FURNITURE & CABINETMAKING

MASTERS OF WOOD

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3YR GUARANTEE

WELCOME

It's a kind of magic. When you work that perfect joint, turn that perfect table leg or see a complex piece of furniture come together, it's like a bit of magic in your workshop. But this month we're looking at a different kind of furniture magic – the furniture optical illusions highlighted by YouTube magician Zach King in a recent video. The piece is well worth tuning into online, and shows off the brilliance of some inventive furniture makers who have taken a completely different approach to their work.

Another kind of magic comes in the elegance of George Johnson's expanding tables, with designs influenced by the mathematical sequences he learnt about when he studied for a master's degree in physics.

We've got plenty of projects for you to work your own magic on this month, from basics like how to turn a tapered leg and perfect the spline joint, through to a stylish low couch table, an arts and crafts-inspired toolbox and a highly desirable shoji-style bar trolley.

We also meet inspiring makers from all over the world, including Australia's Damion Fauser, who caught the woodworking bug as a United Nations military observer in the Sudan; Britain's Charlie Caffyn, who took learnings from his time working with mass-produced furniture and brought them to his own business creating artisan, hand-crafted pieces; and US-born, Berlin-based artist and designer Michael Beitz, whose unusual pieces will make you take a whole new look at furniture.

And that's magic!

'There is no magic to achievement.
It's really about hard work, choices and persistence.'

MICHELLE OBAMA

CONTENTS

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COVER IMAGE George Johnson
photographed by Ruth O'Neill

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

FURNITURE & CABINETMAKING

If you would like to be featured in *Furniture & Cabinetmaking* please email **FCEditorial@thegmcgroup.com**

A FRESH TAKE ON FURNITURE

CHARLIE CAFFYN'S FURNITURE COMBINES MODERN INNOVATION WITH TRADITIONAL CRAFTSMANSHIP. HE TELLS *F&C* ABOUT IT

PHOTOGRAPHS: TIM J BAKER PHOTOGRAPHY

How did you first get interested in making furniture?
Looking back over my childhood I can remember various examples of what was to become my profession. My Dad caught me at the age of nine with a plywood skateboard deck I had made sneakily in his shed and was holding over the steam from the kettle to try and steam-bend it – I failed. I also used to get old pallets and rip them apart to make furniture, my first successful piece was a table with shelf storage for my *Beano* annuals.

But it was during my Art Foundation year that I truly realised furniture was my path, and I spent most of my time either in the workshop or life-drawing.

How did you train?
Following my Art Foundation, where I realised furniture was my true passion, I did a two-year HND in Furniture Design and Make at Rycotewood College in Thame, Oxfordshire. It was a brilliant course with amazing students, where the emphasis was on quality and traditional hands-on craftsmanship. As part of that course I took part in an exchange with the Swedish college, Stenebyskolan. That was an inspiring experience which took my perceptions of quality and detail and my love for wood to a whole new level.

Before going on to Ravensbourne College in London to do a BA in Furniture Design and Related Product Design, I did three months' work experience in the design office of a nursery furniture manufacturer in East London. My years at Ravensbourne, where I studied shoulder to shoulder with product and interior designers, really drove my love and appreciation of the design and the thought process involved in developing beautiful and functional furniture.

What was the first project you completed?
My first project as a professional was just at the end of my degree, with colleagues from my furniture courses. I designed a range of furniture for the Home Bar in Old Street in London. It included large focal point mirrors, a magazine rack, various types of tables and a bar, all made in Mexican rosewood veneers. We used so much that we dried up the stock of the veneers from the supplier in East London!

You have worked in both mass production and made to order furniture. Can you tell us about your experiences before you moved into your own business and how those experiences have influenced your work now?
Working in mass production was an absolutely incredible experience. I worked with both small- and large-scale manufacturers who produced our products, from Spain and Italy to Croatia and Slovenia, before expanding our supply base into China, Vietnam and Malaysia.

We supplied a few of the major high street retailers and also sold our products through independent shops. As such the quality levels, product development procedures, supply consistency and testing all had to be maintained at a really high level.

I learned that the job of manufacturer was an extremely hard one. I have nothing but the deepest respect and admiration for the work they do, and formed extremely close bonds with many of the staff at the factories. I learned that attention to detail, order and procedure are key.

