

FURNITURE & CABINETMAKING





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WELCOME

As the old year draws to a close – and what a year 2020 has been – the dark days of winter can be a time for new beginnings. And what better way to make a fresh start than by trying something you’ve never done before?

Ever tried stippling? This is your chance – Brian Kawal introduces this simple yet utterly striking technique. Have you had to give up a commission because your lathe wasn’t long enough? Richard Findley’s clever hack means you never have to again. Interested in midcentury design? Louise Biggs creates a pair of footstools inspired by 1950s Japanese style.

There are plenty of artists, designers and craftspeople to inspire you in our pages. Meet Jeffrey Miller, who turned to furniture-making when illness put a sudden stop to his career as a classical musician. Berlin-based ‘joinery fetishist’ Dorian Bracht has set himself the challenge of making every single type of joint – and broadcasting his explorations on YouTube. New York artist Vivian Chiu uses her woodworking skills to create optical illusions, folding blankets, self-portraits and much more – and teaches furniture-making on the side. And Jim Lindsay, the founder of the Dowelmax joinery system, tells us how his product has made it possible for novices and even a completely blind carpenter to make furniture.

Plus we’ve got sliding dovetails, acanthus mouldings, a history of Utility furniture and much, much more. We hope this issue of *F&C* will inspire you to try something new today.

*‘For the things we have to learn before we can do them,
we learn by doing them.’*

ARISTOTLE

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F&C ISSUE 296

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For article submissions and editorial enquiries:
E: FCeditorial@thegmcgroup.com

EDITORIAL Anthony Bailey, Karen Scott, Christine Boggis, Jane Roe
E: karencs@thegmcgroup.com
T: 01273 477374

DESIGNER Claire Stevens

ADVERTISING

gmcadvertising@thegmcgroup.com

PUBLISHER Jonathan Grogan

PRODUCTION MANAGER Jim Bulley

T: 01273 402810

MARKETING Anne Guillot

PRINTER Poligrafijas grupa Mukusal, Latvia

DISTRIBUTION Seymour Distribution Ltd

T: 020 7429 4000

Subscription enquiries:

T: +44 (0)1273 488005

E: pubs@thegmcgroup.com

To subscribe online go to:

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COVER IMAGE Dorian Bracht, photographed by Chris Mulzer

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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.



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DUNE HALL TABLE

THE CORONAVIRUS LOCKDOWN GAVE **THOMAS EDDOLLS**
THE OPPORTUNITY TO WORK ON THIS COMMISSIONED TABLE





PHOTOGRAPHS BY THOMAS EDDOLLS

1 Thankfully my timber merchant was able to supply what I needed, despite the lockdown **2** This Minimax meant I could machine the timber in a secure environment **3** Clamping up the top and sides **4** After roughing out, the legs were mounted on to a profiled jig

This year started out looking so promising. Sometimes things can be a bit sleepy in January as everyone emerges from Christmas, but enquiries were coming in nicely, and the year before had been good, so things were looking encouraging.

Unfortunately, life had a remarkable story around the corner and the Coronavirus pandemic began to unfold.

When the lockdown measures were introduced I reluctantly but dutifully locked up the workshop and stayed at home with my family for a full month. During this time I began to find ways to work in isolation while still shielding vulnerable family members.

By some lucky quirk of fate, I spotted a lovely Minimax combination machine on the marketplace. Acting quickly, I managed to secure the deal, my good

father picking it up from Somerset for me and bringing it back to the farm, whereupon the kind farmer obligingly forked it into the shop with a telehandler. This proved to be a turning point, as I could now handle machining operations in a strictly isolated environment.

With a subcontract project temporarily suspended, I decided to bring another commission forward. I made a phone call to the clients to make sure they were happy to proceed with the table, which luckily they were, and so it was decided – it was time to get stuck in again.

I called my timber suppliers (Tyler Hardwoods in Wiltshire) to check their trading status and was reliably informed that they could select the timber for my cutting list and deliver it to the workshop.

THE LEGS

I had made this table before so I already had templates for the legs, although as luck would have it I had cut the shaping jigs up a couple of months previously. However, I dug out the original drawings and reviewed old photos of the piece to help me analyse and remember the process.

The first thing to do was to produce the compound curved legs and build the rest of the project around them.

Properly dried 100mm-thick cherry can be difficult to find at the best of times, but luckily Tyler's had some in stock, so after skimming off the surfaces I marked out the leg shapes on to the cherry boards, looking out for any defects – few in this case – and nesting the shapes together to get the most out of the material.



5 The spindle moulder was used to produce the first curve deflection ... 6 ... but the next stage was done by hand 7 The four completed legs. My intention was to create a modern version of the cabriole leg shape 8 The carcass sides were jointed and clamped to the legs 9 & 10 The dovetails at the tops of the legs were worked by hand

The legs were roughed out on the bandsaw in one plane and then mounted on to a profiled MDF jig, which I would follow with a ring fence on the spindle moulder to produce the first curve deflection.

Two different deflections on the leg make the process quite involved, the kick-out in the front elevation being more pronounced in the side elevation.

With the first curve shaped up nicely I decided that, as there were only four legs, and considering the amount of work and difficulty of the machining process, I would tackle the next stage by hand, bandsawing the secondary curve out and simply working down to my marked-out lines with my trusty vintage Stanley compass plane. Working happily through this process, I now had four legs in what I intended to be a contemporary take on the classic cabriole style.

THE CARCASS

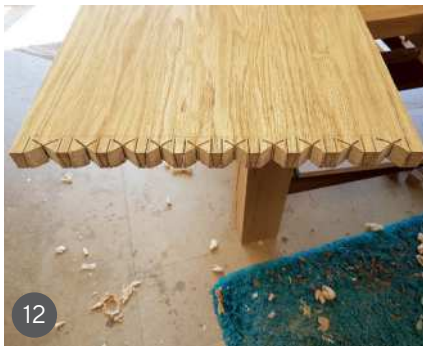
With this initial stage complete, I then began to convert the carcass timber, which was machined out of 25mm-thick tangentially sawn oak. Reading the crown figure, the boards were pattern-matched and finish-jointed together by hand with a No.7 plane before being biscuit-jointed and sash-clamped together.

I then dimensioned the carcass sides before cutting out the exposed Arts and Crafts-style dovetailed joinery. With them being small enough to work mostly on the bandsaw I sawed out the tails using a very simple sled guide that cants the workpiece to the correct 1 in 8 angle guided off the rip fence. This provides accurate results quite quickly, and then the pin slots were worked out traditionally using a coping saw and chisels. The sides were then jointed to the legs with a tongue and

groove and clamped together.

I now had to work the dovetails on the top of the legs; there's quite a bit to get right here with a rebate to house the top section and a mitre to work in. I tackled this all by hand, sawing the joints out just shy of my knife lines before carefully working back to the lines with shoulder planes and chisels.

For aesthetic purposes I needed to work a curve rebate to house the drawer front into the front legs. I still had the original jig and, looking at it all, I could see that this would work perfectly. It was shaped from nothing at the bottom into the point where it mitres into the carcass top. I used a top-bearing-guided bottom-cutting cutter in the router, making sure things were handed appropriately. The routed surface was cleaned out with a scraping tool I often find very useful – it's just a simple old plane iron ground to 45° with a



11 Joining the top and base to the ends 12 Cutting the pin waste out 13 Checking for fit 14 Having a quick look at how it was all coming together 15 Marking the pin ends out from the tails 16 Shaping the top leg rebates to accept the drawer front

hook burnished on to it. It's very handy for working into corners and difficult places. After sanding down to 240 grit, it was time to joint the top and base to the ends.

Starting with the top, I marked out the pin slots on to the dimensioned pieces carefully using a scalpel. The imprint for the tails was established and, after squaring a guide line down to a cutting gauge mark, I sawed out the pins using a vintage Roberts & Lee saw. I used chisels to pare back the remainder of the waste to just shy of the knife lines, leaving the end grain waste to be removed with a short top-bearing hinge recess router cutter, guiding off the pins to achieve quick and accurate results.

The base section was approached differently owing to the panel needing to be housed around the legs. A loose ply tongue was dropped into the mating

components to reinforce the joint.

When the leg notches had been cut out from the panel, the pins were fashioned using the same methods as described above.

After all of this work was completed I now had the opportunity to dry fit the carcass together to make sure everything worked out. It all looked good so the glue-up was completed, using Titebond 3 as an adhesive and some heavy-duty Record sash clamps. Everything went home nicely, which was a happy relief.

THE DRAWERS

In order for the drawer to work a guide system had to be installed, so long grain guides were milled out in the long grain and screwed to the inside of the carcass, dead at the front and slotted at the back to allow for movement. With a heavy

countersink allowed, I hand-planed the slight allowance left on to the carcass with a hefty and sharp rebate plane.

The drawer work came next. One of the most unusual and interesting aspects of this piece, about which many a comment has been made before, is the sculpted drawer front. This design was made into a reality by the superbly talented people at Waywood CNC, who have been pioneering CNC technology for years.

Fitting the drawer front into the carcass required a rebate to be routed on to the back side, kissing up against the legs from which the drawer sides would be lap dovetailed into. The drawer front ends then needed to be shaped into the curved section of the upper part of the leg and the drawer set ever so slightly back so the highest undulation was just behind the carcass front.



17 The glue-up, using sash clamps 18 & 19 The drawer has a sculpted, undulating front which is eye-catching but tricky to achieve 20 The drawer glued up

It took a bit of trialling and cajoling – presenting the workpiece into the aperture and taking a slight shaving off here and there where appropriate – but eventually a good fit was achieved. The final fitting and evening up the gap would be done during the clean-up.

The drawer box was constructed using the methods described above, with bandsawn tails and hand-cut pins, keeping in mind where the drawer base would need to fit into the assembly via grooved slips and a groove in the front to accept a bare-faced tongue on the cedar base boards.

I glued the drawer box together and checked for wind and that it was square. I took special care to make sure the tail end points met crisply with the finished lapped point; in some places these needed a pinch up, which was quite tricky with the undulating front. Rough-shaped softwood clamping blocks came to my aid here.

While the glue was setting (again I used Titebond 3), I milled up the drawer slips and central muntin in preparation and left the adhesive to cure for 24 hours before doing any more stressful manipulation. I planed the drawer sides down to the

hand-fitted end grain points of the tail ends, which had been carefully worked to the carcass opening. True square is ideal but slight discrepancies can be crafted in, the back being carefully matched to the front. A plain flat drawer side can be planed down in a jiffy, but the overhang of the front made it impossible to tackle this in such a way, so I cross-grain-planed with a rebate plane down to the end grain, then, using block, smoothing and jack planes, worked sideways and diagonally along the side to create a flat surface. I scraped out any lines or slight tearing. With this technique, if you have done everything



21 The drawer jointed, ready for glue 22 & 23 A central muntin was added to fix the piece 24 Four coats of Osmo Oolyx Satin oil provided the finish



right, a few swipes of candlewax and the drawer should be a very tight fit. This wasn't a bad effort and it nearly slid in fully home at the first attempt.

I could now glue the grooved slips on to the sides, and once the glue had cured I added the drawer bases, which were made from beautifully aromatic solid cedar of Lebanon.

Once fitted, the bases needed to be rebate-fitted into the grooves with a traditional central muntin added for fixing and movement purposes. Clean, crisp joint lines were the aim here.

The final fettle was make or break

time: using abrasive papers the sides were worked over thoroughly, making sure to obtain a fine finish while retaining the straight and flat surface. I find this procedure is best done in several stages as it's easy to mess the fit up. They say a properly fitted drawer should pull from either end. When I feel it's the right time I will wax the sides and glides and have a look at how it runs. I look for a nice, even run and although a piston fit is considered the Holy Grail, the run and action is the most important thing for me and if a small amount of play is present but the drawer behaves correctly, I find

that acceptable. I have not yet had to go back to a fitted drawer for a fettle.

FINISHING

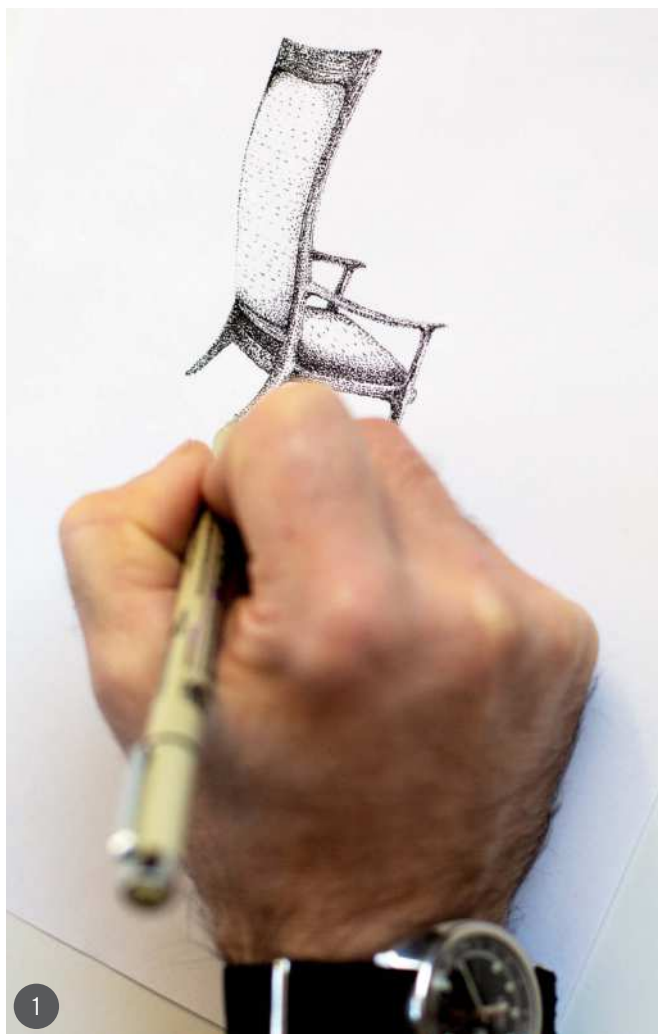
With all works completed and the back fitted, it was time for the final clean-up. As the majority of surfaces had already been worked this was really just a systematic going over of everything with abrasives, working down to a fine grit before finishing with four coats of Osmo Polyx Satin and cutting back where necessary.

After allowing for hardening times, all that was required was a socially distanced delivery to the client.



STIPPLING

BRIAN KAWAL INTRODUCES A
DECORATIVE TECHNIQUE THAT CAN
REALLY MAKE YOUR WORK STAND OUT

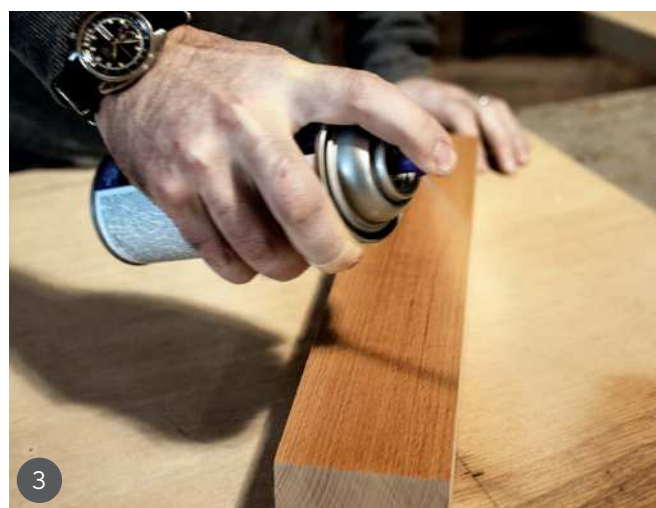


At its very core, the idea of stippling is simply to create a series of decorative dots. In our medium of wood this could be either an applied technique, such as using ink or paint on the wood's surface, or in the case of the specific technique I've worked on developing, poking holes into the wood itself. Stippling of differing varieties has long been used in furniture making as a textural element (see my article in *F&C* 294 on antique chair reproduction where I use the same tools and technique for a traditional carving detail). Expounding on this idea though, you can use this technique for creating unique patterns and pictures on your work. Whether a standalone wall piece or a panel in a chair back, stippling can make your work really stand out.

In this article I demonstrate and describe a simple stippled gradient which is the basis for any stippled work, and I've also included a couple of my past projects to show what can be done.

PREPARATION

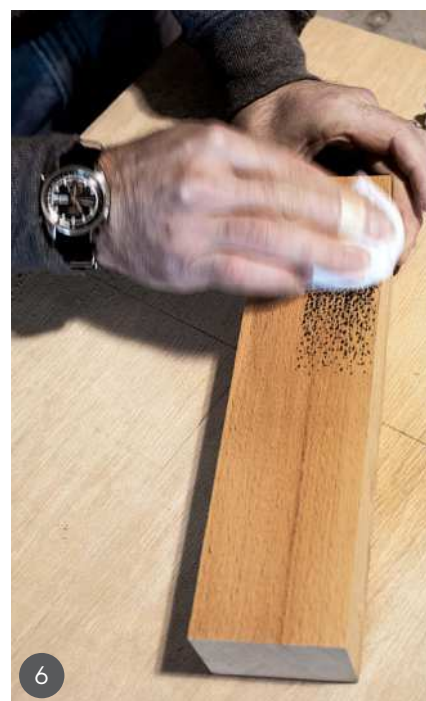
1 Stippling is a very common artistic technique traditionally done with pen and ink on paper. In fact, before trying this on wood I highly recommend spending time with an ink pen first. It is much easier and faster to create dots with the touch of a pen as opposed to pressing each one into wood. As a reference, the ink drawing of the chair shown here took only a few minutes, while



the simple gradient in wood made for this article took much longer. One doesn't have to be able to draw to stipple – you can always trace out an outline on to a panel – but an understanding of shadows and gradients is imperative for performing the technique correctly.

2 Many tools could be used, and as you try the process for yourself you may find a favourite that works comfortably for you. For me, a simple awl used both with and without a mallet is the tool of choice. The advantage of using an awl is that different diameter holes can be created using a variance of pressure, as you can see in this picture. No matter what you choose, you will want to find something that feels comfortable in your hand. A medium-sized piece of stippling can contain tens of thousands of holes and take several days to make, so comfort is important.

3 Before starting to stipple it's vital to properly prepare your panel. Without a stain the stippling would be extremely hard to see, but to create maximum contrast only the holes should take the stain. This can be achieved by sanding the panel first and applying a very light coat of clear lacquer. It's important the finish is easy to puncture with the awl. I use a light coat of an aerosol touch-up lacquer as it applies easily and dries quickly.



STIPPLING

4 Now comes the time-consuming part: dots, dots and more dots!

5 Create your shapes, adding shadows and textures to give dimension to your piece.

FINISHING

6 Once you're finished it is time to really make your stippling stand out. Wipe a heavy coat of dark stain across your panel and immediately scrub it off. You may need to repeat this step several times to get stain into all the holes. This is a great time to reassess and make any further adjustments to the stippling.

7 Once that's done, lightly sand your panel and apply your final clear coat of lacquer.

8 By this point you may feel as I do that there is only so much poetic waxing, flowery descriptions and tutorial write-up that can be used for what amounts to poking holes in wood with a piece of metal! That being said, you may find stippling to be quite enjoyable and you definitely should give it a try if the idea appeals to you. So sand up a panel, grab an awl and create something amazing! You can see more of my designs on [@spadewerks](#) on Instagram.

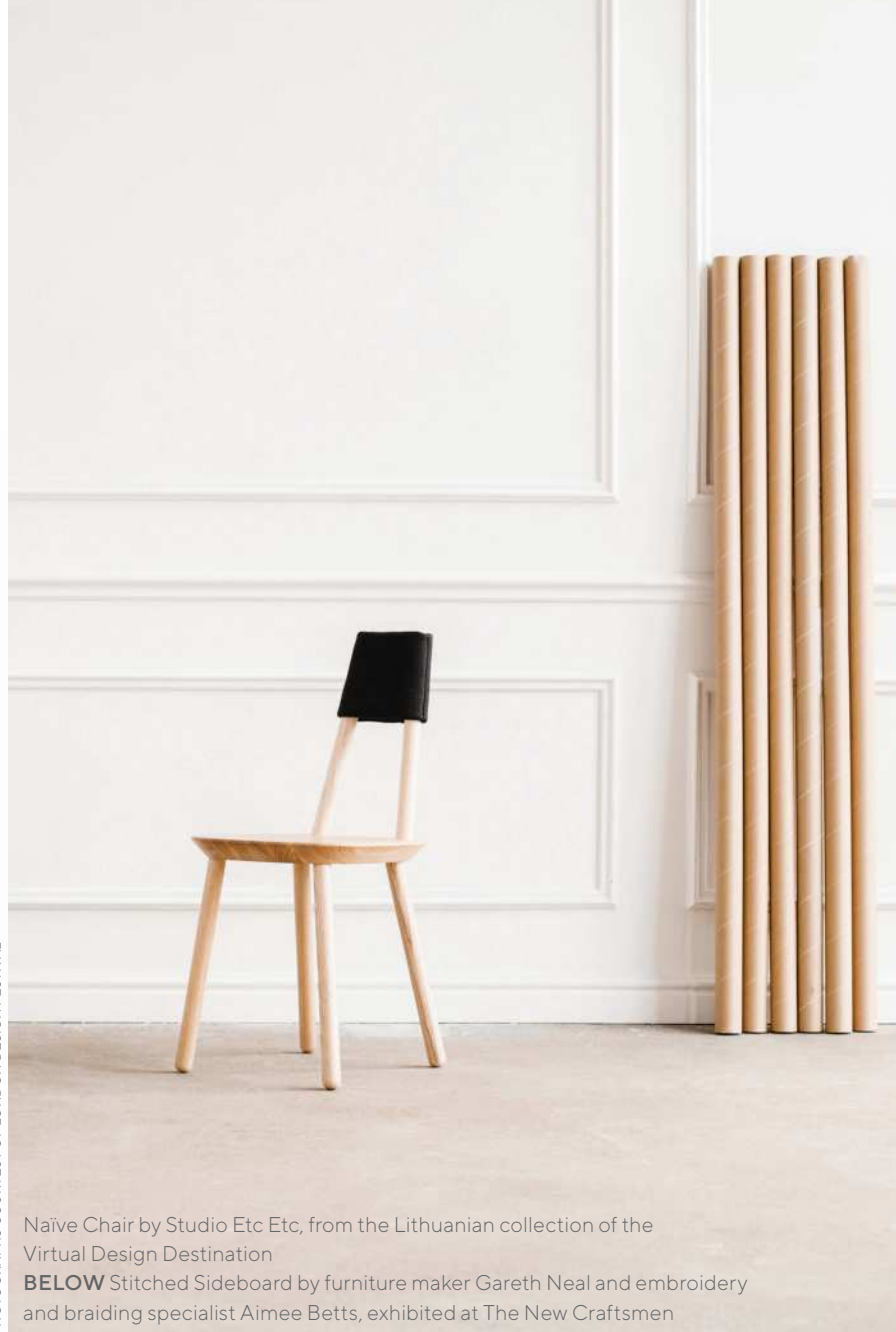
CAPITAL CELEBRATIONS

LONDON'S ANNUAL DESIGN EXHIBITIONS WENT AHEAD IN SEPTEMBER, FINDING NEW WAYS TO CELEBRATE CREATIVE TALENT

Over the past 17 years, the London Design Festival (LDF) has become a fixture in the UK's arts calendar and a valuable showcase of British artists and designers. The 18th edition of the LDF and several other design events were able to go ahead this September despite the restrictions imposed in response to the Coronavirus pandemic.

The New Craftsmen exhibition for London Design Festival

PHOTOGRAPH BY OLLIE TOMLINSON, COURTESY OF LONDON DESIGN FESTIVAL



Naïve Chair by Studio Etc Etc, from the Lithuanian collection of the Virtual Design Destination

BELOW Stitched Sideboard by furniture maker Gareth Neal and embroidery and braiding specialist Aimee Betts, exhibited at The New Craftsmen

THE LONDON DESIGN FESTIVAL

The 2020 LDF programme featured large-scale outdoor installations; four Design Districts in Brompton, Kings Cross, Mayfair and Shoreditch and two new Design Routes in Walthamstow and Peckham, as well as projects, product launches and exhibitions throughout the city. Much of the festival took place virtually with online talks and seminars, exhibition tours and events. One of this year's online exhibitions at the LDF was the Virtual Design Destination, organised by Danish digital gallery Adorno. The event featured 'pavilions' of work from designers from 15 different countries, with each design piece modelled three-dimensionally.

The work of furniture makers was displayed at various events, such as The New Craftsmen's show in Mayfair. Even our canine companions were catered for at the Architecture for Dogs event held at Japan House in Brompton!

In addition to all this, the Festival launched a Freelancer Portal to support freelancers and the creative industries who have been affected by the pandemic, allowing them to share their portfolio and content with a global audience.





PHOTOGRAPH COURTESY OF LONDON CRAFT WEEK

Japan House hosted the Architecture for Dogs show as part of the LDF Brompton Design District;
this piece was made by Japanese designer Kenya Hara
ABOVE Woodturner Eleanor Lakelin demonstrating at London Craft Week's Create Day



PHOTOGRAPH BY HIROSHI YODA / COURTESY OF LONDON DESIGN FESTIVAL

THE EMERGING DESIGN MEDAL

This year's LDF Emerging Design Medal was awarded to Yinka Ilori, a multidisciplinary artist who fuses his British and Nigerian heritage to tell new stories in contemporary design. A graduate of the Furniture and Product Design course at London Metropolitan University, his work has been exhibited around the world. He established his own studio with a series of upcycled vintage furniture, inspired by the traditional Nigerian parables and West African fabrics that surrounded him as a child.

LONDON CRAFT WEEK

In addition to the LDF, London Craft Week returned for its sixth edition, celebrating exceptional craftsmanship and creativity from around the world. The programme included 250 events across the city and over 350 makers, telling the stories behind some of the world's most extraordinary objects. An online exhibition of 300 objects was also hosted on the event's website.

This year saw the launch of the first Craft Week Create Day, an online event featuring a line-up of artists and makers from all over the globe opening up their studios over 24 hours, starting in the Far East and ending in North America.

20 MAKERS, 20 OBJECTS

Design-Nation, the leading portfolio for designer-makers in the UK, celebrated its 20th anniversary by hosting 20 Makers, 20 Objects, an online showcase of the diversity of the UK's craft and design talent. Furniture makers were represented by Angus Ross' unconventional solid wood rocking stool and Jacky Puzey's Koi Lily Pad footstools.

