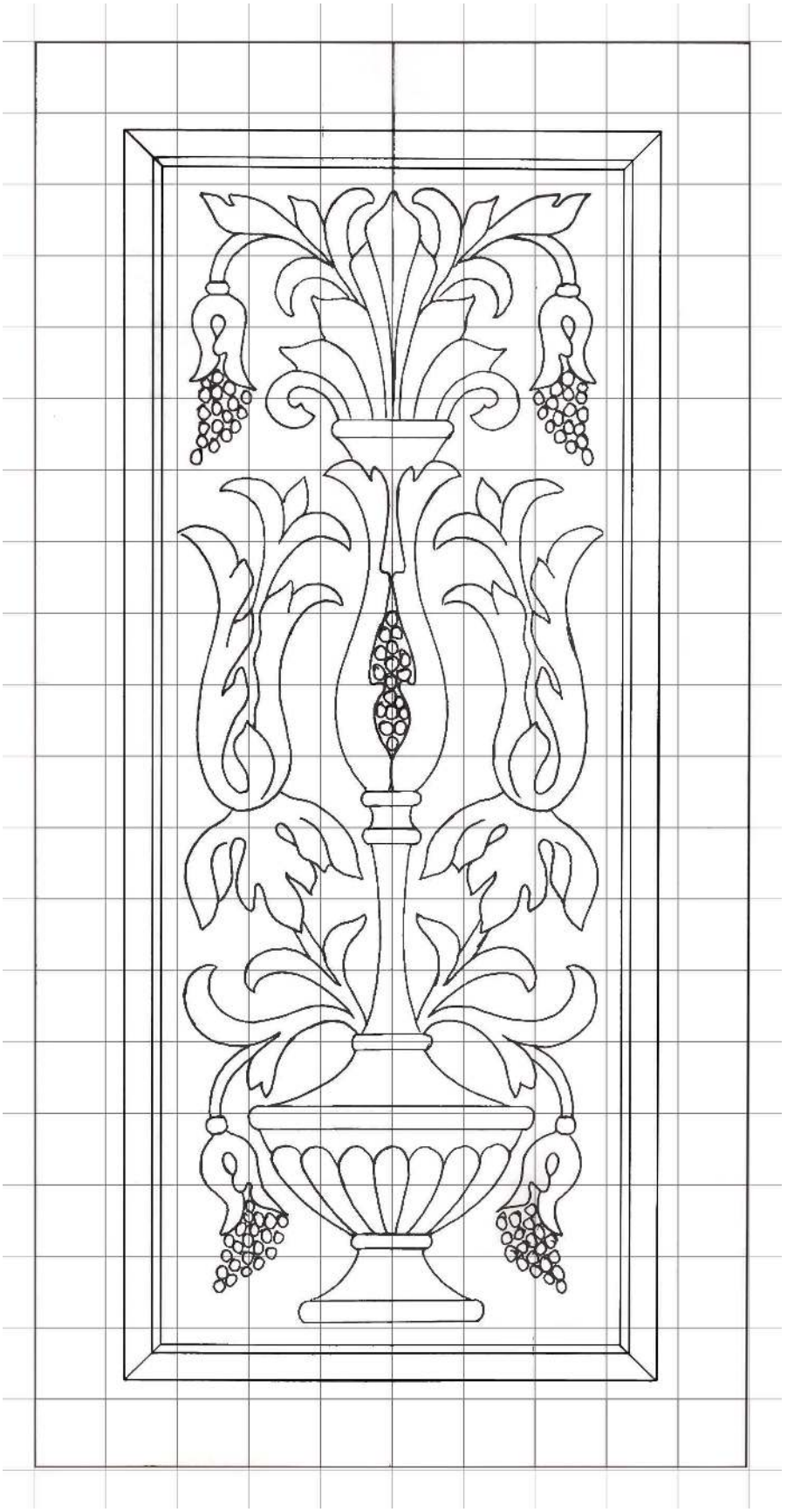
YOU WILL NEED

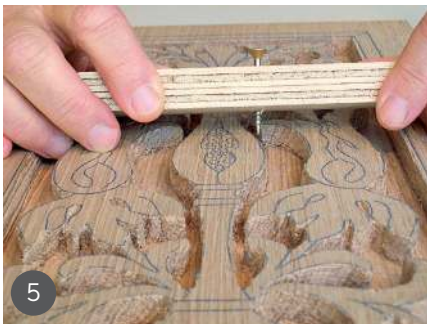
- Kiln-dried oak board, 508 x 254 x 25mm
- 10mm skew chisel, 2mm chisel, 3mm chisel, 6mm fine-ground flat chisel, 20mm flat chisel, 20mm No. 3 fishtail gouge, 16mm hooked skew chisel
- 10mm No. 3 gouge, 8mm No. 8 gouge, 6mm No. 5 gouge, 5mm No. 5 gouge, 3mm No. 5 gouge, 5mm bent chisel
- V-tool
- Household ammonia (for fuming)
- Good-quality furniture polish (for a polished finish)

GETTING STARTED

1 Prepare a board of planed oak 508 x 254 x 25mm. As it will be fumed, make sure it is free from sapwood (the soft white timber on the outside of the tree). Sapwood doesn't respond to fuming and will stay white. Plane the edges and put a slight chamfer on the corners. Trace on the pattern using carbon paper. Normally I would use 'green' oak for carving, but it carries a risk of warping. On a fairly large flat panel like this, warping would be quite noticeable and would spoil the carving, so I have used kiln-dried oak. It is a bit harder to carve (you will need the mallet more), but you can be more confident it will stay flat.

Panel template shown at actual size of piece opposite, reduce/enlarge to required size





2 Clamp a steel rule along the inner edges of the border and use it to guide a 20mm flat chisel. Cut along the rule to a depth of about 2mm with each cut, then chamfer off the waste on the inner side. Repeat the process a little at a time until you have created a clear straight edge to a depth of about 13mm.

GROUNDING OUT

3 Use a No. 8 gouge to remove surplus wood from the 'ground' between the pattern and the border. You will be going to a depth of 13mm eventually, but stay just above this depth with the gouge. Carefully work up to the edges of the pattern, using a V-tool in the narrow gaps.

4 With the bulk removed, 'bost' down carefully around the edges of the pattern, and 'ground out' the background with flat chisels to an even depth of 13mm all over.

5 To get an even depth, make a simple depth gauge with a screw inserted through a flat piece of wood, set to protrude just under 13mm. Lay it on the panel and move it all over the ground, then use a chisel to flatten off the patches with scratch marks from the screw until no more appear.

6 The pattern must look as three-dimensional as possible on a flat surface, which is why we have gone to a depth of 13mm. First, shape the base of the vase so its rim is a continuous curve. Shape the 'bulges' on the vase so they appear bigger in the middle and smaller at the edges. This helps to give a three-dimensional effect.

7 The stem and foot of the vase must be shaped to follow the curve of the base, which means lowering the depth in proportion to the width.

8 The open seed pod in the middle of the stem is a common Renaissance feature. To make it look as if the seeds are about to burst out, use a small No. 5 gouge to round over each seed and the point of a skew chisel to clean out the triangles between them. At the base of the pod, make one of the sides lap over the other.

9 Another Renaissance feature is the way the various leaves curve down to the ground along one edge and have a raised edge on the other side, like an escarpment. Use the concave side of a No. 3 gouge to shape the convex curve. Make a clean edge where it joins the ground by careful use of a V-tool.

10 Carve the bunches of grapes by rounding over each grape with a small gouge and using the point of a skew chisel to clean up the triangles between them.

As with all the features, try to maintain symmetry on opposite sides of the carving.

11 Finish the detail carving with the fan of leaves erupting from the top of the main stem in a flourish.

FINISHING THE BORDER

12 With the detail carving finished we can return to the border. Use the steel-rule trick again to cut a step 2mm in from the inner edge and 2mm down from the top face. Make it straight and level using flat chisels. Think of this as 'freehand planing' with your hand acting as the plane and the chisel as the blade – it is a good exercise in accuracy.

13 Now use a 10mm No. 3 gouge to round over the step into a convex moulding running straight and even on all sides. Create a neat mitre in each corner.

14 With the border finished the carving is now complete and should look like this. If you want to leave it in its natural 'new' colour, just give it a coat of wax furniture polish. But for an authentic Jacobean look it is time to start fuming.

FUMING

15 Fuming with ammonia replicates the natural darkening effect of air on the tannins in the oak, but at a rate of about a century an hour. Pour about six tablespoonfuls of household ammonia into a plastic tub large enough to hold this panel. Place the panel on some wooden supports to allow the fumes to flow freely around the wood, put the lid on the tub and seal any gaps round the edges.

16 The time it takes to darken depends on several variables (strength and volume of ammonia, temperature and the volume of your tub), so check the panel every half-hour until it reaches the colour you want. In my case it took about three-and-a-half hours to reach a nice Jacobean chocolate brown. If yours is too slow to darken, add more ammonia and leave it a bit longer.

17 If you fancy a matt finish as I did for this panel, you can just give it a rub over with a dry cloth and leave it unpolished. If you prefer more of a shine, use a good wax furniture polish, such as Antiquax.

SAFETY WARNING

Fuming with ammonia must be done in a well-ventilated place and wearing eye protection. Take care when opening the tub as the fumes will be strong. Follow the chemical product safety instructions.

LESS IS MORE

UNDERSTATED ELEGANCE MARKS OUT **ROBERT BARNBY**'S CLASSIC FURNITURE DESIGNS. HE SHARES HIS ETHOS, METHODS AND INFLUENCES

'Good design should be as little design as possible,' according to German industrial designer Dieter Rams, who is associated with the functionalist school of design and the 'less but better' concept.

Rams' 10 principles of good design are always on Hay-on-Wye-based designer and furniture maker Robert Barnby's mind when he is creating – especially the tenth, quoted above. Barnby says: 'It's about stripping a design back to its essentials. As Rams also says, "design should be unobtrusive", not over-cluttered and busy-looking.'

You only have to glance at Robert's portfolio to see he has taken Rams at his word. Sleek traditional-style benches, pared-back coffee and occasional tables and plain but effective ladder shelves show mid-20th-century influences as well as a clean, no nonsense philosophy. Cupboards, beds and the show-stopping Ted Larder make functionality as important as style.

Barnby grew up on a Welsh hill farm until he was 13, learning to be practical, fix things and build and fall out of tree houses with his brother. 'I'd always enjoyed drawing and painting, but the interest in furniture-making came at senior school,' he says. 'The workshops were well kitted out and came with some inspiring teachers. Discovering my scribbly sketches could become tactile three-dimensional objects really opened my eyes to the world of the designer-maker.'

He went on to study Furniture and Product Design at Nottingham Trent University for four years. 'It gave me time to find my feet and learn from others, and a chance to start evolving the style I use today,' Rob explains. One of those years was spent on placement at a Birmingham furniture company, and he was inspired by the business owners' energy and how they thrived on the stresses of running their own business to launch his own venture.

'As a designer there's inevitably always a thirst to create, or at least oversee the creation of your own designs. The concept of working for someone else and being forced to design and make things I didn't really dig was always hard to stomach,' he says.

PHOTOGRAPHS BY FINN BEALS

Doweled Up stool

PRODUCT PHOTOGRAPHS BY KATE HAYWARD, UNLESS OTHERWISE STATED

Table Turned

PHOTOGRAPH BY PETR KREJCI PHOTOGRAPHY

Ted tables

After he graduated he began working part-time for a local cabinetmaker, who was both knowledgeable and supportive and allowed Robert to use his workshop in the evenings and some weekends – during which time he began developing the range he offers today. In 2012 he set out on his own full-time, and later signed up partner Lewis Day to create design studio Barnby & Day.

Rob's aim with his furniture is to offer a fresh take on mid-century style, with influences from both Scandinavian and Japanese design. Clean lines and subtle details are among his hallmarks.

Two years later Rob took part in The Wish List Project run by the American Hardwood Export Council. The project called on leading architects and designers to work with fledgling businesses who would create an item for them, and Barnby & Day was chosen by Alex de Rijke of dRMM Architects.

Rob says: 'The brief was to design and make them something they'd always wanted but never been able to find. dRMM are pioneers in the use of cross-laminated timber, so it was no surprise that Alex wanted that incorporated in the large round dining or conference table we designed and made him.

'Unsurprisingly there was a fair bit of woodturning involved, and Sir Terence Conran sat and watched a good chunk of it. There was something very mesmerising about watching professional woodturner Mike Bradley shape the giant rings of CLT we'd created.'

The finished project, Table Turned, was made from American tulip wood and was hollow, but gave the impression of being crafted from a single piece of wood. It was exhibited at the V&A during London Design Week 2014, along with the other nine Wish List projects.

Since then Rob has gone solo as Barnby Design, and is based in a workshop just outside the picturesque town of Hay-on-Wye near the Black Mountains on the English-Welsh border. He says: 'It's housed in two stone barns, with a lovely garden behind, so coffee breaks and client meetings in the sun are always relaxed. In the smaller of the barns we have a display and photography area, and next door the machine and assembly shop, which gets a little cold in the winter.'

He uses a combination of hand-drawn and computer-assisted design to create his pieces. 'I always start by sketching designs out, but quite quickly get them drawn up on 3D Max or Solid Works,' he explains. 'I like how the computer allows you to play around with proportions without building lots of time-consuming prototypes. When I think I've finalised a design I tend to leave it a few weeks, then revisit it periodically. With a fresh pair of eyes I often want to alter aspects.'

He also uses a combination of hand tools and machines to create his designs, including lathes, chisels and routers. But he notes: 'Even if I had the time and wealthy clientele to make furniture the way Chippendale used to, I'm not sure I would. I get itchy feet spending longer than a couple of weeks working on one piece.'

Rob uses lots of jigs to shape the tapered components that feature heavily in his designs. 'I'm a bit prone to rush the building of the first one though, often a little eager to see how

Lucas coffee table

Dalton desk

'It's about stripping a design back to its essentials. As Rams also says, "design should be unobtrusive", not over-cluttered and busy-looking.'


Ted larder


Ted tables


Ferron side tables

a new design is going to look,' he admits. 'It seems so slow at the time, but it always pays to allocate a decent block of time to jig-building. Making a second one when the first has fallen apart kind of defeats the object.'

For the exposed joint work he loves he often uses wedged joints. 'I've always loved the light aesthetic they offer, while remaining remarkably strong,' he says. To finish he almost always uses Osmo. 'They have such a wide range of wax oils to choose from, and have recently added colours to the range, which I'm yet to properly explore. I use their Raw and 3040 mixes regularly. They both have white pigment built in, which gives the wood a lovely, natural, unfinished look,' he says.

Rob's larger pieces are always made to order, but he batch-produces around 10% of his products, mainly smaller items such as bar stools. 'Making larger pieces to order allows customers a chance to adjust dimensions,' he explains.

One of his most recent projects was a Yorkshire home he worked on for a London-based interior designer. 'For the project we designed an L-shaped corner record unit in walnut, with oak-framed linen doors,' Rob says. 'I'm chuffed with how it turned out and we're hoping to extend variations of the piece into the range, including bedside tables and sideboards.'

His favourite project so far has been for Macmillan Cancer Support. He says: 'They funded the building of a beautiful new palliative daycare unit at the Royal Glamorgan Hospital. We were asked to design and build installation shelving for several large walls in the communal lounge and dining area. The brief wanted the design "to bring the outside in, use natural materials, and have uplifting qualities".

'Patients are encouraged to draw and paint, and our shelving offers an aesthetic space for them to display their work. End-of-life care is difficult, but these spaces are designed to elevate the spirits of both the patients and the nurses who look after them. I love that we were trusted with such an important project, and hope that our small part helps make a difference.'

His biggest challenge was a time-tight refurbishment with a family-run events and interiors business Village Circus, redesigning Shepherds café and ice cream parlour in Hay-on-Wye. He explains: 'The build was OK, but the rip-out and fit had to happen overnight. The client wanted to surprise the regulars, who knew nothing of the refurb. We were in there 15 hours straight and walked out the door at 5.45 in the morning. Having ice cream on site helped make it possible!'

Rob's ethos is all about furniture that is both beautiful and functional, and the design that has been most useful to him personally has been his Border Bed, which has two large drawers underneath the mattress. He says: 'My partner Scarlet successfully uses virtually every nook of hanging space we own – those drawers are basically all I have.'

barnbydesign.co.uk

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Above *The Furniture Makers Design Award - Winner 2019. 'Guilloché' Bedside Tables by Fernanda Nunez.*

Below *CCD New Talent Award - Winner 2019. Writing Desk by Tom Galt.*

Right *Young Furniture Makers Award - Shortlist 2019. 'Ice' Cabinet by Lasse Kannegieter.*

RIPPLE SIDEBOARD

DAVID WAITE BUILDS A CURVED-FRONT CABINET

Most of my day-to-day work revolves around making pieces to commission, striving to fulfil my clients' wants and needs. I do, however, allow myself the opportunity to create at least one speculative piece each year, which gives me the chance to explore techniques and express ideas that I have had kicking around in my head for a while. This year the Ripple sideboard was the culmination of these efforts.

The idea I wanted to explore with this piece was whether I could extend a technique I had previously developed, whereby thin laminated strips of wood are glued together in a staggered configuration to create interesting and unusual three-dimensional ripple effects. I had used this technique previously on the lid of a small yew and sycamore keepsake box and was pleased with the results, but had wanted for some time to extend the idea into a much larger statement piece.

I wanted the ripple to be the main focal point of the new piece and decided to create a stylish cabinet with doors that featured the effect in large undulating panels on its front. After sketching and refining several ideas, I settled on creating a dining room sideboard with two push-to-open drawers inside for cutlery storage and adjustable shelves below to keep crockery and other dining ware on. I opted for a curved front to the cabinet to provide additional visual interest, set on a cherry frame with a curved front to match the carcass sitting above it. Before starting the build, I made a full-scale cardboard mock-up of the piece, a process I use often with a new design to help me visualise its overall impact and to allow easy refinements with a craft knife where necessary. I opted to use cherry for all of the external faces of the sideboard, including the undulating doors, and for contrast when the doors were opened, I chose ripple sycamore for the internal drawers.

1 Statement effect: ripples in cherry
2 Floating laminated panel surrounded by solid cherrywood lipping
3 Internal view showing two cutlery drawers and adjustable shelves

FLOATING DOOR PANELS

The doors were the focal point of the whole piece and also the most technically challenging part of the construction. Not only were the laminate strips skewed in length to give the interesting undulating effect, they also needed to be set on a curve of fixed radius across their width to match the bow front of the cabinet. To achieve this, I decided to plant them on curved flexiply panels pre-shaped to the desired radius using a former with a solid cherry wood lipping applied around each to complete the door. I planned to allow for wood movement of each laminated panel by attaching it to its curved flexiply base using slotted screws from the back with a 1.5mm shadow gap between the edge of the laminate panel and the solid wood lipping. The laminated panels were essentially floating on the curved internal cores with a cherry veneer covering the screw holes on the internal back face of each.

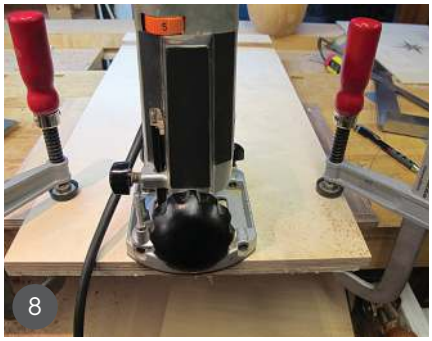
BASE FRAME

This was constructed in a straightforward manner, using my spindle moulder to taper the leg stock and Dominoes to join the rails to the legs. The spindle moulder was again employed to shape the bow-fronted curve on the front rail as well as the curves on the underside of each of the four rails. A 10mm shadow gap was created between the base frame and cabinet by screwing three 10mm-thick battens across the base frame with slotted screw holes drilled in the outer battens to allow the cabinet to be secured firmly. Small chamfers were planed on the bottom of each leg to allow the sideboard to be moved without fear of breakout.

CARCASS CONSTRUCTION

Cherry boards for the carcass were carefully selected for consistency and butt jointed together. The sides and top were cut consecutively from a single jointed board to achieve a pleasing grain wrap around the carcass. A 10mm rebate was next cut in the back of the sides, top and bottom using the spindle moulder ready to receive the back panel.

Mitres were then carefully cut on both ends of each carcass component at the



PHOTOGRAPHS BY DAVID WAITE

4 The leg tapering jig
5 Base frame with curved front rail
6 Carcass mitres and back rebates cut
7 The carcass glued up
8 Guide bush router jig used for cutting the stopped housing rebates
9 Frame and panel back showing 2mm shadow gap
10 Shaping blue foam former on the spindle moulder
11 Dimensioning the flexiply doors

tablesaw fitted with a fine crosscut blade and biscuit slots cut along these mitres to provide additional strength to each joint.

Next, stopped housing rebates were cut into the internal faces of the four carcass components to receive the internal dividers of the cabinet. I favour using a simple guide bush jig made from ply used in conjunction with a router and guide bush to cut these housings. I find it allows accurate and consistent positioning of the housing cuts on matching components, ensuring the dividers lie parallel and square to the carcass components when assembled. The curved bow front edge was carefully machined on the top and bottom carcass components using a router and template trim bit, following an MDF template, and finally the front edges of each carcass side were angled so they would meet the top and bottom curved edges at the mitred corners seamlessly.