What made you decide to set up on your own?
Having spent many years working for a company as a project manager and designer, in the UK and around Asia, it got to the point where I needed a change. I always knew that after working for so long in mass production, I would return to making bespoke pieces of furniture from wood with a focus on design, detail and craftsmanship.

I was working too hard and my now wife Emily was in the UK. We both quit our jobs and went travelling, after which I knew it was time, and with all the experience I had, I felt ready to set up my own company.

PHOTOGRAPHS: DAVE MARS

How did you go about it?
Initially I was offering design consultancy, which also involved prototyping the pieces. After that the workshop naturally grew, as did the work and commissions.

At the back of my mind I always intended to produce my own range of furniture, but fairly quickly the years went by, and there never seemed to be the time needed to design and develop a range. Finally, it all came together about two years ago when I designed my Whitehill garden bench, and this piece became the first of my range.

I had strict criteria I wanted my designs to adhere to: they had to be generational pieces of furniture that celebrated and challenged structure, which would be stand-out pieces of architectural furniture with an eye for detail and, of course, function. The range gradually grew from there.

What type of tools do you like to use and why?
I am jig obsessed. A jig is a guide you make to aid the process of making one part of a piece of furniture. You sometimes make a jig that is only used once, or you use them on a regular basis as with my Farleigh Magazine Rack, for which I have made over 10 jigs. A jig itself to me is a thing of beauty, and like the components in a piece of furniture, it has to be 100% accurate and millimetre perfect.

The bespoke commission process will also usually result in a large amount of chisel and mallet use, and there are a couple of old chisels in my set that I return to more often than others; they've become my old faithfuls.

Power tool wise, I am a router lover. One is fairly basic and is permanently set up on my router table, the other is a beautiful Festool OF 1400, and my very consistent workhorse is my Trend T11.

Are there any you avoid, and if so why?
I have no real aversion to any particular tool – the job will dictate the tool required. Although I do hate wood waste and try as much as possible to keep waste to minimum.

As my workshop is small, it's easier for me to pass power tools along the wood, rather than passing the wood through a machine, which requires twice the amount of space. Also, noise is a consideration where I work, so the use of any machines that I call 'screamers', such as a spindle moulder or planer thicknesser, is kept to a minimum.

Tell us about your workshop.
My current workshop is in my back garden. Before we moved to Bradford on Avon in Wiltshire about eight years ago, we were living in Bristol and I had two great large workshops. My current garden workshop is on the small side, which means I have to be incredibly organised to prevent myself from being swamped by materials, tools and pieces of furniture. I am just in the process of adding an additional space for oiling, packing and office to free up more room in the main workshop.

I have been considering moving to a larger space, but if I did, it would need to be about four times what I currently have to make the cost worthwhile, and so would represent a considerable leap! Currently, I am in two minds about this move, as I am now starting to bring in local craftsmen who have their own workshops and can work alongside me in their own spaces. Watch this space...

How does your design process work?
When developing a new design, I start in two ways. Either with an intense amount of market research into which products or pieces of furniture would be best to bring to market. Or, as is the case with my Farleigh Magazine Rack and Iford Library Step Chair, I follow my desire to design and make a certain type of furniture, usually brought on by my own need or want for such a piece. I have so far always found this to be the best and most successful route!

Once I have decided on the piece, I spend a large amount of time getting a feel for the design in my head over dog walks and many moments in between. Along with research into the existing market, I spend a huge amount of time in the workshop prototyping.

I then spend time with these prototypes for some weeks as I learn to live with them and fine-tune the design. At this stage I have before, after weeks of work, discarded a design completely if it's not working. After this step, I focus on detailing and, at all points, the construction and structure of the piece. I aim to make my pieces as structurally and architecturally interesting as possible.

Which woods do you most like working with?
My wood trinity is oak, cherry and walnut. Oak, although not my favourite in terms of the actual practical making methods, is visually one of my favourites. Cherry and walnut win hands down for the sheer joy I get from actually cutting, joining and sanding a slightly softer and kinder wood.

All three, though, give a stunning finish after going through the grades of sanding and finishing off with three coats of oil. That said, I do also love and push the use of ash and tulip wood, not just as practical joinery timbers, but as aesthetic timbers as well.