For more information about these events and designers, see:
londondesignfestival.com
yinkailori.com
adorno.design
londoncraftweek.com
designnation.co.uk

Rocking stool by Angus Ross, exhibited at Design-Nation's 20 Makers, 20 Objects

PHOTOGRAPH COURTESY OF SEEN PR



Cinch Chair by Otis Ingrams, exhibited at The New Craftsmen

PHOTOGRAPH COURTESY OF LONDON DESIGN FESTIVAL



PHOTOGRAPH COURTESY OF LONDON CRAFT WEEK



Aesculus Collector's Cabinet by Laurent Peacock, exhibited at the Future Icons event at London Craft Week

Tubular Armchair by Lucas Munoz, from the Spanish collection of the Virtual Design Destination

PHOTOGRAPH COURTESY OF LONDON DESIGN FESTIVAL



London Design Festival Emerging Design Medal winner Yinka Ilori

PHOTOGRAPH BY ANDREW MEREDITH/COURTESY OF LONDON DESIGN FESTIVAL





Jacky Puze's Koi Lily Pad footstool,
exhibited at Design-Nation's 20 Makers,
20 Objects

Upcycled chairs by Yinka Ilori





KEEPING IT REAL

SELF-CONFESSED JOINERY FETISHIST **DORIAN BRACHT** TALKS SHOP

Berlin-based carpenter Dorian Bracht loves joints so much he decided to cut one of every type himself. He started filming himself doing this, and recently released his 59th Joint Venture clip on YouTube – a bridle enclosed in a mitred through mortise and tenon. This unusual enterprise has won Dorian a massive 174,000 subscribers on YouTube – and he's only released 69 videos so far, featuring different builds and a challenge to create furniture made from just wood using pure joinery as well as the joint experiments.

'I decided to start a YouTube channel because I wanted to try all joints at least once to build my skill and I thought I would film the process of cutting the joints for others to see,' Dorian says. 'It was the content I always desired as a joinery fetishist, but only rarely got in the format I wanted.'

The films are not how-to guides but are simply of Dorian working, with chilled music playing but not obscuring the sound of his tools on the wood. As well as being of interest to woodworkers, they work as relaxing slow TV. 'I make the films the way I do, because I am not teaching [the joints], but trying to figure them out for myself,' he explains. 'Sometimes I only have a very pixellated photo of the closed joint and have to figure things out from there. Nearly all the joints are first-time tries too, so there is nothing to teach there. The responses I have had are overwhelmingly positive. I never thought so many people would be interested in just cutting joinery.'

JOINING UP

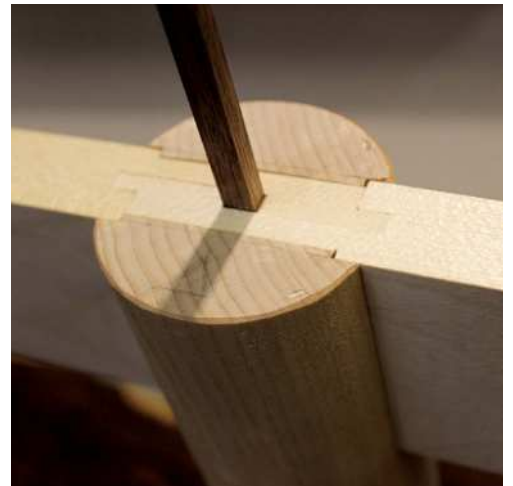
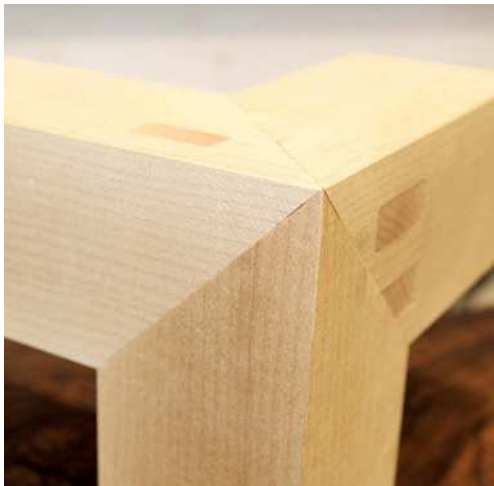
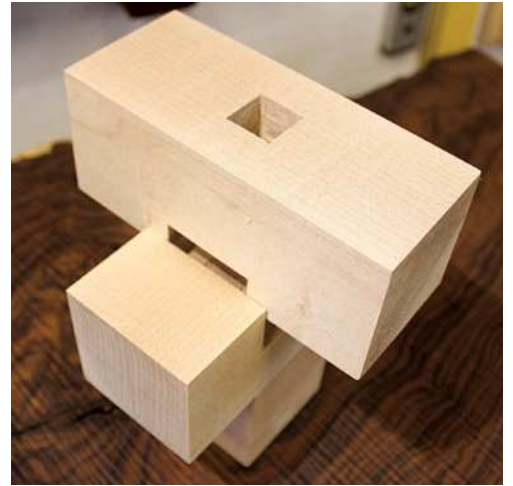
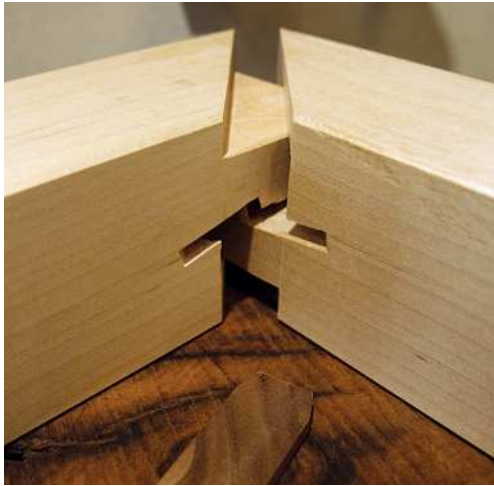
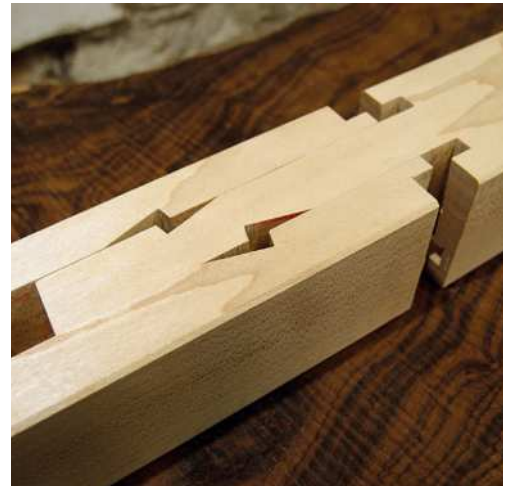
Dorian planned to study graphic design but wanted to learn a trade first, so he took up carpentry – and never looked back. 'My training started with two internships in typical cabinetmaking shops, working with MDF and particle board. I then did an apprenticeship with a master in Germany who taught me to work with solid wood and build shoji. He taught me a lot about joinery in construction and got me completely hooked,' he says.

The first project he ever completed was a footstool made from larch wood, built completely with hand tools. 'This is a typical exercise for German cabinetmakers when they start their apprenticeship,' he explains.

He embarked on his own business with the aim of creating aesthetically minimalist pieces using traditional joinery and combining western, Japanese and Chinese influences, tools and techniques. 'The guiding principle behind my work is combining the best quality and workmanship possible with good design. When working on designs for clients, I try to become the best pure craftsman I can be,' he says. 'Wanting to set up my own business was more of a necessity than a choice, because nobody did the work I was interested in. I also had a lot of ideas I wanted to make a reality.'

He started out working in rented workshops and the attic of the building he was living in, and built up a small portfolio selling to friends and relatives. His name spread by word of mouth until he started his YouTube channel. 'That really helped with my Google SEO,' he says.

Dorian currently shares a workshop with two conservationists, where he has his own bench with space for hand tools and small machines, but is planning to move to a bigger space soon, so he can take on bigger projects.





THINKING IT THROUGH

'My design process is done completely in my head,' he says. 'It is easier and quicker for me than making a CAD model or a drawing. I can change details extremely quickly and can revisit and interchange design ideas. For clients I have to do a drawing or a CAD though, which is good too, because I see the proportions properly and can adjust accordingly.'

His favourite woods to work with are walnut and oak for workability, and chestnut, elm and cherry for their beauty. 'All in all I like working all woods, although I am starting to steer away from tropical hardwoods for ethical reasons,' he says. At the moment he only works with wood, but is considering using other natural materials like linoleum or urushi lacquerware. 'My expertise is in wood, but I do want to incorporate some other materials like stone or patinated metal in the future,' he says.

'I like using Japanese and western tools, favouring good quality over price any day of the week,' says Dorian. 'I like the aspect of needing knowledge and technique to properly use Japanese tools and the economic expediency of western tools. I mix it up so it fits my style and I have fun working. I avoid cheap or bad quality tools, because it is a waste of time unless you are in a pinch.'

He prefers to use natural finishes or none at all: 'I enjoy the patination they make possible and it just feels right to me putting them on wood. I especially like the hand-planed finish of urushi lacquer, which has a lot of possibilities.'

Inspiration comes from 20th-century furniture and architecture such as Memphis Milano, art deco and some 'wacky' 1980s designs. 'I also get a lot of inspiration from Chinese Ming Dynasty furniture and architecture and from Japanese interiors

of old, which blend natural materials seamlessly into manmade forms,' says Dorian. 'I especially enjoy the Sukiya teahouse architecture style.'

As he loves joints so much, does he base his designs around the joints he wants to use? 'When I am designing, 95% of the time, the joinery is the means to an end,' Dorian says. 'For me the overall form is the most important aspect. In many cases I find that big visible joints take the attention from the overall form. Designing a piece around a certain joint can work, but I find the design possibilities are more limited.'

His favourite project he has worked on so far was his first piece as a self-employed furniture maker. 'It was a high board made of fumed oak, with blind mitred dovetails and a complete Yari Ganna – Japanese spear plane – surface on the outside of the two intersecting corpuses. It was built to house my father's lacquer collection. It was great, because I had no design restrictions.' His most challenging piece was a bubinga table with a burned oak base. 'It was complicated because of the nature of the bubinga. I hand-planed all the surfaces. Also the base was a splayed leg construction, which is always a bit tricky.'

He is currently finishing a birch wardrobe and is about to build a fetish cage in hard maple finished with urushi lacquer and only using glueless joinery. 'I will be filming it and making a series of it on YouTube,' he says. Looking forward he plans to give workshops on furniture joinery and sharpening. 'I will also start a furniture collection – I am designing it with my partner and producing it in small series,' he says.

dorianbracht.com



GARRETT HACK-INSPIRED BOOKCASE



ISRAEL MARTIN BUILDS A SMALL CHERRY BOOKCASE
WITH A SLIDING DOVETAILED CARCASS

When I started designing this piece, my goal was to build a small bookcase, simple and classical in its main shape but with an additional, useful detail that would make it a more interesting piece, so I decided to add three small drawers. These three drawers on the right side break up the overall shape and are a fun addition to the bookcase.

I made the carcass with a design I learned from American furniture maker Garrett Hack, using sliding dovetails to join the sides with the top and bottom pieces and dados to join the middle shelf. It also has top and bottom mouldings to cover part of the carcass and the back is made with half-lapped boards so that the seasonal movement of the wood won't affect the piece.

I used cherry for the carcass and solid ripple sycamore for the drawer fronts. I like to use quartersawn red cedar for the backs and drawer bottoms for its stability, and it's also easy to work with.



SLIDING DOVETAIL CARCASS

Sliding dovetails are a great joint for carcass construction. They are faster to make by hand than through dovetails and with this carcass construction you can make them through, which saves a lot of time.

The front sides are later covered with two stiles, which allows you to use thinner pieces for the carcass but the final look is much stronger. These stiles are glued in a rebate made on the sides, plus a recess on the top and bottom, which is made after gluing up the carcass. At this point you have to decide whether to leave a recess for the inlays, or just make them flush if no inlays are going to be added. It also allows you to add edge inlays without having to make a rebate for them. The back is held in a groove made on the top and rebates on the sides, and fixed to the bottom and middle shelves with brass screws in the centre of each board.

- 1 Sliding dovetail tenons
- 2 Sawing the sliding dovetails
- 3 Testing the joinery
- 4 The carcass before adding the rebates
- 5 Making rebates for the front stiles
- 6 Gluing the carcass
- 7 The carcass with the front stiles







8 The dovetails on the drawer case 9 The mitred corner on the drawer case 10 The dados for the drawer case
 11 The completed drawer case 12 Adjusting the fit of the drawer fronts 13 Testing the drawers with their sides
 14 Detail of the drawer dovetails 15 The drawer bottoms 16 The finished drawers with the ebony pulls

CARCASS FOR THE SMALL DRAWERS

The case for the small drawers was made with through dovetails to join the top and left side with a mitre on one of the edges, and just dados to join the case to the main carcass. The drawer dividers are also joined with dados. I added another piece on the right side to allow the right drawer to be pulled out, avoiding the small recess left by the addition of the vertical stiles in the carcass.

MAKING THE SMALL DRAWERS

When making small drawers, if I can, I prefer to use solid wood instead of veneering the fronts. The fronts of these drawers are made of 16mm-thick ripple sycamore and the sides and backs from 5mm-thick hard maple. I usually use hand-cut half-blind dovetails to join drawer fronts and sides, and the backs are joined with dados instead of sliding dovetails, because that joint is strong enough for small drawers. I used quartersawn red cedar and

southern yellow pine offcuts to make the drawer bottoms. Just to add a surprise, I added a small holly and ebony inlay to the pine bottom. I used a small lathe to make the drawer pulls out of ebony.

EBONY AND HOLLY INLAYS

One of the best things for me about any project is adding details. These ebony and holly inlays define the three horizontal pieces of the carcass. I made them larger than the rebate and after gluing them up, I planed them flush with the front and sides. They are thinner at the front to make the bookcase look more elegant and thicker at the sides to increase the weight of the sides. Once the stiles were glued up to the carcass, I glued the inlays on the recess left by these stiles. I used a bevel-down plane with a 43° angle blade so the grain direction of inlay pieces was not an issue. The inlays add interest to the piece and also cover the joint between the stiles and the carcass.





17 Planing the ebony and holly blanks for the inlays 18 Gluing the inlays 19 Planing the inlays flush 20 Shavings from the inlays
 21 Sawing the red cedar boards for the back 22 Adjusting the back panels with 1mm Sims 23 Measuring the middle back panel
 24 The completed red cedar back 25 Measuring the cornice moulding to length 26 The left corner of the cornice 27 The completed cornice

HALF-LAP JOINTED BACK

When making wide backs, instead of just making a wide board, with its seasonal movement problems, I prefer to use tongue and groove or half-lap jointed boards. They are later screwed to the carcass (in the middle of each board) to allow tiny wood movements and also add strength to the carcass.

ADDING SIMPLE MOULDINGS

I used white beech to make the cornice and bottom moulding. The cornice was made with a 1in round old moulding plane and for the bottom moulding I just used a block plane and a scraper. The mouldings along the top and bottom front edge are glued along their length to hold them securely. The mouldings on the sides are only glued along their front half and pinned with a nail at the back. That will allow wood movement in the sides. These mouldings add a classical look to the bookcase.



ALL OUR FUTURES

ANNE GUILLOT PONDERES HOW TO COPE IN AN UNCERTAIN AND EVER-CHANGING WORLD

Unknown, unpredictable, fascinating. However you imagine tomorrow's world today, it will change in the blink of an eye.

Some people prefer to take one day at a time, while others insist on planning years ahead. Some are desperate for time to stand still, others can't wait for it to go faster. Some can't see further than their own world, while others look beyond it. We all anticipate the future differently, actively pursuing dreams and goals, or accepting life as it comes. But no one really knows what the future holds. Yes, it's possible to make logical assessments and, yes, there's power to change it... or is there?

Each of us plays a role in a large and complex system, intricate and interconnected. We are all actors, but we don't always recognise the significance of our part, or understand how tiny occurrences can sometimes have profound effects. The notion that a butterfly flapping its wings in Brazil can cause a tornado in Texas conveys the idea that a small, seemingly insignificant action can lead to unpredictable consequences and change the course of an event. If this metaphor, known as the butterfly effect (coined by American meteorologist Edward Lorenz), is taken to suggest that we each affect the world in our own way, then imagine the reverberations made by the 7.5 billion people who populate the planet. It makes for a dynamic world that's constantly changing, as is the future.

SOCIETY IN FLUX

'The future isn't what it used to be,' wrote French poet Paul Valéry. Why? Because the countless variables that shape the world today can't possibly be the same tomorrow. But not only that. As time goes by, society, and our perceptions and expectations, are also evolving. Only a few decades ago, the future was filled with hope as the general sentiment was that humanity was on the rise. It could (and had) reached the moon, it would eradicate poverty and promote equality for all.

Today, dreams of further space exploration have largely given way to hopes of finding positive ways to save our planet. Poverty and inequality remain, and an air of pessimism pervades the airwaves, social-media streams and daily discussions. But does the future really look bleaker? Or just different, more complex, but not necessarily less stable? Could it be humanity progressed too quickly or expectations were too high?

Technological advances over the past 30 years have had a great impact. They've revolutionised the way people communicate, shop and even date, but society is still catching up. As the means of communication have become wider and exponentially faster, some people have, paradoxically, become impatient. In the race to go further and faster, maybe it's time to ask if humanity has reached its limits – not of what it can achieve, but of how much it can cope with.

If so, how is it possible to conceive of living in a future that many might consider too advanced for them? Maybe it could be looked at another way – one where, instead of considering what we want for the future, we think about what we'd like today. As Valéry implied, our vision needs to evolve with time, new technologies and trends. And there's even a science to it...

FUTUROLOGY VERSUS SCIENCE FICTION

There's a fine line between scientific speculation and creative fantasy. Futurology is the study of current trends to forecast future outcomes, while science fiction is more make-believe than science. And yet, the latter inspires concepts that often become reality. The fantastic worlds imagined by HG Wells and Jules Verne, considered by many as the fathers of science fiction, predicted the future on many occasions. Writing at the beginning of the 20th century, Wells depicted people communicating via wireless systems, and outlined the basis for modern genetic engineering, while in the second half of the 19th century, Verne described submarines, helicopters and satellites, long before

they existed. Science fiction reflects dreams and fears. It provides insights into diverse futuristic worlds and allows the viewer or reader to reflect on scenarios that they might wish to avoid or embrace. Science fiction might have a powerful influence on the future, but let's not forget it remains a product of the imagination. As for futurology, even if it proposes analytical conceptualisations of (less far-fetched) emergent futures, it isn't the most precise science.

LIVING WITH UNCERTAINTY

Many people struggle to cope with the changes that seem to be coming their way, but if you wish to face the future as confidently as possible, it can help to accept that it – and the world – are unpredictable, and try to embrace life's uncertainties. The key? Not to get (too) ahead of yourself and, instead, try to make sense of today's knowledge in order to anticipate tomorrow's trends. Think unconventionally: the future doesn't solely lie ahead of us. The future is also now.

'Think unconventionally: the future doesn't solely lie ahead of us. The future is also now.'



PHOTOGRAPHS BY RICHARD FINDLEY

TURNED BEDPOSTS

RICHARD FINDLEY HAS THE SOLUTION TO TURNING ITEMS THAT ARE LONGER THAN YOUR LATHE

What can you do if you are commissioned to make posts that are longer than your lathe? Depending on the design of the job, it is possible to join sections together to form a single longer item that can appear to be made in one continuous piece of wood, and that is exactly what I needed to do when I was commissioned to make these four-poster bedposts in walnut.

Using a hidden or invisible join is a really useful technique to have in your armoury for those tricky long turnings that just don't quite fit on the lathe. My Wadkin RS8 can handle just shy of 1,700mm between centres, which is great, but as with so many things, no matter your capacity, you'll occasionally need more.

FOUR-POSTER BEDS

Four-poster or canopy beds date back to at least the 16th century and most likely

before, when the heavy drapes would be drawn for warmth or privacy rather than just as an extravagant show of wealth. Most modern variations seem to be largely based on Victorian examples and range from heavily carved posts with solid wooden canopies and heavy curtains to much lighter, open-topped designs which would originally have supported much lighter fabric canopies, with several variations in between, including something known as a 'half tester', which is high at the headboard end, supporting a small canopy and often decorative drapes around the head of the bed, but having a more standard, low foot end.

THE DESIGN

This particular set of bedposts is for a modern and relatively simple open-topped design, based on the type that

would have once supported a light fabric canopy. My customer markets these with a modern Mediterranean feel, so they could also be used to support a mosquito net, although there is little need for that here in the UK.

The set is made in American black walnut and will stand 2m tall when finished – that's a full 300mm longer than my lathe, which means a hidden join is needed. There is a turned foot at the base, a square section and straight-turned portion in the lower part, which allows for fixing a head and footboard with traditional mortise and tenon joinery, and a long, straight taper to a 30mm diameter at the top. There are a couple of simple V-grooves with rounded edges, which are used to break up the plainness of the taper but, importantly, also allow for the hidden join.



1 The walnut blanks 2 The beautiful flame figure in one piece of walnut 3 The modified drill bit held in the chuck
4 Setting up the V-shaped cradles 5 One hand on the timber, the other turning the hand wheel is all that's needed 6 Drilling in action

TIMBER

My customer supplied me with 65mm square blanks of walnut with the edges rounded over, cut to the required lengths: 4 no. 1,100mm and 4 no. 970mm. The two lengths join together with a 70mm-long turned tenon in the shorter section, to form the 2m total length required. My first job is to pair them up to try to give a continuity of grain and figure throughout each complete post. One of the pieces has a lovely bit of flame figuring, which I decide to keep away from the join as drilling here may be tricky. To achieve the best centred and straight holes, plain, straight grain is easiest to deal with. Fancy grain patterns can make drill bits wander, but can be drilled with care and patience if necessary.

THE JOINT

Having marked up the timber and knowing which end is which, forming the

joint is the next job. This will be a turned mortise and tenon joint, which, once glued, will be as strong as a single solid piece of timber. I generally use a modified 30mm diameter 'blacksmith's drill' for this. Blacksmith's drills are available in a variety of diameters and have a reduced shank that allows them to be held in a standard chuck. The leading edge has been ground into a point, which helps to easily start the drill and guide it as it bores into the wood. A Forstner or sawtooth drill can be used, but because they only have a short cutting head, there is nothing to keep them drilling straight and prevent wander. The type of drill I use naturally forms a straighter hole. It isn't perfect, but so far it is the best I've found.

MORTISE AND TENON PROPORTIONS

Traditionally mortise and tenon joints are formed by roughly dividing the material into thirds, with one-third of

the width as tenon and each side cheek also being one-third the width of the timber. Tests have shown that joints with tenons half of their overall thickness can actually be stronger. If a tenon is too narrow it is weak, but likewise, if a tenon is too wide, the whole joint is unstable as there is little material around the tenon for the shoulders of the joint to seat against. This will result in a joint that will not resist the forces applied to it when in use. With this in mind, I usually aim for a tenon between one-third and half of the total thickness of the material. The timber for these posts is 65mm, so a 30mm tenon is ideal.

DRILLING A STRAIGHT HOLE

Small pieces of work can be drilled freehand on the lathe, but as timbers become longer and bigger in diameter, the danger of things going wrong increases dramatically. I have found that twisting is the biggest danger,



7 The holes cleanly drilled 8 The tools used to turn the bedposts 9 Setting out the foot of the leg 10 Cleanly slicing the pommels 11 The result of the cut 12 The live centre positioned in the hole

particularly with long pieces such as this.

If the work doesn't stay parallel to the drill, the sides of the bit can dig in, causing a catch and throwing the wood across the workshop. Simply using the tailstock to help feed the timber on to the drill will prevent this from happening, but when drilling a relatively large diameter hole such as this, the wood needs to be held firmly to prevent it spinning with the drill. Again, on smaller pieces and with smaller drill bits, it is possible to support the wood with a hand, but as the drill diameter increases so do the forces involved and it becomes impossible and unsafe to try to keep it all steady by hand. In this case, I use a pair of adjustable V-shaped support blocks to give extra support.

I hold the timber between the point of the drill bit and the live centre in the tailstock and position the V-blocks, which are designed to slide up and down depending on the size of the timber. The blocks simply sit on the lathe bed, between the bed bars so they can slide

along the bed but need to be lifted off the lathe bed to remove them. Properly adjusted, they cradle the square timber and prevent it from spinning, making drilling a safe and simple operation.

The drill bit is held in the engineering jaws of my chuck and I usually drill at around 500rpm, which is a good balance of efficiency without too much heat build-up. Because the drill bit is centred and the wood is cradled in the V-blocks, I can confidently stand near the tailstock end of the lathe and gradually turn the hand wheel with just my left hand on the work to give it a little additional stability and to prevent it from riding up and off of the V-blocks.

The quill movement of my lathe is around 60mm but I like a slightly deeper mortise hole than that. To produce a deeper hole, the tailstock quill has to be wound back and the tailstock itself needs to be moved in, closer to the headstock and the drill. I've found that the safest and most accurate way to make this adjustment is to stop the lathe, adjust

and repeat the operation. Although it is possible to do it with the lathe running, one of the biggest risks is the wood can vibrate on the drill, enlarging the hole and leading the drill off course.

WORK WITH A HOLE

Any turned work with a hole in the centre should be drilled first, before turning. Whether this is a long item like these bedposts with a drilled mortise, or a table lamp with a cable hole through the centre, this allows the work to be driven by the hole which re-centres it, meaning that even if your drill wanders slightly, the hole will always end up in the centre of the finished job.

TURNING

Having drilled the holes, the turning is the easy part. I use a template or story board to mark the positions of the details on the foot of the leg and begin by turning all of the bottom halves of the posts first. Any combination of tools can be used here but I keep my selection to a



13 Forming the taper **14** Checking with a straightedge **15** Planing with my beading and parting tool, offering support to the work with my front hand **16** Forming the V-groove with rounded edge detail

minimum and just use my 32mm spindle roughing gouge and 10mm beading and parting tool.

TURNING POMMELS

The pommels, where the square section meets the turned, are cleanly sliced with the tip of my beading and parting tool, used like a skew. The details of the foot of the posts are turned to size using my duplicating fingers, although callipers are fine to use. The straight section is turned with my spindle roughing gouge and the diameter is checked with callipers before planing smooth with the beading and parting tool. The top edge around the drilled mortise is rounded over with a rolling cut from my beading and parting tool and sliced cleanly, slightly undercutting, down to the live centre which is driving in the hole.

TURNING A TAPER

The top half of the post has the 30mm diameter turned tenon at the base. The main diameter of this part of the post

is turned to match the diameter at the top of the lower section with a matching round-over rolled on the edge, which forms the detail hiding the joint. It then tapers to 30mm diameter at the top. The 30mm tenon is turned with my beading and parting tool and Vernier callipers, which I find the most accurate method. The taper is formed using my roughing gouge and a long steel ruler as a straight edge, working from the smaller diameter end and gradually removing material in a systematic way, regularly checking against the straightedge to achieve an even taper.

PLANING AND DETAILS

Once happy with the taper I plane it smooth with the beading and parting tool used like a skew. Because of the length and diameter, there is a little vibration, but with a bit of support from my front hand it is easily stabilised and a smooth cut can be taken.

Sometimes, if I still can't make a clean planing cut I will revert to the roughing gouge, but presented slightly skewed to

the work, taking a very light cut, which can produce a surface almost as good as a skew chisel.

The final detail is a kind of V-groove with rounded edges which mirrors the detail at the join, around 200mm from the top of the post. With all of the turning done I sand to 320 grit.

FITTING THE JOINT

I always tend to err on the side of caution when making a turned mortise and tenon joint like this and cut the tenons slightly oversize and fit them properly at the end. The exact fit to look for is one that is snug with no wobble, and should slide together with just a little friction, but without the need for undue force. A trick I use regularly to get the fit 'just so' is to cut heavy lines into the tenon with the tip of my beading and parting tool. This gives a suitably rough surface for the glue to key to, but also adds a little bulk to the diameter of the tenon, should it be needed. As long as a dry fit shows the joint is acceptable I can add glue.