The carcass was glued up with biscuits re-enforcing the mitre joints internally. To simplify what would be a pretty nerve-racking one-man glue-up, I machined mitre glue-up blocks from scrap hardwood to the exact length of each joint and glued a pair of these to either end of a piece of 4mm ply dimensioned to be slightly smaller than each of the four carcass components. I could then clamp one of these glue-up boards to each component before starting. This saves a lot of time during the actual glue-up process and cuts down considerably on the number of clamps needed. With the glue applied and the components together, I screwed small G clamps across the mitre blocks to close up the mitre joints nice and snugly, checking the diagonals of the carcass and adjusting as needed to ensure everything was nice and square.

The back of the panel was a traditional frame and panel construction, employing my bag press to cover ply panels with cherry veneer and the use of solid timber jointed with Dominoes for the frame. The frame was grooved to accept the back panels, which were then glued in place leaving a 2mm shadow gap between each and the edge of the frame.

DOOR CONSTRUCTION

A former was first created in blue foam on the spindle moulder following a template of the desired door radius. This was then skinned with birch ply and datum reference points carefully marked. The core of each door was then built up from multiple sheets of flexiply and epoxy resin and left on the former in the bag press overnight.

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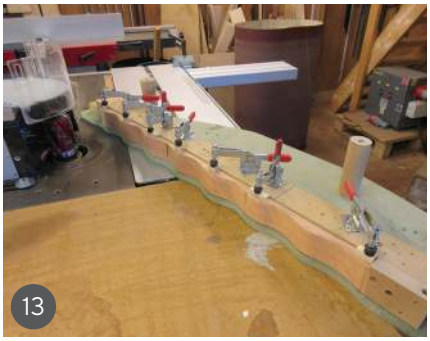
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Once cured, the cores were dimensioned to the final door size at the tablesaw while sitting on the former and Dominoes were cut into their edges ready for the hardwood cherry lippings. The outer curved surfaces of the core were temporarily covered with plastic film so they could be used as the curved reference surface on which the laminated strips would be stuck together.

The 2mm-thick laminate strips were made from 50mm-wide strips of 25mm-thick cherry. An undulating wave pattern was first cut into a piece of MDF using the bandsaw and smoothed to the desired profile on a bobbin sander. A jig was then made using this template which allowed the 800mm lengths of cherry to be firmly held and allow the wave pattern to be cut using the bandsaw to first remove much of the waste and then the spindle moulder with a bearing-guided cutter to follow the template pattern in a finishing cut. The laminates were then cut from these undulating strips on the bandsaw and passed through my wide belt sander to reach final thickness

The laminates were first glued together using cascamite glue and skewed on a flat surface following a curved template guide to create the undulating wave pattern. Finally, the skewed laminates were carefully pressed on to the flexiply cores to follow their curved shapes and clamped across their width before excess glue was carefully wiped off. Once cured, the laminate panels were cut to dimension while sitting on the former and carefully sanded.

The doors were assembled in a stepwise manner. First, slotted holes were drilled through the flexiply cores from the back and the lamination panels were screwed securely into position. Then a cherry veneer was applied to the back side of each door, using the bag press and curved former to glue it in place. Finally, the hardwood lippings, which were mitred at their corners, were attached to the edges of the ply core using small Dominoes for additional joint strength. Hinges were cut in the doors and carcass edges by hand, great care being taken to ensure the planted doors sat squarely on the front of the carcass.

DRAWER CONSTRUCTION

The two curved drawers were designed around the Blum 'push to open' soft-close runner system. The internal carcass dividers were first glued into place to create the drawer apertures. Next, the

12 Cutting Dominoes in the edges of the curved door cores
13 The wave pattern jig in use
14 Cutting laminates on the bandsaw
15 Laminates ready to be sanded
16 Laminates staggered around the curved template
17 Door laminates glued up on the curved former
18 Slotted screws fixings
19 Solid wood lippings ready to be attached
20 Hinges cut into the carcass edge by hand
21 The finished doors fitted and ready to be oiled
22 Blum drawer runner system
23 Applying veneer to curved drawer fronts
24 The finished cutlery drawers

individual components were dimensioned according to the technical specifications of the Blum data sheet. A complicating factor in their construction is that each drawer front was curved in an asymmetric fashion with the drawer sides closest to the centre of the cabinet needing to be longer than its counterparts closest to the carcass sides. To work out the exact geometry and dimensions of each component I made extensive use of my Rhino CAD drawing package.

The drawer front was made from an MDF core which was first lipped with solid ripple sycamore and then the curves cut into the front and back faces on the spindle moulder following a template. Ripple sycamore veneers were then applied to the curved surfaces using the bag press. I opted to attach the curved drawer fronts directly to the sides rather than plant them on to square internal drawer boxes, which results, in my opinion, in a much more elegant look to the drawer internally. Solid sycamore was used for the drawer sides and back and these were jointed together and attached to the drawer front using Dominoes. A groove was cut into the sides and drawer fronts to allow the drawer bottoms to be slid into place from the back. Each base, made from 4mm MDF covered with a ripple sycamore veneer, was curved on its front edge to fit the curved drawer fronts and a curved strip of solid sycamore was attached to the underside of each to allow the Blum runners to attach at an equal distance from the drawer fronts. All drawer internal components were pre-sanded and finished with shellac sanding sealing and a wax paste before gluing up.

FINISHING TOUCHES

Adjustable shelves were fitted beneath the drawers inside the cabinet with the brass shelf pins drilled into the carcass sides using a pre-drilled MDF template. A subtle finger pull detail was carefully added to the top edge of each of the doors and each door was secured to the carcass front using rare earth magnets which were sunk into the carcass and doors and carefully hidden with cherry plugs. The cabinet was then sanded by hand and with an orbital sander to 400 grit before being finished with a hand-rubbed Danish oil applied in several thin coats.

REACTION

I chose to exhibit the Ripple sideboard for the first time at the 2019 Celebration of Craftsmanship and Design event in Cheltenham and was delighted by the reaction it received from the public. People were genuinely intrigued by the look of the doors, commenting on their tactile nature, the fact they appear to shimmer as you approach them and that they are drawn to reach out and touch the undulating curves (which is always encouraged). How the doors are made is also a point of interest to many people who often assume they were generated on a CNC machine using CAD software. When I explained the process I go through to achieve the effect, they seemed genuinely surprised and impressed.

PHOTOGRAPH BY FOTOSR52/SHUTTERSTOCK.COM

CAN CONSTRAINTS BOOST CREATIVITY?

CREATIVITY IS A VITAL PART OF FURNITURE MAKING, BUT CAN WORKING WITHIN LIMITS ENHANCE YOUR WORK?

It's most commonly used to describe writers, musicians and artists, but creativity – cultivating fresh ideas and aiding them through conception to execution – is a human trait used pretty much every day by everyone. If you've ever solved a problem (and chances are you've already done this more than once in the workshop today alone), you've exercised your creativity. And it's very likely you had to operate within certain constraints, whether self-imposed or externally applied. In the furniture-making workshop, external constraints might relate to time, a client's budget, or health and safety procedures. Self-imposed constraints, on the other hand, could involve specific design challenges, working with a restricted toolset or with particular timbers. What both sets of constraints share is the possibility to trigger unique ideas, to boost productivity and to create a sense of fulfilment.

A WORLD OF RESTRICTIONS

There are numerous examples of where working within certain constraints has driven award-winning, well-known or successful work. One common feature is that the creative minds involved have embraced the restrictions imposed upon them and used them to help fuel their creativity. Here are a few examples:

FURNITURE

Several furniture makers have imposed constraints on their own work, often choosing to restrict the tools and materials they use. In the 19th century, followers of the Arts & Crafts movement rejected modern technology and mass-production methods to craft quality products by hand. George Nakashima, a leading figure in the American craft movement, chose to follow a pared-back aesthetic that honoured the 'character' of wood. Rather than working with perfect timber, he embraced and highlighted any imperfections in the wood, leaving natural edges and showcasing the timber's natural grain.

In modern times, many furniture makers have chosen to eschew power tools in favour of traditional hand tools and techniques. American craftsman Peter Follansbee has taken this further than many by dedicating his career to researching and re-creating the world of the 17th-century New England furniture workshop, working exclusively with tools and materials from that era.

ARCHITECTURE

Frank Gehry, the renowned architect and mastermind behind the Guggenheim Museum in Bilbao, Spain, is no stranger to constraints and has even gone as far as to suggest they have led to some of his most noted works. 'It's better to have some problem to work on,' he explained. 'I think we turn those constraints into action.' This belief helped him to design the award-winning Disney Concert Hall in Los Angeles, California, a build that demanded he meet the strict standards necessary for acoustics. The result is a beautiful yet functional interior and the iconic, free-flowing steel exterior.

In contrast, the architect claims one of his most challenging projects was a constraint-free house build. 'I had a horrible time with it,' he said at the time. 'I had to look in the mirror a lot. "Who am I?" "Why am I doing this?"' Clearly, unlimited freedom isn't always an idyllic situation for a creative mind.

ART

American artist Phil Hansen's passion was pointillism, an artform in which a piece is comprised of thousands of individual points drawn by hand. His dedication to his art throughout childhood and high school, however, eventually left him with permanent nerve damage and an irreversible hand tremor. This devastating news prompted him to quit the art world, but after three years in personal artistic exile, he remembered the words of his doctor: 'Embrace the shake.' With this advice in mind, he began experimenting with mixed-media, pushing his own artistic boundaries as well as those of the art world.

He went on to explain how his physical constraints took him out of his comfort zone and enabled him to become a successful multi-media artist. 'Embracing the limitation can actually drive creativity…' he said. 'We need to first be limited in order to become limitless.' His deep understanding of the power of constraints has led him to create work that has captivated the hearts and minds of over a million YouTube viewers.

WHAT HOLDS PEOPLE BACK?

It's important to think about some of the situations where you might find yourself feeling stuck or even overwhelmed by the scope of your endeavour. The following are a few traps in which, without constraints, creativity may falter:

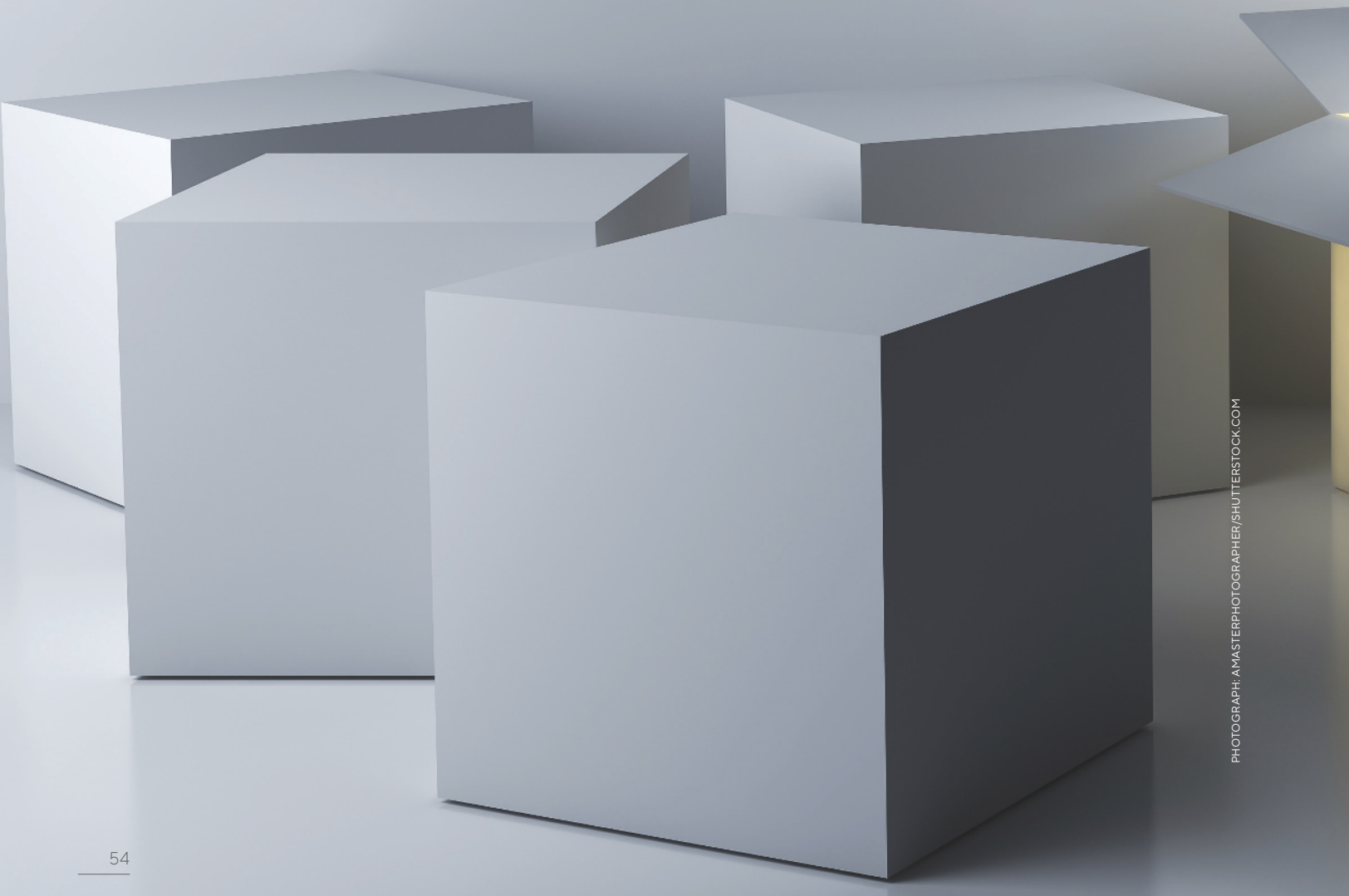
PARALYSIS OF CHOICE

A project without constraints can be difficult to begin. With endless choices, the mind races from one idea to the next. This can lead to frustration – the project might even be shelved – until a decision is made. With endless solutions, becoming overwhelmed and shutting down mentally is a risk.

ASSOCIATIVE RUTS

The brain is a complex mechanism designed to expend the least amount of energy possible. One way it does this is by relying on patterns to relieve the strain of thinking. When well-versed in a particular field, a person becomes comfortable within their own patterns. Knowledge and experience are assets, but they can also be detrimental if one becomes too comfortable. In certain situations, associative techniques have been used to facilitate creativity. When unexamined, these associations can lock the creative pathway into an unwanted pattern.

Imagine a city park reconstruction was under way. A seasoned urban planner was hired to ensure bike paths flowed smoothly throughout the park. This employee would have the expertise to get the job done in a potentially creative way. Now imagine a software engineer was given the exact same task. With no history of urban planning experience, they would have no previous projects on which to base their ideas for the cycle path.



PHOTOGRAPH: AMASTERPHOTOGRAPHER/SHUTTERSTOCK.COM

Their thoughts would, instead, come from a place of new and fresh perspective – that of computer systems – which could potentially result in more inventive solutions. The same theory could be applied to personal projects.

RABBIT HOLES

While creative brainstorming is often crucial to a fruitful project, execution is equally as important. When undertaking a project with full creative liberties, the vision can stray and lead to mental and physical fatigue. One way in which this can happen is if one idea feeds into everything that follows. This can serve to waste time and erode motivation.

A familiar example is the oversaturation of images, video and commentary on social media. The seemingly endless pursuit to complement and perfect a creative endeavour can be overwhelming and lead to the abandonment of a project. The unlimited options available provide a perfect environment for meandering or mental flights of fancy, which affects focus and risks critically overshooting deadlines. The initial idea, however straightforward, deviates into an endless quest for perfection.

CREATE YOUR OWN CONSTRAINTS

The next time you start work on a new piece or find you have a sudden creative block, consider adding a constraint. It's important it creates a challenge or that it takes you out of your comfort zone. Here are a few you could try, but feel free to venture off-path or experiment with restrictions that could spur on that next big idea.

USE TIME AS A GUIDE

Time can be used in many ways – the most common is to set a deadline. This is useful for both professional and personal work. For your next project, consider setting a deadline for the final result. You could even set timings for each stage of the work.

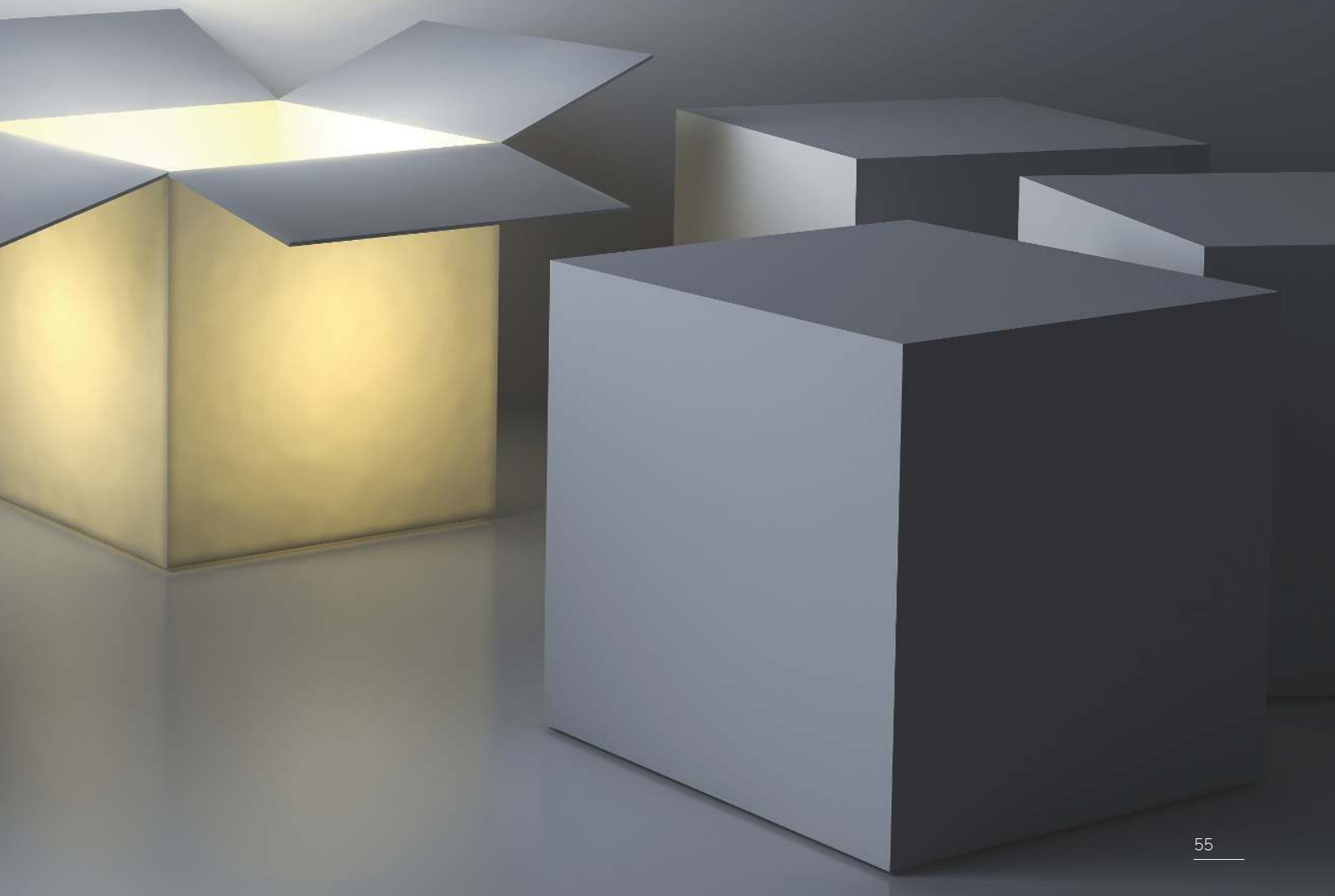
SWITCH TOOLS

Comfortable using SketchUp? Use Adobe Illustrator. Happy with your PC? Use pen and paper. Switching tools can take you out of your comfort zone and encourage you to master a new skill, which will expand your capabilities for future projects.

CREATIVE CHALLENGE

Forming a creative challenge can be enlightening and prove valuable throughout a project. You could, for example, allow yourself to use only three images per design; to write a novel with only six words; to build a chair with only curves. Make it as easy or as difficult as you want. It's your creative challenge.

WORDS: KATE SCHUYLER



PHOTOGRAPHS BY PAUL WILSON

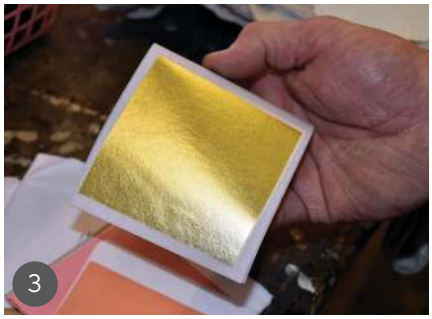
GILDING A CLAW FOOT

PAUL WILSON SHARES HIS GILDING TECHNIQUES WITH ANTHONY BAILEY

Paul Wilson freely admits he is largely a self-taught gilder, but his work is exceptional. He manages to make a difficult and intricate job look remarkably easy. First, he picks up an old screw-topped jar from a selection on a dusty shelf: 'I think that's the one, it doesn't smell that bad.' You could have fooled me, it smells pretty revolting. 'Skins, some years old, the older the better for what I want.' He means rabbit skin size, very watery, less pungent when brushed on to the gessoed, yellow-painted 'bottoms' then 'bowl' (red) on the 'tops'.

After that, holding a gilder's cushion with its draught shield at the back, he transfers a leaf of gold and gently brushes it flattish, ready to go. Then, using a knife, Paul slices the leaf again and again, cutting it into smaller pieces to suit the awkward internal shapes in a scroll foot. I always thought having a head of hair was essential for creating static with a gilder's tip, but apparently not. A few flicks, then he picks up a piece, carries it gently to the work, brushes it down and repeats endlessly, until it is time to select a new leaf and start all over again. It is somehow mesmeric, watching a skilled craftsman lifting each piece into the correct overlapping position until good coverage is achieved, ready for the agate burnisher to smooth and shine the whole surface. 'I leave it to dry overnight before burnishing it,' he says.