Do you work with other materials?
I have recently introduced my Farleigh Colour Magazine Rack, which is a plywood version of my solid wood magazine holder with coloured Formica laminates. This was demand and design-led. It meant I could offer a bolder and more contemporary version of my most popular design, at a slightly lower cost as I am using a CNC machine.

At present I am also looking at coloured Perspex and acrylic as possible materials to incorporate into my furniture, and as a fan of design collaborations I am in discussions with a glass architectural designer to work on a piece together.

What sort of finishes do you prefer?
For wood, after trial and error, I have settled on Liberon Finishing Oil for all my solid wood pieces, but always three coats. The finish is not quite as dull as a standard oil, and not as glossy as a lacquer. It sits in the middle, offers a good amount of protection and makes the grain sing.

At times I will add a coat of beeswax on to this with a large amount of buffing. For bespoke pieces, I will use the relevant finish required by the commission.

Handmade, handcrafted and artisan are key words on your website. Why are those elements important to you?
Having spent years in mass production – and in a world where products, clothes, machines and furniture can be seen as disposable – I want to produce legacy pieces of furniture that the customer knows have been crafted by just one set of hands, by someone who has a passion for what he does and takes real care and pride in what he produces.

Customers need to realise they are buying a personal piece of furniture that they can keep and hand down through their family. Small artisan businesses need to be celebrated, supported and at front of mind when buying quality goods.

PHOTOGRAPH: EMILY MIDDLETON

PHOTOGRAPH: EMILY MIDDLETON

What inspires you and where do you get your ideas?
I am furniture and house obsessed. I spend a lot of time in customers' homes and relish the chance to experience the furniture, products and finishes they use. I can spend hours chatting with people about the furniture they have chosen or would like to choose.

At the moment, I find Victorian iron structures a great source of inspiration, from the vast cavern-like roofs of railway stations to the stretching expanse of a suspension bridge. Structure and architecture are at the front of my mind when developing my pieces, and I strive to make each a statement piece of miniature architecture.

What has been your favourite project?
My most recent favourite project has to be my solid wood Atworth Lamp. I designed this with lighting designer Deb Wythe of Design in Progress.

It was a really challenging and time-consuming project to produce a directional, atmospheric lamp from solid wood, with a really simple and modest structure. The simpler a design, the harder and longer it takes to design and detail.

What is the most challenging project you have worked on and why?
Again, I think it must be my Atworth Lamp. There were a huge number of obstacles to work around, and of course the stringent testing to meet British and European standards to get the CE mark, made harder with the inclusion of electrics and cables. Each step had to be perfect and every component had to do a job and pass certain tests.

Do you prefer commissioned work or your regular stock?
At present I have a great balance between commissioned work and orders for pieces from my range, about fifty-fifty, although the range has been steadily creeping upwards as my work starts to be recognised and seen more. I am now at the point where expansion and the need for extra help in the workshop is something I can no longer ignore.

The commissioned work can really keep you on your toes and is great for creativity and productivity. I will always take on commissions but the long term goal is for the range to be about two-thirds of the business, as it really does feel amazing to make these pieces and send them out to customers internationally.

How do you go about working on commissions?
Each client is different, but mostly they tend, after the initial consultation and visit, to let me lead them in the design process. I try not to bombard them with too many design options, as that often leads to indecision – I'd rather take my time on the design side and come to them with something I have tailored to their needs and taste.

What are you working on now and next?
I have probably a bit too much in the pipeline at the moment! In the autumn, I will be starting to supply small independent shops

'I want to produce legacy pieces of furniture that the customer knows have been crafted by just one set of hands, by someone who has a passion for what he does and takes real care and pride in what he produces'.

PHOTOGRAPH: TIM J BAKER PHOTOGRAPHY

across Europe with pieces from my range. I am also starting to source small local makers to broaden my range with the use of different materials.

Where do you see your work in the future?
I thought I would always be happy to work with just solid wood, which I have done for well over 20 years now, but the designer in me cannot help but look at the other incredibly exciting material options.

There are a couple of projects in different materials that I am working through at the moment, but at this point they are still in the early stages. But at my core, and in my workshop, solid wood is still king and will remain so.