17



18



19



20

17 Sanding to 320 grit 18 Cutting key lines in the tenon
19 Gluing three-quarters of the way around the mortise to avoid an airlock
20 The complete set of posts, standing vertical to dry

A problem I've struggled with for some time on a nicely fitting joint with the addition of glue is an airlock. As the joint is pushed together, the tenon pushes the air that was in the mortise out. With a well-fitted dry joint this isn't a problem, but add glue and the air struggles to escape past it, which means as the two parts are pushed together the trapped air pushes them apart again. This is incredibly frustrating. When a joint can have a clamp applied this is less of an issue, but with a 2m long bedpost, there's no way I can clamp it, so it just needs to work.

AIRLOCK SOLUTION

I came up with a solution for this problem in something of a 'Eureka!' moment, but my idea is so simple I can't imagine I'm the first person to think of it.

The glue is always applied to the mortise so excess is pushed into the hole, rather than squeezed out and

over the work as it would be if the glue is spread over the tenon. I would usually spread a liberal amount of glue all around the drilled mortise, but I realised that simply by only gluing about three quarters of the way around the hole, it leaves a gap for air to escape. Since using this technique I have not struggled with an airlock. If the lack of glue troubles you, by simply twisting the two halves of the joint a little before settling on the correct position with the grain neatly lined up, the glue is spread around in the mortise and gives an excellent joint.

To ensure the posts stay nice and straight while the glue dries, I usually stand them upright, which works well as long as you can avoid knocking them over, which creates further work removing dents and bruising, but that's a mistake that is only made once.

The finished batch of posts is ready to have the joints cut, finish applied and be made into a completed bed.

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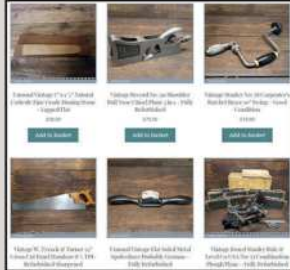
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WHEN ILLNESS PUT A STOP TO **JEFF MILLER'S** CAREER
AS A CLASSICAL MUSICIAN, MAKING FURNITURE BECAME
HIS SOLACE – AND HIS LIFE'S WORK

Jeff Miller was just 27 years old when a severe illness forced him to abandon the career in classical music he had been pursuing since his youth. Although he loved making things as a child, music was his real love, and his main focus at college. 'After college I went on to graduate school in music,' he recalls. 'During grad school, I took time off to play a year with the Singapore Symphony Orchestra – an amazing experience for a 22-year-old. I returned to grad school after my time in Singapore, and after finishing my degree, I moved to New York City to freelance, and then to Chicago to play, tour and record with a brass quintet.'

It was during his time at college that Jeff first got experience woodworking. He helped to set up a small workshop in the dorm where he lived and made his first project there – a simple music stand. 'It was mostly mitred and dowelled together – all I knew at the time – although there were a few odd angled bits and more complicated joints to contend with as well,' he says.

After that he became interested in making musical instruments. 'I came across the book *The Amateur Wind Instrument Maker* by Trevor Robinson, and was so excited by it that I took time off from school to make baroque and renaissance musical instruments. This was supposed to be a supervised experience, but my mentor got a job with a museum and wasn't around much, but still allowed me access to his shop. This was my first serious experience woodworking, and it also involved quite a bit of tool-making. During this time I also made some furniture for my apartment. It was rather crude, but great fun to do.'

Jeff continued making items of furniture for friends to earn a bit of extra cash in between music gigs. 'When I left the brass quintet, I had more time on my hands, and went into a small shop that made their own futon mattresses and sold bedframes and accessories, and told them I could make furniture for them. I showed them some of my work, and they decided to give me a try,' Jeff recalls.

'Right around that time, I discovered I had kidney disease. The medications I needed to take made me very jittery, and I was unable to continue with musical performance. I concentrated instead on making furniture.'

TURNED UPSIDE DOWN

'I was 27 years old, and my world felt completely upended,' he says. 'It was a terribly stressful time, but the woodworking provided a distraction, a creative outlet, and I could work at my own pace. In many ways, I feel that building furniture got me through the trauma of being seriously ill and having to give up my music. I had a very generous friend who let me use the basement of her house as a simple shop for a year, and I slowly acquired some woodworking machinery and hand tools.'

'With the basement shop and some sales from the futon shop, I was in business. However, the futon shop owner was not an especially good businessman, and after a year, I realised I needed to expand beyond my work for him,' Jeff says. 'I had developed some decent bed designs, and was making other pieces as well. So I started advertising in local newspapers and magazines, and got my own commissioned work. I concentrated on bedroom furniture, but soon found that people were also interested in – and willing to spend good money for – dining tables and chairs, so I started designing and making those as well. A commission for 75 chairs for a local convent's chapel taught me a great deal about production, and funded acquisition of some more and better tools.'

Jeff is completely self-taught in woodworking and design, and says the books that have most helped him include those by James Krenov and Tage Frid. He says: 'I'm not sure why I felt I could make furniture, but I approached everything I did fearlessly – perhaps foolishly is a better word – and didn't mind failure. Failure was plentiful, of course, but it always taught me something. I found it easy to learn from books and magazines, and every encounter I had with other woodworkers was tremendously enlightening.'





PHOTOGRAPH BY TANYA TUCKA





PHOTOGRAPH BY ASA CHRISTIANA, THE TAUNTON PRESS

'Many of my students, and some of my apprentices, have come from or gone on to formal training. I am occasionally jealous of their training. But I think, too, that my own "training" was incredibly valuable. Having to figure things out meant I wound up with a broad and deep understanding of woodworking – and more generally, problem solving. This was often better than what my trained students had achieved.'

'My musical training was also important. Woodworkers seem to have a fundamental aversion to practice, but practice is what a musician does – for hours and hours a day – and I brought that with me to woodworking. Musicians also need a deep understanding of how to use their bodies correctly to play at a high level. This taught me a great deal about the physical aspects of woodworking, and how properly using one's body makes woodworking easier and more accurate. This has become a large part of how I teach now. I help students understand how their approach to sawing, chiselling, planing and even machine use can be improved by paying attention to how they can use their bodies better.'

SETTING UP SHOP

Jeff's workshop is in an old brick post office in Chicago, which was built around a century ago and was converted into a bowling alley in the 1930s. 'One of my elderly neighbours worked there when he was younger, manually setting the pins,' Jeff says. 'I was able to buy the building 28 years ago, and my wife and I fixed it up. It now houses my shop and showroom, another woodshop in the back, and a music school – the latter two run by others.'

He has a workspace of around 200 sq m and a showroom of another 75 sq m. 'I have seven workbenches, all of them made in house. These are supposedly for my classes, but when I'm not teaching, I manage to use them all myself as I work on assorted projects. Work really does expand to fill the available space! I have a pretty full complement of machines, and a wide range of hand tools. Although I may downsize a little in the next few years, I have no plans to leave this space,' he says.

When he's designing Jeff tends to start with sketches, then move to full-scale drawings and prototypes. He adds: 'I also "doodle" with wood, improvising little models. Usually, although not always, that takes place on the bandsaw.' For chair designs he will often start with a functional prototype using plywood or whatever else is available. 'I can usually put one of these together in an hour or so, and it allows me to concentrate on comfort before I get too deep into the design. These prototypes also tend to help me generate beautiful curves,' he says. 'From there, I begin to fill in details and concentrate on joinery. With some of the more complicated pieces, it may take a few tries to get everything where I want it. And the design will often continue to evolve over time, as I refine details and find better ideas for aspects that nag at me a little.'

He uses a mixture of hand tools and machines, and has found himself becoming more reliant on hand tools after starting out thinking machines were more important. 'As my work has become more complex and more reliant on curves, I find that the machines are great for preparing my stock and cutting it to rough shape, but the hand tools get me closer to where I need to go quicker, and often with greater accuracy,' he explains.

He also makes some of his own tools. 'About two years ago, I was inspired to try to make a version of David Pye's fluting engine, a hand-powered carving machine for making bowls and platters,' he says. 'It took months to build as a side project, and months more to modify it as I figured out the cutting geometry and how to use the tool effectively. It has been an amazing addition to my shop, and has led me into a completely different area of work. I'm having tremendous fun learning how to use it creatively.' Jeff has also made a number of planes, and often modifies tools he has bought to suit his needs.

One thing he hasn't got is a CNC router. 'I'm not avoiding it on principle – I can see how it might fit into my work in a variety of ways. But I don't sell high volume, and the investment in money and time required to learn to use the tool – and then make the jigs and fixtures I would need to make my pieces – seems daunting.'

THE VALUE IN CRAFT

For Jeff, making furniture and high-level craft in general are ways to make work satisfying and meaningful 'in a world driven by ever more insidious consumerism'. 'Sadly, the rewards of approaching work that way are not always financial. And at the same time, this craftsmanship is – and has almost always been – beyond the means of average consumers,' he says.

His favourite woods to work with are cherry and walnut. 'Oak and ash are a little harder to work with, but the results are also great. Butternut is a dream to work with, but is very soft and requires extra care,' he says. All these domestic hardwoods are plentiful at the moment, but he is concerned about the emerald ash borer which is decimating ash trees in the US and around the world. 'It won't be long before they are all gone here,' he says.

To finish he applies a mixture of thinned varnish with a splash of tung oil by hand. 'Three or four coats wet-sanded in are followed by an application of a mixture of carnauba and beeswax,' he says. 'The finish is lustrous and fantastic to the touch. On tabletops, I replace that finish with just the varnish, which holds up better. And on a few of my pieces made in ash, I switch to a hand-applied water-based polyethylene, which remains clearer instead of turning yellow.'

Inspiration comes from all around. 'My eyes are always open and looking for ideas,' Jeff says. 'I find inspiration in nature, architecture, and plenty of historic furniture. I also believe that people have an important relationship with historic styles and types of furniture. Tapping into some of that helps add meaning to my work which is not historic in nature. The curves of the human body are also an important source of my ideas for chairs. And some ideas come from my own, earlier work. This can arise out of dissatisfaction with an earlier project, or the opposite, where I want to explore a good idea further. I can trace the evolution of many of my pieces back to earlier work.'

Jeff's favourite project so far has been his Toccata Rocking Chair. 'It grew out of what seemed like a dead-end idea I had 25 years ago,' he explains. 'A few years back, I figured out a way to work with that idea, although it first led to a dining chair. I was working on a commission for a solid wood reading chair, and realised I could combine the two ideas, resulting in the Toccata Reading Chair. From there, I tweaked the idea to develop the rocker. In a way, it felt like that chair almost designed itself, leading me all the way from the initial idea through the three versions. Of course, there were numerous prototypes along the way to refine the design! It's my favourite chair to sit in.'

Another rocker, the Canzona, is the most challenging project he has worked on. 'Most of the challenge is in what I call the branch joint, where the back leg, the arm support and the front leg all merge,' he says. 'All three components go all the way down to the rocker, in a complex three-way lap joint I developed. It takes five jigs to make the joint on the left side, and five mirror image jigs to do the right. The rest of the chair is a little easier, but not by much.'

PASSING IT ON

Jeff also loves to teach, holding workshops on a wide range of subjects, although these have all been put on hold because of

the Coronavirus pandemic. To make up for this he has started a series of self-produced videos, available on Vimeo, which he hopes will replace some of the lost income from cancelled workshops. 'Learning to direct, shoot and then edit these all on my own has been a lot of work, and a lot of fun. I haven't tried real-time online lessons, though,' he says. The pandemic has also meant his commissions are down, but there is still enough work to keep him going. 'I worry that the economic impact will be with us for quite some time, but failing to adapt to the times will always be a recipe for failure,' he says.

One of the things that has helped him as a teacher is learning to focus on what holds students back in their work. 'Much of the time, it's something physical,' he explains. 'Not understanding wood as a material can also be a problem. I also find that having a poor or incomplete idea of what you're trying to do is an issue. Solving these problems with students is my biggest pleasure in teaching. Students who don't listen or seem to ignore what might be a big help in their work is always frustrating, and is one of the few things I don't enjoy in teaching.'

He has also authored and co-authored a number of books, including his latest, *The Foundations of Better Woodworking*, from Penguin Random House. *Chairmaking and Design* from Linden Publishing won a Stanley Award for best woodworking book in 1998, and his books *Beds* and *Children's Furniture Projects* are published by Taunton Press.

Jeff says: 'I really like how writing requires you to focus on expressing exactly what needs to be said to get your ideas across. It also means you need to learn your subject more thoroughly than you might think. For me, it fits well into the mix with teaching and making. I need to design and make furniture to know what I'm talking about, I need to teach to understand what readers need to know. And I need to write to clarify my ideas and techniques, which then helps me to be a better teacher and a better maker. The worst thing is the seemingly endless work of rewriting and editing, which seems to always come as a surprise after I think I'm done.'

Looking ahead, Jeff has been exploring the possibilities of the fluting engine, working with green wood and new types of chairs. 'I'm very interested to see how the new techniques and approaches I'm learning will nourish my designs,' he says. When he's not working he tries to stay active, running several times a week and skiing when he can escape to the Rockies from the flat US Midwest. He also enjoys cooking and travel – when there isn't a pandemic stopping him.

Jeff adds: 'One additional thing that consumes a significant chunk of my time is dialysis. When I was younger, I had two kidney transplants one after the other, but both failed over time, and I now spend about 14 hours a week at a local dialysis centre, hooked up to a machine. This gives me plenty of time to write and to read. It also keeps me up and running, but I would certainly prefer to have a working kidney, and the time available for other pursuits.'

furnituremaking.com



PHOTOGRAPH BY TANYA TUCKA



PHOTOGRAPH BY STUART BLOCK



PHOTOGRAPH BY TANYA TUCKA

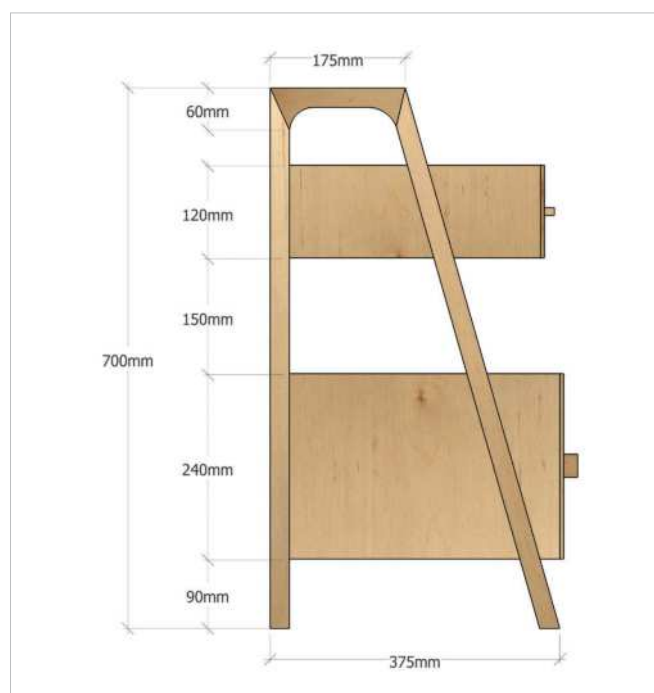
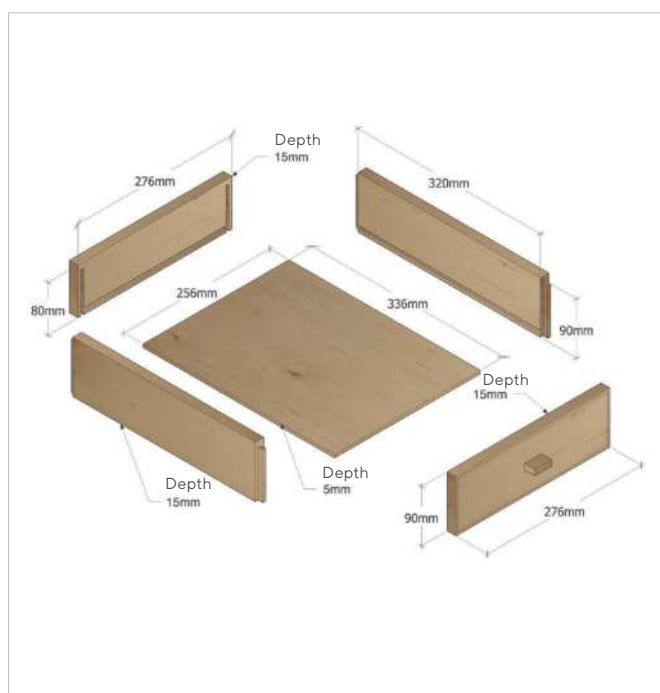
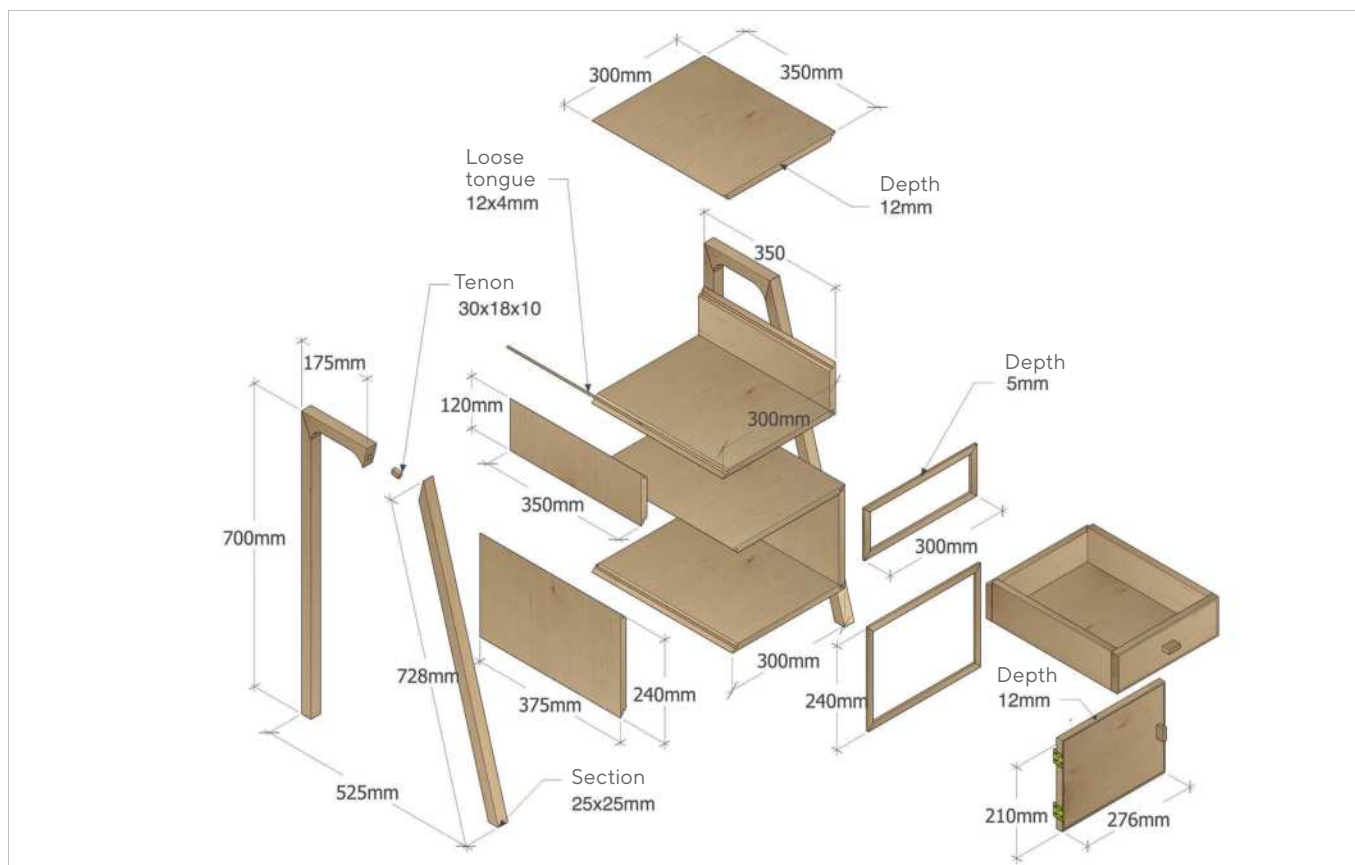




BEDSIDE CABINET

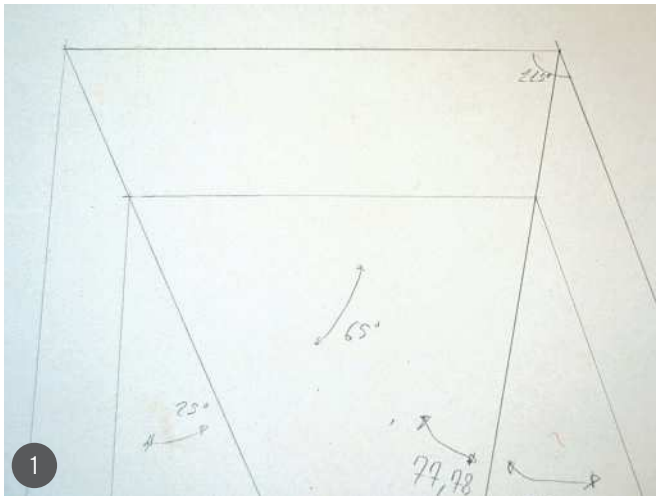
PAOLO FRATTARI DISCOVERS
THAT CONTRASTING SHAPES
CAN CREATE A SURPRISINGLY
HARMONIOUS OBJECT

PHOTOGRAPHS BY PAOLO FRATTARI



I started making furniture in my old age, but my main activity has always been building structural frames, and through this I got to know many architects. A few years ago, one of them, an architect who's also a bit of a dreamer, suggested that I include architectural frames in the design of some furniture, not as a simple decoration but as a structural part. As we talked,

with a felt-tip pen in his hand, he transferred those unusual ideas on to paper. Soon many solutions were born: wardrobes, dressers, beds, bookcases and so on, all composed of one or more rigorously smooth chests and one or more frames that supported them. The chests could contain drawers or doors or have openings, while the frames could also be a separate element.



1 My drawing of the joint 2 The tools used to measure the angles and transfer them from the paper to the mitre fence of the saw bench 3 The angle fences supplied with many machines do not normally exceed 45°. To cut more obtuse angles a wedge can be added to the fence to increase the angle it will make 4 Here you can see the angle of the cuts on the crosspiece for which it is not necessary to add the wedge

I have not yet made anything from those particular drawings, but I have taken up the idea of the two apparently unrelated and contrasting elements to create this bedside cabinet.

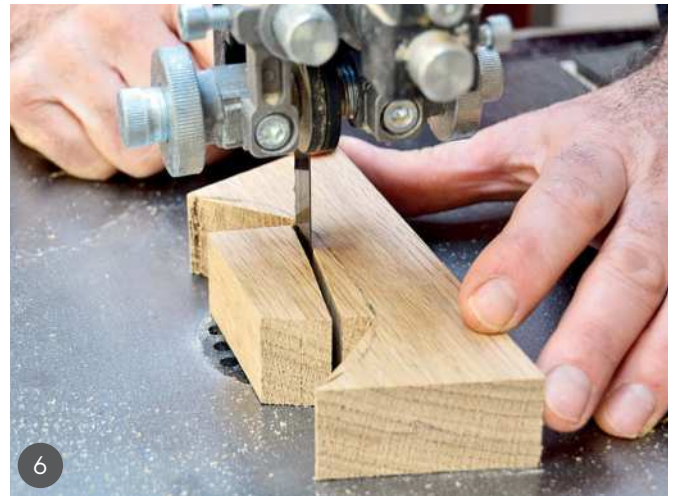
The unit is composed of three distinct elements: two chests of different sizes, an upper one containing a drawer and another lower, larger one, equipped with a door, and two identical lateral trapezoidal figures to which the chests are fixed. The contrast between the elements is much less marked than in my architect friend's drawings, however the cases with the sides joined at 45°, the crosspieces of the trapezoidal frames in the shape of a bow and, lastly, the two different types of wood, make it a highly unusual object.

THE FRAMES

I made the pieces for the two frames from a portion of American oak board: four strips of 750 x 25 x 25mm and two of 170 x 50 x 25mm.

There was a time when I loved to see the sharp contrast between the head and the grain of the wood, but now I think that the view of the grain alone is much more elegant, which is why all the parts of the furniture are joined together. I started the work by joining the rear legs with the crosspieces. The pieces have different sections so the joint cannot be at 45°; the simplest way to determine the angle of the cuts was to make a real-size drawing of the parts, tracing the connecting vertices and measuring the angles. Next, with a false square locked on the detected values, I set the saw bench protractor and truncated the pieces.

The front leg does not join the crosspiece at 90° but at 115°, so I made a new drawing with the part correctly angled and I repeated the same steps made previously. The same procedure also applies to the two crosspieces. The larger section of these two pieces allowed me to create a small arch which, in addition to making the structure more pleasant, increases the useful surface of the joint. To make the arch, I started with a drawing



5 To avoid confusion and eliminate errors, it is advisable to draw the entire shape of the crosspiece and number the two different angles

6 First I made cuts near to the line with the bandsaw **7** More cuts were needed to remove the difficult areas **8** Most of the marks left by the saw were removed with the #5 gouge, after which I used the rasp and the semi-round file to make the surface smooth. The thin end of the crosspiece was still fragile at this point so it was preferable not to touch it

on paper, which I then transferred to tracing paper and then cut out with scissors to mark the shape on the wood. Finally, I roughed out the pieces on the bandsaw.

To remove the marks left by the bandsaw I used hand tools instead of the powered sander; doing this by hand takes about the same amount of time but I prefer this way of working as the machine leaves small imperfections. I started working with a #5 gouge, then moved on to the rasp and then the file.

THE LOOSE TENON

To join the legs with the crosspiece I used the loose tenon technique, a procedure that involves cutting two identical mortises into the pieces to be joined and inserting a correspondingly shaped dowel that engages both of them and creates the joint.

I drew the dimensions on the pieces to receive the joint, which I had to move off-centre downwards to make the most of the useful surface. The tenon measures 30 x 18 x 10mm, not

much but enough for the joint.

I made the mortises using the mortiser: the operation is easy but as the mortise is off-centre with respect to the width of the pieces the mortiser has to be reset when cutting the opposing piece to make sure the pieces align when put together.

After mortising the rounded holes, I squared the mortises with a chisel then, after creating the tenons with plywood, I assembled the parts. As the sides of the frame were not parallel, it was necessary to take care when tightening the clamps to stop them slipping.

After gluing, I smoothed the arch to the legs with the #5 gouge, then finished with a half-round file. Finally, I used the random orbital sander for the flat parts and hand smoothed the curves.

I completed the work on the frames by cutting off the legs at the correct length and angle. To do this I used the tablesaw as it has a large surface, putting the rear leg against the mitre fence as that is set at a right angle.