I'm impressed even now, but rubbing back the gold to reveal glimpses of the red base underneath is an art in itself. Being able to create this effect is very attractive to some clients but is also good for blending in sympathetic repairs. 'A German company makes a special stick-on gold leaf. It's a bit bright, but it is an alternative to the traditional sort. They said it couldn't possibly be used for burnished work – I proved them wrong of course,' he says. I agree it is a bit bling in appearance, but he has managed to somehow break through the surface convincingly to give a good distressed finish.



1 The aim is to produce a worn distressed effect like this leaf form.

2 Gold leaf is, of course, extremely thin and tricky to manipulate. The shield at the back prevents draughts disturbing the very thin leaf.

3 Here is a more modern, German-made alternative that doesn't need rabbit skin glue. It is a bit brighter than normal, and note the textured surface.

4 The rabbit skin size is gently heated with water to produce the working solution which consists of collagen from rabbit bones.

5 This is the disgusting-smelling cold mixture, now some 35-plus years old, which apparently gives the best result.

6 The surface is burnished all over with a brush to break through the size layer as part of the pre-distressing process.

7 Using the size water to pre-distress the surface of the 'bowl'.

8 The flat-edge knife used for cutting the leaf is given a quick sharpen for clean cutting and avoiding tears in the leaf.

9 The gilder's tip is prepared by combing it so it is silky smooth for a good 'pick up and put down' on the job.

10 The book or pad is opened and a leaf gently blown on to the tray. Two leaves should be sufficient for one side of the claw foot.

11 Pick up with the knife to help the leaf lie flat. Each leaf needs to be spread out before attempting to cut it into pieces.

12 The very gentlest of breaths is needed to persuade the leaf to flatten out fully. Note the soft surface underneath for cutting on.

13 The surface has the size applied to it, ready for gilding.

14 The leaf is cut in half, then again. If awkward areas are to be gilded then ever smaller pieces are used.

15 The static trick, a gentle brush and the fine squirrel hairs have enough power to lift a piece of gold leaf.

16 A section of leaf is now carefully captured, ready to press down on the job.

17 Pressed down, like so, roughly following the direction of the carved swirl.

18 The 'dabber' is touched to the lips to check it is dry, not wet size which would result in the gold leaf becoming stained.

19 The gold leaf is dabbed into place. The size has previously dried enough to avoid contaminating the brush.

20 More size is applied to an adjoining area. Each piece of leaf slightly overlaps the last, although you can build up density as well if you need to.

21 Gently laying down a smaller piece. Gilding is a time-consuming process, although it gets quicker with practice.

22 The 'bottoms', the deep ravines, are already painted yellow where there may be 'misses' in the gilding. Filling in missing areas with gold leaf is known as 'faulting'.

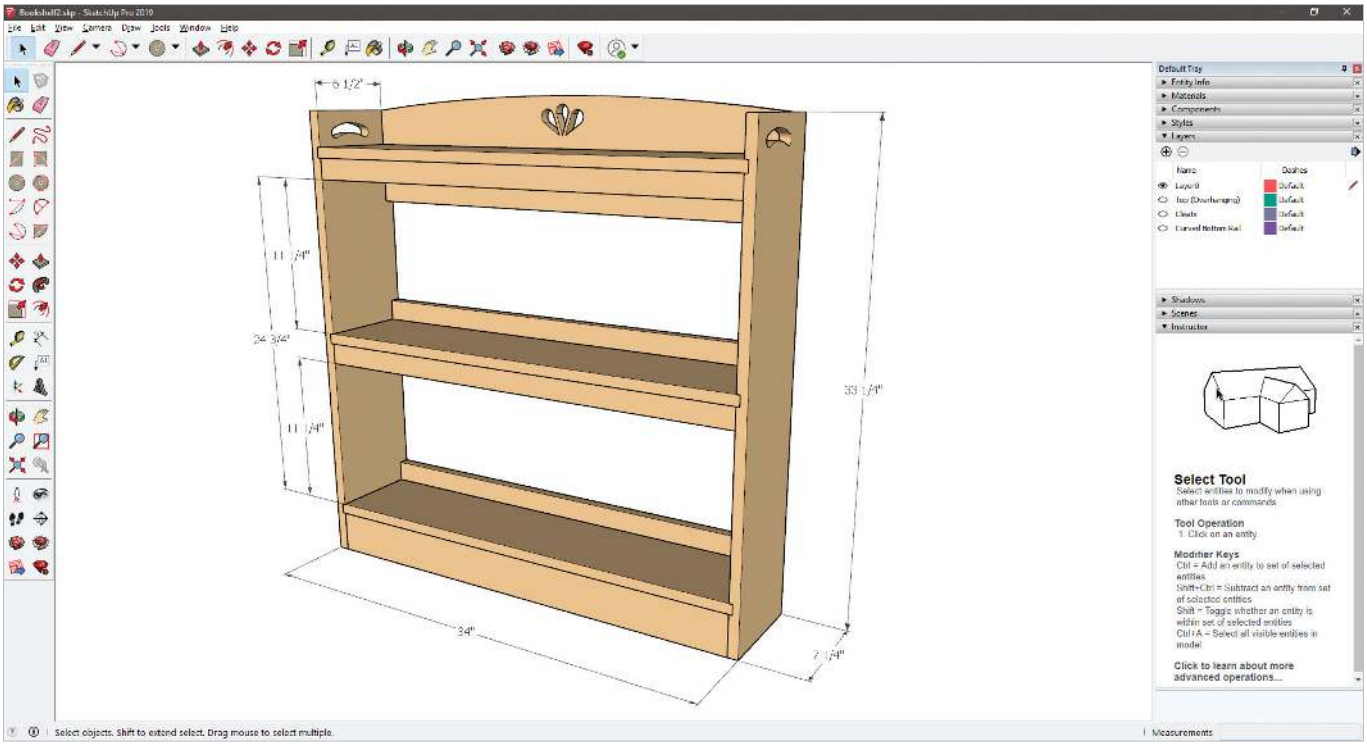
23 Dabbing down the latest additions, pushing them gently into place.

24 Gradually the surface gets covered in gold leaf. Any missed areas are easily filled in with smaller pieces.

25 Laying another section. The visual effect is rapidly becoming apparent.

26 Applying the old size water to tone the gold and then while wet, distress the gold.

27 Cleaning off the old size residue from the gold with methylene chloride (wax-less stripper) also tones the gold. You can then use an agate-tipped burnisher to give the foot a burnished finish.



SKETCHUP FOR WOODWORKING

RANDALL A MAXEY EXPLAINS ALL YOU NEED TO KNOW ABOUT THE 3D MODELLING SOFTWARE

When designing woodworking pieces, it's always a good idea to sketch out your design beforehand. If you're able to create a 3D model of your project, that's even better. With a model, you can rotate the design to look at it from various viewpoints. It's easier to visualise the proportions and scale of the components and how they fit into the overall look of the piece. Plus, you can make changes to refine your design before you put the saw to wood.

Traditional methods of creating a scale model of your design involve using foam, clay, cardboard or scrap wood to build a mock-up of the piece. This can sometimes be tedious and time-consuming, and modifying the design can sometimes be difficult.

Another option for designing your project is to use software such as SketchUp – a 3D modelling software that has been around for some years now. It has grown quite a following among architects, designers and woodworkers. It's distributed by Trimble, a worldwide company that provides software, hardware and services to a wide range of industries.

SKETCHUP VERSIONS

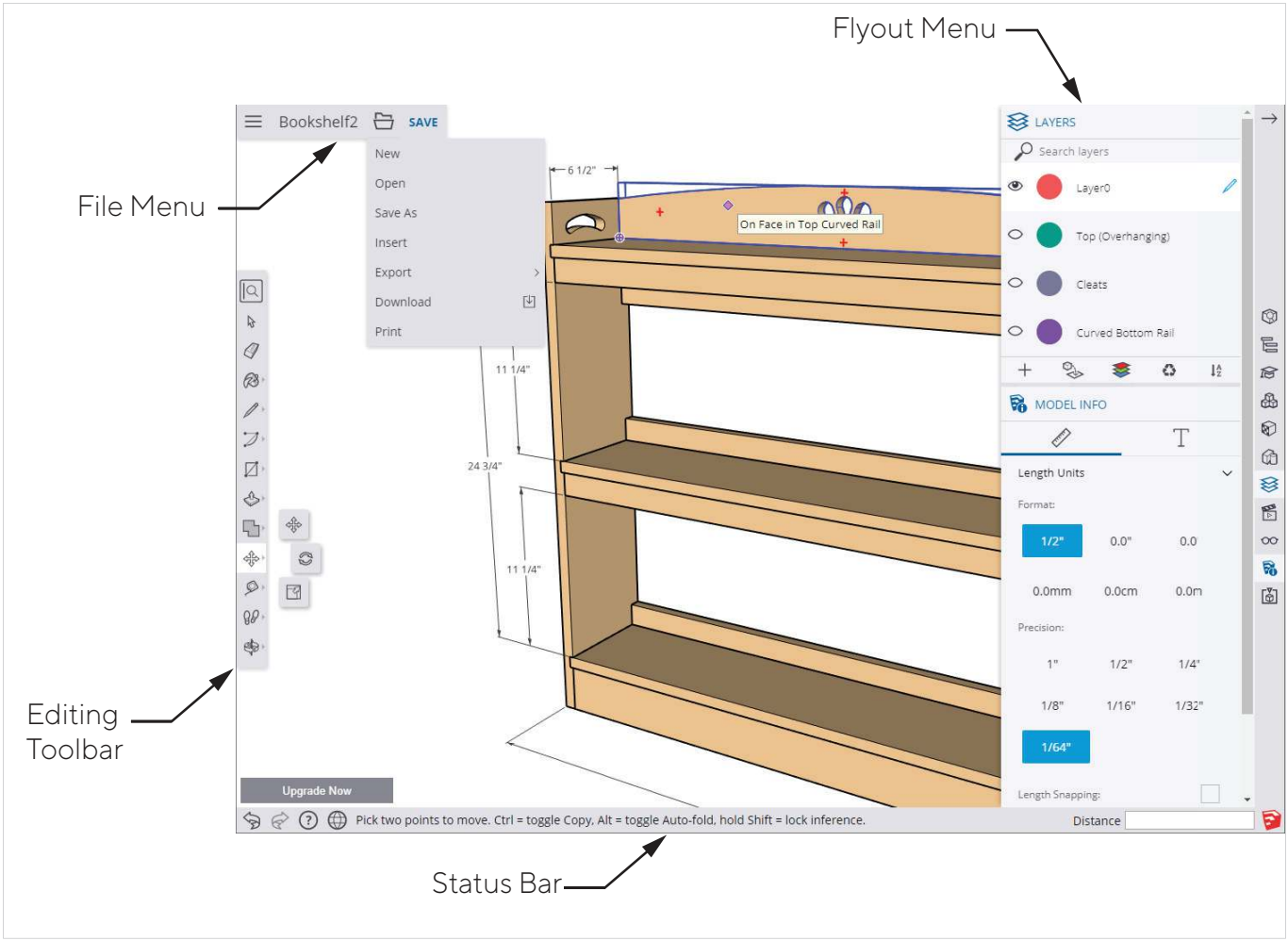
If you point your web browser to sketchup.com, you'll find a variety of options and plans. They range from a free, browser-based version to a fully installable package that runs on your computer.

The three packages most suitable for woodworking are SketchUp Free, SketchUp Shop and SketchUp Pro. They range in price and the paid versions include more features than the free ones.

SketchUp Free and SketchUp Shop both require an internet connection since they both run within your web browser (app.sketchup.com/app). Trimble provides 10GB of online storage for the free version and unlimited cloud storage for the other versions. Of course, you can still save your models to your local computer.

This browser-based version of SketchUp is packed with a lot of the basic features and tools that are also included in the paid versions. The menu at the top left of the screen contains the functions for opening existing models, saving your project, inserting components into the existing model and file import and export options.

On the left of the screen, you'll find a toolbar containing buttons for adding and modifying elements to create your 3D model. These include drawing tools for elementary sketches that form the basis for your model. Other tools allow you to turn those sketched elements into 3D objects. There are also tools for manipulating the view of the model in 3D space.



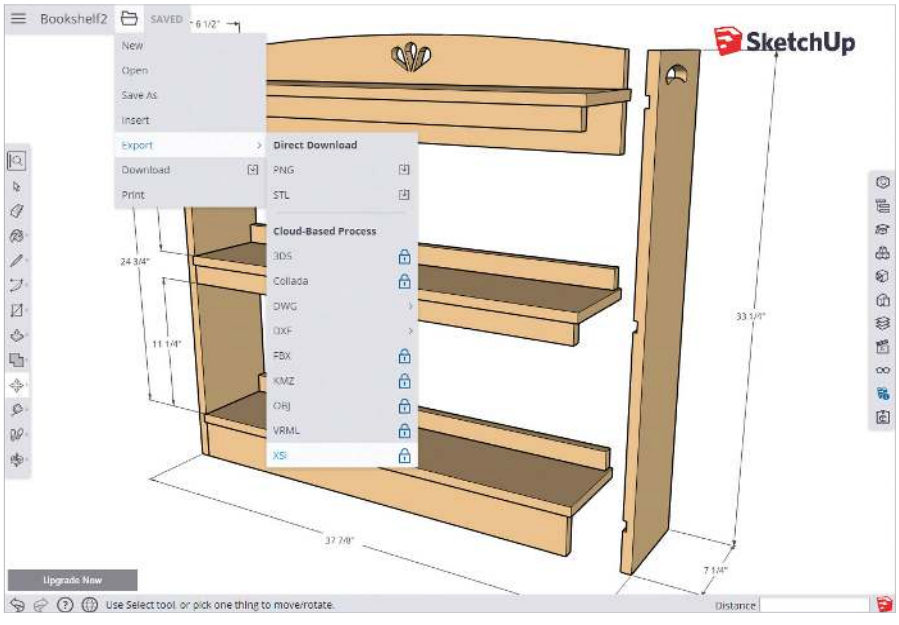
IMAGES BY RANDALL A. MAXEY

SketchUp Free runs in your web browser and provides a lot of features for creating a 3D model of your design

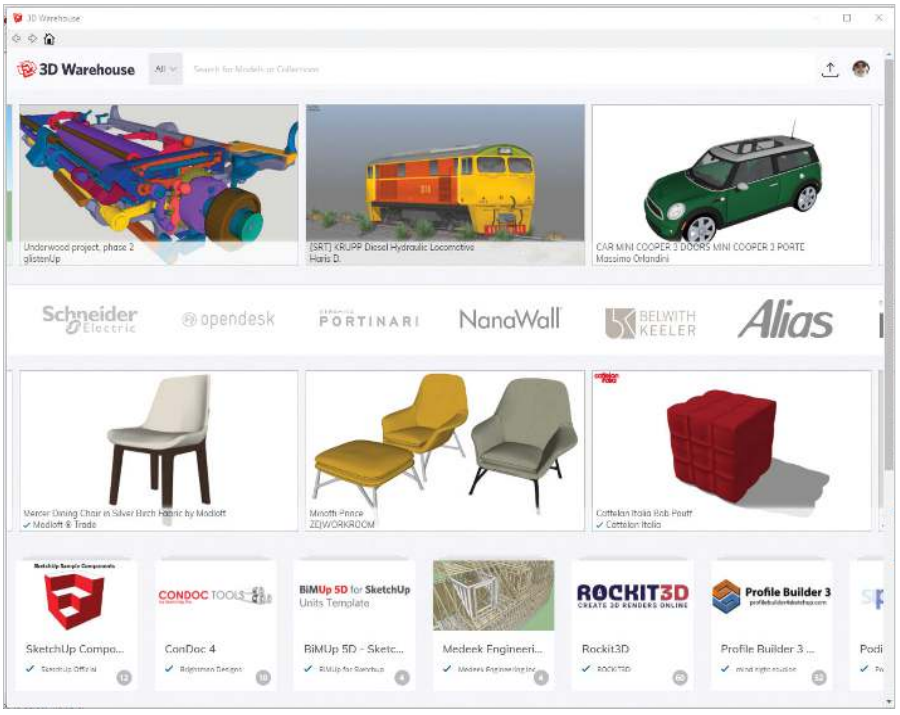
On the right side of the screen is a toolbar with buttons for organising your file. This becomes important as your model becomes more complex with numerous components. There's also a built-in 'instructor' tool that provides helpful, contextual instructions for the active command. For example, if you need help with all the options for drawing an arc, the instructor provides step-by-step instructions inside the active window. Located at the bottom of the screen is a status line that provides basic information for the active command and a button to access the online help library for SketchUp.

SketchUp supports a broad range of file formats to work with other software, 3D printers and so on. With the free version, you're limited to exporting a PNG image or STL file (for 3D printers).

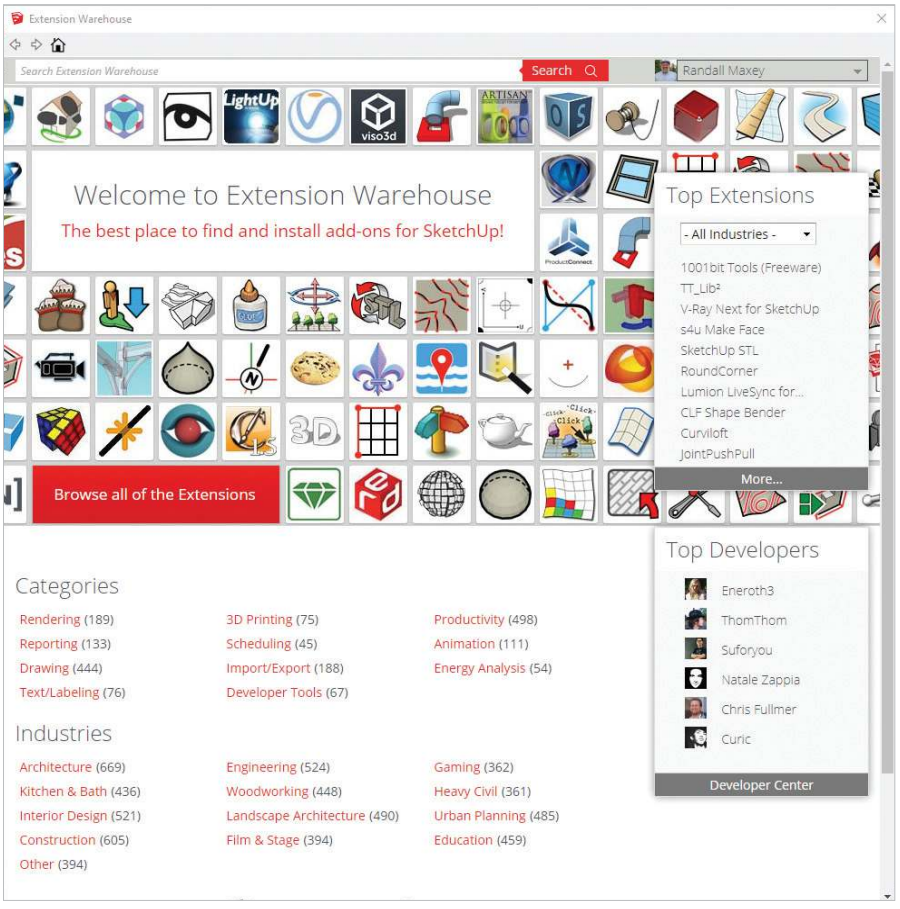
Printing a paper copy of your model is limited to a PDF file or a screen capture.



ABOVE: File export options are limited unless you upgrade to SketchUp Shop or SketchUp Pro
OPPOSITE: SketchUp is a valuable tool for visualising your designs and working out the joinery methods



The 3D Warehouse is a vast repository of user-supplied and manufacturers' models that you can download into your model or as a separate model



Downloadable extensions are add-ons that add features and functions to SketchUp Pro and higher

You can't print directly to a printer with the free version. The Shop and Pro versions of SketchUp add additional file import and export options to work with a wider variety of software.

'Extensibility' means the extent to which SketchUp can be customised and if you can access the 3D Warehouse, which is a repository of user-submitted models you can download and use.

From appliances to mechanical parts and beyond, there are thousands of models to choose from. This can save you time by not having to create the model from scratch. As you gain experience with SketchUp, these features become invaluable. For example, there are hundreds of add-ons (extensions) that provide additional tools and commands for SketchUp.

These extensions are written by third-party developers to give users additional tools that aren't included in SketchUp. They make generating models easier, faster and more productive. For example, woodworkers commonly use extensions for generating cut lists. Access to the 3D Warehouse and extension library is only available on SketchUp Pro and higher.