Have the Covid-19 pandemic and the lockdown affected your business?
The Coronavirus pandemic initially saw orders for pieces from the range drop, as some of my products are sold via shops, and also many people were holding back from spending on anything that was not 100% necessary due to the sudden changes in their financial situations. However, throughout June I experienced a large spike in orders for pieces from the range, coupled with a rise in orders from Scandinavia, which I can't really explain.

The commission side has also grown over the past few weeks as people look to make home improvements. My problem currently is doing the work, as I am home-schooling my two kids two days a week. Luckily my workshop is in my garden, so I can 'lock down' very easily and still work.

Long term, I think the impact will be extremely hard for large businesses with high overheads and staff numbers. Luckily, I am a tiny business and extremely flexible.

On a personal level, this time has taught me to slow down and not run at 100 miles an hour. When everyone around is pushing hard to move forward, it's hard not to do the same. With everything stopping I have realised I can do things at my own pace, and if a new design doesn't come out until next year, that's fine – the world will keep spinning.

What do you do when you're not working?
Time outside work is spent with my family. We have a seven and a five-year-old so there is a constant supply of projects to be done and games to be played.

Alongside that is our now slightly creaky Border Collie, Jack, who still needs a large amount of exercise, which is one of the reasons we got him, as my wife and I are massive walkers and we have trained the kids to appreciate this as well – as long as we supply them with a picnic halfway round one of our weekend walks!

My eye obviously turns to our home, and improvements we would like to make, but time is not on my side, so any projects at home take a back seat to running around with the kids and building dens.

charliecaffynfurniture.co.uk

PHOTOGRAPHS BY BRIAN HOLCOMBE

BAR CABINET

A SPECIAL COMMISSION GAVE **BRIAN HOLCOMBE** THE CHANCE TO TRY OUT AN UNUSUAL CONSTRUCTION

Late last year a client came to me with a unique proposal, one which was entirely open-ended. My client showed me a space in her house where she wanted to utilise material from a tree that had fallen in her yard. The space seemed just right for an idea that had been lingering a few years on my drawing board. The Bar Cabinet is a project I had designed a number of years beforehand. The project was quite aspirational for my skill level at the time, and during those few years since designing it I've better prepared myself to actually make this project. As luck would have it, this opportunity would eventually allow me the chance to test myself.

I designed this cabinet to feature a frame and panel carcass, which would carry a drawer, wine rack and storage for upright bottles. Along with that I wanted to use sliding doors and a set of brass castors.

The frame and panel carcass would feature traditional mortise and tenon joinery throughout. It incorporated a groove to house rift-sawn cherry panels and a rail about the top that would double as a handle. It was very important that this cabinet had to feature a slab from a tree that came down in the client's yard. This tree was dear to her and she wanted me to make good use of it in its entirety.

I built out the front of the cabinet to incorporate traditional shoji, featuring upper and lower door tracks of a hefty scale fitted with full-framed shoji screens, complete with washi (mulberry bark paper).

MAKING THE CARCASS

1 First I had to mould the track rails and cut the joinery to make the outer frame members.

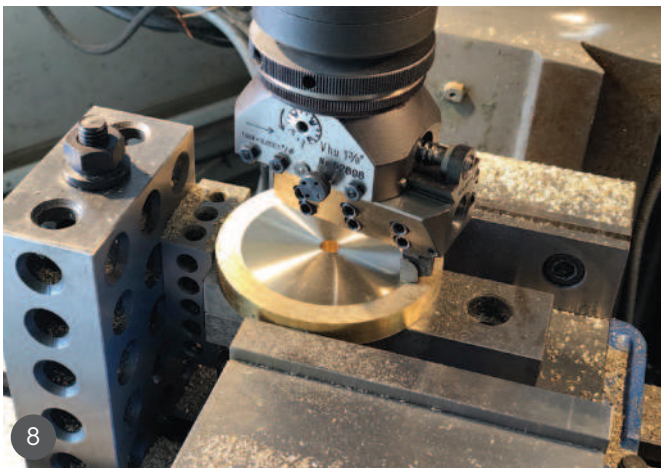
2 The frame was then fitted with another set of tracks that would carry the drawer. These drawer tracks were floated at their rear connection to allow the large door tracks to move with seasonal humidity changes.

MAKING THE CABINET FRONT

3 Next, I made the shoji screens to complete the cabinet front. Shoji frames feature a type of joinery that is unique to them: a mitred shoulder referred to as the 'jaguchi' and a moulded inner rail known as the tsukeko.