9 The first crosspiece acts as a template for the second to obtain two approximately equal parts 10 The joint's dimensions are marked on the side of the pieces when laid together. If you move the joint downwards, the volume of the tenon can be increased considerably 11 Proceeding slowly when cutting the mortises meant the vibration of the cutter's tip was reduced, which made the cut cleaner. The stop provided by the piece of plywood was used to replicate the operation on the second leg and on the second crosspiece 12 The off-centre position of the mortise requires the plywood stop to be repositioned for the mortise to be cut in the mating pieces 13 A larger chisel helped to square the hole more easily 14 To maintain squareness while gluing and clamping the frames, carefully cut wedges where required to hold the clamps in the correct position. A small strip at the bottom prevented the frame from sliding upwards 15 The curve was continued into the leg with the #5 gouge, then smoothed with files and abrasives



16 The rear leg is joined to the crosspiece at 90°, by placing it against the mitre fence the legs were cut at the correct angle. The front leg must be held firmly and, although not shown in the photo, it would be better to hold its position during the cut by inserting a strip between the two legs **17** For the narrower sides it was preferable to use the parallel fence. To prevent the tip of the angle just cut from slipping under the fence and changing the measurement, it may be useful to attach a strip to the fence that holds close to the table saw's surface. Note: the guard has been removed for clarity **18** The larger panels were squared using the mitre fence. Note: the guard has been removed for clarity **19** The slots for the loose tongues were cut by sliding the panels along the parallel fence **20** After making the first slot, the panel was moved back to mark its position on the table in relation to the blade. When the slot needed to be made on the narrowest pieces, I just changed the parallel fence position to align the edge of the new panel with the mark and proceed with the cut **21** It was necessary to even out the pressure of the clamps well to avoid distorting the boxes during gluing. Any out of squareness was corrected with a clamp placed diagonally

THE BOXES

The boxes are made from 12mm birch plywood panels, joined at 45° by means of a loose tongue. To make these angled cuts correctly you need good professional machines, cutting them by hand is not easy. With my modest table saw I tried to lessen its slight out of squareness with some small tricks, going over the cuts with a minimum removal, using both the sliding table and the parallel fence, but above all always checking and comparing the parts.

To create the slot for inserting the loose tongue I used the parallel fence, but first I calculated the height of the blade and the position of the slot. To position the fence correctly for the pieces of different sizes, I used the slot on the first piece to mark a reference on the table of the saw on which to align the following pieces.

The blade mounted on my table saw produces a 3.9mm wide slot, so I had to plane down the 4mm plywood strips with which I made the loose tongues, to be able to insert them into the groove. Having tested the joints of the boxes, I moved on to make the rebate (4 x 4mm) which allowed me to apply the rear panel, an operation which I performed with the router table. Once all the internal parts were sanded, I assembled the boxes with clamps and glue.

THE EDGES

All the edges of the plywood must be hidden, and to do this I used strips cut from a scrap of oak, 5mm thick and slightly wider than the 12mm of the plywood. I started on the box for the drawer, taking the measurements directly on it and cutting the pieces on the table saw with the mitre guide set at the correct angle. I used masking tape to keep the edge pieces in place while gluing.

After the glue had dried, I levelled the edging with a plane, both internally and externally, paying attention to the areas where there is the risk of splitting the wood on the end grain. I normally prefer to plane these areas from the other side, or, if I don't have time, I use the plane with a semicircular movement as if it were a knife.

To give the boxes a similar appearance on the front and back, I repeated the oak edging on the back as well. The edge partially overlaps the perimeter of the box and the plywood back at the same time, allowing it to be locked in position.

THE DRAWER AND THE DOOR

After finishing the work on the two boxes, I cut out the two front panels for the drawer and the door and repeated the edging work on these two pieces as well. I subtracted the thickness of the oak strips from the measurements taken on the boxes.



22 Working one strip at a time, I took the measurements directly on the box until all the pieces were cut **23** When it's necessary to make small corrections to the length of the strips it is preferable to use the guide table; the one shown here is self-made and allows 90° and 45° adjustments **24** When you are close to the end grain of a piece when planing the edge level, you must be careful to avoid splitting the wood **25** The rebate for seating the plywood back ... **26** ... and the application of the edging that fixes it in position **27** The edging of the drawer front and the door blends with that of the two boxes and, in addition to hiding the lines of the plywood they enhance the front of the cabinet **28** The router and the fence maintain the setting for all the front and rear grooves. First, the two lateral grooves, stopped before the top, are cut, then the groove for the bottom, also stopped before the ends. For the side rails, the depth setting of the cutter remains the same only the position of the fence is changed **29** The upper part of the tenon had to be cut off at the point where the groove stops **30** The rear edge of the drawer is lower than the sides to allow air to escape during glue-up

I made the drawer sides with an old offcut of 15mm-thick larch, while for the bottom I used 5mm plywood. The sides are joined to the front and rear by means of a tenon and groove joint. After cutting the pieces to size, I cut all the joints on the router table, using a single 5mm diameter straight cutter set at a correct height.

The two grooves on the front stop before they break out at the top. For one side you can make the cut and set an end stop, for the other side you must first make a plunge cut to establish the start of the cut set back from the top. Then insert the cutter into the hole and cut the groove through the end.

Once the drawer had been glued, the joints between the front and the sides were reinforced by inserting small wooden pins laterally to hold the tenons.

I used small booklet hinges for the door, recessing them in slightly due to the modest thickness of the frame. After marking their position, I made the cut with a chisel.

The two boxes were fixed to the trapezoidal frames with screws, four for the upper box with the drawer and eight for the other. I started by holding the parts together with clamps, in order to leave a margin of 100mm at the bottom and top, and



- 31** The hinges are recessed only in the door, ensuring that the fixing of the hinge part that is screwed to the box has the full thickness of the wood
32 The assembly of the frame was done with screws. Once the boxes had been positioned on one of the frames, I marked the overlap points
33 Then the holes were drilled in the boxes, the centres were marked on the frames and these pieces are also drilled, but using a bit with a smaller diameter
34 The components after sanding, ready for final assembly

I marked the overlap points on the frames. After drilling the holes in the boxes, I assembled the structure again to transfer the position of the centres of the holes on to the frames with an awl. I disassembled everything again and used the drill press to make the holes in the frames, using a drill bit with a slightly smaller diameter. The final assembly was made by screwing the boxes to one of the two frames and attaching the other one afterwards.

THE FINISH

Once the structure was assembled and the final result observed, the marked colour contrast between the oak and the birch left me a little perplexed. For this reason, I preferred to even out the appearance by whitening the surfaces with water-based impregnating agent (with these products, birch tends to raise the fibre a lot and it is advisable to moisten and smooth the surfaces beforehand). I then fixed the colour and gave the wood protection with two coats of transparent sealer. To finish, I brushed on a coat of white wax, and polished the cabinet with a cloth.



PHOTOGRAPHS COURTESY OF ALED LEWIS



THE ARAN DESK

**ALED LEWIS'S SOLID OAK DESK WAS HONoured
WITH A PRESTIGIOUS BESPOKE GUILD MARK**

The Bespoke Guild Mark, awarded by The Furniture Makers' Company, is the ultimate accolade for designer-makers, recognising excellence in design, materials, craftsmanship and function for exquisite pieces of furniture made as single items or a limited run of up to 12.

It is awarded to only the most meticulous, luxurious and highly crafted pieces of bespoke furniture and, since its launch in 1952, has been the apex of distinctions for UK designer-makers.

In order to be awarded a Bespoke Guild Mark, each design has to be stringently vetted and scrutinised by a panel of judges. One

piece that was deemed worthy of the honour is the Aran desk; its designer, Aled Lewis, tells us about the piece here.

Can you tell us about the background of this project and your inspiration to make it?

The design of this desk, like most of my work, began to take shape in the form of sketches in my notebooks, perhaps over a couple of years. It followed on from a different desk, Wish, which explored an unusual method of construction. Aran's design ideas continued to push some of the boundaries of traditional construction.

The opportunity to make this desk came along when some of my good friends decided to build their new home on a hill overlooking Rockport harbour in Maine, USA. There was a need for a writing desk in a space in front of the glazed elevation looking out on to the ocean.

I wanted to create a distinctive and simple design with an appealing silhouette that did not block the view to the sea. Since there was to be so much daylight, I wanted light and shade to accentuate the subtle details.

What materials did you use for the piece and why were they chosen?

I decided to use solid oak. It's probably my favourite timber because it's so versatile. With careful selection, it can be used for almost any design or style of furniture.

I selected quartersawn boards from one tree to be sure of the minimum amount of seasonal movement and for colour and grain continuity. The top and bottom 'skins', each tapered from 9mm to 6.5 mm from the mid-point, join together at the outer edges with a narrow bloodwood accent strip providing the dividing line. The oak legs are strong where they need to be at the top end joinery and the slender tapered foot.

What features are you particularly proud of?

I think what makes this desk unique is the hidden detail of its construction. It's light weight and strong, with a modest silhouette from every angle. Buried in the top is a complex web of tapered block spacers and strong spine to anchor the legs. All the seasonal wood movement is accommodated within the structure and the adapted torsion box construction keeps the top flat and level.

How long did it take to create, from initial design to completion?

Since this desk was made in my 'spare time', as I continued my day job of lead instructor at the Center for Furniture Craftsmanship in Maine, it took a while to complete. But the actual hour count was modest, around 120 I think. That's not counting the design time – that was an age!



What modifications did you make along the way?

I made some subtle changes to the design at the full-size drawing stage. I made quick mock-ups of the leg/top profiles, I usually wait until this stage to make the final call on the design, sizes and proportions because I need to see the thing in real life to satisfy myself that I have it right.

What was the most challenging aspect of the design?

I think the most challenging aspect of this design was that initial stage of drawing and getting the shape right; the subtle tapers of the legs and their 'stance' also took a while. The making was relatively straightforward once I got my head around the process. It's not conventional!

What does the Bespoke Guild Mark mean to you?

I've never gone out of my way to promote my work, or to 'blow my own trumpet'. Much of my career was spent making furniture for others, not for myself, like so many other craftsmen and women. That seldom provides the opportunity to shine. So to be awarded this Guild Mark at the first attempt is recognition that my work, at least in the opinion of a selected group of judges, is worthy of praise! In an industry that seldom heaps such accolades, it does mean a huge amount to me.

What do you see as the benefits of being awarded a Bespoke Guild Mark?

A Guild Mark is a high benchmark. It does not need explaining or qualifying. You either have one or you don't. For most people who are aware, it should provide some underlying confidence in my ability as a designer and maker of truly exceptional pieces. I hope that will be the case.

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For more information about the Bespoke Guild Mark, visit furnituremakers.org.uk



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CHIPPENDALE SCHOOL GRADUATE EXHIBITION 2020

THE SHOW STILL WENT ON FOR STUDENTS
AT THE RENOWNED FURNITURE SCHOOL

The Covid-19 pandemic has forced the cancellation of many events this year but the students and staff at the Chippendale International School of Furniture still found a way to stage their annual exhibition of work by graduates of the nine-month Professional Furniture Making course.

In October an exhibition and sale of the graduates' work was held at the school, which is based 20 miles east of Edinburgh. The students' furniture was also displayed in a virtual show on the school's website, meaning that people from all over the world could admire their hard work. The online show also included videos showcasing each of the graduates' designs.

School Principal Tom Fraser said: 'We are delighted that despite the upheaval caused by Covid-19, our annual Graduate Exhibition and Sale was able to go ahead in 2020. Our yearly show is the opportunity for our graduating students to show the fruits of their labour following nine intensive months on the Professional Course.'

The exhibition can be viewed at: chippendaleschool.com



PHOTOGRAPHS BY DAVID N ANDERSON, COURTESY OF THE CHIPPENDALE INTERNATIONAL SCHOOL OF FURNITURE

Alastair Smith, Superlifter Coffee Table



Samuel R Brilz, Harvest Moon Table



Richard England, Winzer Chair



Manuel Kalo, Table



Darren Phillips, Market Garden Cabinet



Stewart Musk, Music Stand



Bret Johnston, Melting Desk



Rebecca Elliott, Dressing Table



James Bullen, The Surfer Console Table



Hugh Ainsworth, Coffee and Games Table



Constance Graesslin de Mare, Dovetail Chair



Fran Bullinger, Coffee Table



Fraser Harley, Full Circle Coffee Table



Rob Goodburn, Les Jumelles Console Tables



Jason Hicks, Ripple Cabinet

Alice Caundle, Wedge Tables





PHOTOGRAPHS BY FREDERICK WILBUR, UNLESS OTHERWISE STATED

ACANTHUS MOULDING

FREDERICK WILBUR CARVES A TRADITIONAL FOLIAGE DESIGN

The ubiquitous acanthus motif has been stylised more than any other, showing up on all sorts of objects from silverware to glazed tiles, from manuscript borders to their ivory covers, being simplified on one hand and contorted almost beyond recognition on the other.

The acanthus plant is indigenous to the Mediterranean area. There are two species of acanthus – *Acanthus spinosus* and *Acanthus mollis*. The former has a sharply pointed leaf, crinkly and ragged and presenting many different planes. The leaflets have deep valleys which cause the edges to undulate steeply, and it is these two characteristics that are emphasised in the surface modelling of the leaf. There is a pattern in the chaos, however, and the natural leaf can be regularised easily. The Greek version used on Corinthian capitals and brackets is of this variety. The Romans tended to prefer the rounded lobes of *Acanthus mollis*.

The acanthus rinceau, in which swirls of leaves create spiral

patterns, first appeared in Roman architecture and subsequently became a favourite Renaissance motif for friezes and panels.

This free-flowing adaptation was one of the inspirations for the baroque carvings of Grinling Gibbons. The acanthus motif was easily transplanted to pieces of furniture, on screens, frames, legs and brackets.

The conventional acanthus leaf carving usually has a prominent centre stem or vein, and the stems of the side leaves curve out from it. The side leaves are made up of a central pointed lobe (or a rounded 'Roman' lobe) and a number of smaller lobes of similar shape on either side. These side leaves usually overlap one another in succession, as if they have been bunched together, and create a teardrop-shaped 'eye' between them. The side leaflets become smaller as they approach the tip of the main leaf. On Corinthian capitals or brackets – or indeed almost everywhere else – the tips of the leaves curl outwards from the ground.

ABOVE LEFT Acanthus scroll on an 18th-century screen, from the Colonial Williamsburg Foundation

ABOVE RIGHT Acanthus carving on a chair leg, from the Colonial Williamsburg Foundation



CARVING THE ACANTHUS MOULDING

In this version of the foliage moulding, the intention is to give the leaf an uncluttered formality. The cyma reversa profile is combined with a bead to allow the tips of the leaves to curl away from the cyma background. The spots of light created by the curling leaves make the linear quality of the moulding more interesting. Often the prominent curves of the moulding are given more modelling in order to catch the light, while the concave areas under the curls are not modelled at all, but simply carry the shapes of the leaves from base to curl.

To create a workable pattern, allowance must be made for the curvature of the profile and the curled leaf tip, as well as the spacing between elements. The problem of mitres cutting through elements, as in egg and dart, is minimised here because the centre stem is calculated to fall on the mitre joint and the leaves spaced accordingly. The stretching or compressing of the primary leaf will depend on the specific length of moulding required. The exception is in very short returns, where a whole leaf will not fit after the half-units of the mitres have been allowed for. In fudging the design around such returns, the frontal elevation should be kept in mind. The increments should appear to be evenly spaced on either side of the returns.

In the sequence shown here, the curl will not have much detail so it can be dealt with after the main part of the leaf has been drawn. Tape a piece of tracing paper over the profile, aligning the edge with the bottom edge of the moulding, and draw a perpendicular line representing the middle of the leaf. The proportion between the width of leaf along the run and the height of leaf across the width of moulding varies greatly in historical examples. The space between primary leaves can be left as clear ground or filled with a secondary layer of leaves (often of different appearance or size) or additional elements such as buds, shells, etc.

After the main part of the leaf has been designed, the curl should be considered. A pattern should now be made, and the units and half-units marked on the lengths of moulding. Parallel markings should be made to locate the 'eyes' and any other salient features of the design.

The first stage of carving is to isolate the curl so the leaves below can be set in. The astragal between the curls should be cut away, using either a back saw or simply a series of stop-cuts with the chisel. Waste the bead down to the cyma profile, making sure that the acute corner created by the machining of the bead is carved away.

This moulding is set in and grounded like any other, but it is a good idea to 'drill' the eyes first (with a #9 gouge spun between the palms) because it is easy to locate these accurately. It may be necessary to set in and ground in several stages so as to gain sufficient depth to allow for modelling of overlapping leaves, but,

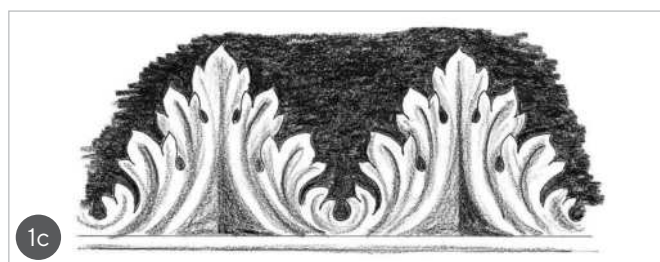
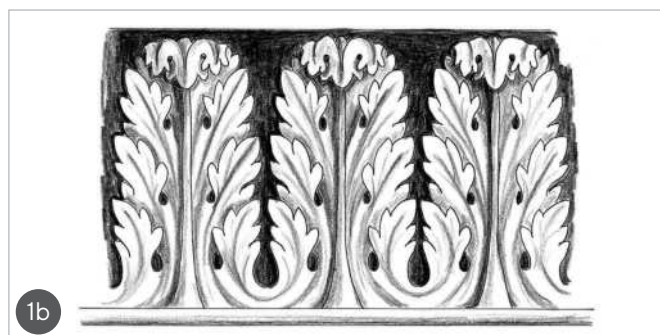
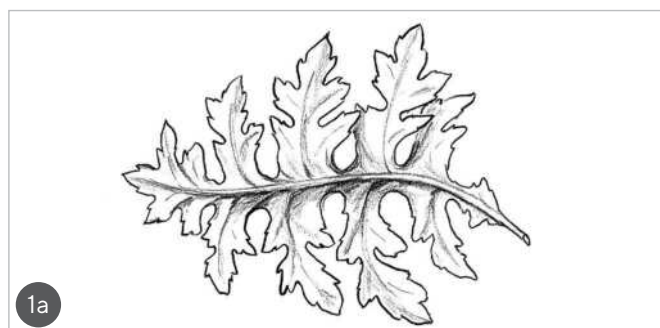
- 1 The initial setting in has been completed. The eyes have been 'drilled' with small gouges, and the unwanted parts of the curl wasted away
- 2 The centre vein has been formed, the leaves are being modelled with a shallow gouge
- 3 Final setting in and grounding completed
- 4 The completed moulding
- 5 An alternative design with a slightly more elaborate leaf with a shell between repeats

as in any relief, it is important to avoid making the side walls irregular or fuzzy. Enough depth must be obtained to make the leaves readily identifiable as such and to make them 'pop' out or grow out of the background; otherwise they may look pasted on. There is no need for undercutting, however. Stabbing with #7 gouges ensures the leaflets have a nice curve to them.

When modelling the leaf, the stem is first defined with a parting tool and then rounded with a turned-over gouge. The leaflets are then modelled with a shallow gouge and given more definition with a veiner. These depressions should be carried down to the

base of the moulding, so that an undulating line is created at the bottom fillet or edge of the cyma (which will eventually be mounted against a background of some sort). Take care not to mar the fillet; you may need to clean up this plane with a flat chisel.

The curl is divided into three or more leaves, the central one of which comes to a point, while the leaflets to either side are wider. To create the impression of actually rolling over, a deep gouge is used from the side of the leaf to undercut the bead. To enhance this roll, the sides of the bead are rounded downwards to either side so that the side leaflets appear lower than the main leaflet.



- 1 Some of the many possible treatments of acanthus foliage: (a) near natural, (b) vertical and (c) horizontal adaptations and (d) sprouting from volute
 2 Foliage moulding with rinceau-like shapes, on a door architrave in the Victoria and Albert Museum, London
 3 Foliage moulding with curl in high relief, from the Lenygon Collection of the Colonial Williamsburg Foundation; note the simplified treatment of the area beneath the curl
 4 Picture frame with acanthus and flowers

PHOTOGRAPH COURTESY OF THOMAS A GODDARD





USING HER ILLUSION

ARTIST **VIVIAN CHIU** TRAINED AS A FURNITURE DESIGNER BEFORE USING HER SKILLS TO CREATE SCULPTURAL ART AND OPTICAL ILLUSIONS

Tell us about your background, education and career.

I was born in Los Angeles and moved to Hong Kong at the age of three. My interest in art brought me to Rhode Island School of Design where I majored in Furniture Design, graduating in 2011. Coming out of the programme, I was more interested in sculptural applications of wood and was able to explore this interest at artist-in-residence programmes such as Anderson Arts Center, the Center for Art in Wood, Sculpture Space, Bemis Center for Contemporary Arts and Houston Center for Contemporary Craft. In between these residencies I worked as a studio assistant for renowned sculptor Ursula von Rydingsvard. I received my MFA in Sculpture from Columbia University in 2019. I now teach woodworking at Virginia Commonwealth University while continuing my own artistic practice.

How do you choose what media to use in your art?

A lot of trial and error! I fell in love with woodworking during my undergrad education but have recently been combining it with photography as well as applying woodworking techniques to other materials such as acrylic, to play with opacities. My interest in trompe l'oeil and optical illusions inspired the incorporation of other materials to explore ideas of perception, camouflage and visibility.

I am generally drawn to a certain idea or technique and use that as a jumping-off point for more conceptual work. I make a lot of samples, then use my intuition to take them further into bodies of work.

'I feel that my work lends itself to being overwhelming and encompassing, and I hope to create works that can surround the body and periphery.'



PHOTOGRAPHS BY MIKE MACHIAN

How does wood compare to the other materials you use?

I always start with wood. I think and sketch through wood because it is the material I am most fluent in. It's additive and subtractive and allows me to work quickly. Once I started combining photography – especially self-portraits – it's been something I've been excited to add to the illusion. Wood is low maintenance, somewhat predictable and affordable, whereas acrylic is hard to find since the need for PPE has gone up during the Covid-19 pandemic. It has also been hard to use other materials with shop tools, but I am slowly getting used to wearing additional protection when I'm cutting acrylic with the tablesaw.

Do you work with the wood yourself?

Yes! Much of my work investigates ideas of labour and pays homage to my family's history in the toil of factory work, so it's important to me that I do all the work myself. I find the repetitive processes in my work to be quite meditative.

What type of tools do you like to use?

This might be a boring answer but I love the tablesaw. Many of my pieces involve hundreds, if not thousands, of individual pieces, and I love to get into the flow of using the tablesaw. I appreciate the geometry that the tablesaw gives me and I'm interested in how to create organic forms with geometric shapes. I also love the bandsaw, which I used to 'chew' textures into my *Fractured Body* series.

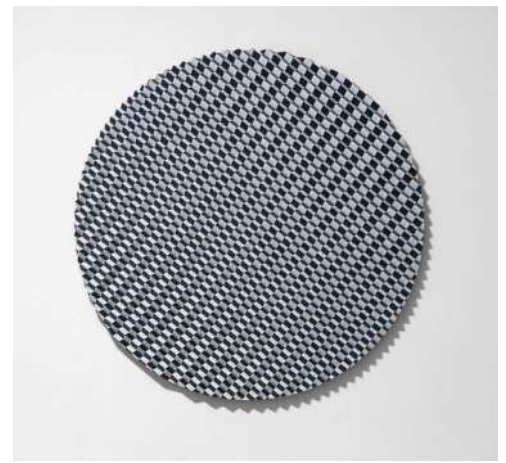
Much of my work investigates contrasts within a single object. I make things that are both rigid and fluid, organic and geometric, methodical and chaotic. *Blanket* is a great example of this. It is made up of thousands of hand-cut cubes that are woven together so that they become a responsive fabric that can be draped, moved and formed over things underneath. Each cube had to have two holes drilled through it so all the processes of cutting, drilling and weaving were incredibly labour-intensive, but also incredibly rewarding when the piece was finished.

Are there any tools you avoid?

Not really – I love tools and learning new techniques. I've been thinking about tambour doors and finally bought myself a Bosch Router to play with, and have been having lots of fun with it! I also have a lot of friends who work with wood and I love being able to talk shop with them and compare brands and styles of tools.

Which woods do you most like working with?

Generally when I work with hardwoods I use maple because it's hard, has a light neutral colour and an inconspicuous grain so it won't detract from any image or colour I am using in the piece. My most recent work uses Baltic birch plywood. I have been cutting individual sheets of quarter-inch plywood on the bandsaw and stacking them to create a chaotic and biomorphic interior space. I decided to use plywood because I could get thin and stable material that I can then laminate and not worry about movement too much. The cross grain of the layers also lent more



stability when cutting out small detailed shapes, as I didn't have to worry about short grain issues.

What sort of finishes do you prefer?

I am actually notorious for not finishing my work. My work involves so many layers that need to be glued up that I could never clean up the squeeze-out to my liking. I enjoy seeing my work age naturally, so I generally just wipe on a few layers of wax and call it a day!

We love your Inception Chair. What gave you the idea?

I was drawing concentric squares as a doodle and it made me think of a stackable chair that came apart like a Russian doll. I had already been working with the idea of perception and illusions and I decided to make it for my chair project as a senior in college. I didn't know at all what optical effects it was going to make, since I had only drawn out its orthographic view, but sometimes my processes lead me to feelings of 'oh,

I'm on to something' – and I just knew while making it that it was going to be something special.

How did you go about making it?

I spent a lot of time drafting by hand and then in Autocad to get accurate measurements. All the chairs are proportional to each other, so there was quite a lot of maths involved. There was also a lot of head-scratching to figure out how the chairs would interlock. In the end I designed a peg and groove system in which each chair had pegs on its outside that slid into grooves on the inside of the next chair. All the grooves had to be hand-cut since the measurements were so specific. The hardest parts were putting together the smallest three chairs, since they didn't involve any joinery.

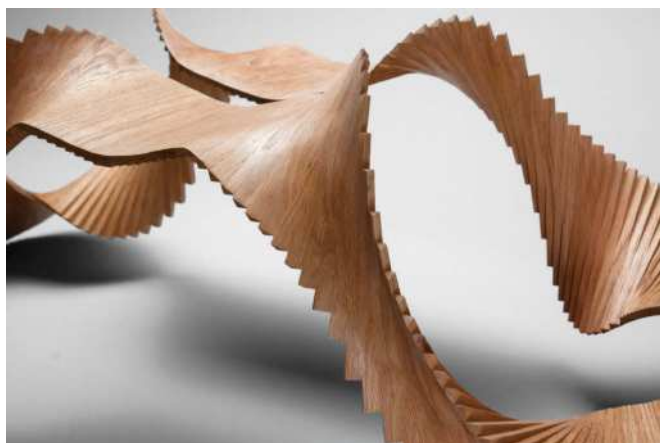
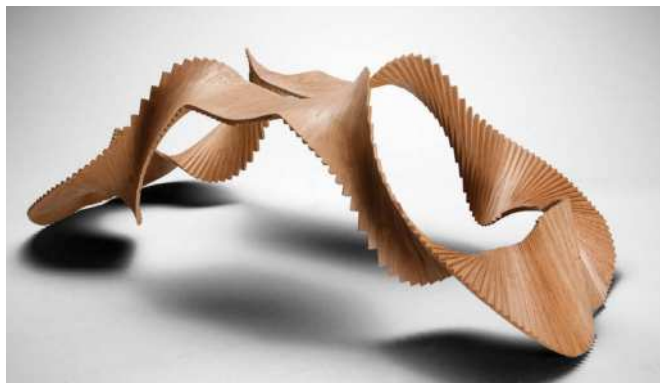
When you make chairs, do you take a different approach from when you are creating more visual art?