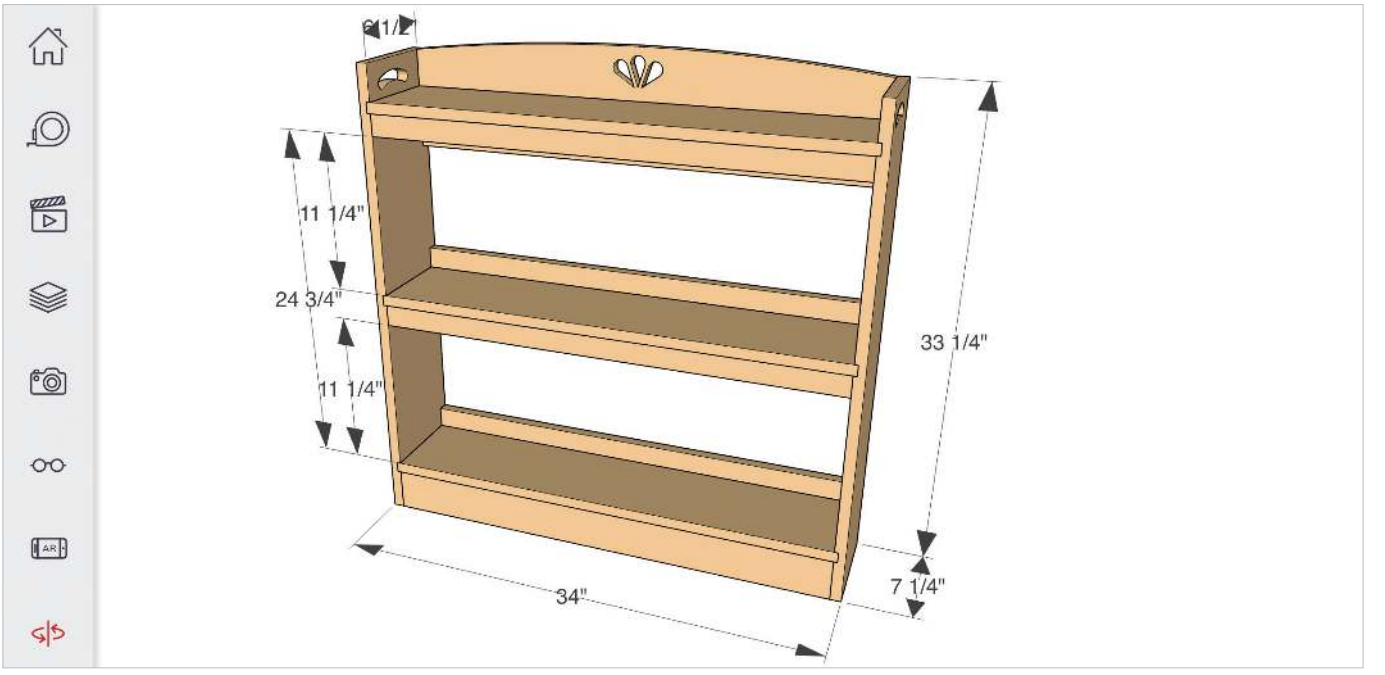
If you need the ability to generate shop drawings that include orthographic (top, bottom, side) views, detail views or section views, you'll need the desktop version of SketchUp Pro. It includes an app called 'Layout' that allows you to generate drawing sets. You can lay out and determine the scale of all the views, add dimensions, create detail views, include title blocks and page borders as well as other features normally included in a drawing set.

SketchUp Shop and SketchUp Pro provide the ability to create custom styles and materials. For example, you can make your models look as if they were drawn by hand. There are dozens of styles to choose from and you can create your own using a separate app called 'Style Builder'.

You can also add custom materials to your models. There are several to choose from such as various species of wood and types of metal. For architectural modelling, there are materials available for landscaping, floor and wall tile, roofing and more.

Layout is a separate program that is installed with SketchUp Pro. It allows you to generate professional drawing sets of presentation, shop and construction documents

You can stylise your designs for presentation using various built-in or custom-designed styles



The ability to view 3D models on your phone or tablet is handy to have in the shop or for presentation to clients

Interestingly, Trimble makes available a SketchUp Viewer app for smartphones, tablets and desktop PCs. This app allows you to view a SketchUp model from anywhere without the need for SketchUp.

Your model needs to be stored in the cloud to be accessible. The viewer is great to have in the workshop as you're building your project. And if virtual reality is your thing, you'll need to subscribe to SketchUp Pro to be able to view your models through a virtual reality headset.

I've been using SketchUp for many years as a modelling tool for my woodworking projects. I started with the free version. I learned it rather quickly by taking advantage of the extensive knowledge base and videos online. But as I become more proficient with it, I ended up subscribing to the Pro version. I use it mostly for the capability of generating drawing sets that I can take into the shop or show a client. Having the ability to load plugins for additional functionality was a plus for me also. For me, SketchUp is a powerful tool for experimenting with designs and figuring out how a project needs to go together. I rarely use a pencil and sketchpad anymore.

EASTERN PROMISE

NEW JERSEY-BASED CRAFTSMAN **BRIAN HOLCOMBE** TAKES INSPIRATION FROM MING DYNASTY CHINA AND JAPANESE SASHIMONO CARPENTRY TO CREATE BEAUTIFULLY UNDERSTATED AND STRONG FURNITURE

What do you do if you emerge into the working world with a degree in finance in 2009, just after the financial crash that sent much of the western world reeling toward recession? That unpromising start set Brian Holcombe on a journey that led to a profession as a woodworker, artist, craftsman and teacher.

Brian's interest in woodworking began as a teenager when he stumbled upon the work of Japanese craftsman Ru Amagasu, who was working near his home in Hamilton, New Jersey. 'I had not seen anything like what Ru was making and was very taken with it,' he recalls. 'When I began making furniture a few years later, I recalled how Ru's work made me feel, it brought woodwork to life for me.'

When he left university and found that no one in the world of finance was hiring, Brian joined the sales team of a design firm where he had the opportunity to study classic modern and postmodern furniture designs. 'Having that around me all the time was a constant inspiration – at that time I was woodworking as a hobby and using this experience to hone my design skill as furniture maker' he explains.

Dovetailed Bench
OPPOSITE: Hikido Credenza

Live Edge Dining Table

At the same time he continued crafting things he wanted for himself and had taken on a single client for handmade furniture. Artist Frank Smith and his wife Maria offered Brian his first commission. 'Early on I struck up a friendship with a couple who wanted to help me get a start as an artist,' Brian recalls. 'I built a jewellery cabinet for Maria of Indian rosewood and Macassar ebony. I set my sights high, hoping to learn the additional skills needed as I worked through the project.'

As he progressed in his woodworking, an interest in Japanese design and traditional Chinese furniture began to form – he realised they influenced the modern design he saw in his workplace and could also inform his own work. Brian found a guiding hand in a fellow woodworker's blog, *The Carpentry Way*, run by Chris Hall. 'Chris's work in Japanese techniques really affirmed for me that it could be done and he has been a constant mentor,' he says.

Brian began looking more closely at both traditional Japanese and Western work and pulling out elements he would like to incorporate into his own style as a craftsman. His focus was on hand tools, and he took inspiration from Japanese interior

Butler's Desk

carpentry and sashimono furniture. A short time after leaving the design firm, Brian decided to start up on his own. In addition to building art frames for artist Frank Smith, a long term commission from a friend helped to form the foundation of his business. 'The Butler's Desk was made near entirely by hand, from prepping boards through to each bit of joinery.'

HAND-CRAFTED

Hand tools are a key part of Brian's work and he says he has a 'hand tool ethos' even when using machinery. 'I started to get into hand tools pretty heavily because I didn't have a lot of space, nor the budget for good machinery. With hand tools I could work large or small-scale projects, depending on how much effort I was prepared to put into it, and I wanted to make anything without being limited to what I could fit into my space.'

Later on he started introducing machines to his workshop, including mortisers, wood milling machines and saws, a few of which were older machines and some of which he had to restore. 'I really like older machines and for the most part they were built very sturdy. They can be a handful to get into my shop though,' Brian admits. 'I found that adding some machinery to the shop was extremely helpful to my workflow.'

In terms of designing, Brian draws by hand first and then moves to computer-assisted design. 'I look toward Ming dynasty Chinese furniture as historical inspiration,' he says. He also looks at Japanese carpentry and sashimono furniture. He explains: 'I like the simplicity of design. Ming especially is really incredible – the craftspeople were working in very dense hardwood, which is not easy to work with, yet they did very intricate work. The pieces were made to be taken apart and moved, because it was fairly common for furniture to be moved from say the winter to the summer palace, and it would be disassembled and reassembled. There is something fantastic about that. They couldn't really use glue, so the pieces are made with joinery. The joinery isn't really made to show off, it is always structural and yet also remains aesthetically pleasing.

'I began working those elements into my own work and found that it made very strong connections. It encouraged me to work much more of it into my design work.'

Although Brian prefers working with Japanese tools, he says western tools are just as good. 'A friend of mine makes traditional western wooden planes and I like them easily as much as Japanese planes.' For him the main thing is to use the right tool for the job, and that is why he uses waterstones to

'I like hardwood because it doesn't move a whole lot. It is also structurally stronger in many ways. I also like that it is very subtle in appearance – I don't really like light furniture. Furniture should be subtle in most areas and attention-calling in a handful. I try not to have everything call attention.'

White Oak Kitchen

Tea House Armchair

White Oak Kitchen

Dovetailed Long Bench

Henry Armchair

sharpen his own tools. 'Diamond stones are mainly used to flatten a waterstone. Waterstones work effectively on Japanese tools: if you are going to use Japanese tools you are probably best to use Japanese sharpening methods. For sharpening western tools you can use either method, and I use what suits the tool.'

Although he has adopted a Japanese design and craft ethos, Brian says that in fact the methods are not all that different from Western ones. 'The tools are a little different but both are founded in carpentry work, utilising the effect of riving or splitting in earlier work. The appearance can be much different, but the goal and process of work is very similar.'

Brian gets to meet up and share ideas with like-minded craftspeople at annual Kezurou Kai or Kez events, which celebrate Japanese woodworking. 'It is a great event helping to continue many traditions of Japanese carpentry,' he says. 'The main part of the event is a competition to plane the thinnest shaving, unbroken from the full length and width of a board,' Brian explains. 'I have come in third place every year so far.' He notes that everyone at the event is open and happy to share tips with others, even though they may be business rivals. 'Woodworking is funny in that way – you have open, interesting discussions with your friends in the field, who I might add are often also your competition,' he says.

RAW MATERIALS

Brian works in walnut, oak, ash, cherry, cedar and mahogany for indoor furniture and in yellow cedar, western red cedar and mahogany for exterior furniture. 'I like quartersawn material because it is very stable and subtle in appearance. Furniture should be subtle in most areas and attention-calling in a handful. I try not to have everything calling for attention,' he says.

His favourite material is Honduran mahogany, a depleted material he will continue to use as long as he can get hold of it, which he doesn't expect to last much longer. 'It is really nice to work with and planes beautifully. It is also much easier to work by hand than, say, kiln-dried white oak. I use it whenever possible, and my second choice is walnut.'

Having said that, his favourite recent piece was a live-edge bench made from a cherry tree that had died in a client's garden and was very important to her. 'I was unsure of the material at first, but it won me over. It really showed a fantastic character to it,' he says.

His most challenging recent project was a splay-leg table. 'It was incredibly difficult to work through but very rewarding,' says Brian. 'Splay-leg furniture is very strong, but getting there is very difficult. I spent so much time and effort making all the machinery in my workshop get a perfect 90° angle. It takes a bit of ingenuity to make something like that accurately.'

When he's not designing or working with wood, Brian opens his studio to visitors, teaches classes and writes a blog. How does he fit it all in? 'I begin work after my son Henry leaves for school and start work again after Henry goes to sleep at night, working sometimes until midnight,' he says. 'Any time not spent working with wood is usually spent playing with Henry, building Lego.'

brianholcombewoodworker.com

TRESTLE BENCH WITH JAPANESE JOINERY

BRIAN HOLCOMBE DESCRIBES HIS CONSTRUCTION PROCESS

This trestle bench is made using Japanese carpentry techniques along with those I have developed through years of practice in my workshop.

My work begins with careful preparation of lumber, usually beginning with what is brought in from the lumberyard. This project, however, began a bit differently – it all started with the cherry tree still standing. This cherished tree died unexpectedly and the client wanted to make good use of its lumber.

A local tree service carefully felled the tree and delivered the logs of this multiple trunk cherry to a sawmill where it was sawn and kiln-dried. Many months later I was able to receive the material and begin acclimatising it to my workshop. That process starts with stickering the material just as it was at the mill and leaving it to set for a few weeks.

I began milling the material flat and true very slowly. The process of planing, then lightly thicknessing, followed by a return to the stickered pile was continued over the course of a month in a repetitive cycle until it was both flat, true and exhibiting the ability to maintain that state.

Once the lumber was planed flat and made to thickness it was ready to be joined. Inspecting the flattened slabs and playing with how they would ultimately interact provided me with a plan. The material yielded one slab with a section of rot through the centre, and removing the rot and joining this to a larger and complete slab would provide enough seating area to be comfortable. However, joining two slabs with a waney edge would be not without difficulty.

1 To join these slabs, I first squared up the outside edges on the main slab, maintaining its wane but removing the angle of the edges. Using the squared edges as a pattern to cut the adjoining board created a neat feature between both. Rather than attempt to glue these boards together I decided it would be best to leave a split between them, intentional in appearance but practical in purpose. The two boards were then joined up to a large piece of pine for fixturing.

2 The combined boards and pine support were mounted to the sliding tablesaw out-rigger for making the angled end cuts, which will be prominent features.

3 Next, the top was detailed by spokeshave and chamfer plane to neaten the waning edges, smooth the end grain and create a crisp effect along the edges. The edges of most of my work are chamfered, giving a nice, soft feel to the edges while maintaining a crisp appearance.

4 Now to begin making the structure. The bench would be joined to the top using mortise and tenon joints at the uprights and those uprights supported by stretchers. To position the mortises, the sacrificial pine slab, which had been fastened to the top and carefully positioned, was used as a reference.

The pine slab had ends cut very precisely square. This ensured both rows of mortises would be parallel. A matching row of housed tenons were cut on to the uprights using the bandsaw and router table.

5 With the bench sides now standing, prepped material for two stretchers could be marked out against those uprights and cut to size. A thin beam would be used directly under the top to provide support for the seat. Another, heavier, beam would be used to maintain the uprights.

6 The upper stretcher utilises a simple halving joint, cut on the tablesaw.

7 The lower stretcher utilises a joint common to Japanese carpentry. The joint, known as a cogged joint, is a stretcher to post connection. The joint uses a notch to capture the upright and is fixed into place with a tapered wedge.

8 With the main joinery now complete, I began making brass feet which detail the uprights of my benches. These feet are combined with a recessed cut at the bottom of the upright that allows them to stand proud.

I feel it necessary to have adjustable levelling feet on some furniture but have also found that those feet often leave something to be desired in aesthetics. The brass feet featured on this bench have come about through a series of prototypes. Each time I have built a similar bench, I've worked to improve upon the

feet. Originally, this feature was a simple slab of brass threaded to carry an adjustable foot. Neat enough but I worried about the connection between wood and metal using screws into end grain.

Next, the foot evolved into a dovetailed brass housing which carried a thread for the adjuster. This improved greatly upon the original but still I worried that perhaps the detail would come loose during seasonal changes. Finally, I modified my approach another time, again starting with brass bar stock milled to exact dimensions.

The parts were sized, dovetailed and shaped to form a raised boss which would house the foot. The parts were next fitted to teflon runners and run in a vibratory tumbler to deburr the outside edges, neatly rounding them.

9 After tumbling, they are hand-lapped to a bright polish using micro mesh abrasive paper. These papers have just enough give to make the process of lapping fast and effective.

10 The feet are joined to the wood with sliding dovetails, made proud of the bottom by pattern routing to remove material between the feet.

11 Brass-threaded inserts are installed into the upright, then the housings are carefully pressed on to the feet. The wood must be compressed as the dovetails are fitted to avoid having them loosen over time. The threaded inserts are then backed out into the receiver in the brass foot. This locks the foot into place and carries nylon adjusters.

12 The bench is finished using a light oil, topped in shellac. The shellac is buffed then made satin and finally coated in wax, completing the build and readying this bench for many years of use.

ON YOUR WISH LIST

THIS MONTH'S MAKERS' MOST WANTED

Bridge City HP-12 Dual Smoothing Plane, £892.99
axminster.co.uk

Axminster Rider 6-piece bevel edge chisel set, £89.95
axminster.co.uk

Premium tool kit by Grace USA
£195, **conranshop.co.uk**

Damascus Viking's Axe "Braveheart"
£1,599, **northmen.com**

A5 bespoke notebook
£130, **williamhannah.com**

Chairmaker's drawknife
£292, **northmen.com**

Leather tool box
£275, **conran.co.uk**

Hand cleaner with activated charcoal
US$9.98, **workmansfriendbrand.com**

Troika construction multi-tool ballpoint pen
US$34.95, **troikaus.com**

Micra keychain multi tool
£60, **conranshop.co.uk**

Handmade Japanese set of 3 saws
£230, **workshopheaven.com**

The Shorty key organiser
US$68, **quietcarry.com**

Tsunesaburo Zousaku Hira Kanna Japanese jack plane 55mm
£149, **workshopheaven.com**

IT DOES GROW ON TREES

BRENDAN DEVITT-SPOONER DOES WHAT MOST OF US CAN ONLY DREAM OF – CREATES HIS OWN TIMBER SUPPLY

Over the years at exhibitions and various craft shows I have taken part in, there is usually a question along the lines of: 'Where do you get your wood from?' The devil inside me wants to reply: 'From trees.' Whether they think because I am 'in the trade' I have access to a secret source of timber I am not sure. Depending on how seriously the conversation develops, I say that I get most of it from trees that I have sourced or been given or, failing that, from a reputable sawmill.

Since I began my life as a furniture designer and maker in the summer of 1987 I have been actively engaged in collecting trees, having them converted and then air drying them outside my workshop. Fortunately for me (but not for many others) the hurricane of that October was a gift. Suddenly there was free timber everywhere for the asking. So began my timber collecting activities.

PHOTOGRAPHS BY BRENDAN DEVITT-SPOONER

A FALLEN OAK

A couple of years ago, a student at my evening class mentioned to me that a friend of hers had a large oak tree that fell over in strong winds. Because it had made a mess of her garden she was anxious to have it removed. Although it might seem daunting, collecting a tree of this size is not usually a problem. The two main issues that can affect the collection are access and the ground conditions. If I cannot drive to the tree with a trailer and have space to turn or get the log on to the trailer then it becomes a no-go. Similarly, if the ground is boggy it is a no-go. In this particular case a simple reverse with a trailer down a winding driveway made the job quite straightforward.

LOG RECOVERY

Having reversed down the drive to align the trailer parallel with the log, it became obvious that 5m of oak tree was not going to fit on to a 3.6m trailer. Fortunately the guy who accompanies me on these forays just happens to be one of my sons, who is also a tree surgeon. We decided to cut it into two pieces – a 2.7m and a 2.4m. It was around 1m in diameter at the base, reducing to about 0.5m.

Setting up the recovery is reasonably straightforward. The ramps are laid far enough apart to take the weight of the log evenly without being too close, which might allow the log to fall to one side should it not roll up evenly. The winch is attached

Brendan's secret is getting the supports dead level

Beautifully stacked and 'sticked' to air dry

to the far side of the trailer with a strong rope. The steel cable is attached also to the far side of the trailer, fed underneath the log and then fed into the winch and pulled taut. With the handle engaged it is a simple matter of cranking the handle backwards and forwards and watching the log roll towards you and the trailer. Sounds simple, and it is, assuming the log is perfectly cylindrical and of a constant diameter. In real life one has to allow for trees being far from the ideal shape. In most cases this will mean siting the steel cable slightly closer to one end or the other. If the log is not parallel to the trailer you will need to move the cable on the log to compensate for the angle.

When the log reaches the base of the ramps you must ensure that the log will roll up and sit with its weight slightly forward. Driving a tail-heavy trailer is no fun.

As the log rolls up the ramps it may be necessary to alter the angle to straighten it up. This is where the wedges come in. Put a wedge under the part of the log that is farthest from the trailer and then reverse the winching. This will let the part of the log nearest the trailer slip back down under control until it is level. It may be found that the winch cable needs to be repositioned to enable the log to proceed evenly.

Put wedges under both ends on the ramps and then slacken off

1 Several of Brendan's logs waiting to be processed
2 The first pass just takes off a thin layer
3 An early cut produces a 'top' board
4 Some serious planking begins
5 The feed roller moves the boards away
6 Brendan's planked timber being fork-lifted back on to his trailer
7 The trunk re-stacked by hand

the cable and reposition. It might be prudent to note here that logs are not light. With any adjustment work it should always be done on the 'up side' of the log. Twice I have had ropes and chains part and trying to stop three tons of tree from returning to the ground is not easy.

As the log comes on to the trailer, make sure it runs on suitable bearers as this will allow the cable to be disconnected from underneath it and will also protect the floor of the trailer.

This is another time when wedges are useful. They will stop the log from rolling off the other side and also keep it in position.

Getting the other part of the tree on to the trailer was equally straightforward, although we had to move the trailer further back to align it correctly. With both logs on board they were both wedged and then secured with a number of ratchet straps. Attention to safety is of paramount importance here.

THE SAWMILL

I took the log to my local sawmill, Northwood Forestry near Ashington in West Sussex. Having decided that I wanted both logs planked into 54mm thickness, I left the head sawyer there to do his magic. A couple of weeks later I picked up the planks and took them back to my workshop.

STACKING PLANKS

Putting the planks into stick – that is, separating each plank with softwood sticks to allow the planks to dry evenly – is a very important process. If not done carefully it can lead to a lot of expensive bent timber. Over the years I have arrived at what I consider a good way of achieving straight, flat planks.

Most important is a flat and level ground. Most of my timber storage area is concrete. I put down heavy rails of either steel beams or large section timbers. These will then have thick 'stickers' (sticks, in other words) of about 100 x 100mm section placed to about 500-600mm centres to form the base. Before placing any timber it is imperative that these big stickers are flat, level and not in wind.

Using a long aluminium straightedge helps. On top of the big stickers I then put on conventional size stickers, usually 20mm thick. The planks of timber can then be laid to form a stack.