4 The doors are backed with mulberry bark flecked washi paper, giving a clean soft background a bit of visual interest. The cabinet carcass was then fitted with rift-sawn cherry panels and a top made from the client's remaining cherry tree slab.

5 I then moved on to making the dovetail drawer which would be used to store corkscrews and other bar accoutrements, and a wine bottle holder that would sit under the drawer. This completed the wine half of the cabinet.

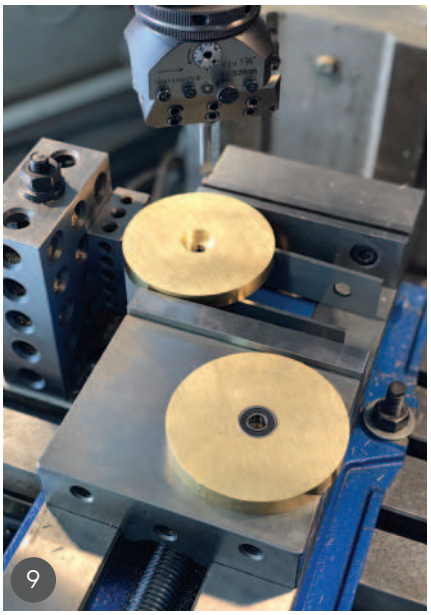


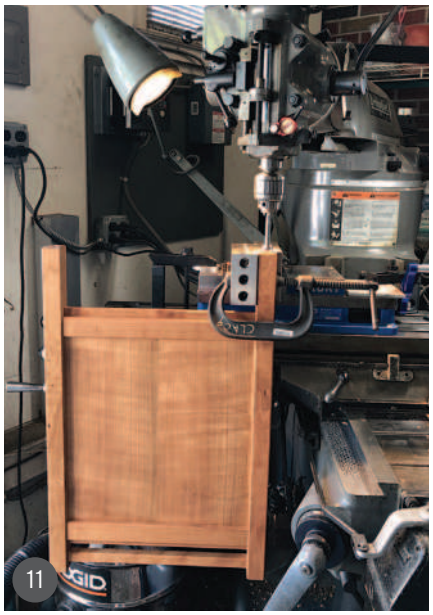
6 The opposite side will be used to store upright bottles, which are far easier to accommodate, as they require only a bit of space.

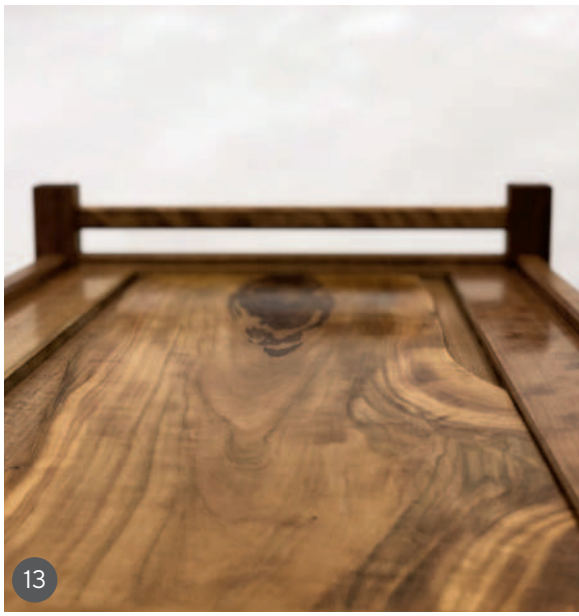
MAKING THE CASTORS

7 With the cabinet portion of this project all but complete I began to focus my attention on the castors. Without any castors of my liking readily available I decided to build my own. These castors could be simple in nature, they did not have to pivot, but complication found its way into the design at the connection between wood and metal. To further complicate matters I could not access an outside machine shop and so the entire project would need to be done on my knee mill outfitted with a boring/facing head. The process began with the 'shank' portion of the castor, which would be installed into the leg. The shank is composed of a brass block, fitted with graphite bearing bronze. This block was installed into a long tube and silver-soldered in place. Fitted into this was a shaft that would hold the castor.

8 Next the castors were prepared. Being without access to a lathe made this work a bit tricky, but I decided to fixture carefully in the mill vice and take 'facing' cuts to create smooth, accurate surfaces. (Note: the guard has been removed for clarity here and in photos 9, 11 and 12.)