When I graduated from RISD I had already interned for a few furniture

companies. I had realised that I was interested in woodworking in a more sculptural capacity than a functional one. I was fortunate to attend the Anderson Ranch Arts Center as an artist-in-residence right out of college, and was able to explore more abstract forms that incorporate more personal concepts. Currently I do not make much furniture, but I teach it at Virginia Commonwealth University and am constantly inspired by traditional techniques and processes that I can use in my wood sculptures.

Your Inception Chair appeared in YouTube illusionist Zach King's popular video on furniture illusions. How did that happen?

As with others in the video, I was not previously contacted by Zach and a friend of mine showed me the video on YouTube. He had pronounced my name wrong in the video and had given it a title which was incorrect. Unlike the work of other designers, the *Inception Chair* is a single unique product which I own and do not sell, so it was quite hurtful to see



that someone had reproduced my chair – and incorrectly as it only contained eight chairs. As an artist I am quite defensive of my intellectual property, and it is an ongoing process to learn to copyright and protect my work from being recreated without my consent. Although the video has had a lot of views, I think we could have come up with a better way to collaborate if he had contacted me beforehand.

What advice would you offer fellow makers who want to create optical illusion furniture?

Do a lot of research, there is so much out there! I read Bridget Riley's *The Eye's Mind*, Robert Irwin's *Seeing Is Forgetting the Name of the Thing One Sees* and referred to the exhibition catalogue *The Expanded Eye: Stalking the Unseen*, which gives a lot of references to artists who have explored spatial dimensions and optical devices. I also spend a lot of time on YouTube watching and learning about illusions in toys and objects, and finding a way to incorporate those techniques into my sculptures.

What is your favourite project you have worked on?

My favourite project so far was probably the *Blanket* since it was so incredibly

labour intensive and I had no idea what it was going to be able to do once it was finished. I only made an eight-inch square sample before attempting an eight-foot square final piece, so it was such a relief to see it completed. I had to make so many jigs and contraptions to make the process more efficient, which is always fun. It can also be displayed in different ways every time it is exhibited, and it's great to see people's reactions to it.

What is the most challenging project you have worked on?

Probably the *Blanket* as well, since I don't do the stretching I need to and I spent a lot of time crouched down weaving the blocks of wood. Advice for new woodworkers: don't forget to stretch!

What are you working on now and next?

I am working on projects that combine acrylic and photography through woodworking techniques. Sometimes when I stumble on a new illusion I confuse myself and I am finding myself reverse-constructing what I've already done to figure out how to move forward. I am also trying to create new sensual and organic forms through split turning (gluing up wood with paper in between,

turning them, then splitting them down the seams). It's fun but definitely a learning curve.

Where do you see your work going in the future?

I hope to work on a larger scale and with architecture. I feel that my work lends itself to being overwhelming and encompassing, and I hope to create works that can surround the body and periphery.

Have the Covid-19 pandemic and the lockdown affected your business?

My studio is in the building that I teach at, so since the school closures I haven't been able to work on anything but I have been trying to learn new skills on the computer and trying to read more and do research. In thinking about the long term, I am trying to manifest the idea of starting my own woodshop so I wouldn't have to rely on the facilities at school. Slowly but surely!

What do you do when you're not working?

I teach undergraduate woodworking classes at VCU and I am learning how to cook better!

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UTILITY FURNITURE

ANTHONY BAILEY RESEARCHES THE HISTORY OF RATION-ERA FURNITURE AND RESTORES A 1950S TABLE

In the 21st century – the age of cheap, mass-produced products – we think nothing of buying new furniture and dumping our old pieces at the recycling centre. However, during World War II, all materials were in short supply, including timber, and these shortages continued in the years following the end of the war. At the same time, demand for new furniture was high as many people had lost their homes and possessions due to bomb damage.

THE UTILITY FURNITURE SCHEME

Introduced in 1942, the Utility Furniture Scheme sought to address this major problem and its work continued into postwar austerity until 1952. The Utility Furniture Advisory Committee drew on the considerable experience of furniture makers Gordon Russell and Ernest Clench, as well as Herman Lebus and John Gloag. Their job was to ensure that

scarce timber resources were used in a sensible way, new furniture being made available only to those who had been bombed out or were newly wed. A logo, often referred to as the ‘two cheeses’ and previously used for utility clothing, was also adopted for the furniture scheme.

The committee published a catalogue in 1943 featuring a number of approved designs which were mostly in the tradition of the Arts & Crafts movement, quite simple and unornamented, unlike the more elaborate decorative styles that had been popular before the war. The committee was reconstituted as the Utility Design Panel in 1943, with Gordon Russell as the chairman. Over time the committee created three ranges of furniture – Cotswold, Chiltern and Cockaigne – which were carried forward into the postwar period in an important exhibition of postwar design called Britain Can Make It. This government-backed exhibition ran at the V&A museum in London for

14 weeks in the autumn of 1946. Its aim was to boost British manufacturing and promote a ‘design consciousness’ in the general public. The furniture exhibits showed how the utility scheme evolved after the war: more ‘luxury’ items could now be made but manufacturers were encouraged to maintain the more economical wartime production methods.



TOP Utility sideboard designed by David Booth in 1950. It has a mahogany carcass and rosewood veneer on birch laminboard with a routed helix pattern on the doors **ABOVE** Marcelle Lestrang looks at her permit for Utility furniture, which she had just received from Chelsea Borough Council in March 1943 **RIGHT** The ‘two cheeses’ logo used for the furniture scheme





LEFT An unrestored 3A dining chair in oak
ABOVE Utility chair in laminated wood
RIGHT Utility design panel dressing table made by Heal & Son in 1947

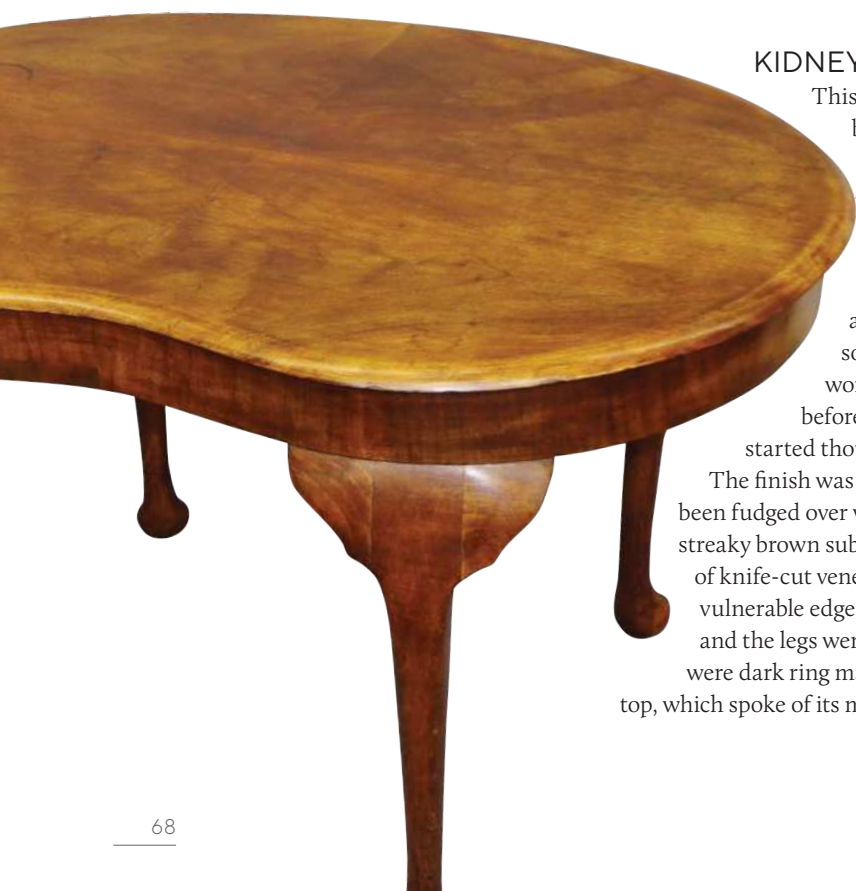


While the panel members were firm believers in the aesthetics of their designs, popular taste still favoured ornamentation, indeed there were reports of utility furniture available on the black market with carved decorations added to them. The population was war-weary and rather than accepting the designs that they felt were being foisted on them, they sought

relief from the drabness and austerity of straitened times with more decorative goods. When the design rules were relaxed in 1948 and the Scandinavian-influenced Diversified range was announced, public taste was very much against it. The panel was wound down and the wartime scheme finally ceased in 1952 when furniture rationing ended.

Over the decades, public taste has changed again and in today's market midcentury furniture, including Utility designs, is considered highly collectable.

The Gordon Russell Design Museum in Broadway, Worcestershire, has several exhibits relating to Russell's work for the Utility Furniture Scheme. To find out more visit gordonrusselldesignmuseum.org



KIDNEY-SHAPED TABLE RESTORATION

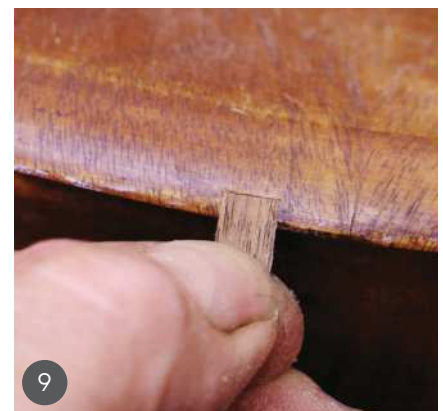
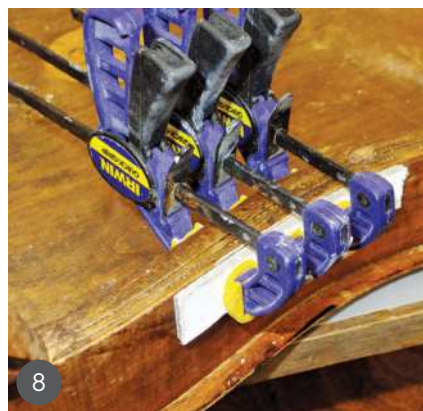
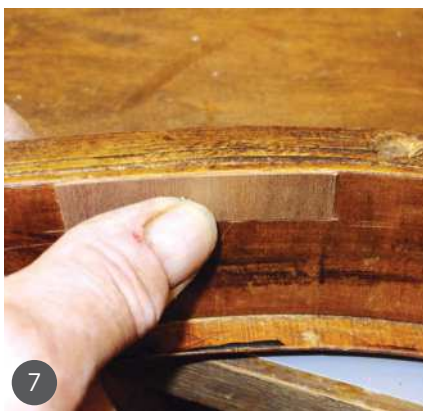
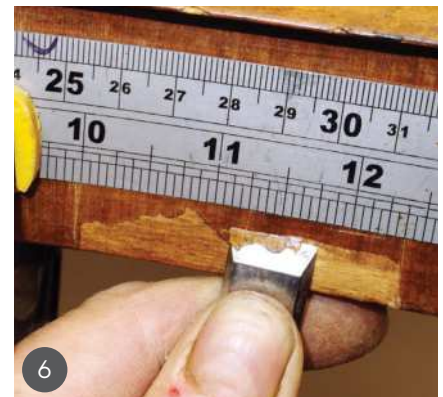
This little table had been in my wife's family for some time and was in need of some restoration.

A thorough assessment and some detective work was required before I could get started though.

The finish was worn out. It had been fudged over with some kind of streaky brown substance, odd bits of knife-cut veneer around the vulnerable edges had been torn off and the legs were wobbly. There were dark ring marks on the table top, which spoke of its misuse over time.

When I turned it upside down the thick laminations of the kidney curves were visible, as was the aged hide glue around the leg support blocks, one of which was missing. In the middle was the 'two cheeses' symbol of the Commodities Committee 1941, which denoted it as a piece of Utility furniture from World War II, which the family had always accepted it to be. Except it couldn't be Utility furniture – it wasn't straight and square, and it didn't eschew ornament with its Queen Anne-style legs.

So this funny little side table didn't make sense. I did some research in a book called *Utility Furniture* by Jon Mills. It is very informative and features a facsimile of the wartime *Utility Catalogue*. The answer to the mystery lay on page 14: 'In June 1948 furniture



rationing ended, although furniture makers could continue making CC41 Utility-marked furniture of their own design as evidence of quality of workmanship. Many did so until the Utility Furniture Scheme ended in 1952.' So, that explained it. Whoever made it simply produced what most people craved after wartime austerity – back to the traditional and out with the square, in a postwar four-year time slot.

STAGES OF RESTORATION

1 Here you can see the table in its original condition with its damaged finish.

2 The 'two cheeses' Commodities Committee symbol and the manufacturer's own serial mark.

3 The missing leg bracket was replaced and coloured to match.

4 Gaps in the laminated kidney-shaped frame were filled with slips of veneer and glue for strength. These were then trimmed flush.

5 I felt that cutting a straight line would be better than attempting a series of angled cuts. I did this with the rule

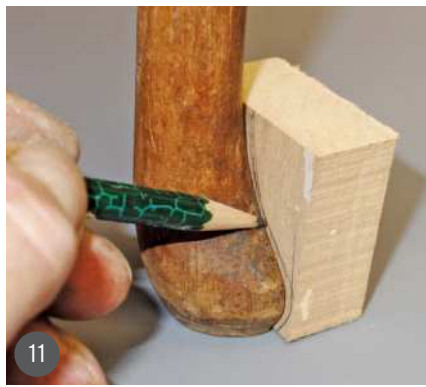
clamped to fit the concave shape of the frame.

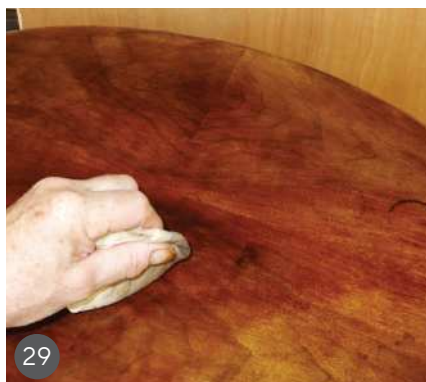
6 Then the ragged veneer could be carefully pared away back to the groundwork.

7 I checked to make sure the new piece would fit; the colouring would be done later.

8 A piece of uPVC made a good flexible, non-stick clamping pad.

9 Even small broken edge pieces needed to be replaced with veneer, not filler.





10 A broken foot was block planed level while still attached to the table.

11 A new piece of beech was marked around to get a rough profile of the foot.

12 After rough shaping in the other plane the replacement foot was glued and clamped in place.

13 It became apparent that the leg would have to be removed for shaping.

14 The new beech timber was incredibly hard, so it was easiest to shape it on the disc sander.

15 The internal shaping was done with coarse abrasive bonded to a piece of plastic waste pipe.

16 This was followed by fine-grade foam-backed abrasives to sympathetically blend the repair.

17 I made a colour test to make sure the colour could be matched properly where the repair met the leg.

18 All the legs had their screws tightened but one needed its bracket glued. CA adhesive was the easiest method.

19 The many veneer repairs could now be sanded in, using finer-grade abrasives.

20 It was impossible to level this repair without removing the finish around it.

21 Now was the time to remove the gunky French polishing using spirit thinners.

22 The very uneven top finish was rubbed back lightly with 320 grit to retain some of the table's character.

23 A coat of pale French polish all over helped to highlight the state of the existing finish.

24 I used a dark coloured Danish oil over French polish to give a richer appearance.

25 Next, garnet polish was applied with an artificial hair mop where there were lighter areas.

26 Acrylic paint was used sparingly to touch out the filler and veil over the veneer repairs ...

27 ... in areas such as these fine bits of damage right on the edge that would be tricky to veneer.



28 Veiling the paintwork to try to 'lose' the cross-grain join in the veneer before finishing work.

29 Several coats of garnet polish were applied all over, with special attention to the top.

30 Once the garnet polish had hardened, the whole table was rubbed over with '0000' wirewool and waxed.

31 Finally, this 1950s side table was restored to its former glory.



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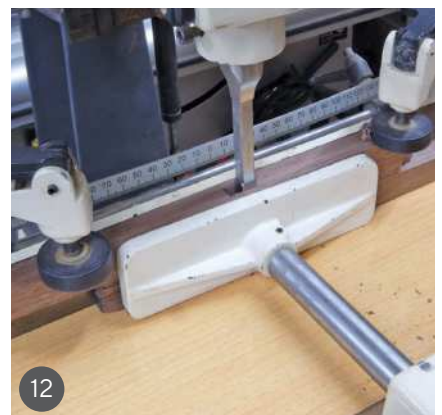
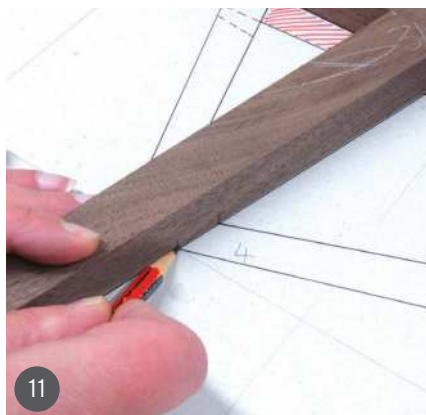
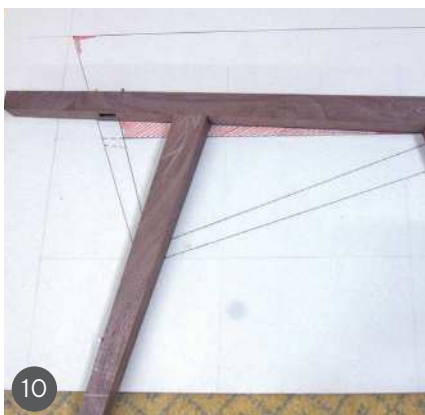
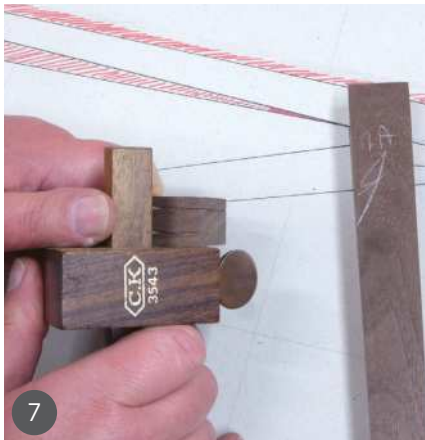
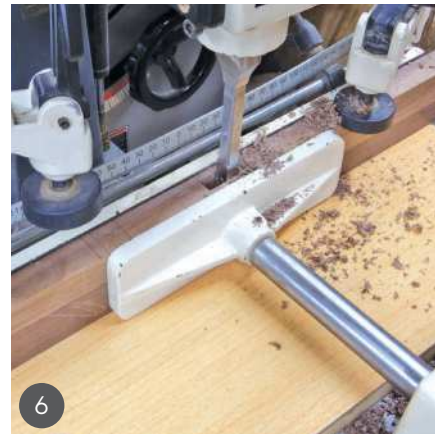
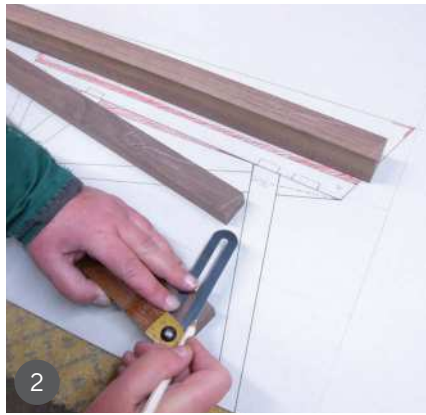
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MIDCENTURY-STYLE FOOTSTOOLS

LOUISE BIGGS RECREATES A PAIR OF 1950S JAPANESE FOOTSTOOLS

I was approached by a customer bearing a photograph of a footstool made in Japan in the 1950s. I explained that I couldn't make a direct copy of the footstool but I could make something in a similar style. So he commissioned me to make a pair of footstools using American black walnut with a grey fabric for the upholstered cushion.





MAKING THE FOOTSTOOLS

1 I started by drawing a full-size template. Each end frame would need to be glued up in one go, so the template was taped to a flat board and used to align the various sections during the making and gluing processes.

2 The timber was faced and edged on the surface planer and planed to 20mm thick. The width dimension was planed to the widest measurement of each section as all were to be tapered. The top rails were the starting point and a sliding bevel was set from the template and the length of the top rail marked out.

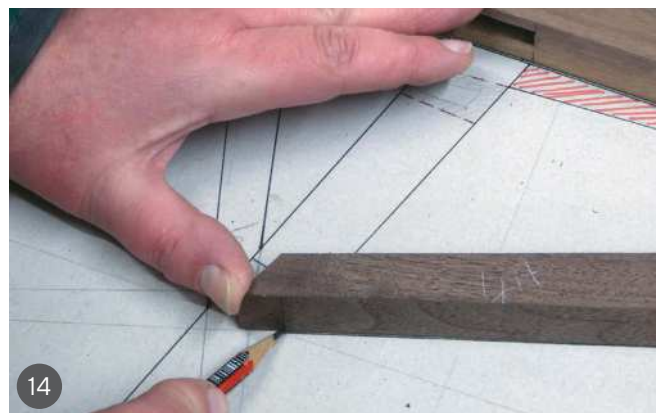
3 Leaving the rails longer, the width of the narrow end of the taper was marked using a mortise gauge so that equal amounts of timber were removed from each side. The top rails were kept in pairs and were marked out.

4 Waste timber was removed using the bandsaw before using a jack plane to create the final taper down to the mortise gauge marks. Using a straightedge, the tapers were checked to make sure they were flat and the edges square. All other sections will be tapered in the same way.

5 Placing a top rail on the template, the positions of the legs and cross rails were marked. The outer mortises on either end of the rail were given a haunch line, then holding the four top rails together the lines were carried across the rails using a square.

6 The mortises in the top rails were cut square to the bottom edge using a 10mm mortise chisel. The rail edges were supported in line with the fence and square to the cutter, other rails were placed underneath and rotated in turn until all four rails were mortised.

7 The leg joints were marked and cut for each frame. Laying one leg in each position on the template the shoulder lines were marked and a sliding bevel set to the angles. The positions were then squared across the other legs before the angles were marked using the sliding bevel. Note: the angle of the shoulder line differs between the two legs because of the taper. The tenons were then marked on the ends of the legs using a mortise gauge.



8 It was easier to fit each component in turn to the four frames before moving on to the next. The shoulders were cut close to the line on each side and the tenons were cut out using a gent's saw.

9 With the bulk of the waste removed a chisel was used to cut a clean shoulder against the marked lines. The tenons were trimmed as required until a tight fit was achieved. Once fitted, the leg and top rail should line up with the template.

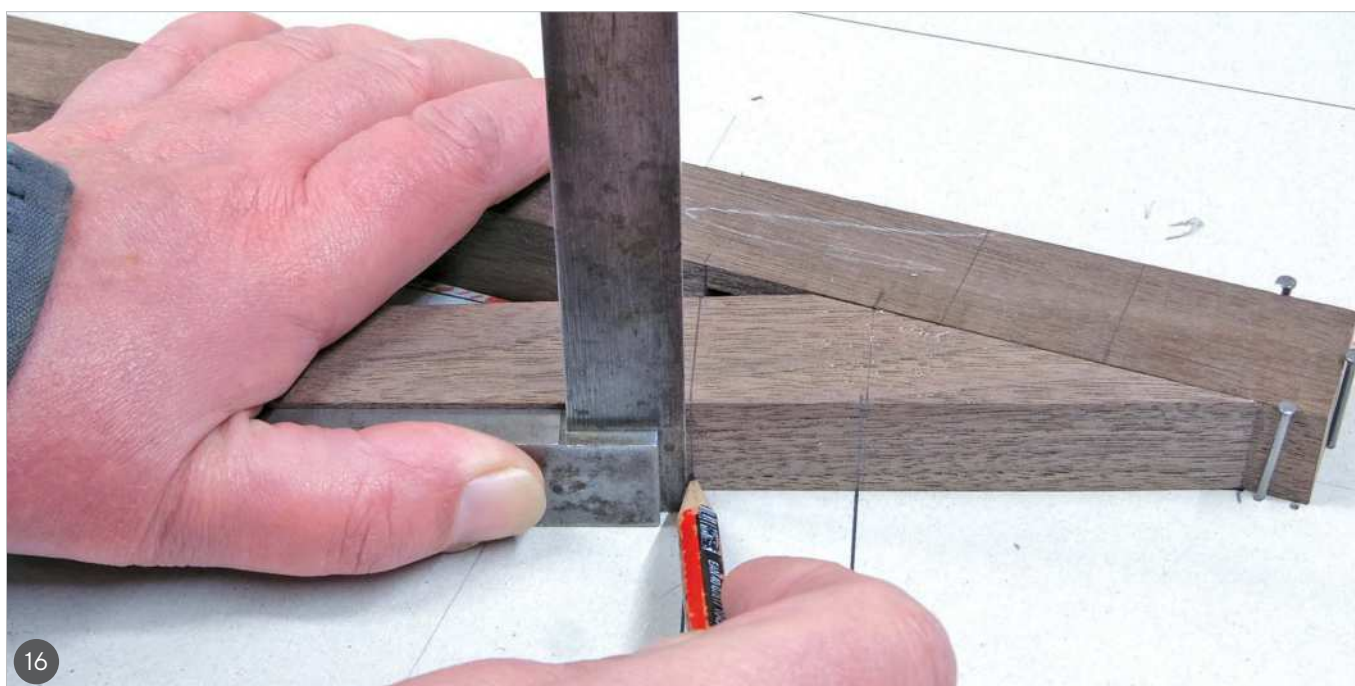
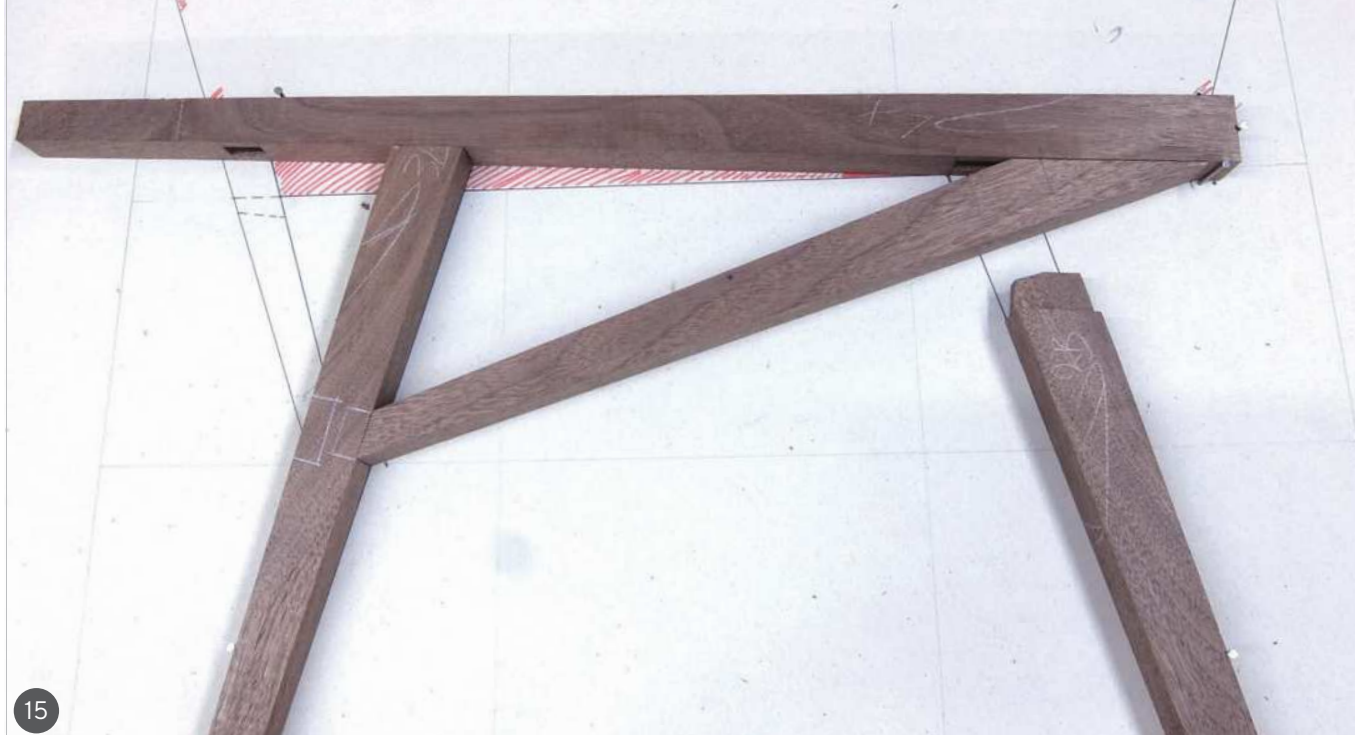
10 Nails acting as stops were used to hold the top rail and one leg in position on the template. In turn the other leg was jointed and fitted in the same way as the first, adjusting the necessary angles on the sliding bevel, until all four end frames looked as shown.