It is important to ensure that each line of stickers is vertically in line to ensure flat planks. I have found the best source of stickers to be old pine floorboards – they are a constant thickness and usually free!

AIR DRYING

After sticking the log, the stack has to be protected from the weather, whether it be sun or rain, and weighted down to keep the top planks flat. I have found old concrete fence posts to be ideal. 'Roof' coverings can be whatever is to hand. I have long steel roofing sheets that allow for a long overhang. These need to be weighted down as well, usually with more bits of fence post, concrete blocks or the discarded crown boards from the log which cannot be used.

In around two years' time I will have some lovely pippy oak. In order to use it, I will then need to put it in my container-based dehumidification kiln for a while longer until the moisture content drops to the roughly 10-12% needed for furniture making.

THE NUMBERS

In collecting trees it is a benefit to know how much a log weighs. Generally 25 cubic feet of timber weighs around a ton. My trailer is rated for 3.5 tons and can therefore legally take a 2.75 ton tree as the trailer weighs 0.75 tons.

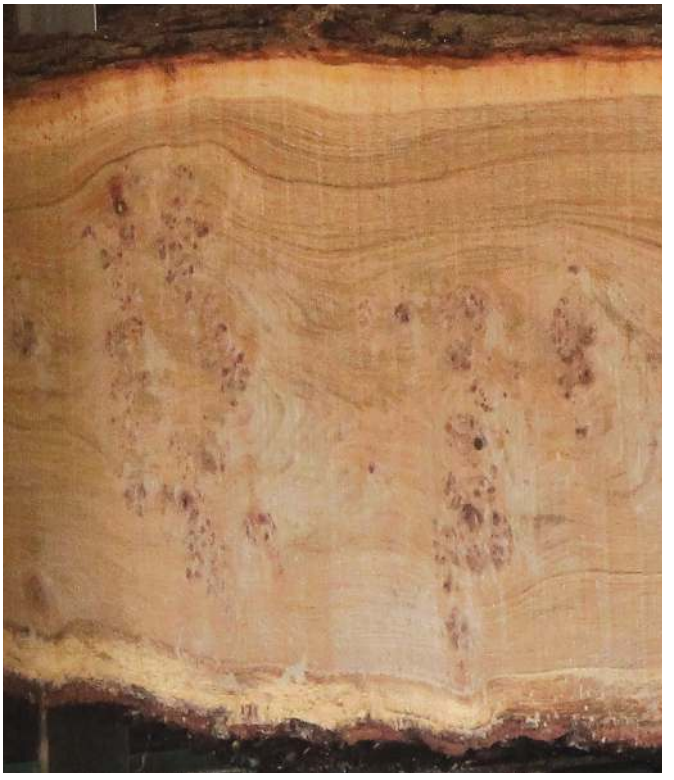
You will note that I use imperial measurements for my calculations. Despite metrication, hardwoods are still commonly measured this way because a cubic foot is much smaller than a cubic metre, which is huge by comparison.

Working out the cubic footage I use the following method: length of log in inches multiplied by 0.25 of the girth twice. This will give the number of cubic inches, which is then divided by 1728. This will result in the cubic footage.

So a 12ft by 3ft log is worked out as follows:
144 x 30 x 30 = 129600 cubic inches
129600 divided by 1728 = 75 cubic feet

And, if you are paying £40 a cube for oak, this example would cost around £3,000.

I like the ideal of a workshop that is surrounded by stacks of drying timber which can be traced to their origins. When clients or visitors visit they can see the timber in its natural state. They can see where it was sourced. They can see the journey from growing tree to finished item of furniture. Romantic? Possibly, but I feel it works.



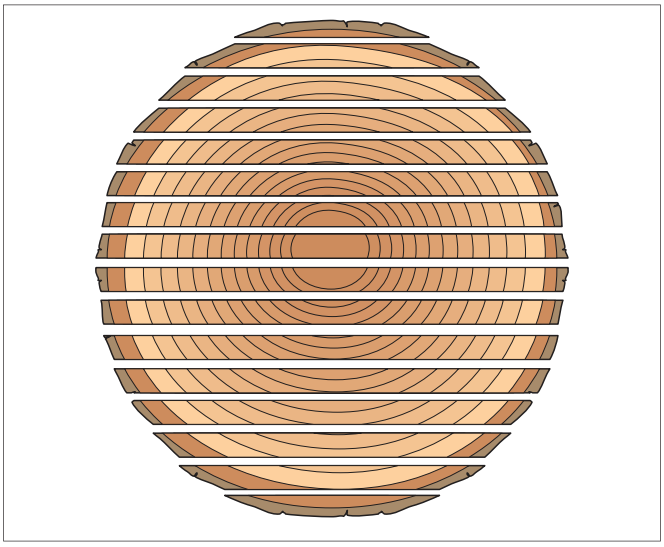
Beautiful 'pippy' figure – enough to delight a designer-maker's eye

SHOULD YOU BE TEMPTED TO TRY THIS FOR YOURSELF...

- Primarily you will need a vehicle that can tow a large trailer with a heavy log on it. A large 4x4 with a low ratio gearbox is essential. Trying to reverse 3.5 tons up a slope while slipping the clutch is not much fun – it doesn't do the clutch much good either. This is hooked up to a 3.5 ton trailer, in this case an Ifor Williams flatbed with old-style forklift truck wheels. These, being much wider than the current offerings, resist the possibility of sinking in soft ground.
- A pair of sturdy ramps, ideally 2.4m long as they lessen the angle from ground to trailer.
- A winch – in my case I have a hand-operated Tirfor with 25m of steel cable.
- Various ropes to secure the winch to the trailer.
- A selection of wedges – mine are cut from old 8x4 roof joists.
- A strong steel crowbar or two.
- A selection of heavy-duty ratchet straps.
- A metal detector.
- Possibly a chainsaw and associated safety equipment.
- Gloves and steel toe-capped boots.
- A sense of adventure.

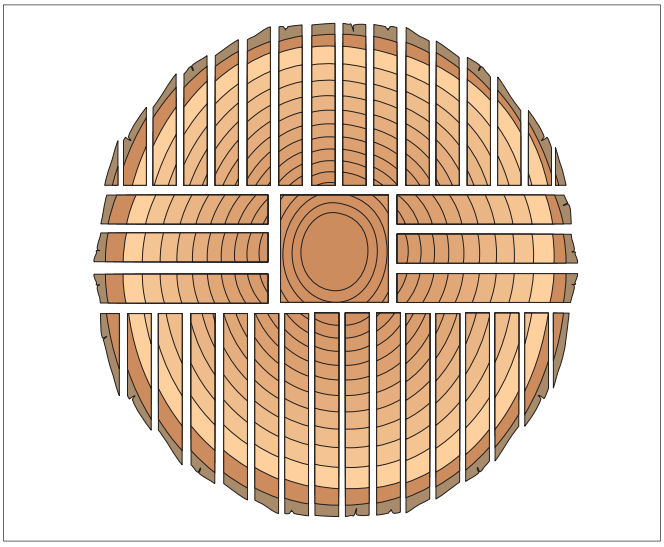
CONVERTING WOOD INTO SMALLER SECTIONS

There are several different ways in which a log can be cut. Some methods are very economical from the woodyard's point of view; others produce more waste but yield more dimensionally stable timber and, in some species, a more attractive figure.



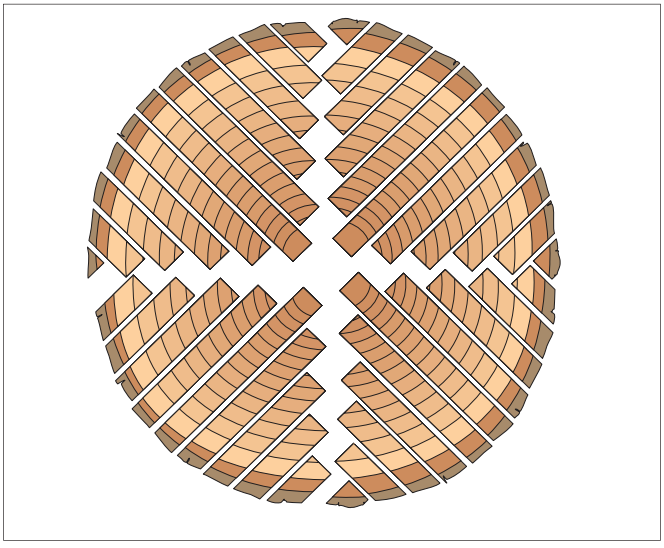
THROUGH AND THROUGH

The log is sawn horizontally along its length, and this is repeated until all of the log has been cut. The boards have a wavy or natural edge running along their length. Another term for this is slab-sawing. Wastage is small, but the boards are liable to warp.



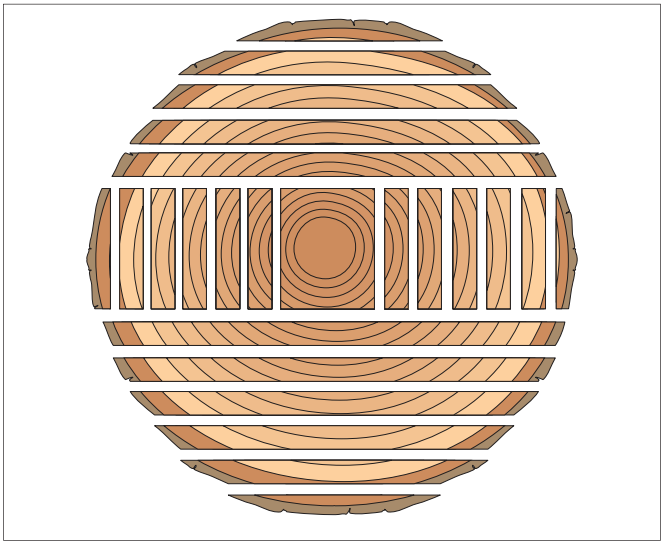
MODERN QUARTERSAWING

Because traditional quartersawing is expensive and wasteful, an alternative method is now used which is more economical. It still produces the figuring mentioned above, but compromises the dimensional stability of the board a little.



TRADITIONAL QUARTERSAWING

Traditionally, boards were cut so as to radiate out from the heart of the tree, much as the spokes of a wheel radiate from the hub. Wood cut in this way is very stable, and in some cases – oak, for instance – the wood will yield an attractive ray figure.



PLAIN OR FLAT SAWING

This is similar to through-and-through cutting, apart from the zone that includes the heart of the wood. The heart, because it is unstable, is cut out (boxed) and discarded, but the sections to either side of it are cut at a tangent to the grain (riftsawn).

ILLUSTRATIONS BY SIMON RODWAY

WORDS: MARK BAKER

MODERN RECLAMATION

WHEN A TREE CAN NO LONGER STAND IN ITS TRUEST FORM, **JOSEPH LA MACCHIA** ENDEAVOURS TO TURN IT INTO SOMETHING BEAUTIFUL AND EVERLASTING THAT CAN STAND IN ITS PLACE. HE TELLS *F&C* ABOUT HIS WORK

Did you know there are trees thousands of years old scattered across the globe? In Sweden there is a Norway Spruce called 'Old Tjikko', which is nearly 10,000 years old. There's even a colony of an individual aspen tree in Utah known as 'Pando' that has been continuously cloning itself for 80,000 years. The trees that inhabit this planet stretch back in time through generations, and this is why I aspire to turn them into furniture that can be passed down through the generations.

I am passionate about leaving objects behind that not only have their own creation stories, but whose materials have origin stories as well. I'm not just making tables and chairs so people have a place to sit and eat, I'm linking the internal environment in which we dwell to the external environment from which these materials have come. Whether sawn by my hands, or by another's, this intimate connection allows me to trace the provenance for each piece I produce – crafting the narrative of the work and filling it with both the soul of the tree and the maker.

PHOTOGRAPH BY SARA STATHAS

PHOTOGRAPHS BY JOSEPH LA MACCHIA

Aspect Dining Collection
ABOVE: Aspect benches and chairs

SALVAGED TIMBER

Local urban salvaged trees and timbers are at the centre of this approach. I call it modern reclamation – utilising, preserving and honouring these resources so that their value is not lost solely because their prior existence in this life has changed. Taking what has fallen and giving it another life compels me to continue what has been a time-honoured tradition within the craft, albeit one for which modern society has very little need. Nonetheless, for me, it has been a deeply personal, moral choice in the methodology of this work since I saved my first urban tree in 2007.

Much like the 'farm-to-table' movement, which for decades has been sharing the benefits of eating locally and knowing 'from whom and from where' our food has come, I would similarly hope for us to once again know the 'from whom and from where' for the table we set that food upon. In striving to be better stewards of the planet, shouldn't we once again turn our focus towards knowing where more of the goods we purchase come from as well? Who built the bed you will sleep on tonight, or the bench on which your kids lace their shoes each morning? I'd love for those kids to watch their own children do the same, while being reminded of the story of a majestic tree that once stood right outside their childhood home. The same tree where they played under its canopy, and climbed on its limbs, until a summer night's storm brought it to the ground. These are the origin stories of urban salvaged trees; long before my hands ever touch them.

In recent years spending money on experiences has become widely popular, but I will always be an advocate for the immeasurable experiential return on investment brought forth by studio furniture makers. The joy of looking at a meticulously executed piece, the pleasing tactile sensation of running your hands over a beautifully finished surface or being captivated by the way the form interacts with light and shadow, are all priceless experiences that a patron gets to share in every day as they interact with the work. Add to this any of the possible connection points to the material itself through the philosophy of modern reclamation and an undeniable legacy is born, one where the collective spirit of the maker's story and the material are told.

lamacchiadesigngroup.com

Modern Stacked Bunks
ABOVE: M stools

TOP LEFT: Aspect coffee table
TOP RIGHT: Fibonacci curl
MIDDLE: Hex Prism stools
ABOVE: Facet chopping boards
RIGHT: Hex Prism

PHOTOGRAPHS BY KIERAN BINNIE

A GRAND WORKBENCH JOURNEY
SLAB LIFE

KIERAN BINNIE ADDS AN OAK SLAB TOP TO AN 18TH-CENTURY STYLE WORKBENCH

One of the biggest challenges when building a traditional 'slab top' Roubo-style workbench is flattening and squaring the slab. In many ways the slab is just a normal piece of timber such as you would use for any furniture build – only much, much bigger. The significant increase in scale has several implications. First of all, you are committed to a hand-tool-only approach unless you have access to very large commercial quality machines. Secondly, while many of the same techniques that would apply to dressing stock can be used, you do need a clear plan of attack as well as understanding which surfaces need to be perfect and which do not matter. I recently processed the oak slab for my own hand-tool-only Roubo workbench build. That slab started out at 2800 x 558 x 152.5mm in the rough with a finished size of 2600 x 530 x 146mm, and in this article I will show how I approached this stage of the build.

FIND A FRIEND

Like many woodworkers, most of the time spent in my workshop is solitary. Lone working might be very pleasant most of the time, but when moving a Roubo-sized slab, you are not going to get very far on your own. So the first step is to call a friend, or three, to help manoeuvre the slab into position. If you plan an efficient workflow (as I have tried to set out here) you will only need to move the slab into three different positions, but you will need assistance for all three moves. Having an extra pair of hands available to help with planing is also useful, although not essential.

The first critical surface to work is the underside, which is the reference surface for laying out the joinery. In *L'art du Menuisier* (the classic 18th-century furniture-making volume that has been translated and published by Lost Art Press as *With All the Precision Possible: Roubo on Furniture*), André Jacob Roubo

OPPOSITE: The completed slab, ready for joinery

1 Much of the processing can be done with a jack plane. A scrub plane can also be useful (but not essential)

2 Planing a chamfer on the far edge of the workpiece prevents spelching

3 Traversing cuts will flatten the slab quickly and efficiently

4 Traversing with the jack plane

suggests that the best orientation for the slab is heart-side down, so that if the slab cups as it dries the leg joinery will be pulled tight. The underside does not need to be pretty, but it does need to be flat, otherwise the legs will be pulled out of true and the workbench will not be stable in use. Once the slab is in position, check the underside for twist with winding sticks – I use 91cm-long aluminium corner cladding. The length of these winding sticks exaggerates any twist in the workpiece, and enables me to identify where material needs to be removed. Fortunately, my slab had only minimal twist which I was able to remove quickly using a No. 5 jack plane. The slab was cupped across its width, and had a number of difficult knots where branches had previously grown. Part of building a large-scale workbench such as this is accepting knots or checking, which would otherwise be considered defects – the sheer size of the individual components mitigates against those issues.

For guidance in how to true the underside of the slab I turned to Joseph Moxon, a predecessor of Roubo. Moxon's book *The Art of Joinery* is the very first English language book on woodwork, and was originally published in 1703 (reprinted by Lost Art Press, 2012). In *The Art of Joinery* Moxon describes a technique called 'traversing', where you work across the grain rather than with it. This technique exploits the relative cross-grain weakness of wood, and means you can take a heavier cut than if you were working along the grain. Traversing works very well when flattening the cupped side of boards as the sole of the plane rides on the cupped edges and ensures you only remove material from those high spots, and so was the perfect technique to flatten the underside of my oak slab. I first planed a heavy chamfer along the far side of the slab, to avoid spelching, and then traversed the grain using a No. 5 bench plane fitted with a cambered iron. For some particularly difficult areas I also used a scrub plane, where the more aggressively curved iron (honed to a 75mm radius) was able to remove truculent knots with ease. Once the cupping was removed from the slab, I switched to a No. 8 jointer, set to a finer cut and continued to work across the slab, this time at a 45° angle to the grain. Once the surface was flat and free of twist, I called it done – isolated patches of tear-out remained, as did some knots lying below the planed surface. However, this does not matter on the underside providing that the surface is free of twist and largely flat (particularly in the areas where the leg joinery will go). Cleaning the slab up to 'furniture standard' would introduce a lot of extra work for no real benefit.

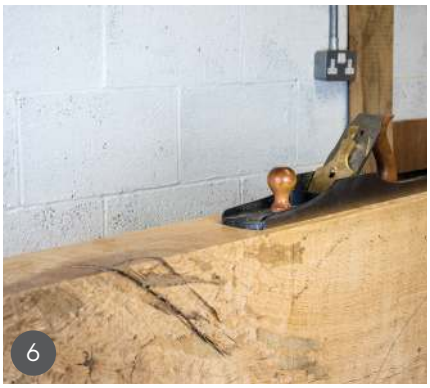

5

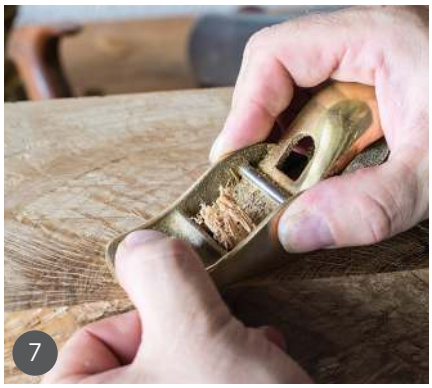
EDGE TO EDGE

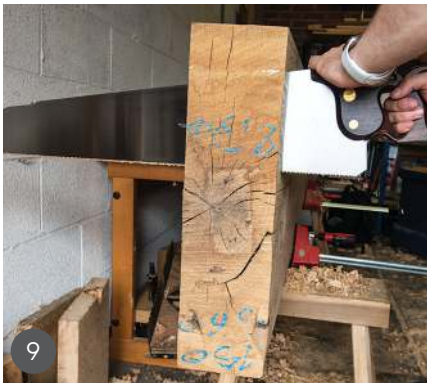
The next critical reference surface is the front edge of the slab, as this will provide a clamping surface when the bench is in use, and will also be used to reference the position of the leg joinery. The front edge needs to be both square to the underside of the slab, and straight. With the help of my slab-moving team, I repositioned the slab so that the front edge was facing up with the slab standing on a pair of sturdy saw benches and clamped to my existing workbench for stability. Truing the front edge is not complicated, but it is worth taking the time to get it right. I used my No. 5 jack plane for most of the work, finishing with the No. 8 for the final pass. When working on a wide (145mm) edge such as this, I find that the easiest approach is to divide the width into two sections. The first inch or so, falling against the corner with the now-flattened underside, was worked first so that I had a straight edge. Then I worked the remainder of the surface until it was perpendicular to the underside. This avoids trying to straighten and square up the full surface in one go. My slab had a dip halfway down the length of the front edge, around which the grain reversed – most likely due to branch growth. My strategy for addressing this was to work from each end of the slab into the low spot, until the surface was straight and square to the underside.

CUTTING YOU DOWN TO SIZE

The good news at this stage is that both of the key reference surfaces have been dressed. While the slab was on the saw benches, I cut it to length. The ends do not need to be perfectly square or cleaned up, and in fact the end grain on a large slab will likely check after it has been cleaned up, as the slab will take years to reach equilibrium moisture content. The upshot of this is that if your slab is already at the desired length, you can leave the ends as they are, even if they are not square to the two reference surfaces. My slab was delivered over length, and so with the underside and front edge cleaned up I measured out the final length and trimmed the excess off with a coarse crosscut saw. Cutting thick oak like this is not difficult, providing you pace yourself and remember to lubricate the saw plate to reduce







5 The flattened underside
6 A jointer plane is ideal for getting a straight and square reference edge
7 Cleaning up a difficult knot with a low angle block plane
8 Getting the reference edge square to the underside is critical
9 Trimming the slab to length with a crosscut saw
10 Measure the width from the legs
11 Ripping the slab to width. Go slow and lubricate your saw plate

friction and binding in the cut – I use mutton tallow, although canning wax works well too.