9 I then bored a hole in the castor's centre, which would house a bearing.

10 With the wheel blanks now made parallel and with accurate centres I could then fix them up on the mill's rotary table and cut a groove along the outside of the castor. This groove would be filled with rubber 'tyres'. As no such tyres exist in normal use, I went searching for something suitable and readily available. I found a square section seal, made of medium durometer rubber, intended for a very large hydraulic piston that would do just the trick.

The wheels were polished up along with their adjoining parts then pressed together to create a friction fit that would hold them in place. The tyres were then installed on the wheels.

11 Favouring accuracy over ease I decided to fix the cabinet sides on to the Bridgeport mill in a vertical position and bore the round mortises needed. Boring the holes was easy work but what came next was a touch more hair-raising...

12 To retain the shanks in place I decided to use a shoulder bolt cut in through the side of the leg – easy in theory, but the positioning had to be accurate to a few thousandths of an inch, at most. I carefully positioned the cabinet sides on the Bridgeport mill and used a rotating 'wobbler' and digital readout in conjunction with careful measuring to find my location. My efforts paid off and the parts assembled well.

13 The cabinet was finally assembled and prepped for finish. I went with the finish I like most for this work, shellac. Shellac carries a lot of charm for me, and I feel it ages well and looks pleasing on cherry.

CHIPPENDALE'S DIRECTOR

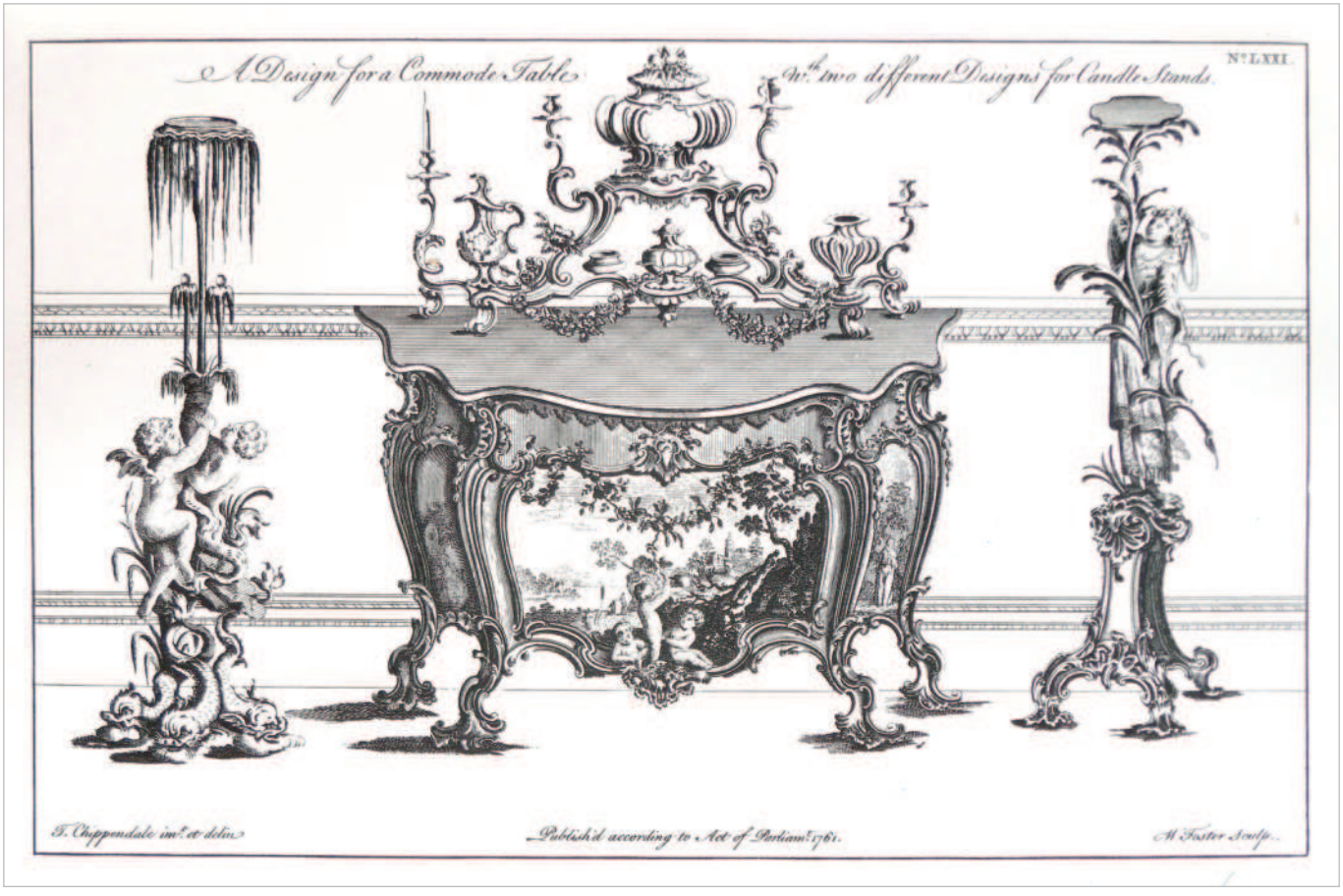
STEVE BISCO LOOKS AT THE MAN AND THE BOOK THAT TRANSFORMED 18TH-CENTURY CABINETMAKING