11 The mortises for the two cross rails were marked out. With one frame end in position the adjoining rails were marked and the lines squared across the edges. As before with the top rails, the four legs were aligned and the mortise positions carried across the other legs.

12 With the leg supported so the required edge was level with the fence and square to the mortise chisel, each leg was mortised on one side before reversing to cut those on the other side.

13 The cross rails had a tenon at the top and a half-lap joint where they crossed the legs at the top ends of the rails. Fitted individually, the mortises were cut first. Laid in position on top of the frame, the shoulder lines for the joints were marked on to the rail and the mortise gauge used to mark the tenons. The tenons were cut in the same way as the leg tenons and trimmed for a tight fit to fit the cross rail as shown. Further nails were pinned through the template to keep the sections aligned.

14 Holding the dry joint together at the top of the cross rail in position on the template, the tenon on the bottom end of the rail was marked from the template. Before marking the position, the leg edge had been checked to gain the exact position of the shoulder line for the joint.



15 With the tenon cut and trimmed as before, while constantly checking the alignment of the angles, the long cross rail was fitted. The cross rails were all fitted at this stage as shown.

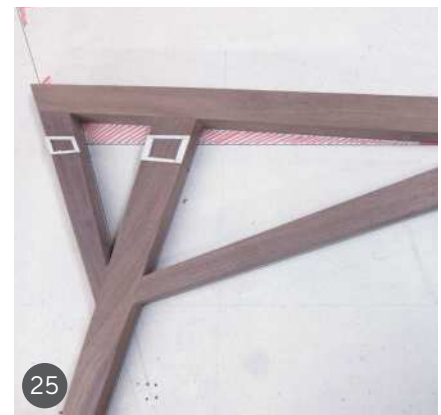
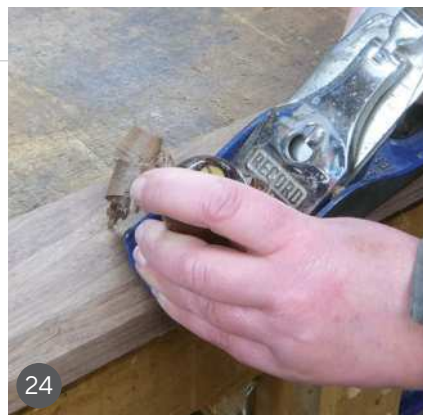
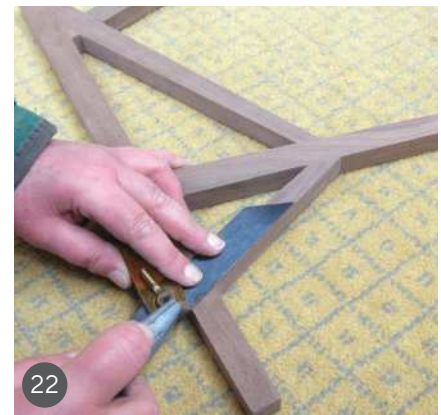
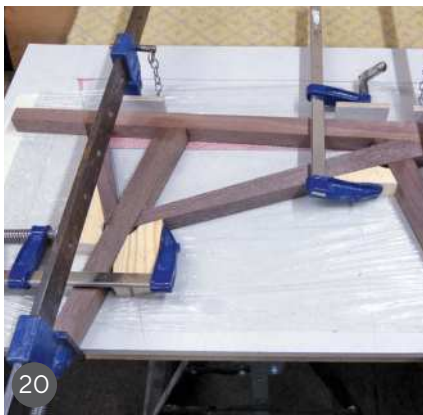
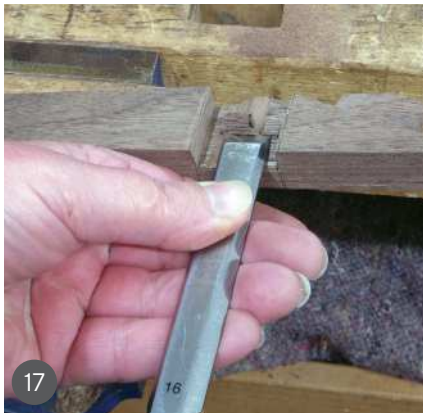
16 Keeping the rails in position, the position of the leg was marked on the top and bottom edge and the angles of the half-lap joint were also marked. Each half-lap joint was cut individually to suit each frame.

17 Setting a marking gauge to the centre of the rails the depth of the half lap was marked on each cross rail. The shoulder lines, as with the tenons, were cut close to the line so that the final cuts of the shoulders were obtained using a chisel. The waste was removed by working from either side down to the gauge line.

18 With the cross rail in position the mortise and tenon at the top of the leg was aligned and the half-lap joint marked on the leg, cut out in the same way as the cross rail. The shoulder lines of the top tenons ran in a straight line, forming a tight joint with the top rail.

19 Attention was then turned to the support rail. The mortise and tenon at the top of the rail was cut first, before aligning the joint to mark the shoulder lines of the bottom tenon, cut and fitted as before. Four frames were made which aligned with the template. The legs and top rail were left longer until after gluing up.

20 Each frame was glued up over the template with clingfilm spread over the card to prevent the frames sticking. Trial and error identified the best position for the clamps and pine blocks



cut to shape to protect the walnut during the clamping process. A two-part epoxy glue was used to glue the frames.

21 With the frames glued up the legs were cut to length while the frames were held on the template. The tablesaw fence was set to the width of the board to run along the bottom edge, cutting the legs to the right length.

22 The angles on either end of the top rails were cut and trimmed flat using a chisel. The angle followed that of the short support rail and was echoed at the other end of the top rail.

23 The seat rails were shaped to align with the end frames. Card templates were made for each rail and, setting the blade

at the required angles on the tablesaw, most of the shaping was carried out. The surfaces were then planed using a jack plane.

24 On the wide seat rails the two angles on the underside had to be planed to shape. The steeper angle was planed first, followed by the flatter angle.

25 The maximum size of mortise was drawn out on the rail templates and their positions drawn on the frames. The wider rail would partly cut through the half-lap joints at the intersection of the leg and long cross rail, hence the use of the epoxy glue for a stronger joint.



26 I removed the front clamping block from the mortiser, then used a 6mm mortise chisel to cut the mortises. The edges of the mortises were set parallel to the fence using a combination of wedges and adjusted as required for the various angles.



27 The shoulder lines of the tenons were cut on the router table, adjusting the depth of the cuts as required. The end haunches were cut by hand and trimmed using a chisel until all the rails fitted.



28 The footstool frames were glued and clamped, making sure the top rails were in line and the frames were square.



29 Excess glue was removed and the final clean-up carried out with abrasives. Having checked the frames were level, a plywood seat panel was cut to size, leaving clearance for the upholstery materials with an angle on the two edges echoing that of the seat rails. The spray finishing was carried out by Phoenix Fitted Furniture.



30 The upholsterer used a block of chip foam to form the main shape of the cushion, with a softer foam forming the top inch. This will help the cushion to keep its shape. The foam was covered with a calico cover under the fabric and a base cover, before being fixed to the seat rails with screws. Upholstery was carried out by T&M Upholstery. The footstools were ready for their new home.

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Timeless stories

FROM REPAIRING BICYCLES TO RESTORING DANISH MODERN CHAIRS,
DAVID JOHNSON OF SIDECAR FURNITURE HAS WOVEN HIMSELF AN
UNUSUAL CAREER



David Johnson loves the stories behind the Danish Modern chairs he lovingly restores, including weaving new seats to match the originals.

He says: 'I judge the quality of my projects – no matter how big, small, complex or routine – by the people who own them. When I get an original owner I always ask about the history of their pieces, and have heard some amazing stories. One woman told me about how they bought all of their pieces on a honeymoon in Copenhagen while I sat in her living room filled with these same pieces which haven't left the home until I took the chairs to my shop to repair.

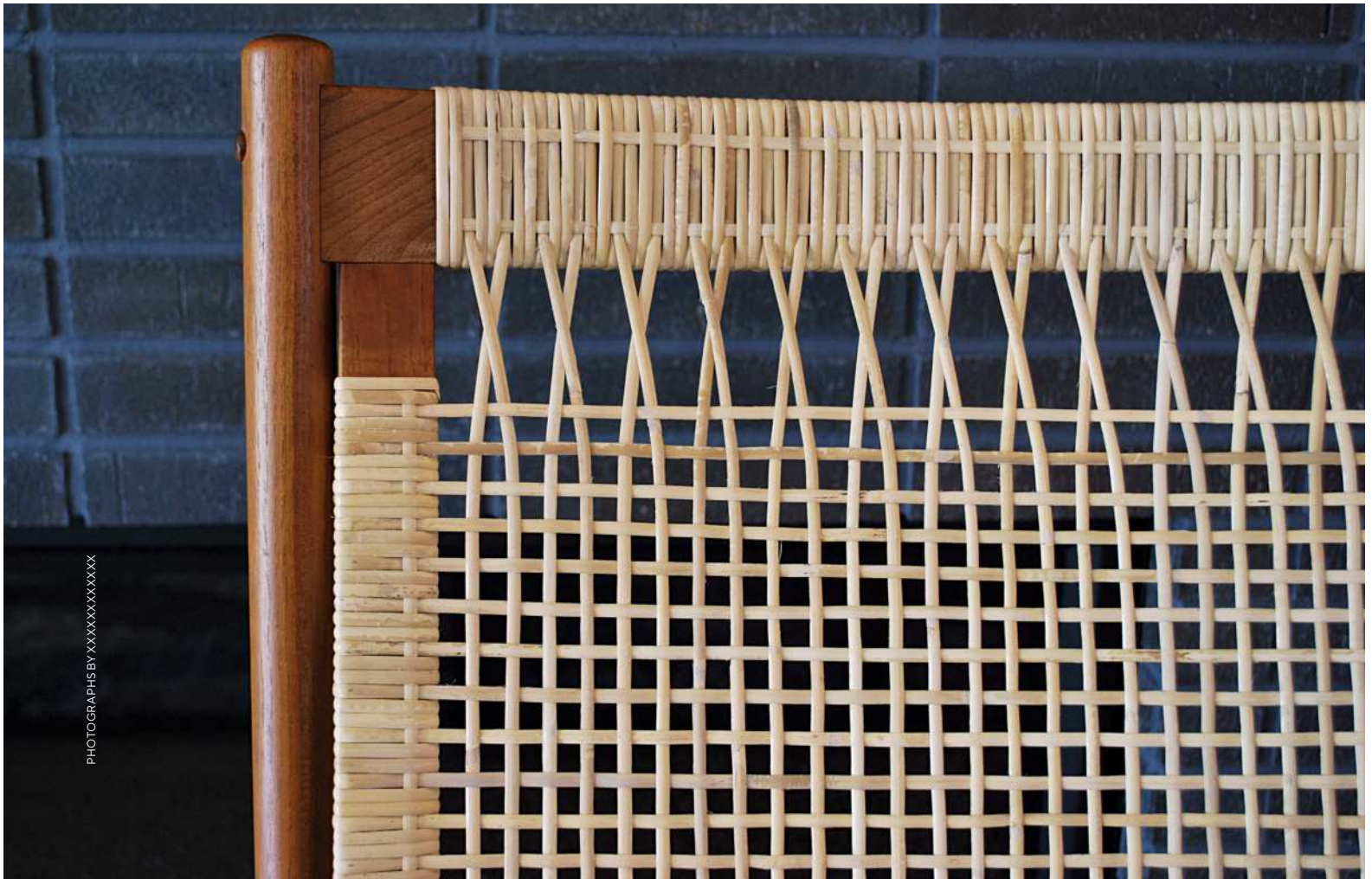
'Another was a diplomat in Denmark. And one person had a house that was well maintained, original down to the cabinet pulls in the kitchen, and filled with the iconic Scandinavian pieces of the 1960s. She's now well into her eighties and told me, "at the time I didn't know what I was buying, I just liked it".'

But it's not just the chairs that have a story to tell – David's own tale is pretty interesting too.

Although he had always been interested in furniture and design, he made his living as a bicycle mechanic and worked his way through a course in studio art and art history. 'At that time the woodshop there wasn't being used and I became fascinated with it,' he recalls. 'All of the tools and techniques were new to me as I was more accustomed to turning wrenches on bicycles and old cars. I quickly took to it and all of my focus shifted to woodworking.'

One of the staff members in the art department was an early student and teacher at the College of the Redwoods, now known as the Krenov School, and he introduced David to the writings of James Krenov. 'I was also fortunate to buy a copy of *Tage Frid Teaches Woodworking* volumes 1 and 2 early on. Then, I had no idea who Tage was but the book and his methods really connected with me,' he recalls.

This reading led to him coming to the College of the Redwoods after he'd only been woodworking for a year. 'I felt like an impostor on that first day when JK – as he's known at the school – came out and told us to relax and enjoy our time there,' he admits. 'We hit the ground running, as JK would say, by learning to sharpen on that first day. I found my direction while at the school and it cannot be emphasised enough how much of a special place that school is, both then and now.'



Now when he thinks back to his first project – a small side table in purpleheart with a bird’s eye plywood drawer – his reaction is ‘ugh’. ‘It was made before I went to the College of the Redwoods and all of the proportions were wrong and the legs tapered strangely,’ he says. ‘It’d be in the trash if my wife hadn’t been there when it resurfaced after many years. Let’s just put it on the record that being at the College of the Redwoods catapulted my design and technical abilities.’

It took several false starts – which always took him back to working at a bike shop – before David was able to successfully turn his hobby into a business. ‘While living in San Francisco I was part of a group shop on the decommissioned World War II-era naval air base in Alameda. As requests for commissioned pieces and repairs grew, I felt comfortable leaving the bicycle industry and started Sidecar Furniture. The name was chosen as an arbitrary word since my name, David Johnson, is so common and gets lost in internet searches,’ he says.

MAKING AND RESTORING

‘Because I was introduced to the work of James Krenov and then quickly went to the College of the Redwoods, his work and methods have a strong influence on how I work, which is in an identical manner to what can be found in his books. Grain colour and direction play an important part in design and I won’t start building until I have a full-scale mockup that is satisfactory,’ David says.

‘Machines are used at the beginning of a project to save time and energy, but as the piece progresses hand tools become more prominent. The bandsaw is the primary machine in my shop. Like JK I use sharp chisels, Japanese saws and wooden hand planes that I’ve made. Unlike JK, I use Japanese waterstones for sharpening. He preferred oil stones with kerosene as a lubricant and scoffed at us students using the waterstones. One day he barged into my space with his sharpening kit and insisted I give it a try. So I spent the afternoon with his stones sharpening. I have to admit, his set-up worked beautifully, but I found using kerosene very unpleasant with its smell and toxicity. But I can now say I’ve used James Krenov’s sharpening tools that are seen in his books!’

David loves Danish Modern chairs because of the way they pay homage to traditional designs and methods while being modern at the same time. ‘Study Danish Modern chairs and you’ll see many interpretations of traditional styles such as Shaker, traditional Chinese, Windsor, Campaign and others. It builds upon what has preceded it,’ he explains. Now a major part of his work is restoring these chairs in a way that is historically accurate and true to its origins.

He says: ‘I approach my repair work as a conservationist and do everything I can to maintain the history and patina of a chair. It’s my goal to have what I’ve done be invisible. The pieces I work on are intended to be used and no one wants to sit in a chair with the finish flaking off and a woven seat that is about to collapse. Tired finishes can easily be cleaned and revived with shellac and wax, which are also reversible. Teak comes back with a good cleaning and oiling. Woven seats are meant to be replaced. When I do a seat I replicate every detail of how it was to be originally

done even if those details aren’t seen by the everyday user. It’s my intention that whoever removes my seat will think they are removing an original seat.’ His advice to fellow furniture restorers is not to ‘over-restore’. ‘Old furniture should still look old but wear that age with dignity,’ he says.

WOVEN HISTORIES

Weaving has become a major part of David’s work, and his interest in the skill dates back to his time at the College of the Redwoods. He was fascinated by the process and went on to read *The Caner’s Handbook* by Bruce W Miller and Jim Widess, making a stool to practise the techniques he learned. ‘As I progressed as a weaver and learned more patterns from the book I began to get more and more jobs repairing chairs,’ he says. ‘While I lived in San Francisco I would buy my materials from The Caning Shop in Berkeley, which was run by one of the book’s authors, Jim Widess. He noticed me and gave me a job repairing chairs. I became very good at hand caning and primarily did many of their hand-caned chairs that also needed structural work. At the time I was starting Sidecar Furniture as a business to produce commissioned pieces and do weaving work on the side. Now, 15 years later, that has completely reversed itself and I primarily repair chairs.’

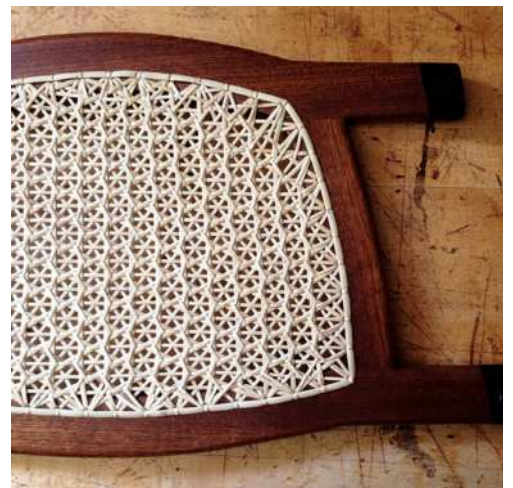
For any furniture makers keen to try out hand caning, David’s advice is simply to ‘get a book and start weaving’. He adds: ‘Once you have a base to build upon, start studying vintage pieces and notice the small details on how to build a piece to accommodate a woven element. This will help you to prevent the many design mistakes that can happen when incorporating weaving into your work.’

His own design work is inspired not only by Danish Modern designers but also their influences. ‘While I don’t produce many pieces currently, I am still always sketching. Windsor and Nakashima chairs are my current obsession,’ he says.

David lives in Los Angeles, where he has a small, detached, 100-year-old garage behind his home to house his workshop. Although it is only 16 sq ft he says it is a typical set-up minus a tablesaw, for which he doesn’t have space. ‘Most tools are vintage and the pride of my collection is the 1960s Davis & Wells 20in bandsaw,’ he says. ‘These are the machines of choice for many Krenov School graduates on the West Coast. I’ve been here for 10 years and we have no intention of moving any time soon, since we have the rare luxury of living in a walkable neighbourhood in Los Angeles.’

A LINE OF ONE’S OWN

One day David would love to have his own line of furniture with shared design details, on which his custom-made furniture would be based – but for now the majority of his work involves repairing chairs with woven seats. ‘Making custom furniture is a tough game,’ he admits. ‘I’m working on creating the time to make speculative work and the latest speculative piece I’ve made is a bench in ash and Danish cord. It reflects the direction I’m going in design-wise, with the surfaces treated by edge tools and minimal design details.’





When he's designing he will start with a quick pencil sketch, then move quickly to a full-scale drawing and mock-up. 'I get caught up in too many details to not work full-size,' he explains. 'I like to resolve every design detail before making the finished piece, so when I'm building I'm just focused on the build and not questioning design decisions.' His favourite woods are North American hardwoods such as walnut, ash, oak, maple and cherry. 'I don't want to be frustrated by the wood I'm working in and these work well with hand tools. I avoid sanding if possible and prefer to leave the tool marks left by edge tools, so I seek out tight and straight rift-sawn boards. I avoid exotics, but occasionally have teak and mahogany left over from restoration work.'

His go-to finish is shellac. 'It's fast, long lasting, fairly durable and very adaptable to different sheens,' he says. 'That said, if I'm making a table for a client I'll have it sprayed in lacquer with a low sheen so they get the durability they expect.' David is currently booked up for the next year and a half with restoration work. 'Right now I'm making some new seat frames which will be woven for some Maurizio Tempestini dining chairs,' he says. 'They have curved side rails which originally were cut out of large stock and have now split at the short grain. I'm making new frames with bent lamination rails so they will be much stronger. Here and there I peck away at a new workbench for myself. It's in Douglas fir that was salvaged from a building and given to me. The bench will be in the Roubo Schwarz style with a Benchcrafted leg vice. My Instagram account is a great way to see what I'm working on in real time.'

Going forward he hopes to be able to produce more original

work from the designs he is constantly working on, and when he's not working he's busy looking after his two small children, who are now at home because of the Coronavirus pandemic. 'My wife works a demanding job and is now doing that from our home office while I watch the kids by day,' he says. 'At night I manage to work a few hours. As a result my schedule has backed up considerably and for the remainder of 2020 I'm only doing work for my regular clients. At the time of this writing I don't see any of that changing soon, so I hope that my business can survive this. I work on luxury items. If the bottom falls out of the economy my client base shrinks. I hope to make it through. I'm not good at anything else except fixing bikes.'

David describes his skill set as an amalgamation of what he has learned from others – 'I've created nothing new,' he says. 'I strongly believe that no method should be kept a secret. In order for the craft to be moved forward, knowledge should be shared. Creativity does not lie in knowing a skill but what one can do with that skill. I'll share anything I know.'

Overall, he wants his work to stand the test of time. 'The best compliment anyone can make about any designed object is for it to be timeless, and that is what I strive for,' he says. 'As woodworkers we can't respond to the quickly changing fads created by the tastemakers, nor should we. Instead, we create pieces with a quiet elegance that will ensure that they will fit into any environment for many years to come.'