With the slab at final length and both reference surfaces cleaned up, it is time to think about the rear edge. This surface does not need to be perfectly straight or square, and if the slab is at the desired width you can call it done. I built the undercarriage for my workbench before tackling the slab, and so needed to remove 20mm excess width from the slab to fit it to the undercarriage. I prefer to use direct measurement rather than numbers wherever possible, and to determine the required width of the workbench I assembled two legs and a short stretcher, and then set my panel gauge from that assembly, rather than measuring. After calling upon the slab-moving team to move the slab back on to my existing workbench, with the underside facing up, I used a panel gauge to mark off the excess width – a chalk line would also be a good way of marking a clearly-visible line. The amount of excess material was more than I wanted to remove with a plane, so instead I decided to rip the waste with a handsaw. Using an overhand ripping technique allowed me to drive the saw with both hands while standing upright. Again, pacing is key so that you don't lose steam, or accuracy, halfway through the cut. The end result was a straight cut which was largely square enough for the back edge of the workbench top. I did clean up the areas where the rear legs would join the top, to make laying out the joinery easier, but most of that back edge is left straight off the saw.

The top surface of the slab does not need to be dressed until the bench has been assembled – at this stage you have two reference surfaces for laying out and cutting joinery, which is enough. The slab-moving team were called in one final time to help put the workpiece away while I cut the leg joinery.

CONCLUSION

Although dressing a slab might at first blush seem a daunting task, once you look beyond the (admittedly intimidating) scale of the workpiece it is not that much different from furniture-scale work. Efficient work on the slab requires understanding the tolerances appropriate to each surface.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BRANDING AND SOCIAL MEDIA

YOU MAKE GREAT FURNITURE BUT WHAT'S THE BEST WAY TO BRAND YOUR BUSINESS AND SHARE YOUR WORK ONLINE? FOLLOW THESE TIPS TO BOOST YOUR PROFILE

People make assumptions about businesses based on their branding. That's why building and designing a brand is vital to the success of a business and why branding mistakes can be costly. With the advent of social media, branding has taken on a whole new level of importance in the daily running of a business – as customers now follow, interact and share with businesses online every day.

This means you need to be visible online, creating interesting and engaging content that will compel followers to choose you when they need a craftsperson. Remember that even if you aren't engaging online, you can bet that your competitors are.

PROFILE PICTURE

When considering your brand online, the first thing to think about is your profile picture. This could be on your Facebook page, Instagram account or for your own website. It is often the first thing a potential customer will see, so it needs to hook them, draw them in and tell them about your company. Logos can work well, but make sure it is clear what the business offers. If your logo isn't suitable, then try a photo. A picture of a finished piece of furniture is one good option, a photo of yourself is another – but make sure you look professional and include some furniture-making tools to get the message across.

PHOTOS

Images are vital to social media as regular posts to entertain and inform your followers. Good, professional photographs give a strong message of competence and style, but poor photographs do anything but instil confidence. If you're handy with a camera or good quality camera phone, that's ideal, but paying a professional photographer to document your work will give you an array of stunning images you can use across social media, websites and printed brochures.

Format your images in RGB (Red Green Blue) rather than print-ready CMYK format and save them this way, otherwise the colours will display incorrectly on a screen. Aim for 72 dpi (dots per inch) and try to keep the file size under 1MB (megabyte). Again, consider getting assistance from a professional: they will be able to format all your images correctly, so all you need to do is share them with your legion of followers! Note – keep original high resolution versions for print publication.

TEXT

Close on the heels of imagery is the text. Every blog post, tweet or Facebook comment should be carefully considered and checked for spelling and grammar. It may seem obvious, but rarely a day goes by without a business posting an embarrassing misspelling or Freudian slip. Though the odd slip won't harm your brand, messy and ill-considered posts on a regular basis can easily alienate your clientele.

HASHTAGS

On social media platforms the hashtag is king, especially Twitter and Instagram. Whenever you post, end the text with some well-chosen hashtags, which allow new users to find your post by searching for these terms. Use half a dozen or so carefully chosen words and phrases that are directly linked to the post and your furniture business. Be specific, but not so specific that no one will ever think to search for that term. Think
#londonfurniture **not**
#londonfurniturespecialisinginoak
#bespoketable **not**
#bespoketablemadebydavesmith.

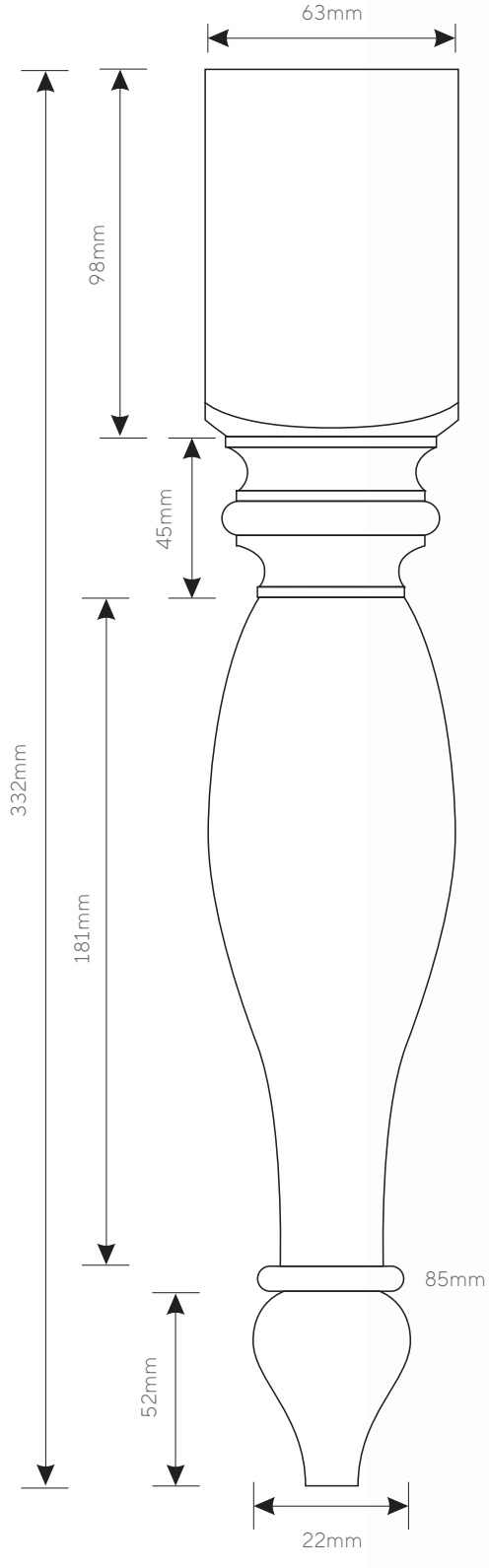
SEO

On your own website, words are even more important. SEO (Search Engine Optimisation) is the process of highlighting your website's content so that Google and other search engines know what you offer. The more specific and relevant your content is and the better you've optimised your site, the higher up the search engines you will appear, meaning potential customers will be able to find you more easily. Use keywords, similar to hashtags but without the hash, and keeping all of your content relevant to your business. Using keywords that appear in the article in the title can really help, plus almost all website building platforms have optimisation tools such as meta keywords and descriptions for every article and page – things your visitors will never see but search engines can read.

These tips are all just starting points to help you to begin making the most of your presence on the internet. Once you start delving into the world of social media and website management, you'll find a whole host of techniques and tricks to help your potential customers find and engage with your business.

WORDS: JOSH ALLISTON

PHOTOGRAPHS: SHUTTERSTOCK.COM



TURNED TABLE LEG

MASTER THE ART OF TURNING PUMMELS ON A SQUARE-TOP TURNED TABLE LEG WITH ALAN HOLTHAM

This table-leg project uses just five tools and addresses the often awkward problem of forming pummels, which is the technical term for the square section left on the top of a leg when the rest of it is turned.

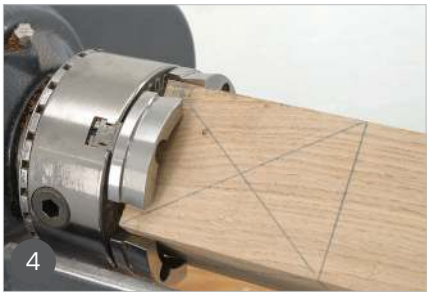
Achieving clean and neat cut edges on these pummels is actually quite straightforward, provided you follow a few basic rules, and you can even experiment with a variety of different shapes in the transition area from square to round.

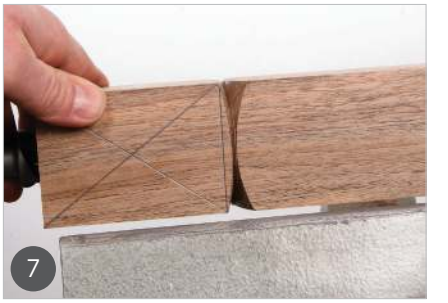
As these table legs are always made in multiples it is essential that the pummel area is clearly marked on each blank before you start, and that you then work progressively back to the line as shown in the sequence. Otherwise any discrepancies in the length of the pummels will be highlighted when you subsequently add the rails to make up the rest of the table frame.

YOU WILL NEED

- Parting tool
- 19mm skew chisel
- 6mm spindle gouge
- 10mm spindle gouge
- 19mm roughing gouge

1 First, it is essential to mark out carefully. Draw on the blank where you want the pummel to be formed, marking the line clearly so that it can be seen as the lathe is revolving. Then mark the centre at each end; this must be spot on, or the pummel will be off-centre relative to the turned section. A dedicated centre finder makes this job relatively foolproof.





PHOTOGRAPHS BY GMC PUBLICATIONS

2 Drill a small pilot hole on the centre as a start for your drive centre. If you simply bang the centre in without first drilling this pilot hole it usually moves slightly to one side, particularly on coarse-grained timbers, and you will end up with uneven shoulders on the pummel.

3 Mount the blank carefully on the lathe, making sure the centres remain in place and that the toolrest is adjusted to be clear of the spinning corners. For a 63mm section blank I would start the lathe at about 2,000 rpm.

A quicker and more accurate method of centring at the headstock end is to use your chuck, but the jaws will usually then mark the surface – not a problem if you can leave the blank slightly over length and then trim off the excess, or plane it later to remove the marks.

4 First, use the skew chisel to make a slicing cut, separating the square area from the turned section. This cut must be made first, as it prevents the corners breaking off the pummel during the roughing-out process. A thin, oval-section tool makes this easier, but is not essential.

5 Use the skew with the long edge on the toolrest. Push it gently into the revolving timber to make the first incision in the waste area, some distance away from the marked line. Don't force the cut, or you will get ridges on the shoulders. If you do get ridges, angle the chisel slightly off the vertical, away from the square section; this reduces the vibration and can leave a smoother cut.

6 Take progressively deeper cuts in from either side, gradually working back to the line to form a nicely radiused shoulder on the pummel. Make sure you keep an eye on the presentation of the skew, to prevent the unsupported top edge from digging in. Keep it upright.

Alternatively, use the spindle gouge to produce a form of shaped entry to the pummels. The technique is very similar to that using the skew, but start with the gouge on its side and cut away from the pummel into the waste area. Experiment with different profiles in the waste area before you continue. An ogee shape is an attractive alternative to standard radiused ends on the pummel, but remember that more elaborate shapes are harder to reproduce if you have several matching legs to make.

7 With the pummel clearly delineated, the roughing-out gouge is used. Start the roughing-out process at the right-hand end; present the tool to the wood with the handle well down, the flute rolled slightly on its side and pointing in the direction of travel. Work the tool from left to right, coming back a little further to the left with each cut so you only remove a small section at a time and end up with a reasonably parallel cylinder.

8 Although the blank now looks truly round, there are often quite large flats remaining; these can be felt quite safely by gently resting your fingers on the back of the revolving workpiece, which saves continually stopping and starting the lathe to check. If you centred the work accurately at the start any flats should be even on all four faces.

9 Be careful with the roughing-out process as you approach the pummel, turning the gouge over to remove the last section of the corners.

10 With a gouge that is ground square across, you can use the outer wing to clean right up to the shoulder, or you could use a parting tool if you are less confident with the gouge.

11 The first roughing-out stage is to produce a straight cylinder with the pummel on the end, hopefully with nice neat shoulders!

12 Next, use a parting tool to cut in to the required depth at the point of each detail change – this greatly helps the copying process if you have to make several the same.

13 Remove the initial waste, using the roughing gouge well on its side to reduce the width of cut.

14 The 10mm spindle gouge is the main tool for the detail shaping, but always cut downhill for the concave surfaces.

15 For convex surfaces, start with the tool relatively flat on the top of the bead with the bevel rubbing, then gradually roll

the tool over, swinging the handle in the same direction to maintain bevel contact around the curve. Take several light cuts to get the required radius rather than trying to do it in one heavy cut.

16 For larger areas of waste the roughing gouge can be used with a fair degree of precision and may actually be easier to control – find which tool suits you best for each particular situation.

17 Small or difficult-to-access beads are best cut with the skew chisel, slicing down from either side, again taking light cuts each time.

18 Whatever their size, beads should be even and smoothly radiused, rather than being too pointed.

19 Use the roughing gouge for the long slow curve of the main section of the legs. With the relatively short bevel of this tool the finish may be a series of very small ridges rather than a nice smooth surface...

20 ... so finish off with the skew, taking light planing cuts but angling the tool so that the cutting edge is virtually square to the direction of travel, to ensure a very fine cut.

21 The coves are cut with a spindle gouge, although for delicate work you may find the standard 10mm version too wide, as you risk catching the top unsupported edge.

22 If so, use a 6mm version. Start with the tool on its side, then roll it onto its back as the cut proceeds down to the required depth. Make cuts from either side of the cove, working downhill into the middle from either side, never down one side and up the other.

23 Use the same tool to roll over the beads, working the other way round this time, starting with the tool flat on its back and rolling it onto its side down the side of the bead.

24 Repeat the procedure for each successive bead, aiming to match those that are close together. Take plenty of material away from the cove, making the sides quite steep with a nicely radiused bottom. Beginners tend to make beads very shallow and uneven.

25 To sharpen up the profile, use the skew to incise a very shallow line at each change of detail.

26 This will make an amazing difference to the finished appearance as everything will look much crisper.

27 Be very gentle with any sanding, folding the abrasive so that the sharp corners you have so carefully created are not rounded over by careless working, or a stray flap of abrasive.

28 If you use these proper cutting techniques the completed leg should only require a minimal amount of sanding, even on hard, open-grained timber like this oak.

PHOTOGRAPH COURTESY OF ROBERT SORBY LTD

CHECKING YOUR PILLAR DRILL ACCURACY

GEOFFREY LAYCOCK EXPLAINS HOW TO GET THE ACCURACY YOU WANT

The first thing I did after installing my new pillar drill was to check the accuracy. I believe this is something that's useful to anyone with a pillar drill, be it bench or floor mounted. The procedure described in this article is perhaps beyond what is needed for many woodworking tasks but hopefully shows how you can check your machine to the accuracy you want.

It's not essential but always good to start with a level base

IS IT LEVEL?

As this was a floor-mounted drill I checked how level the base was and used graduated spacers beneath three corners ensuring adequate support spread over a large area of each foot. To do this I used a Moore & Wright engineer's spirit level. These have the advantage of being adjustable so you can correct if not giving an accurate indication. Using side-to-side and front-to-back, the base was levelled. From hereon I will use milling machine notation so on the table side-to-side is X axis, front-to-back is Y axis and vertical is Z axis. If you have a static bench-mounted drill you can level in the same way. If on anything with wheels, then you probably have to go with how level the floor is. It's not essential for use but always a good starting point.

IS THE CHUCK ACCURATE?

Several components influence how accurately a drill turns in the material you are making a hole in. Inaccurately ground twist drill cutting edges will wander, so can lip and spur, etc., so any re-sharpening should be done with care. You may also find cheap new drills of various types are not accurate out-of-the-box, so bear that in mind. Assuming the drill is going to cut accurately, next up is the chuck. Whether using key or keyless, quality counts. The sliding surfaces of the three jaws and internal conical section of the chuck must be accurate, undamaged and clean, the internal faces of the three jaws must be clean and undamaged with no dings or burrs. How the chuck attaches to the drill spindle is often a Morse taper bar relying on friction, which can either fit into the chuck using a similar friction taper or be screwed but there are other arrangements also. You then need a spindle that is straight and rotating with no 'slop' in its bearings inside the quill – the bit moving up and down – which itself needs to be a close fit inside the machine body. I have a drill that is a restoration-in-progress and spent two hours straightening the spindle as the previous owner had attempted using it for a rather silly metal machining task. It is now as accurate as it would have originally been: these things can be repaired.

If you want ultimate accuracy in holding the drill, you can go to a collet holding system but that is beyond this article scope. Larger size twist drills often come with a Morse taper which increases potential accuracy and also reduces the likelihood of the drill rotating under load as the taper grips harder as more pressure is applied. Remember also with smaller diameter drills it is easy to bend them if abused.

That's a lot of potential inaccuracy! First thing to check is chuck 'run-out': as the chuck rotates how much does it move side-to-side? If it is bad you have probably already noticed drills being 'blurry' as they rotate. It could be the drill itself is bent. You can try changing the chuck/Morse taper for a more accurate one. But any of the above-mentioned factors could be the fault. Some people advocate using a dial gauge against the outside of the chuck which will give a reasonable indication but it is the inside faces of the jaws that determine this. I use a length of ground steel bar held in the chuck. Mine is long enough to use with a 9in or 225mm steel square and is 13mm diameter so unlikely to be easily deflected or bent. It must have no marks or burrs anywhere. Fit it into the chuck, pushing all the way in, then withdrawing a couple of millimetres so the end does not contact the chuck inner surface. Tighten using the key in all

PHOTOGRAPHS BY GEOFFREY LAYCOCK

Using a good quality dial gauge and a magnetic stand makes it much easier

It can be enlightening just resetting the bar and seeing the possible effect at the other end of the bar, including how much deflection there is applying modest sideways pressure

three positions. Set a dial gauge on the table close to the chuck with the contact point on the bar ensuring it is central to the bar diameter. Having a dial gauge with a magnetic base makes this easy. It can be an interesting exercise to also use the dial gauge towards the bottom of the bar and discover how much your positioning of the bar in the chuck can influence its rotational accuracy: repeated release and tightening of the chuck while moving the bar can be a revealing exercise. To use the dial gauge, place the measuring tip against the bar then move in to about half the dial gauge travel, ensuring a strong spring pressure on to the bar. If it's a mechanical gauge, set the dial to zero and rotate the chuck by hand, if you have an electronic gauge then zero. You can either read the maximum/minimum indications like this or move the dial so you are getting a plus and a minus reading.

I repeated this exercise at various quill extensions and I found little variation so I was happy that the drill rotates pretty accurately at any drilling depth, bearing in mind the previous comments.

TABLE ACCURACY

The first job was looking at flatness. I used precision straightedge and feeler gauges. I wasn't looking for perfection and found two areas where the grinding could have been slightly better but we are talking maybe 0.04mm and this is intended for woodworking. What you can see from the photograph is the removable centre insert of the table which is not flush and annoying as drilling debris collects in it and the recess catches on the end of a workpiece being moved. This could affect accuracy when drilling short pieces so a false table will be used when necessary.

THE TABLE X AXIS

The next step is to set the table to 0° tilt in the X axis. To do this I had already checked the bar in the chuck so that the top and bottom were both as close as possible to zero movement when rotated. I lowered the table until my 225mm Moore & Wright engineer's square would sit under the chuck. I keep this tool only for checking other tools or use on a surface table, it is always kept in its box, in anti-corrosion paper and with a light coat of Camellia oil before putting it away.

Adjust the table so the square sits against the bar with contact from top to bottom but very likely contacting only one of those. If the bar was perfectly accurate in the drill chuck you could simply place the square against the bar and set the table so there was no gap and you would have the table X axis exactly at 90° to the Z axis. Unfortunately it will not be perfect so if you want to be as accurate as possible, place a felt-tip mark on the bar then rotate 180° and you are bound to see a change with maybe

One corner of the table is slightly over-ground. The table insert is significantly low. When using your straight edge try to never hold it by the ground edges as fingerprints can lead to corrosion. Wearing disposable gloves will protect such delicate precision tools. Always wipe them clean before using and apply a protective coating before putting them away. I use Camellia oil as this is non-toxic, does not dry out and is also a moisturiser for the skin!

contact at the bottom and a gap at the top. Measure the gap at the bottom or top with feeler gauges, making a note of the value. Adjust the table so the measured gap is halved. Then repeat the half rotation of bar.

If the table is now at exactly 90° to the Z axis, ie the direction of drill movement, you should find the new measured values are exactly reversed. If the new gap at the top was for example 0.06mm then becomes 0.06mm at the bottom that is exactly where you want it. It is likely that after rotating the gaps will not reverse exactly and you may need to make further minor changes.

On my new drill out of the box I placed the square in contact then found I had a gap on rotation of 0.2mm. I worked out that 0.01mm over the 225mm of the square's blade equates to 0.025°, which is nothing. Obviously the table tilt mechanism had not been moved in the factory after the table surface had been ground. Basically, having described a complicated checking process provided you have found good accuracy of the bar in the chuck you can simply place the square up to the bar and reset the table!

THE TABLE Y AXIS

Next up I did something I have never seen described or suggested as important in print. I did the above test for squareness of the table in the Y axis – front to back. It is not a given that machining of the components ensure this is exactly 90°, particularly on a budget machine. It is also interesting to place your dial gauge back in contact with the bar and lean on the table front edge. You may be surprised how much it moves depending on how solidly your drill was built. For one drill I had, I used a car scissor jack set under the front edge of the table if I had anything really heavy to work on. On my new drill I'm pleased to say it was as close as I could measure to being 90°.