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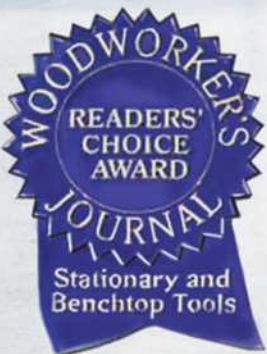
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ABOVE & RIGHT The Organic collection by Henry Blake Hardware

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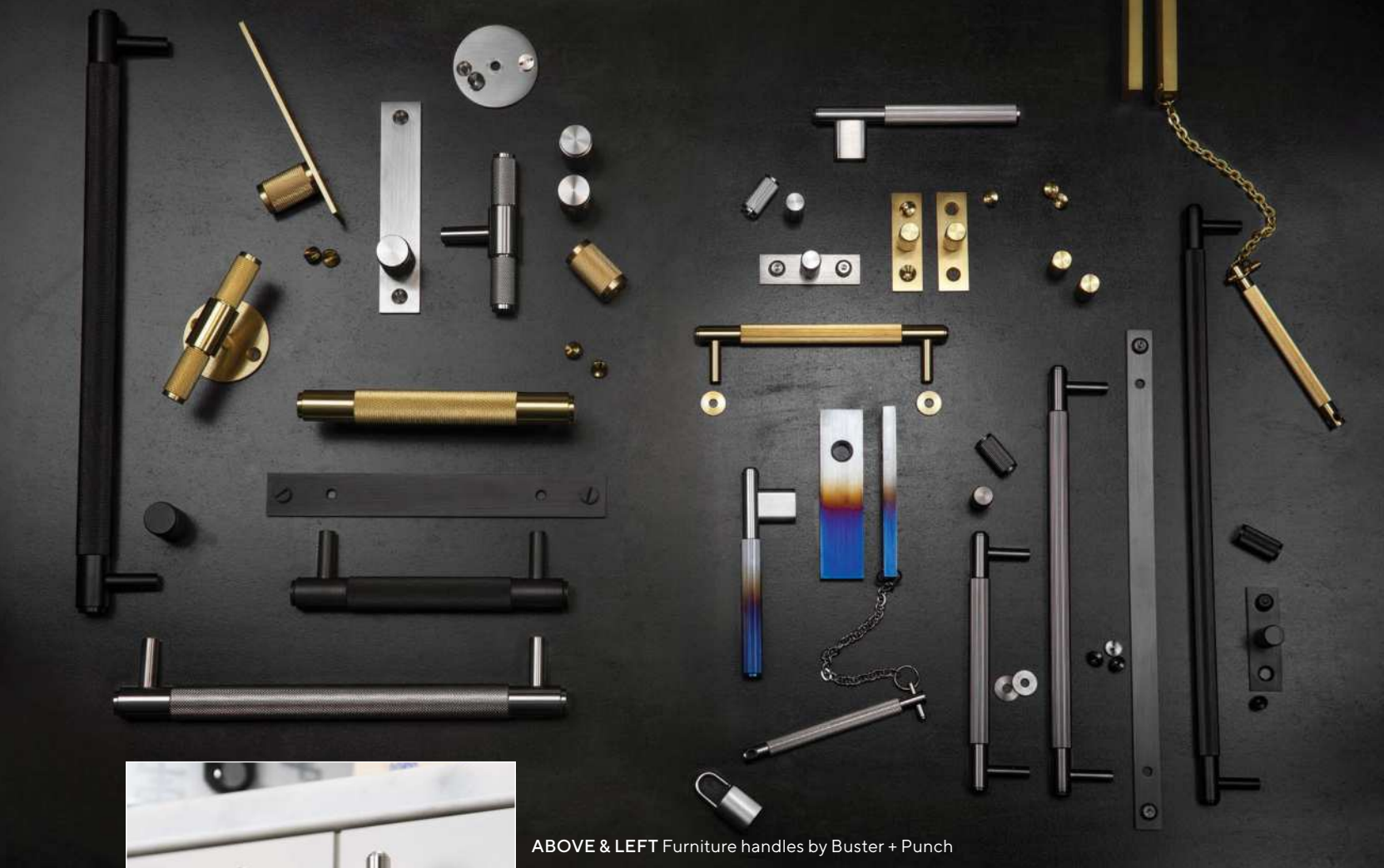
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BELOW & RIGHT Cabinet handles by Pullcast



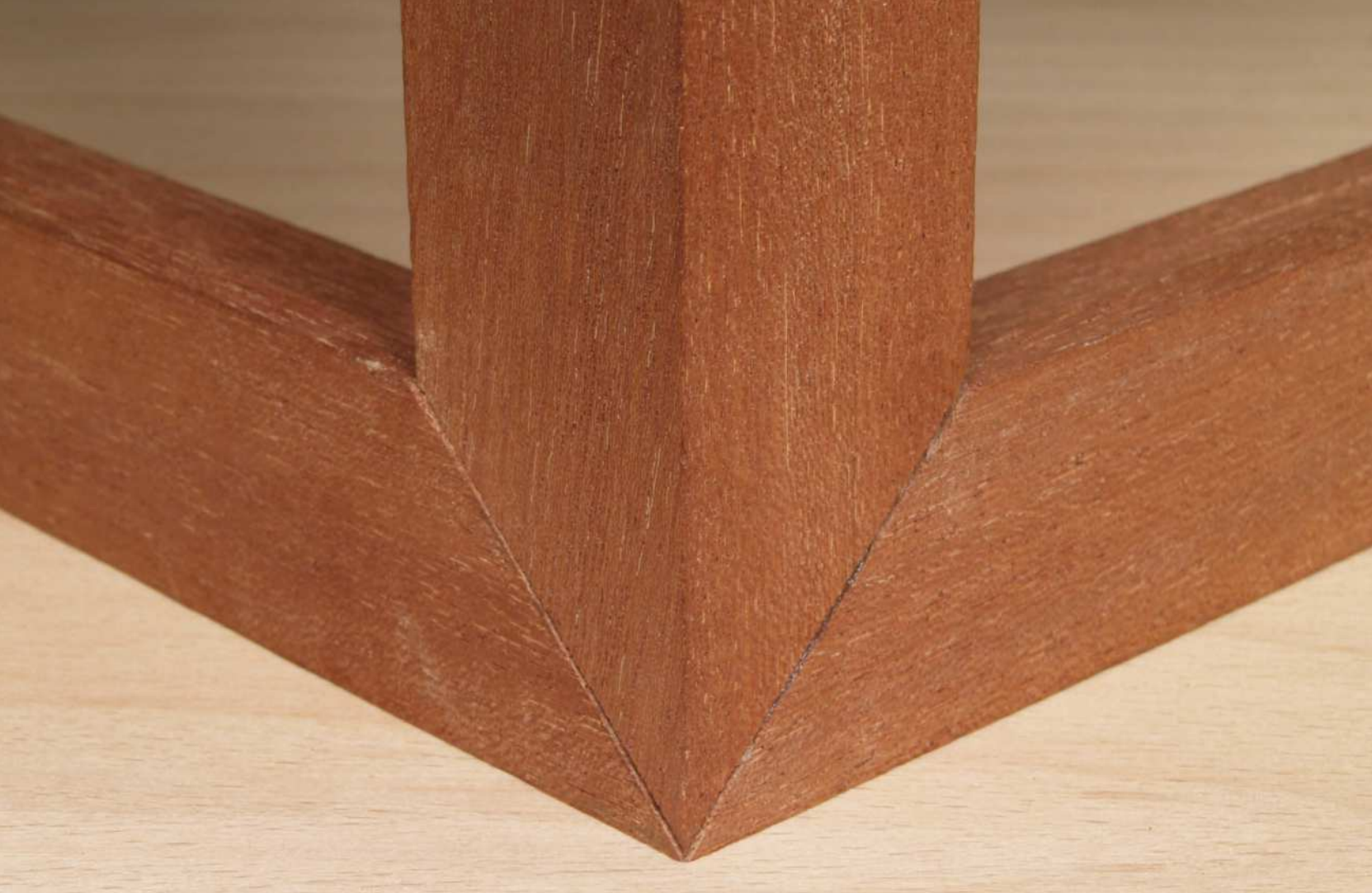


ABOVE & LEFT Furniture handles by Buster + Punch



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A SHOWCASE JOINT

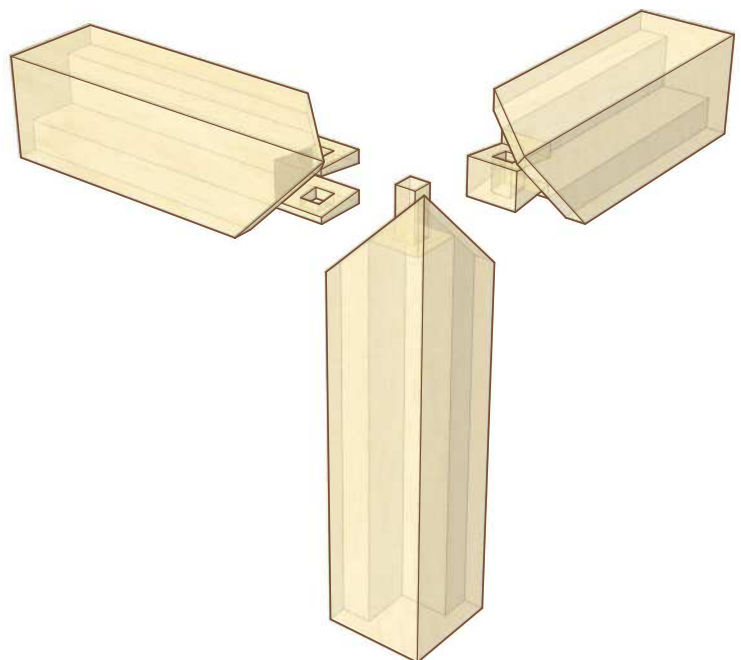
MICHAEL HUNTLEY DEMONSTRATES HOW TO MAKE THE THREE-WAY MITRE JOINT – AN ESSENTIAL JOINT FOR CONSTRUCTING DISPLAY CASES

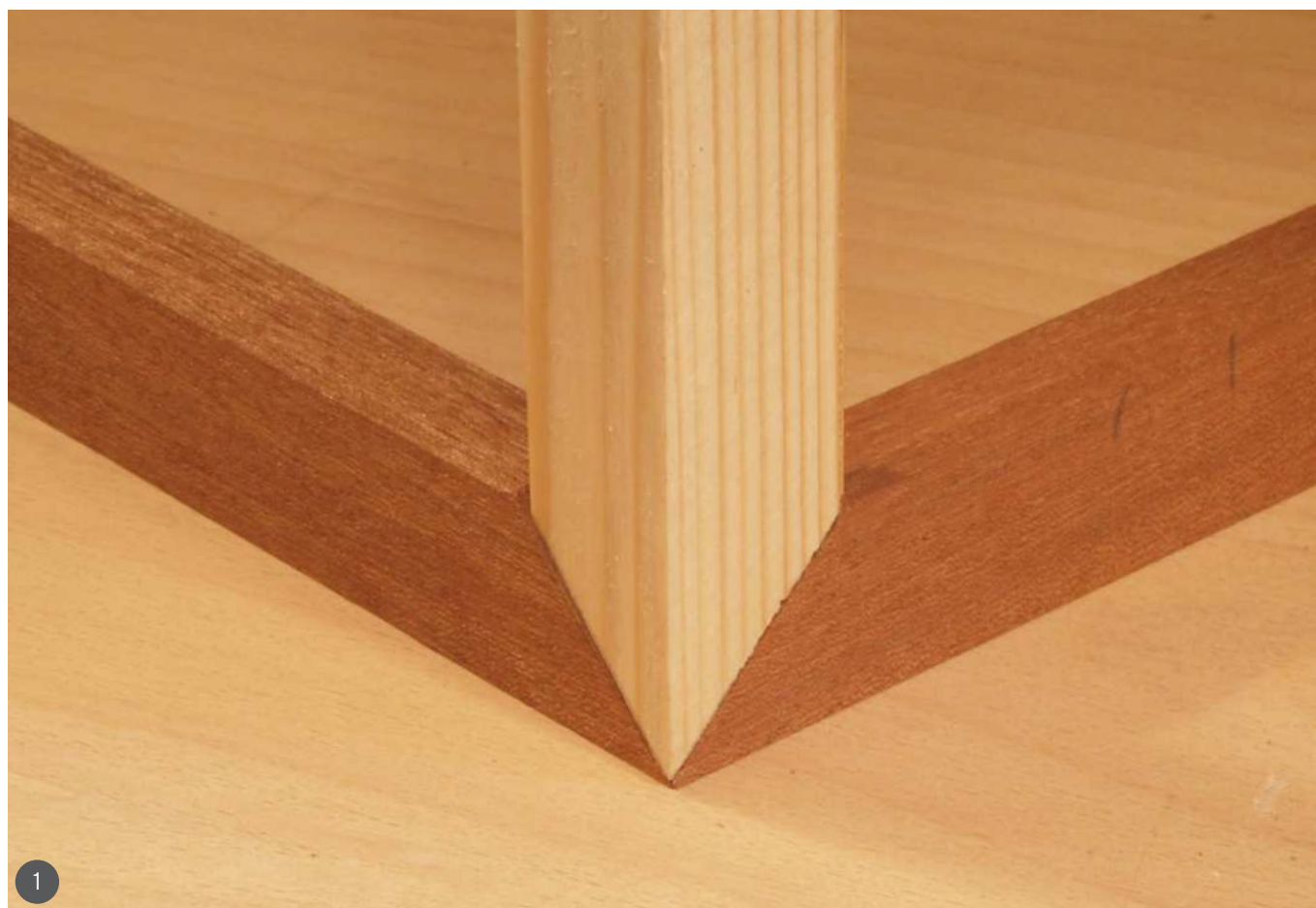
Making a three-way mitre joint will test the accuracy of your cutting. This type of joint is used to make glass display cases, and in a more robust form to make glazed display tables and cupboards or vitrines. The purpose is to form a surround for the glass without the timber obtruding too greatly into the view of the object in the case.

Making a glass case is much easier now thanks to modern adhesives, but if you want a traditional-looking case then some version of the three-way mitre is called for.

It is important to remember when designing this joint that the glass case will be lifted by the top rails, with the whole weight of the glass carried by the joint. Therefore the short side horizontal and the vertical post that comes from it should be reinforced with the best mechanical joint that you can fit into the space.

It is hard to cut a full set of these but it is certainly a traditional show-off joint for which the only replacement is one made from a synthetic material.





- 1 The balanced joint with plain two-dimensional mitres, seen here with one of the softwood practice components to demonstrate how the mitres work 2 Crosscutting the mitres 3 The stub for the fingers is formed, and the finger itself is cut

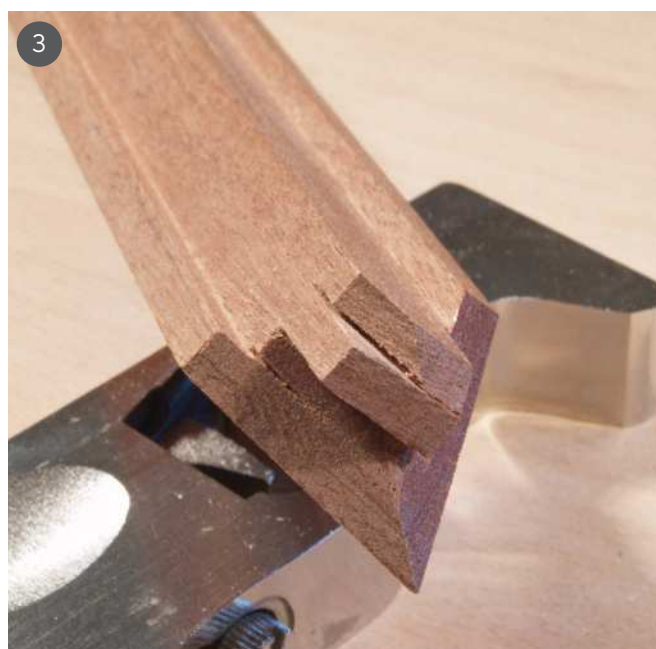
CUTTING A MOCK-UP

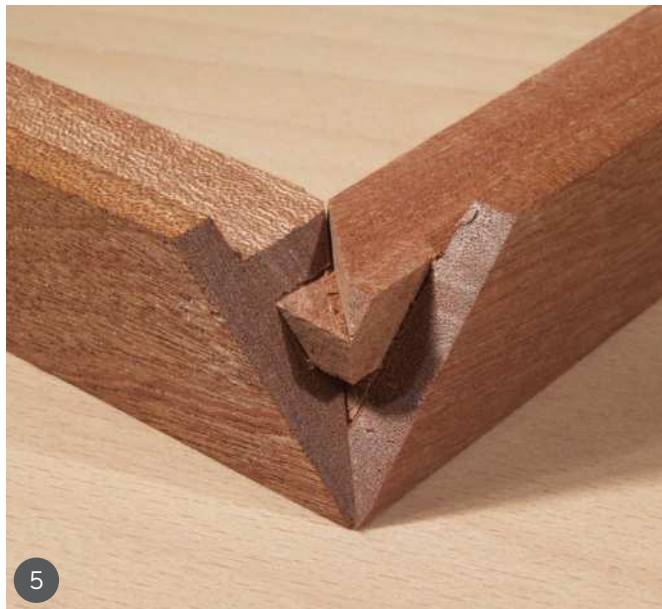
Before you start, make a mock-up in softwood. Use this to define your glazing rebate. It is much easier to assemble these cases if you use glazing beads; in fact it is almost impossible to assemble without beads. And what if a side gets broken? How would you replace that glazed side without disassembling the entire case? Sprung-in beads with a little dab of glue and two pins are much better.

The rebates can be formed on a saw or with a rebate or plough plane or a router. My choice is the plough because I prefer shavings to dust.

Once you have the mock-up, you need a stub on each of the two horizontal members so that they can interlock. The deluxe version of this joint has this interlock as a dovetail, but for this example I will use a finger joint. The fingers provide sufficient gluing surface when using modern glues, but if time were not an issue a dovetail would be better.

In the deluxe versions the horizontal joint is also locked by a dowel or dowels coming down from the vertical leg. The drawing on the opposite page shows the deluxe version.





4 Starting to form the housing for the finger

5 The two horizontals fitted together – I made a mistake and cut a little too much off the cheeks of the horizontal finger

6 The housing in the vertical. This is where a dowel could be fitted if desired

7 All three components fitted together

It is necessary to cut the angles again, resulting in an interesting offset. This is the advantage of making a mock-up first – you get to see how the joint develops much better than just looking at a drawing.

MAKING THE REAL THING

Using symmetrical stock, prepare the timber with glazing rebates, then cut the mitres. Once all three pieces of timber are cut you have what is called a 'balanced' mitre.

At this point the mitre could be glued together. All you would get is end-grain to end-grain joints but with modern glues, for some applications, that would do. In the old days these joints were reinforced by gluing a small strip of light canvas over the inside edge. I, however, am going to add a little mechanical strength to the joint.

The joint can be made by dovetailing two horizontal pieces into each other, but I am just going to add fingers, and this is where cutting the practice joint helps. The fingers project further than the mitre face. Remember to leave the stub in. It helps if you saw down the line of the rebate before sawing the crosscut of the mitre shoulder.

The next stage is to form the tongue or finger. With that done both horizontal components can be placed on a flat reference surface and marked across for the slot into which the finger fits.

All that is required now is to form a suitable recess in the vertical member, then to glue up. As I said above, if you had time you could put in a couple of pins to help lock the joint.

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UNDER THE HAMMER – HOMES AND INTERIORS

WE LOOK AT A SELECTION OF 18TH- AND 19TH-CENTURY FURNITURE FROM
THE BONHAMS EDINBURGH INTERIORS AUCTION



▲ **LOT 960 • £1,785**

A 19th-century fruitwood and coromandel and line inlaid sofa table. The rounded rectangular twin-flap top sits above two drawers and opposing faux drawers.

▼ **LOT 953 • £2,040**

A late 19th-century mahogany and gilt metal mounted *vernis martin* style corner cabinet. *Vernis martin* is a type of imitation lacquer, named after its French inventors. This cabinet has a marble top above a single cupboard door, which is raised on turned tapering mounts with metal cap.



▲ **LOT 756 • £1,211**

A hongmu (Chinese rosewood) display cabinet made in the 19th century. The top has central crest and side panels carved and pierced with entwined faux-bamboo. Inside the cabinet, there is a selection of asymmetrically arranged open shelves. The base section features more carved faux-bamboo and staggered shelves. Bamboo furniture was popular in Britain during the Regency period as part of the Chinoiserie trend, and interest was revived in the 19th century when the 'Japanese style' became popular.



▲ **LOT 1001 • £1,275**

A French Régence walnut, crossbanded and brass-mounted commode, made in the early 18th century. The moulded marble serpentine-shaped top sits over three drawers. The shaped apron is raised on bracket feet.

▼ **LOT 930 • £1,912**

A George III harewood and rosewood inlaid corner cupboard. The cupboard's front has a curved serpentine form, which was a popular shape in 18th-century British furniture. Harewood (also known as airwood) was prized by 18th-century marqueteurs for its silvery-grey metallic sheen; the use of chemicals and natural oxidation turns harewood brown over time.



PHOTOGRAPHS COURTESY OF BONHAMS



▲ **LOT 935 • £1,275**

A George III mahogany breakfront bookcase. The swag inlaid frieze sits above four astragal glazed doors. The base has four central long drawers, which are flanked by two cupboard doors of faux drawers.



▲ **LOT 950 • £1,530**

A late 19th-century gilt metal mounted mahogany and marquetry inlaid display cabinet. The single panel door has multiple bevelled glazed panels enclosing shelves. The cabinet is raised on cabriole legs with gilt metal mounts.



▲ **LOT 949 • £1,530**

A pair of late 19th-century mahogany marquetry inlaid and gilt metal mounted bowfront corner cabinets. Each has a marble top above a pierced frieze and panel door, inlaid with foliage designs.

▼ **LOT 968 • £956**

A pair of 19th-century mahogany and boxwood strung demi-lune tea and games tables. Each has a fold-over top on square tapering legs. One of the tables is fitted with a green baize card playing surface.



▼ **LOT 755 • £1,402**

A hongmu (Chinese rosewood) side cabinet made ca. late 19th/early 20th century. The rectangular top has a 'floating' panel above a narrow frieze of carved geometric motifs. The two panelled doors are decorated with carvings of incense burners and vases and the short drawers below have carved dragon head handles. The cabinet's apron also features carved vases.



UNDER THE HAMMER – TOOLS

WE TAKE A LOOK AT SOME OF THE TOOLS REACHING TOP PRICES
AT THE LATEST DAVID STANLEY AUCTION

Since the beginning of the Covid-19 pandemic, David Stanley's auctions of antique and modern woodworking tools, and tools from allied trades, have had to be remote affairs. Gone are the thrills of bidding in person in a crowded room; gone the dealers' stalls and friendly chitchat among enthusiasts. At least buyers were given an opportunity to view and handle items by appointment at the auctioneers' offices at Osgathorpe in Leicestershire in the fortnight before the sale.

For the auction held on 24 September 2020, the sale room was once again deserted, but as the gavel came down, its sharp decisive taps could be heard on computers all around the world. This was David Stanley's third live auction

in which bidding was conducted wholly online, on the telephone or by sending written instructions beforehand.

For the 999 lots in the sale, bidding was keen, reflecting an unwavering interest in high-quality tools both old and new among collectors and craftsmen.

'Our online sales have been working very well,' commented David Stanley, 'and future sales will be on the internet until it is safe to hold a live auction again that buyers can attend.'

Meanwhile, with 3,200 square feet of new office and auction-room space available at Osgathorpe, customers will have physical auctions to look forward to there when health precautions allow.

davidstanley.com



▲ LOT 984 • £2,500

Treadle lathe made by the great Victorian maker Holtzapffel. This lathe was originally bought for £70 by the young John Edgerton Cust, 2nd Earl Brownlow, in 1863, as one with a 5in screw mandrel; but sadly his use of it was rather limited, for he died soon afterwards in 1867.

▼ LOT 989 • £600

A fine kit of ornamental lathe tools made by Edward Hines of Norwich, stored in a later oak case.



▲ LOT 982 • £11,000

The star of the show was not a woodworking tool but an early gauger's ivory slide rule, made ca. 1700, which reached a staggering price of £11,000.



▲ LOT 571 • £250

Ultimatum brass-framed brace made by Marples.



LOT 999
£4,200



LOT 994
£1,300



LOT 996
£600

The sale included several planes by T Norris & Son, the premier London makers of the early 20th century. An A27 steel-soled, gunmetal bullnose plane (lot 999) with its original snecked iron and ebony wedge was the top seller of these Norris planes. Two A1 Norris planes also aroused keen interest: the earlier 16½-in plane (lot 994) and the later 20½-in model (lot 996), probably unused.



LOT 943
£1,800



LOT 942
£1,500

Two mint-condition modern planes by Sutherland-based maker Karl Holtey achieved high prices at the auction.

They were an A31 gunmetal thumb plane (lot 942) and an A6 smoother in gunmetal (lot 943).



LOT 935
£1,200

A scarce, if not unique, dovetailed shoulder plane with Art Deco design made by Spiers.



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MISMATCHED SIDE TABLES

MARK RIPLEY MAKES A PAIR OF SMALL CABINETS
WITH BOOKMATCHED PANELS

These tables have a feel of William Morris about them but they are still a contemporary design. I used English white ash and olive ash, with ash-veneered ply for the backs and bottoms. The underside of the tops are heavily chamfered and complemented by tapered legs.

CONSTRUCTION

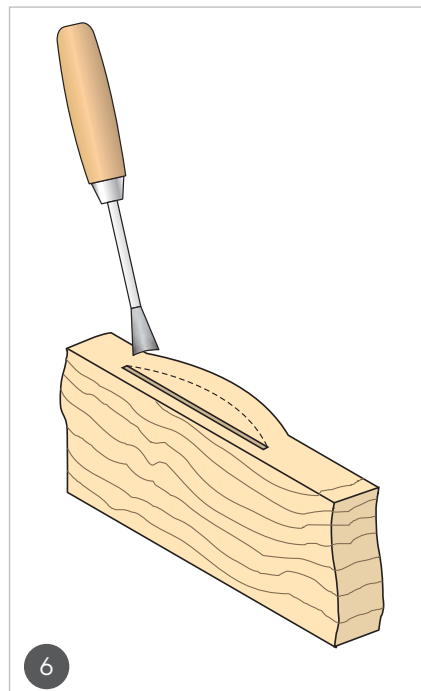
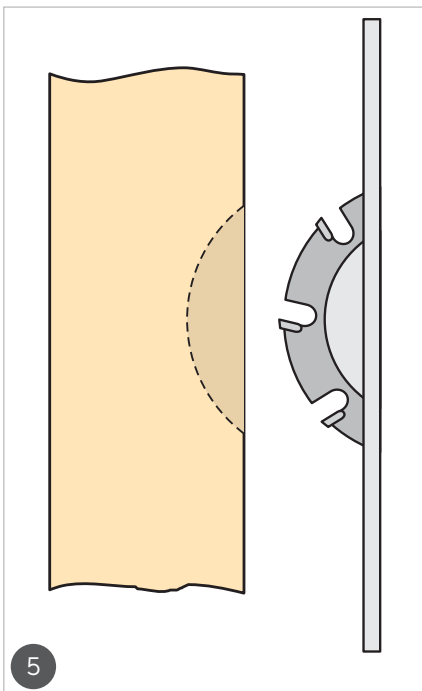
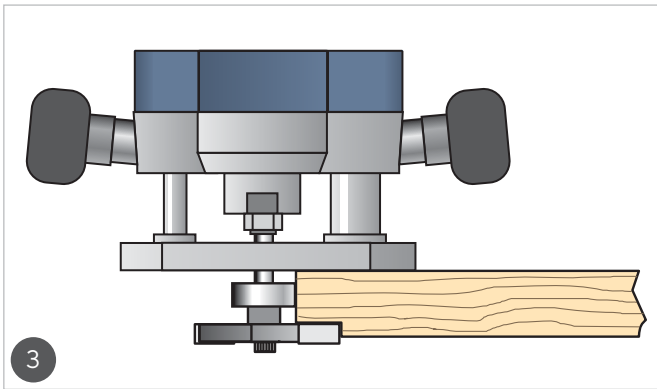
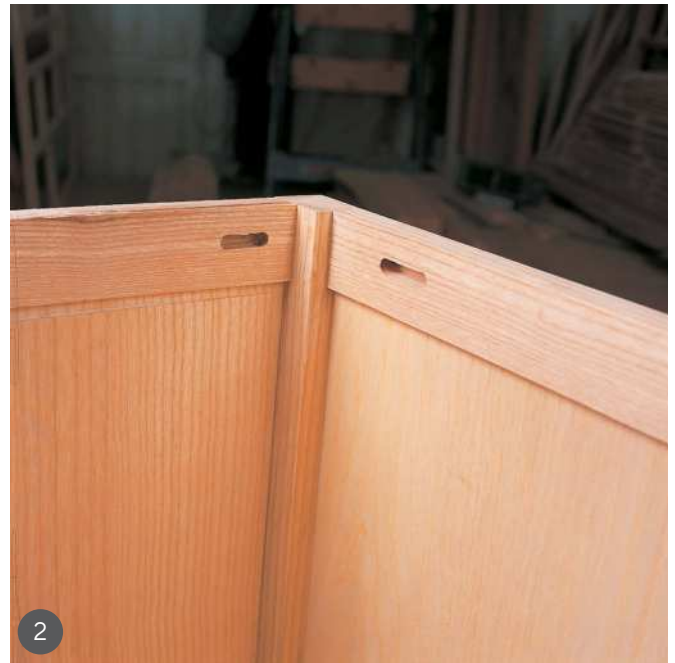
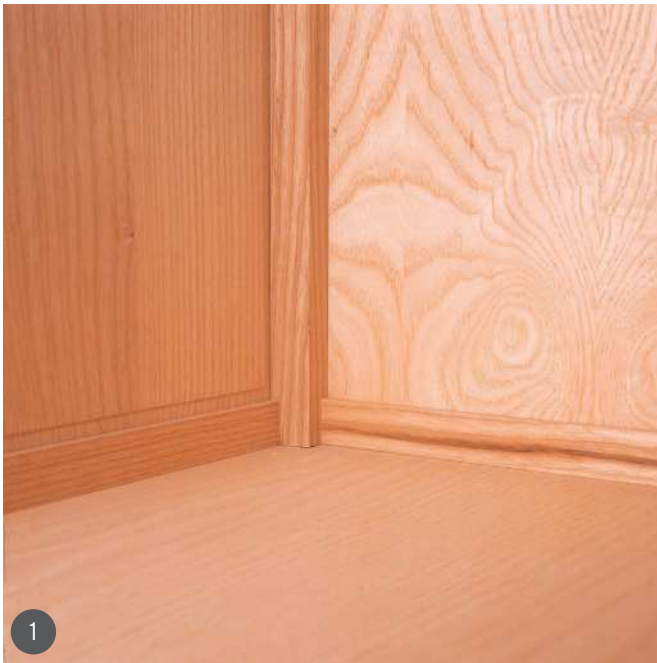
The door panels and end panels are bookmatched, a process of deep-ripping a solid panel to create mirror-image grain. The board, once sawn, is opened like a book, hence the name of the technique.

The less stock removed in the cut, the more accurately the pieces will match. A finely tuned bandsaw is much better than a circular saw for this, because it will cut far deeper and has a much thinner kerf, thus removing less material.

The cutting list comprises small components and so poses few problems. Otherwise useless boards can be used to good effect by working around defects, stick marks and so on. The tops are butt jointed using biscuits for alignment and added strength. The end panels and door panels are bookmatched and glued up.

PANELS

The plywood panels can now be dimensioned and checked for fit, then the end panels cut to size. To ensure a perfect fit in their respective grooves, a grooving cutter can be used in the router: working from the face side, set the cutter so the distance between the router base and the cutter is the same as the width of the groove. A shallow rebate is left on the inside of the panel.





1 The ply bottom is grooved in 2 The top is held on in the traditional fashion, with buttons 3 Trimming the panels 4 Interior showing the buttons 5 The scalloped handle is initially cut with a biscuit jointer 6 A fishtail gouge is used to complete the shaping of the handle. The fronts are bevelled all round 7 A finished scalloped handle 8 The handle recess 9 Ready for hinge fitting

MORTISE AND TENONS

Mortise and tenons are used in the construction of the frames. These are tricky if done all at once, but less so if done sequentially. Beginning with the front and back frames, the joints are prepared. The mortises may be cut either with a router or mortiser, if available. Tenon cheeks can be bandsawn, but a bench saw will make a cleaner job of the shoulders. Once dry assembled and faced off, cut the end mortise and tenon joints; these are not finished flush, so the mortises must be cut on two different fence settings.

Grooves for end, back and bottom panels are routed next. Although the solid wood panels will be thicker than the 6mm ply, all the grooves are cut to the thickness of the ply for the sake of simplicity – about 8-10mm deep. This allows a tolerance of 3mm either side for the solid wood panels to expand and contract. The bottom panels have to negotiate the inside corner of the legs, so a notch is cut to let the panel in. This can be done either by hand, or by marking out carefully the waste to be removed and clamping the pieces together, with a router running against a fence clamped to the pack of components.

ADJUSTING FOR LEAD

An important factor in setting up a bandsaw is to adjust for lead, the tendency for the cut to veer from parallel to a fence fitted at right angles to the front of the table. It is different for each blade, and will vary from non-existent to quite marked, and can be corrected by simply clamping an auxiliary wooden fence parallel to the direction the blade is actually cutting in.

This, assuming that the blade is sharp, properly tensioned and is tracking correctly, will transform a decent bandsaw into a highly versatile and accurate machine, capable of cutting veneers, tenons and other deep-ripping cuts.

A good bandsaw was – and would still be – my first choice of machine in a workshop specialising in one-off solid wood furniture.

END ASSEMBLIES

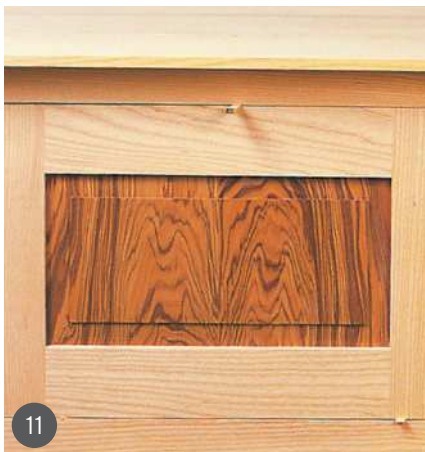
The end assemblies are glued up first. After cleaning up, check the panels can move slightly and have not become glued in. A sharp tap with a mallet should release any spot-gluing to the panel. The front and back frames, with their corresponding panels, are glued up

next. At this stage the whole job can be cleaned up, sanded and sealed. I used clear water-based lacquer to preserve the light colour of the ash.

DOORS

These are mortise and tenoned, assembled, faced off and grooved as per the cabinet construction. The section of the door frame is much greater, but otherwise the procedure is the same. The olive ash door panels are raised, the simpler the moulding the better. I used the tilting fence on my bench saw to set the required angle and after that a light sanding was all that was needed. The door panels are finished with Danish oil before assembly. This accentuates colour contrast. Finishing at this stage means the door panel will not reveal ugly light stripes if it shrinks lightly in service.

The hinges are solid brass butts, burnished and recessed into the door frames. The hinges are also recessed on the inside of the cabinet frame. The shallow chamfers on the underside of the tops are hand planed and sanded. Buttons are used to fit the tops to the cabinets.



10 Catch and chamfered top detail 11 Close-up of panel
12 Planing the chamfer on the underside of the top

HANDLES

Recessed handles give a contemporary feel to a fairly traditional door. Their practical advantages include reduced obstruction and likelihood of damage – to the user or handle!

A curved block is glued behind the handle position, as the door itself is not thick enough to take the handle recess.

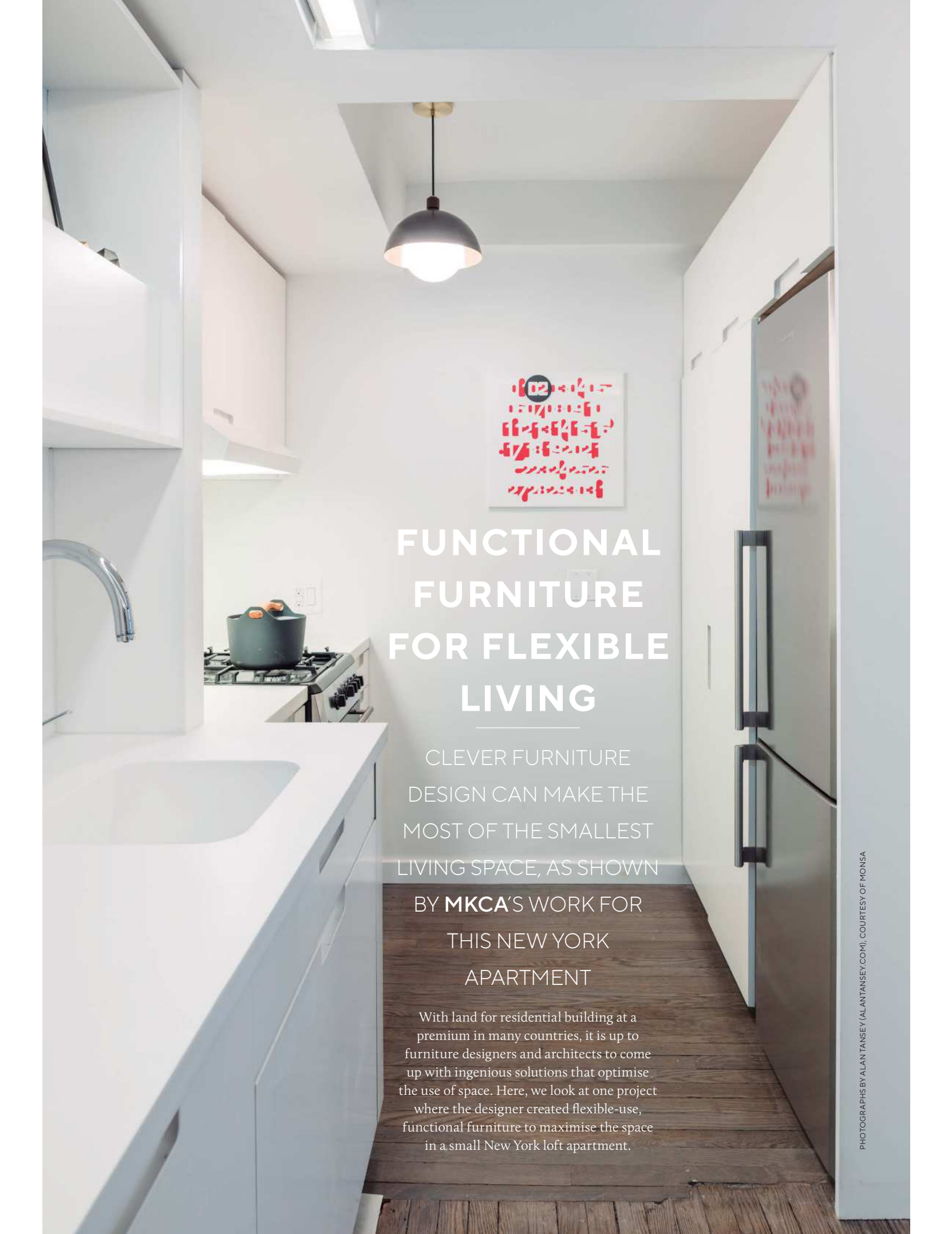
The door is offered up and the position of the handle drawn off the recess in the cabinet frame. To cut the side of the handle, use a biscuit jointer set to maximum depth of cut and 4mm in from the outside face of the door. The scalloped part of the handle is hand carved using a fishtail gouge, followed by assiduous sanding.

FINISHING

The white ash is finished with two coats of clear water-based lacquer, cut back with 320-grit silicon carbide paper between coats. The top is given a third coat. The piece is finally given three coats of clear finishing wax before a 0000-grade wire wool burnish.



‘These tables have a feel of William Morris about them but they are still a contemporary design.’



FUNCTIONAL FURNITURE FOR FLEXIBLE LIVING

CLEVER FURNITURE
DESIGN CAN MAKE THE
MOST OF THE SMALLEST
LIVING SPACE, AS SHOWN
BY **MKCA**'S WORK FOR
THIS NEW YORK
APARTMENT

With land for residential building at a premium in many countries, it is up to furniture designers and architects to come up with ingenious solutions that optimise the use of space. Here, we look at one project where the designer created flexible-use, functional furniture to maximise the space in a small New York loft apartment.



THE 5:1 APARTMENT

Situated in a 1920s co-op building in the Gramercy Park neighbourhood of Manhattan, this apartment was entirely reimagined by architecture firm Michael K Chen Architecture (MKCA).

The 5:1 Apartment is the latest evolution of MKCA's work on ultra-functional urban micro housing, containing the functional and spatial elements for living, working, sleeping, dressing and entertaining within a compact 36 sq m space.

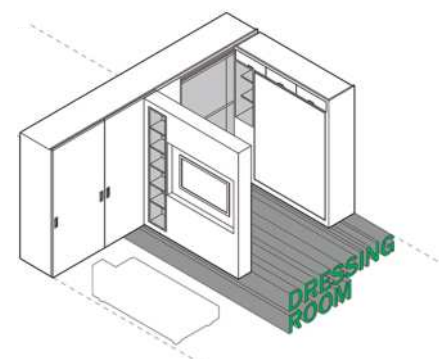
A motorised sliding storage element glides from one end of the room to the other, creating several distinct spaces within the apartment and revealing and exchanging spaces between daytime and night-time zones.

As the moving volume pulls away from the wall, it reveals a dressing room zone with built-in dresser drawers and clothing storage. Fully extended, the space for a queen-sized fold-down bed is created. The sliding element is powered and cabled for television and audio, and houses all of the audio-visual and networking components of the apartment, along with additional storage and display space. A pivoting enclosure with custom speakers allows the television to rotate 180° for viewing from the seating area, or the bed and dressing rooms. A built-in nightstand with power for a reading light and alarm clock is located adjacent to the headboard.

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Sideboard, 95% dowel construction

'I have always felt that a fair percentage of the population, men and women, would consider woodworking as a hobby, but hesitate because of the difficulty in creating accurate joints,' says Jim Lindsay, inventor of the Dowelmax joinery system. 'The craft is inspiring, creative and can result in pieces that are truly unique. So to create a device which brings this craft within reach of the novice is fulfilling.'

Jim's dowel-based system has made carpentry much more accessible to all kinds of people – but perhaps the most uplifting experience he himself has had was when he met John Cook. He explains: 'John is completely blind, his eyes were surgically removed while in his twenties because of a rare disease, yet he has a complete workshop and designs, builds and finishes fine pieces of furniture all by touch. Since Dowelmax is tactile, John is able to use it for most of the required joints and has done for years.'

'When I learned he couldn't see I could hardly believe it. I saw photos of his work and the pieces were all first class. I was absolutely elated – I had inadvertently invented something that, due to the

inherent design, was tactile and could be used by people with disabilities.'

Some of Jim's earliest memories are about repairing clocks and other mechanical devices. His father was an artificer in the Royal Navy and sustained wounds which led to numerous amputations. At a time when the family was strapped for cash in the 1940s, to make sure he was always on time and didn't lag behind other workers, he converted an ordinary clock into a battery-operated alarm clock. Jim recalls: 'At an early age I was fascinated by this process, and I think this may have been the beginning of my interest in invention.'

Jim didn't start working with wood straight away, but after an apprenticeship joined the merchant navy as a junior engineer officer, serving aboard both the Queen Mary and Queen Elizabeth. In the mid-1960s he began working on cross-Channel ferries and rose to the post of Chief Engineer. In 1974 he emigrated to Canada and joined the British Columbia Ferry Corporation, later incorporating a marine

investigation company in Vancouver.

Jim says: 'I always had an interest in woodworking and furniture design, and for years had been aware of the complexities and difficulties in creating perfect wooden joints. I then decided to devise a way to create wooden joints in a more efficient and less time-consuming way. At that time, the mortise and tenon was considered the crème de la crème of joint systems – and it was, but it was also time-consuming and laborious to complete. My goal was to create a joining system that would be 10 times faster without compromising strength. Other methods on the market were, in my opinion, inferior and weak.'

'At that time, I felt the most logical approach was dowels, but these were notoriously difficult to align properly. Initial attempts at a new design proved fruitless and became so difficult I almost gave up. I did persevere however, and a few weeks later the answer became clear. It was bizarre: what appeared to be an extremely complex problem was resolved with a simple solution – the application of the mirror image.'

IT'S DOWEL OR DIE

'During subsequent tests, in some cases supervised by professionals, the system proved marginally stronger than a comparable mortise and tenon and about 10 times faster to complete.'

Jim began working on detailed drawings and a prototype, then looked for a Canadian machine shop to produce the system. He patented his invention, but notes that that did not stop it being infringed during the 2000s. 'Interested parties should be aware that even if you have a valid patent, it is not foolproof, it is merely a deterrent,' he warns.

Marketing was done at wood shows and through the internet, and as he embarked on promoting Dowelmax through YouTube he had to hone his woodworking skills – 'my methods were now in full view,' he says.

'At that time in the early 2000s, most woodworkers would never have considered creating an entire piece of furniture using dowels, for various reasons – including the difficulty in alignment and the strength of the fixture,' Jim says. 'These two problems were negated by the Dowelmax design. Videos of an entire project being created using dowels, together with supervised strength tests, proved over and over that the multi dowel system was extremely accurate and the strongest system of all, by a margin in excess of 30%.'

In 2001 he was awarded a medal for

the design at the *Tomorrow's World* science fair in London, and in 2002 he demonstrated the system on Canadian TV. The business progressed slowly but steadily during the early years, with numerous effusive congratulatory emails contrasted by 'constant complaints and reminders that most people considered the price of the package to be too high'.

Jim says: 'This brought us to an impasse. We were unlikely to survive financially if we maintained the manufacturing base in Canada, it was just not feasible from a business standpoint.'

'We needed to ramp up production and at the same time reduce costs, at which point we had little choice but to consider offshore manufacturing.' After three or four years of grief and bad experiences in Hong Kong and mainland China, he eventually found a reliable machine shop to produce Dowelmax. 'The initial samples were excellent and, surprisingly, of higher quality than we had received locally,' he says.

'A business concept such as this, including original idea, prototype manufacture, patent submission, production and marketing, is no mean task and can at times be daunting, but we never considered giving up. As hard as it was, it was always fascinating, particularly with respect to the amazing characters we met and talked to along the way,' Jim says.

'Conventional wisdom opines that a

good idea or product will require three years before commercial acceptance. Not in our experience. Our period of operation has extended over 20 years, and as a small company of three we had virtually no remuneration for at least the first 10 years. It was daunting, but we were determined and had no doubt about the value of the system. It has value for both the beginner and the expert, and could provide additional impetus for newcomers considering the craft.'

EARLY EFFORTS

So how did Jim first get interested in woodworking? 'I learned basic skills at school and found it necessary to learn quickly,' he says.

'The teacher's favourite wood was mahogany, and he had a two-inch square section which he cherished and kept handy. If you erred on a project and wasted any of his precious wood, he would strike you with the block of mahogany – enough to create discomfort but not damage. I am serious! He was however a great teacher, and I liked him very much. Mostly I am self-taught, and when I encountered a woodworking problem, I used logic and common sense to solve it, at the same time carefully weighing up all safety requirements.'

His first major project came when he emigrated to Canada. 'We were not exactly poor, but we were in no position to purchase furniture,' he recalls. 'Some time later the shipping crate arrived with our belongings, and it was large and constructed of solid pine. At that time, my woodworking skills and tools were very basic, but I decided to use the pine boards to make essential items of furniture. These included beds for the children and a couple of tables, all made using dowels and a crude aligning jig.'

'My first completed project was a pine dining table, very basic, a few knots, four by four legs, and a thick top. I was fairly pleased with the result. It had two benches for seating, and we used it for years with no problem or deterioration. A casual friend showed some interest and purchased the set for a nominal sum. Two weeks later she told me the corners were turning up. I checked it out and found she was right. I was so embarrassed. It was a lesson I will not readily forget. The





Chest of drawers,
100% dowel construction



Chess table
RIGHT Side table,
80% dowel construction



Armoire for TV,
100% dowel construction

deformation was something I never quite understood, and perhaps the reason I have never sold anything since.'

His current workshop is in a 250 sq ft converted garage at his home in British Columbia, but, he says, like every woodworker he needs a bigger workshop. 'After a few years, the space appeared to shrink, leading to petulant discontent. Machinery has multiplied within, so all the machinery stands I have built are fitted with castors, something I highly recommend.'

His current preferred wood is cherry, a significant step up from some of the materials he used earlier in his work. 'Many years ago, because of financial constraints, I began using yellow cedar. When milling or turning, it gives off the most pleasant odour, perhaps its only attribute! Sometimes in the middle of the night a sound like the crack of gunfire would waken us and turn out to be a board or a piece splitting in two. Following several sleepless nights, I tried alder, a species with a lovely grain, but difficult to stain evenly. I now use cherry, which has a beautiful grain and with careful preparation is relatively easy to stain. The

next upgrade was intended to be walnut, however it is double the cost, with no appreciable advantage, so for now I will stick with cherry,' Jim says.

'I like to stain most pieces and initially that was problematic as the surfaces turned out blotchy. I did have more success with cherry, but only when using a conditioner. I use a mixture of shellac and methyl hydrate, and later apply a gel stain. I prefer a spray-on finish using water-based lacquer, but do not have the proper facilities to do so, so I use a semi-gloss finish by Min-Wax, which does not have a plasticky appearance. After dry-fitting, I disassemble then treat and stain each part individually. It is twice the work but worth the effort.'

So what does the future hold? 'Our business largely depends on the financial and political climate of our great neighbour to the south,' says Jim. 'When Covid-19 struck and spread, we anticipated the worst and prepared to cut back. I get little pleasure in stating the opposite occurred, sales increased. I am concerned about the immediate future though, and so much rests with the United States. Americans we have

met are kind, caring, and intelligent people, but the direction taken by the present leadership, on many fronts, is incomprehensible and chaotic. In considering these traits, particularly with respect to the response to the virus, I am reminded of the adage: "The universal aptitude for ineptitude makes any human accomplishment an incredible miracle".'

In terms of his woodworking, Jim is constantly worried about running out of ideas. 'In our house we have items on display and more not on display, in our storage room, in closets, and my wife – who is supportive in the extreme and my inspiration – has threatened to leave me if I make one more table. Having said that, I am considering a table lamp based on my three-leg side table design.

'About a year ago I decided to do a series of simple projects for YouTube, titled *Back to Basics*: beds, end tables, hall tables, bookcases and so on. When finished we advertised them locally and gave each one away free to a single-parent family. Good for them and, even better for me.'

dowelmax.com



STEAM-BENT SIDE TABLE

MITCH PEACOCK USES AN ASH
BUTT'S NATURAL CURVE TO
MAKE A UNIQUE TABLE

I had acquired a length of ash butt that had been discarded due to its hockey-stick shape, and I was set on turning it into a piece of furniture that celebrated that curve. At first I had no ideas about what to do with it, then several ideas came to me, as is often the case. Eventually I decided to make a small side table with steam-bent legs.

BREAKING DOWN THE BUTT

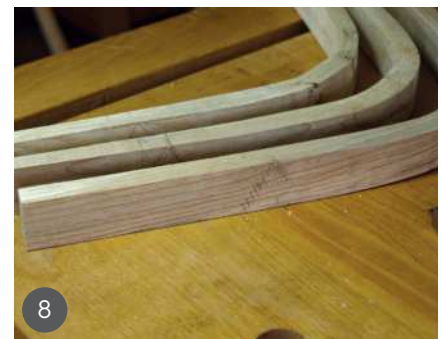
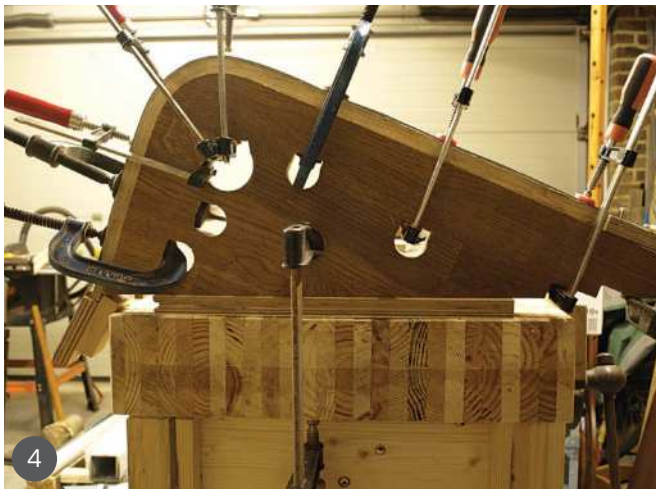
1 As I split the butt into smaller sections, I discovered that the grain was twisted and wavy, and splitting was somewhat haphazard. My attempts to split suitable pieces from which to harvest the table legs were disastrous, and with more and more pieces ending up on the firewood pile it was time for a rethink. Looking at what I had split, I decided I could salvage four

pieces of roughly 50mm by 20mm battens, roughly following the natural bend in the butt. If I could exaggerate the bend, to around 90°, then I could do away with rails and incorporate the legs into the table top.

THE LEGS

2 I used a drawknife to bring the split sections closer to the leg blank dimensions, squaring the edges and rough thicknessing. The aim was to follow the grain as much as possible, which would help when it came to bending them later.

3 At the bench, I refined the blanks, reducing them to almost the finished width.



STEAM BENDING

Steam bending is a process where steam is used to heat wood to the point where the lignin yields its grip a little on the wood fibres, allowing them to slide relative to each other, which allows the wood to be bent. Unconstrained, the fibres towards the outside of the bend will snap as they get stretched, and fibres running out of the wood here are liable to break out. To guard against these problems, a metal strap with end stops is attached during bending.

The twisted and wavy grain of this ash butt was far from ideal for steam bending, and so it was with some trepidation that I began the process with the first piece. I used a 100mm square aluminium tube as a steam box, fed by a wallpaper steamer unit, and cut my bending form from a hardwood countertop offcut. The first leg failed, breaking almost all the way through in several places. With just three blanks left, another failure wasn't an option, so I tripled the steaming time and practised getting the blank from the steam box to the jig as quickly as possible.

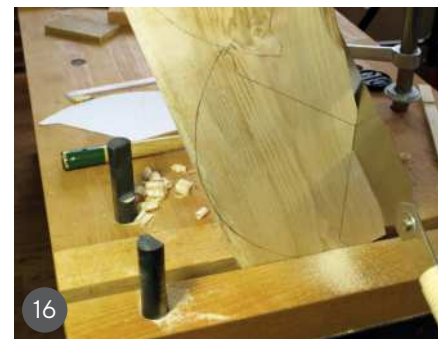
4 With great relief, the last leg was clamped in the jig without any problems.

5 After cooling on the jig, each leg was tidied up back at the bench.

6 One leg did have some damage caused by the presence of some spalting, which weakens the structure, towards the outside of the bend. Since the rest of the leg appeared perfectly okay, the damage was repaired by filling it with brass filings and CA glue.

7 The top of the legs were shot square to the edges...

8 ... producing the flat areas that would lie flush with the leaves, and allow the central joint to be marked out accurately.



9 The three-way halving joint was carefully prepared...

10 ... and, after a little fettling, it fitted a treat.

11 Mortises for loose tenons were cut in the legs, referenced off the flat top surface.

THE TOP LEAVES

12 The three table leaves were prepared from a shorter, split section of the butt. I used a wooden jack plane to flatten the opposite sides first.

13 The resulting short plank was then ripped into two boards.

14 These boards were then thickened and smoothed.

15 I used a paper template, taken from a full-size drawing of the

table top, to mark out the leaves. The one board was a little too narrow for the leaf, and so some of the waste area was glued on, leaving an invisible join.

16 After knifing in the 120° cuts, the leaves were sawn free. Sawing close to the knife lines allowed these edges to be quickly finished by paring; this was necessary because the shape of the leaves means these edges can't be planed.

17 Because there were three leaves rather than, say, four, assembly of the top was not straightforward, with pieces needing to move in two dimensions relative to each other. To cope with this movement, the mortises in the leaves were extended significantly.

18 With the dry assembly completed, the leaves were removed for final shaping and sanding. A wide bevel was added under the arc, which lightens the appearance.



FINISH AND ASSEMBLY

19 I pre-finished all the parts with acrylic sanding sealer and lacquer before assembly. The dry assembly had been quite awkward, so when it came to the glue-up I chose a reversible glue, just in case things didn't go too well. As it happens, it came together fairly well, with just a few light blows needed to adjust the positioning. A single band clamp was all that was needed to pull the leaves in tightly.

20 To perfect the flush joints between the leaves and legs, I used a cabinet scraper and abrasive paper, before re-finishing the table top.

I think the table compares well to the discarded butt it came from, if not the majestic tree it once was. Certainly I look forward to it holding a tumbler of my favourite libation from now on!





SHIHOU KAMA TSUGI

SELF-STYLED 'JOINERY FETISHIST' **DORIAN BRACHT**
TALKS US THROUGH THIS STRIKING TWO-TONE JOINT

According to Nakahara Yasuo, author of *The Complete Japanese Joinery*, the shihou kama tsugi is used at the foot of columns of bell towers and the sanctified wells of shrines and temples. It is usually incorporated in the original construction and is not used as a repair for rotting posts.

This joint was quite a fiddly one. I used a knife for the layout so the 45° cuts could be as precise as possible. The hardest parts were definitely paring to the line and the final fitting to get it hand-tight. Those 45° corners are a hazard to anything and everyone, including themselves! All in all it was a very satisfying experience to have it fitting with no major gaps.



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