> Cigarette rolling papers have been used by engineers for decades as an easy and convenient way to measure a fit/no fit gap. I can only write about one brand and it is not an endorsement of their use as a smoking material. There are at least 10 different colour brands of Rizla paper and they can have different weights that roughly equate to thickness. Of most use will be Blue, which is a fraction over 1 thousand of an inch or 0.025mm, Green is 1.5 thou or about 0.037mm. From my own measurements Silver is exactly 1 thou but seems more fragile than Blue. Orange is around 2 thou, 0.05mm.

You need to use an accurate square and the longer the more accurate

You can just see the gap at the top and rotating the bar 180° the gap was at the bottom. The difference in the gaps equalled 0.01mm or 0.025°– I'd say that was pretty accurate

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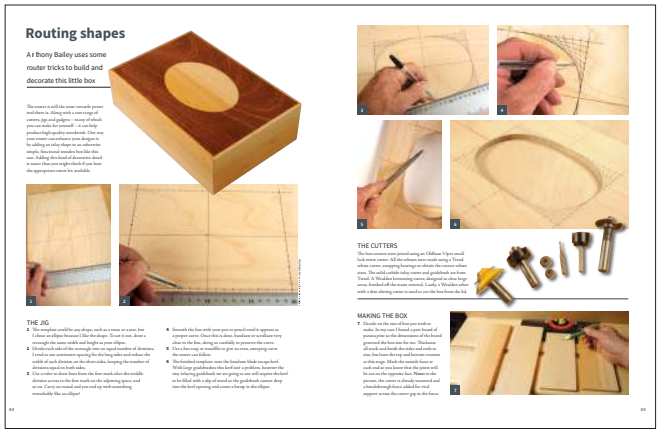
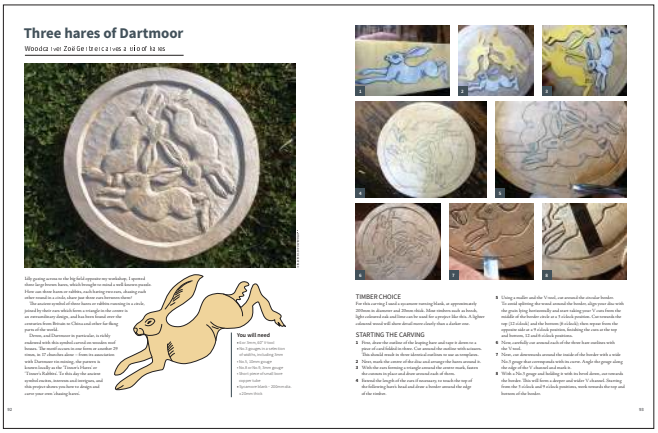




PHOTOGRAPHS BY MICHAEL T COLLINS

PANEL RAISING

MICHAEL T COLLINS DEALS WITH THE AGE-OLD PROBLEM OF PANEL MOVEMENT

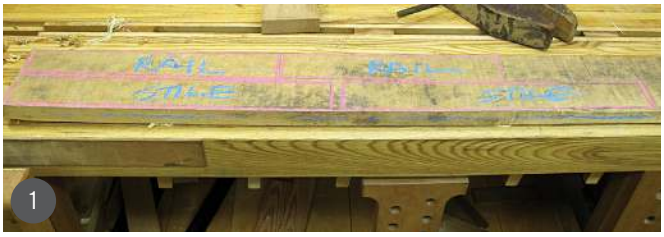
It's a simple fact that wood expands and contracts, and when making furniture you have to account for these fluctuations. Cabinet carcasses are generally constructed so expansion happens front to back, minimising the effect. A door made from long grain members is relatively static, while a panelled door is very much dynamic, expanding and contracting across its width with the seasons. So the problem is to fit a dynamic panel into a fixed space, which seems like an exercise in futility.

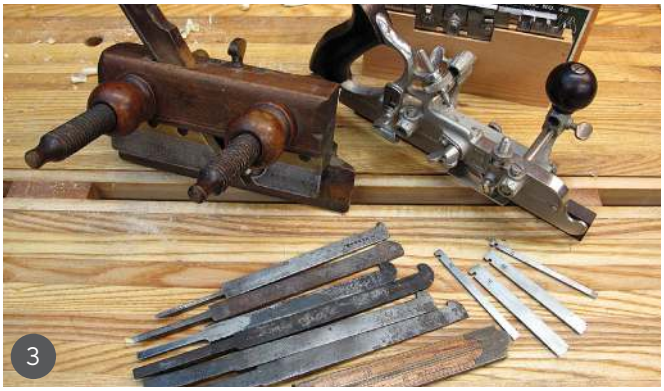
Enter the panel door, which allows the frame to remain static while at the same time allowing the panel to expand and contract within a groove. For this project, the rails and stiles of the door will have a groove to accept a panel allowing for seasonal change. The mortises are going to be through mortises to add visual interest.

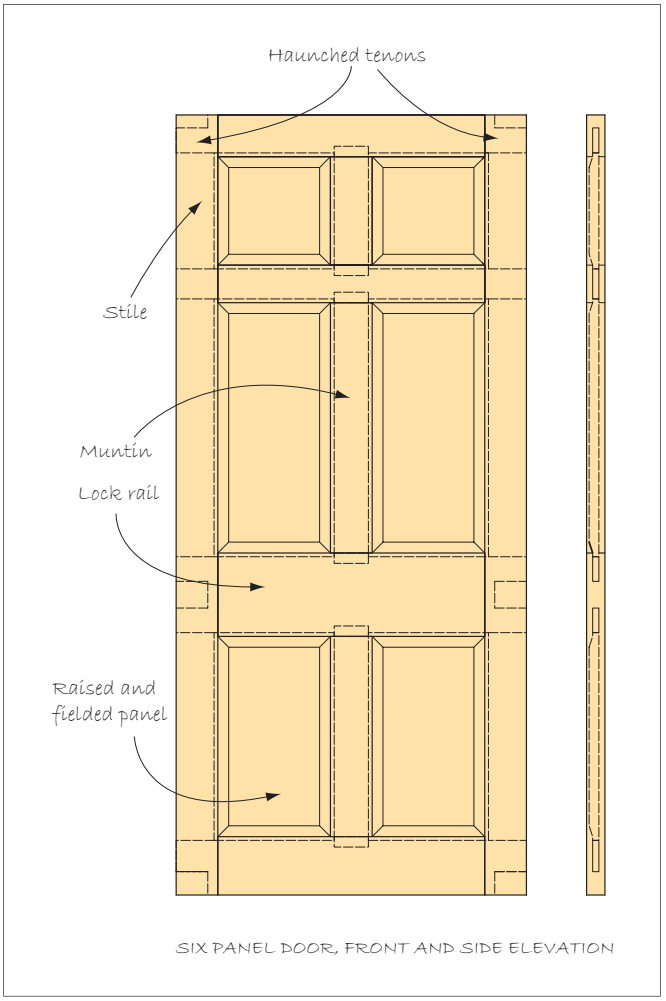
MAKING THE FRAME

1 If you are making two or more doors it looks better to have the grain of the rails and stiles flow through the piece, so cut them from the same board. Doing this also helps with colour: wood cut from the same board will generally have the same characteristics. Here you can see how the board will be cut for two doors.

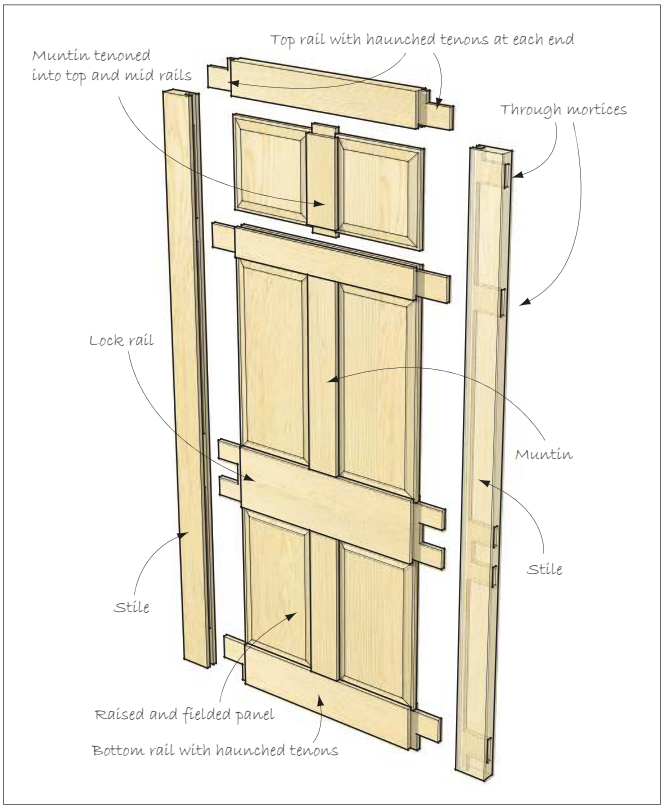
2 Having prepared the wood, mark the face side and face edge, leaving an additional 30mm horn at each end of the stiles; this will prevent the mortises bursting out when chopped. Leave about 10mm extra length on the tenons. As you can see, here I have used a cabinetmaker's mark to orientate the pieces. I always fit doors to a cabinet, recording measurements directly from the





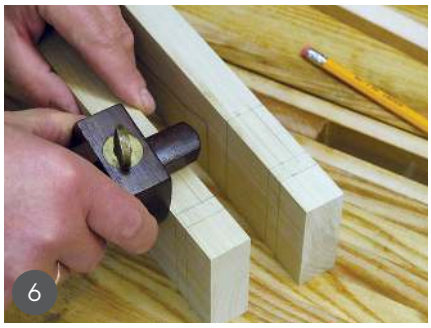


SIX PANEL DOOR, FRONT AND SIDE ELEVATION



opening onto 'story sticks'. When I started making furniture I used two story sticks, one for rails and one for stiles. Label them clearly – believe me, it will help you later! Record the maximum rail and stile length of the opening on the story sticks, then use the stile's width to mark the tenons' position and the rail's width to mark the mortise on the story stick. The next step is to mark the location of the groove and horns. At this point, you should have all measurements recorded on the story sticks.

3 You'll need a plough plane for this project. There are many varieties readily available online. I have two in my collection – an antique wooden plough plane and a Stanley 45 combination plane. The 45 offers greater flexibility, allowing all manner of profiles to be cut, while my antique wooden plough plane only cuts grooves.



PREPARING THE JOINT

4 To make the mortise and tenon joint, use the story stick to mark the location and length of the tenons on the respective pieces. Here I have set the mortise gauge using the width of the chisel.

5 Mark out the tenons on the rails, scribing round the ends, then set the rails aside.

CHOPPING THE MORTISES

6 Mark the mortise location using the same gauge setting. When creating panel doors, the mortises go all the way through the stiles. Using a pencil and the story stick, mark the mortise's upper and lower limits on both sides of the stiles.

7 Take the mortise gauge setting and scribe the mortise location between these limits on the stiles. Because the stiles will have through mortises, scribe the location on the opposite edge.

8 Start chopping the mortises about 1.5mm from one end with the bevel facing the direction of travel and chop out the mortise, walking the chisel towards the end of the mortise; don't go all the way through. Repeat in the opposite direction – pay particular attention to keeping the chisel vertical. You can use a try square to help you.

9 Chop halfway through and clean up by chiselling vertically down on the pencil lines. Only remove chopped wood here.

10 Repeat the process on the other side – the reason for chopping from both sides is that you have a great deal of control at the start but no matter how hard you try, the chisel may miss the mark on the way out the other side; this method guarantees that the edges of the mortise will be crisp.

CUTTING THE TENONS

11 In the past I have sawn the shoulders first then the cheeks; however, because I will be planing a groove on the inside of these pieces, only the cheeks are sawn initially. There are two reasons for this: a) if the cheeks are removed planing the groove would be difficult at the tenons because the plane's fence would not be supported and b) if the groove is planed first it would be hard to saw the tenon. Set the tenon stock in the vice at 45° and on the waste side saw down to the lines – rotate and repeat – saw out the triangle of wood at the bottom of the kerf.

PLANING THE GROOVE

12 The Stanley 45 has infinite


13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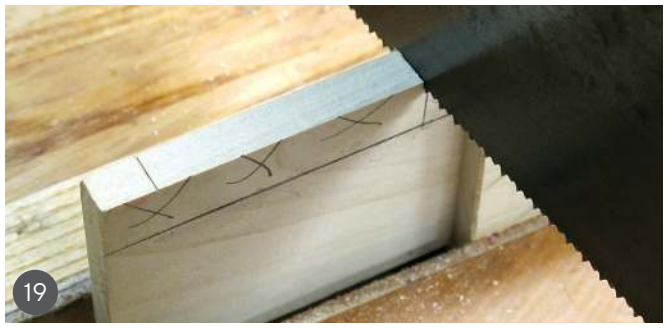
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adjustability but I am only concerned with three adjustments for this groove – setting the depth stop to 10mm using the width of the chisel…

13 … setting the plane's fence so that the cutter is positioned in line with the mortise and tenon …

14 … and lastly, adjusting the cutter's depth: just like any plane, the setting of this will depend on the type of wood and the grain. You will need to experiment with this. Take it slow and adjust as needed. Better to take thin shavings and take longer than work quickly and shave off too much.

15 Starting from the end furthest away from you, plane the groove, taking longer and longer passes as you approach the end nearest to you. The plane will stop cutting when the depth stop bottoms out. Try not to run the cutter on the wood during the backward travel – in hard wood this can dull the cutter. It's important to keep the plane vertical – any side to side angled movement may tear the wall of the groove, making it unsightly. Ideally, you should plane in such a way that the grain is rising up away from you.

ALTERNATIVE METHOD OF CUTTING THE GROOVE

16 If you don't have a plough plane, use the mortise chisel to pare away the groove. Score the entire length of the rails and stiles with a mortise gauge, then, with the bevel down, pare away the groove, starting at the end furthest away. To slow the forward movement while paring, anchor your non-dominant hand on the wood while your dominant hand controls the forward movement. This method offers greater control and keeps both hands behind the sharp end!

17 Once the groove is planed and the cheeks are removed, the tenons will have a very thin piece of wood separating the edge of the tenon and the groove. Simply break this off and trim with a knife. Repeat this for the other tenons.

THE HAUNCH

18 Because the groove extends the full length of the stile there is a gap at the top and bottom that will need to be filled. To hide this, the tenon will need to be cut, leaving a small section called a haunch. Approximate this by superimposing the tenon on the mortise.

19 Then saw the tenon to just over size and test the fit. Pare away any excess until the fit is perfect.

MAKING THE PANEL

20 Here I am going to make a simple raised panel from two pieces of oak using a rubbed joint. Plane the mating edges of the pieces at the same time. This will create an almost perfect fit.

21 Apply glue to one edge and rub the boards together until friction holds them in place. Once dry, plane the face side flat.

22 We need to allow for seasonal changes, so cut the panel 4mm narrower than the distance between the bottom of the stile grooves. The height only needs be 2mm shorter – wood does not significantly expand along the grain. Once cut, mark a chamfer around the panel and plane to just a hair under 10mm. We want this to fit the groove but not be too tight. Planing a chamfer will create a slightly raised panel.

23 Apply finish before assembly and let dry. If applied after assembly, the finish can glue the panel into the groove. Assemble, clean up and finish. Dry fit the frame and check all the joints seat well.

24 Apply glue to all mating surfaces, taking care to not get glue in the grooves. Reassemble, clamp and measure across the diagonals for squareness. Once the glue has dried, saw off the horns and tenons to within about 1mm and plane flush. Plane off all markings. On small doors it's a good idea to chamfer the inside edge of the stile opposite the hinge so that it closes nicely.

25 Careful layout, accurate cutting and patience will reward you with well-fitting joints.

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PER ISSUE

CROSS-BANDING

IAN HOSKER EXPLAINS HOW TO PREPARE AND APPLY VENEER

There are many ways of providing additional decoration to a veneered surface: cross-banding is the most straightforward of these. Its effect is to frame a central panel of veneer and it is at its most striking when the cross-banding veneer is of a contrasting colour or species. It is also quite common to insert an intervening inlay string or banding between the main panel and the cross-banding.

Historically, another function of cross-banding was to act as a protection for the panel itself. Pearl glue in the early days was less reliable, and it was easier to repair a damaged cross-banding than a highly decorative and valuable veneer. Modern glues, however, are very powerful adhesives, so the protective function is far less important.

As with simple veneers, you must remember to use counter veneers and/or balancing veneers with built-up patterns, but it is not necessary to add cross-banding to these.

PREPARATION

Cross-banding veneers are prepared from a piece of straight-grained veneer. It is usual for the grain direction to be at right angles to the edge of the central veneer panel, but sometimes work has the grain running parallel to the panel edge.

Using a straightedge and veneer knife, cut strips of the veneer 10mm wider than the eventual width of the cross-banding, making sure they are all the same width. This ensures an overlap at the edge of the groundwork to allow for trimming after the glue has dried. The internal edge that butts up against the central panel should be trued up on the shooting board with a very sharp and finely set plane. It will often be necessary to join strips of the cross-band to make up the required length, so cut and true up the edges of enough strips to go all round the work.

How the central panel of veneer is prepared depends on how the veneers will be laid. Hammer veneering and press veneering each require a different approach. In the case of hammer veneering, the central panel is laid first, trimmed to size and then the cross-bands are added. If the veneers are to be pressed, the cross-band and central panel are usually prepared and pre-jointed so that the whole assembled pattern is laid in one operation.

LAYING CROSS-BANDING WITH VENEER HAMMER AND PEARL GLUE

Square or rectangular work

When laying cross-banding, it may be necessary to use two or more pieces adjacent to each other. The following general method assumes that this is the case, with some modifications given for variations in design.

1 Prepare the central panel of veneer so that its overall size is smaller than the groundwork. The border for the cross-banding is prepared by cutting back the central panel to a fixed distance from the edge using a cutting gauge. Since the gauge has a fence that needs to be held tight against the edge of the groundwork, any excess veneer that overhangs the edge will prevent the use of the gauge.

2 Brush pearl glue over the groundwork in which the central panel will be laid, and allow the glue to gel.

3 Lay the veneer with the clothes iron and veneer hammer.

4 Trim the excess veneer from the central panel with a cutting gauge set at a distance equal to the width of the cross-banding. With the fence hard against the edge of the groundwork, trim the excess veneer. This ensures that the edge of the panel is parallel with the side of the groundwork. It is essential that the veneer is cut through completely in one pass if an even edge is to be made.

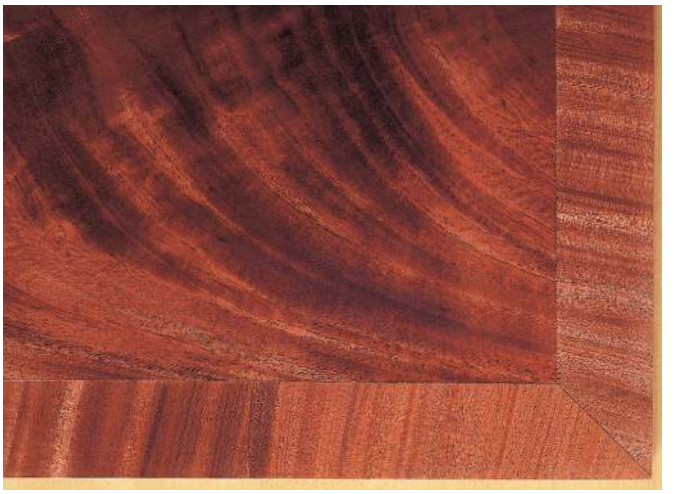
5 Use a chisel to lift off the waste veneer.

6 Before laying, brush a thin layer of glue over the back of the cross-banding and allow to gel. This will compensate for the glue that is removed when the veneer panel is trimmed. You should expect the veneer to curl with the heat and moisture – this is not a problem.

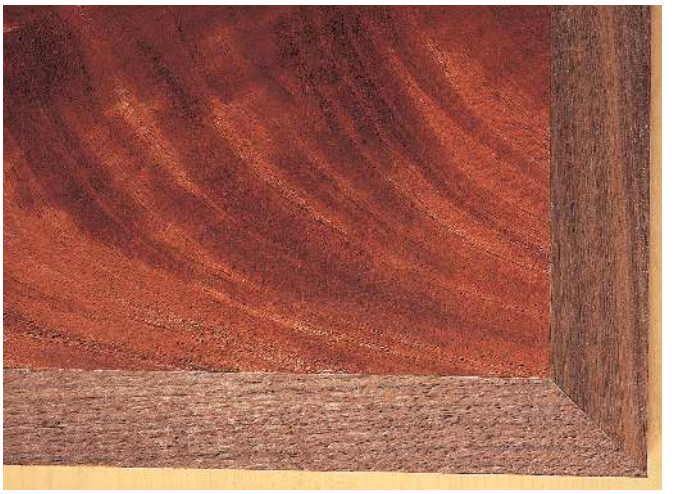
7 Lay the cross-banding around the edge, making a close joint with the central panel and laying each piece separately. Slightly moisten the upper surface of the cross-banding (to help counteract the curling that has taken place), position along one side of the work, butting against the central panel, and iron it down. As the glue melts, the veneer will tend to float, so take care that it maintains a close joint. Tape the joint between the cross-banding and the panel.

If more than one piece is needed to cover the length of a side, take a second piece of cross-banding and repeat the process, but ensure that it overlaps the first piece. Make a joint in the overlap by laying a straightedge over it and cutting through both veneers in one pass, working from the outside edge towards the central panel. Tape the joint, and continue with this process until all the cross-banding has been laid.

8 Make up the corners. For square corners, butt or mitre joints can be used. Mitred corners provide a picture frame effect, while butt joints give the look of a frame and panel construction.



Cross-banding usually has the grain direction at right angles to the edge of the central veneer panel



Another option is to lay the border with its grain direction running parallel to the edge of the work

The central panel of veneer stands some way in from the edge

Prefabricate the veneer for the corner: it is a lot easier than trying to lay several small sections of veneer with accurate joints

Use the template to make the inner curved edge to the corner cross-banding

Rubbing the prefabricated corner into place. This is done by sliding the veneer into position. The natural grab of pearl glue will hold it in place

PHOTOGRAPHS BY GMC PUBLICATIONS

To make a butt joint, you must first decide which lengths of cross-banding will continue through from end to end. These are usually those on the longest sides of the work, with the short sides butting up against them. Lay these two short sides first, making the length slightly longer than that of the central panel. With a straightedge and veneer knife, trim the ends of the cross-banding so that the length of the cross-banding is equal to the width of the panel. Lay both short, butting cross-bands before adding the longer ones. Tape the joints between the cross-band and the central panel as each is completed. Lay the other two sides, again taping the joints as you go. For a mitred joint, on the other hand, adjacent sides should be cross-banded and left with the veneer overlapping at the corner.

To make the mitre, use a straightedge and veneer knife to cut diagonally through both veneers at the corner, ensuring that the join passes over the corner of the ground. If the cross-banding has been cut to the same width all round, as should be done, then a diagonal cut through the corner of the overlap will make a 45˚ mitre. Remove the waste pieces, run the iron over the cross-banding to re-melt the glue and rub down with the veneer hammer. Tape the joint.

A slight complication is presented by rounded corners, for which neither of the above methods is appropriate. The effect of cross-banding relies on the grain direction being at 90˚ to the edge of the central panel and using large pieces at the corner will show a mismatch of grain direction. To avoid this, cross-banding for a rounded corner is made up from a number of smaller sections rather than from a single, or a couple, of larger pieces.

To make a rounded corner, cut round a template, and then use the same template for preparing the cross-band at the corner, which needs to be made up before laying. Cut small wedges of veneer to fit the template, and butt them together, taping the joints securely. Prepare all the corners in advance, using the template to make the inner curved edge.

The easiest way to lay a prefabricated corner is by 'rubbing' it onto the edge. To do this, brush a thin layer of glue onto the veneer's undersurface and, while it is still hot and fluid, press the corner veneer directly into place by sliding it into position. Secure it by applying a little pressure with the veneer hammer – too much may dislodge the veneer. Position all the corners in this way and then fit the rest of the cross-banding up to them, making whatever joints are necessary as described above.

ROUNDED OR CURVED WORK

Straight-edged work presents few complications, but as soon as a curvature is introduced, there is the difficulty of ensuring a close-fitting joint between the cross-banding and the central panel, whose edge generally follows the shape of the groundwork. Inevitably, the cross-banding will need to be fitted as a series of short pieces.

1 Prepare and lay the central panel as you would for square work.

2 Trim the panel with the cutting gauge, which needs to be modified for curved work. The normal fence is designed for straight edges. When used on a curved edge it will rock, making it impossible to get a good edge to the central panel. To prevent this rocking, and to keep the blade working at the same distance all round, glue two dowels to the fence.

3 Add the cross-banding in short pieces so that the curve of the groundwork can be negotiated. At the same time, ensure the grain direction is generally at right angles to the centre and there is no obvious mismatch. The length of individual pieces depends on the degree of curvature, so you need to take each situation as it comes.

4 No matter how long you make each piece, the straight edge of the cross-banding will not make a perfect joint with the central veneer. To make a good joint, hollow the edge of the cross-banding slightly. This is easier on deeper curves, and this should be taken into consideration when deciding how long to make each piece of cross-banding. Making a template of the curve will make life easier when preparing each piece, though in work where there are curves of different radii (eg a kidney-shaped dressing table), preparation needs to be freehand. Experience will enable you to judge how accurate you can be, but as a rule of thumb, the shorter the veneer, the more accurate you are likely to be.

5 Brush a thin layer of pearl glue on the veneer and 'rub' it into place. The natural property of the glue to grab will keep it in place without the need to apply pressure.

6 Position the remaining pieces of cross-banding, making the joints between them as described above. Tape all the joints, both between pieces of cross-banding and between the cross-banding and the central veneer panel.

LAYING CROSS-BANDING WITH A PRESS

Square or rectangular work

1 Cut the central veneer panel to shape and size, and trim. To ensure that the edges are all true and square, this should be done on the shooting board.

2 Mark the layout of the veneer pattern on the groundwork to show the positioning of the central panel and the cross-banding. This aids accurate positioning of the veneer for laying.

3 Mark out a piece of thin ply in the same way, and use this as a baseboard to assemble the veneers, before positioning them on the groundwork. While the use of a baseboard as a template is essential for the more complex veneer patterns, it is not necessary for simple, built-up patterns. All the same, it is convenient to work on a template rather than on the groundwork itself.

4 Position the central panel on the template and hold it in place with veneer pins. The veneer must be absolutely flat. If there is any sign of buckling, flatten the veneer.

A modified cutting gauge for working with curved groundwork

For press work, mark out the groundwork to show the positions of the central panel and cross-banding

The central panel is held in place with veneer pins while fitting the cross-banding

The cross-banding fitted and taped to the central panel. The overlap at the corners is suitable for a butt joint

5 Offer up a piece of the cross-band to the edge of the panel, ensure a close joint and tape it securely into position.

6 Offer up a second piece so that it overlaps the end of the first piece by about 10mm or so. Continue this process on all sides.

7 Fix the corners, remembering that they should overlap. A generous overlap is particularly important for mitred corners, as adjacent pieces of cross-band are joined by cutting through the overlap with a straightedge and knife. The cut should be at right angles to the edge of the panel.

Mitred, butt and rounded corners are all created as for hammer veneering.

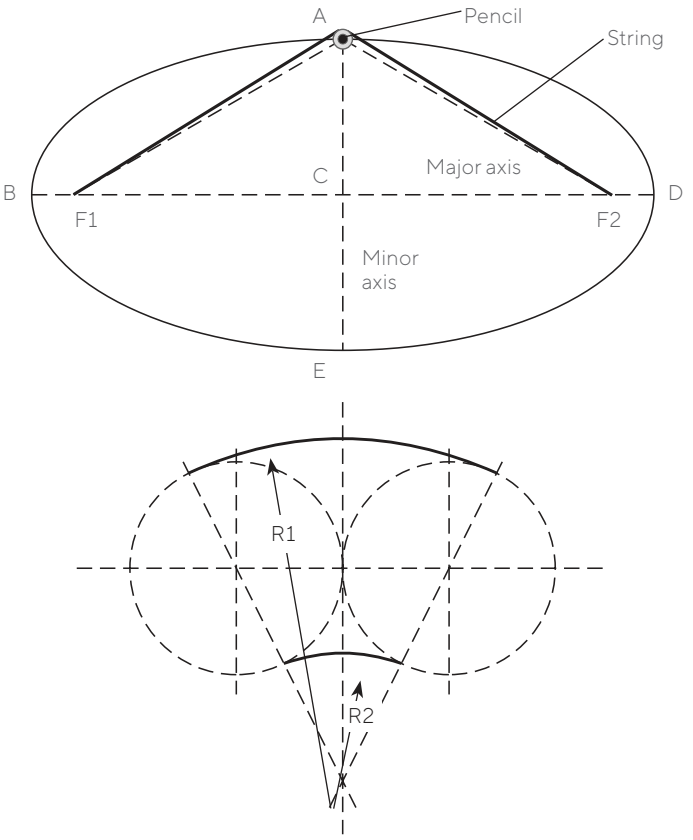
8 Lay and press the veneer.

ROUND, OVAL AND SHAPED WORK

1 Make a template of the central panel. Acrylic plastic sheet is ideal for this because it can be cut and shaped with woodcutting saws. Smooth the perimeter of the template with abrasive paper, so that the veneer knife will work around the edge to cut the veneer without snagging on any roughness. You should also place some registration or alignment marks on the top of the template to assist with lining up the veneer on the ground. The diagrams shows the geometry of oval- and kidney-shaped templates with the registration marks that can be used to help alignment.

2 Mark the groundwork with the same registration lines as the template. Position the template and draw around it to mark the position of the panel on the groundwork.

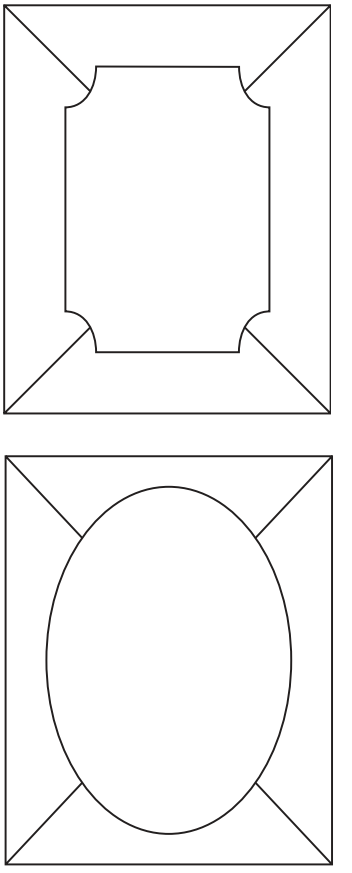
3 Prepare the veneer panel by placing the template over the veneer, and cutting around it with a veneer knife. Take great care not to wander. This can happen very easily as the knife cuts along the grain.



The perimeter of the ellipse is drawn with a pencil which is restrained by the string. The two ends of the string are held at the points F1 and F2 and the string is kept taut by the pencil as it scribes the perimeter. The lengths A–F1 and A–F2 are equal to the distance B–C. Therefore, to locate and mark the positions of the foci of the ellipse (ie F1 and F2), you use the distance B–C. The overall shape of the ellipse is determined by the dimensions you use for the major and minor axes.

R1 and R2 are the radii of the arcs that form the links between the two circles forming the basis of the kidney shape.

The geometry of oval and kidney shapes: making the shaped templates, and to mark out the groundwork and assembly baseboard.



Examples of other built-up patterns

4 Position the veneer on the groundwork, or a marked-out baseboard, within the marked area and secure it with veneer pins.

5 Offer up pieces of cross-banding to the edge of the panel, ensuring a close fit. Make the pieces relatively small, and shape their inner edges to make a close fit with the panel's curvature.

6 Cut and tape the joints between adjacent sections as well as between the cross-banding and central panel.

7 Lay and press the veneer.

LAYING THE VENEER

This is where marking out the groundwork pays dividends. Apply an even layer of glue to the ground and place the veneer so that the central panel lines up with the area marked. Cross-banding should overhang the groundwork a little to allow for trimming. Pay particular attention to mitred corners as these must be in line with the corners of the groundwork.

The veneers may become displaced slightly as pressure is applied in the press. To avoid this, put in a couple of veneer pins near the edge, pinching them off at the surface of the veneer. The difficulty with a press is that you cannot see any slippage happen, only its effect once you remove the work, at which point it is too late. Slippage is especially noticeable if the cross-banding is narrow, where it shows up as an obvious tapering towards the corners. As always, a balancing veneer must be laid at the same time as the surface veneer.

ALTERNATIVE METHOD FOR LAYING

It is possible to carry out cross-banding in a two-stage pressing process. Superficially, the method resembles that used for laying with the hammer, but here the central panel is pressed on to the groundwork first. After removing the piece from the press, while the glue is still relatively soft, run a cutting gauge around the edge to trim back the central panel, and lift off the waste with a chisel. This method has a particular advantage when working with narrow cross-bandings and borders, as it ensures that the cross-banding will be parallel to the edge.

With PVA glue, you can usually remove the work from the press after about an hour, then trim and remove the waste veneer before the glue has completely dried, which makes the trimming process a good deal easier.

Once this is done, the cross-banding can be fitted and the work can be returned to the press.

SIMPLE BUILT-UP PATTERNS

The drawing above right shows two examples of veneer designs based on a central panel of veneer surrounded by a cross-band or veneer border. They were both made with the use of a baseboard (which carries the design drawn on its surface, and upon which the veneers will be built up before laying) and shaped templates to carry out accurate cutting of the veneer shapes themselves. It is a good deal easier to lay these designs in a press rather than by veneer hammer.

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CATCHING UP WITH BEN PERCY

THE AUSTRALIAN DESIGNER TELLS US ABOUT HIS LATEST PROJECTS

We first met Ben in 2014 when he was one of the rising stars of Australian design. He was at an early stage in his career at the time, so what's he up to now?

Since you were last featured in *F&C* magazine back in 2014, how would you say your designs have evolved?
Over the past five years my designs have remained true in style and aesthetics. However, I've certainly been busy since we last talked! I married the love of my life and Lorena and I now have two beautiful kids, Arlo and Luna. It has been an incredible experience starting a family and they make me laugh every day. Arlo can't wait to come and do some making in the workshop. When I can, I still really enjoy designing and making chairs. Thankfully I've had many opportunities to produce chairs for exhibitions, which have gone on to create multiple orders of my designs in a variety of timber species. My two favourite designs have been the further development of my original Rocker design (above), which was featured in the 2014 magazine, and my Lila Armchair (top), which was selected to exhibit at Bungendore Woodworks Gallery near Canberra earlier this year.

PHOTOGRAPHS COURTESY OF BEN PERCY

Working in the southern hemisphere means access to different timber species – can you tell us which you use and why?
Over the past few years I've developed a strong working relationship with Britton Timbers who are based in Tasmania. Knowing where my timber has come from is very important to both my customers and myself. I am passionate about the use of sustainably sourced timber in my work so I am accustomed to using Tasmanian timbers in my designs. The most prominent of these species would be Tasmanian blackwood. It is a beautiful timber to work with and can showcase an exciting variation of colour and grain patterns. There can be a strong feature of fiddle back in this timber, which reflects the varying and sometimes harsh climates it can grow in here in Australia.

The majority of my work these days is commission-based so the timber choice is regularly aligned with my clients' needs. American species such as white oak and walnut are two very popular imported species that I work with regularly and are sustainably sourced via the American Hardwood Export Council. The medullary rays in white oak are a very prominent feature and I will spend a large amount of time selecting their orientation and direction when creating pieces from this material. In chair design, I always try to book match or mirror the grain to either side of the chair. I love it when my clients find and can appreciate that detail in my work.

Some of your designs use steam bent or laminated construction under stress, how do you test the strength of components?
I will always test the strength of components in a full-scale working prototype. Prototyping is a very important process as it not only allows me to test and adjust the ergonomics of a piece

ABOVE: Corner Desk in Tasmanian blackwood
TOP: Coffee Table in white oak

Flex Chair
LEFT: Arla chair

and refine the overall form but also remove bulk and strip away from a design to only leave what is structurally necessary. For a design that features more extreme laminated curves, such as in my Flex chair range, I did go through a series of break tests to determine the load each individual leg could take. It is incredible just how strong solid timber laminates are when they are formed with heavy duty structural epoxy. The results more than exceeded my expectations and allow that design to continue being a very comfortable chair to use.

How do you design or evolve designs? Do you use CAD, sketches, maquettes, etc?
I always start designing my work in 2D sketches and I'm generally considering what will be the 'hero' image of a piece. I'm always looking for the sexiest angle that a piece of furniture could eventually be photographed from and try to sketch that. I like to sketch in pen as it allows me to relax and focus on throwing lines on a page that express the shape and form I'm looking for in that moment. I also like to use Adobe Capture to convert my sketches to vector, which allows for the development of very stylistic views or refinement of lines. Sometimes I like to do a full-scale technical drawing of a certain view of a piece to get a better feel of the design, then produce full-scale mock-ups when developing chair designs.

CAD is also very prominent in my work and I use it in a variety of ways, depending on the stage I'm at in a project. I regularly teach beginner to advanced courses in using Autodesk Fusion so have a very good grasp of the programme. I will often model several variations of a design and render these for use in client meetings when finalising a design. I'll produce technical drawings and cutting lists for projects, 3D print templates for jig making and work out design issues or develop joinery in the program. The ability to make quick and easy modifications to designs on CAD is a real time-saver and gives me more time in the workshop working with the tools.

Are there pieces you have created that posed particular problems such as joint work or shape forming?
The Lila Armchair presented me with a decent challenge when it came to creating the central joint where the back leg, armrest and backrest rail all merge. I designed the backrest so that the curved leather panel would recess into the frame and sit into the joinery. It took me two days to figure out the best order of operations to cut the rebate and build an offset jig that mirrored the curves of the rails. This was made harder because there were no flat references to work off or refer to. This allowed me to route the rebate through the knuckle of the joint before the armrest was joined in place and achieve the look I was after.

To what extent proportionally are machine and hand processes used?
This entirely depends on the type of piece and if I have the constraints of a strict budget to stay under. For chairs I'd like to say that the percentage would be close to 50/50. I'm not looking to win any medals for hand planing boards to width and thickness so will almost always use machines to get my stock to size and break into components on the bandsaw. I will try to get the majority of components to be close to the desired shape off the saw and then finesse the joints by hand. I find I am usually scribing joints off each other and touching up the contact zones with a sharp chisel or block plane to get the fit perfect. I'll also happily remove a large proportion of waste material with a router before I move into blending joinery with rasps and emphasising form or tapers with a spokeshave.

Round Table

Treecycle Cabinet in salvaged African yellowwood

Joint on the white oak Coffee Table

Mantis Coffee Table in salvaged Monterey cypress

With cabinets for example, I'd love the freedom to do hand cut dovetail joinery and take any opportunity I can get. However, I am not often given the luxury of an unlimited budget to design with so I will opt for efficient methods of joinery that are cut with a hand-held router and almost entirely machine-based production. I've now got a family to feed...

Have you worked with CAD/CAM and have you considered incorporating media other than wood – such as plastics or metal?
In previous jobs and in teaching I have worked quite extensively with CAD/CAM. The possibilities are endless when it comes to CAM and the majority of commercial work is produced this way. I guess what I like about my work is I have the freedom and flexibility to allow the material to have some say in what it becomes. I'm not just grabbing the first five boards off the rack and throwing them on to a machine bed to have a lifeless shape cut out of them. Sometimes I feel I can spend almost too much time turning over boards and appreciating the story they have got to tell. I look for shapes in grain that drive design and form. That tree has grown a long time to make its way to me so I want to make sure I do it justice. Saying that, there are some really good businesses out there running the CNC model and demonstrating a balance between automation and craftsmanship.

I've done a fair bit of work with both stainless steel and powder-coated steel. This is generally in the production of legs or frames for tables or entertainment units. I have quite a lot of work lined up over the next year for a special client and all the pieces will feature a nice combination of Tasmanian blackwood and brass detailing.

Where would you like to go next with your designs and marketing?
I've been thinking about this quite a lot lately. I believe my niche in the market is that I am a fine furniture designer and maker. I would like to keep the designer-maker relationship for my own bespoke work but also venture into having another 'production furniture' entity in my business whereby I develop a range that would be specifically designed with CNC production in mind and have that produced and sold to a wider audience. I've started the conversations with a couple of esteemed Australian companies and think that this could be put in motion in the near future.

Are there any special techniques you would like to pass on to readers?
I've been exploring the use of a four-way splined mitre joint on the leg structures of a coffee table and café table I produced for two separate commissions. The assembly of these joints has grabbed a fair bit of attention on Instagram so I'd be happy to discuss the process of creating this joint.

I was originally just experimenting with alternative joinery methods that could help to reduce the amount of end-grain to end-grain surface area, which is inevitable with a mitre joint. As furniture makers, we are aware of the issue with end grain gluing in, where the cells of the timber will draw the adhesive in and eventually starve the joint. With that in mind, I also wanted a method for the joint to have some mechanical strength so that it could stop the joint from being pulled apart.

My solution was to combine both machine and hand skills in the production of the joint. Using a jig on the panel saw, I held the components at 45° to the blade and ran a 5mm slot for the splines to slide. I then gauged the half-lap joints on to the spline pieces and hand-cut these and pared out the waste due to the small sectional size of the stock. The half-laps are orientated so that four legs can be brought together with half of the pieces positioned within the joint and the remaining three all slide down into the joint to secure everything in place. The splines then work against each other to ensure no rail can twist or pull away. I use adhesive in the glue-up to ensure longevity and the splines are self-clamping so the job doesn't require any additional clamps to be applied.

Strength was the fundamental factor I was considering at the start but I believe I've also managed to showcase this joint in an aesthetically pleasing way in my designs. I am enjoying the process of exploring joinery and I have already been developing this joint further to use in larger, more structural applications in future.

benpercydesigns.com

Branding detail on the Round Table

FOUR-WAY SPLINED MITRE JOINT

WE TAKE A CLOSER LOOK AT BEN PERCY'S INGENIOUS JOINT

Ben Percy's unique four-way splined mitre joint has been used on the leg structures of both a coffee table and café table. Originally it was just an experiment with alternative joinery methods that could help to reduce the amount of end-grain to end-grain surface area. This can cause an issue with end grain gluing in, where the cells of the timber will draw the adhesive in and eventually starve the joint. This ingenious method gives mechanical strength that stops the joint from pulling apart, while at the same time creating an aesthetically pleasing feature in his designs. It was achieved using a combination of both hand skills and machine work.

If you want to see how the joint fits together, there is a short video of it on Ben's Instagram: **@benpercydesigns**

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Motor output P2:	750 W
Thread:	M33 x 3.5
Taper:	2 Morse taper
Weight:	48 kg
Size:	W870 x D290 x H252 mm

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