Thomas Chippendale, one of the greatest names in furniture-making history, was born in Otley, Yorkshire in June 1718, the son of a cabinetmaker. As he grew up he became a cabinetmaker himself, and also a master carver of outstanding talent. By the age of 31 he was living in London and in 1754, at the age of 36, he had set up his business at 60-62 St Martin's Lane, near where Leicester Square Underground Station is today. The outstanding quality of his furniture, mirrors and other items, and their extraordinary carved ornament, earned him a high reputation among the grandees of the early Georgian era. Orders flooded in from dukes and duchesses and all ranks of the aristocracy.

Chippendale set up the business in partnership with an upholsterer, James Rannie, who contributed much-needed finance and managed the upholstery and fabrics side of the business until his death in 1766. At its peak, the Chippendale workshop employed more than 20 craftsmen, including cabinetmakers and carvers as well as specialists in upholstery, gilding, lacquering and making mirror glass, and as many apprentices, some of whom went on to establish their own businesses at home and abroad. Production of high-quality Chippendale-style furniture in Philadelphia, US, in the 18th century is likely to have been the work of ex-Chippendale craftsmen.

ABOVE The Diana and Minerva Commode made by Thomas Chippendale in 1773 for the State Bedroom in Harewood House, Yorkshire

PHOTOGRAPH COURTESY OF WIKIMEDIA COMMONS



ILLUSTRATIONS COURTESY OF DOVER PUBLICATIONS, UNLESS OTHERWISE STATED

Chippendale's Director contains 200 pages of designs for fine furniture and carved ornament, much of it in 'the French taste', which we now call Rococo

THE DIRECTOR

As well as the high reputation of his furniture, which endures to the present day, Thomas Chippendale achieved lasting fame by producing what was effectively a 'mail-order catalogue' of his designs for furniture and furnishings called *The Gentleman & Cabinet-Maker's Director*, known simply as *Chippendale's Director*. The first edition was produced in 1754, with 161 plates (pages) of designs for cabinets, chairs, pier-glasses (large mirrors), girandoles (wall-mounted candle holders), ornately carved bed canopies and crestings, picture frames, and many other items to furnish the grand houses of the aristocracy, nobility and gentry. A second edition was published in 1755, and in 1762 a revised and extended third edition with 200 beautifully engraved plates. It is still available today from Dover Publications.

The majority of the designs were in what Chippendale called the 'Modern style' or 'French taste' that today we call Rococo or Louis XV style, with its serpentine curves and elaborate carving. This was the height of fashion in the early Georgian period but was becoming a little old-fashioned by the time the third edition was published.

There are also many designs in the 'Chinese style', later known as Chinoiserie. This was highly fashionable due to the influence of Chinese porcelain and other goods being imported from the Far East. Chippendale's Chinese pieces are so highly regarded that Chinese Chippendale is considered a style in its own right. Chinoiserie is often associated with Rococo, and the Chinese 'Ho-Ho bird' appears in many of the Rococo designs in the *Director*. (See Under the Hammer on page 101 for an example of an armchair in Chippendale's Chinese style.)

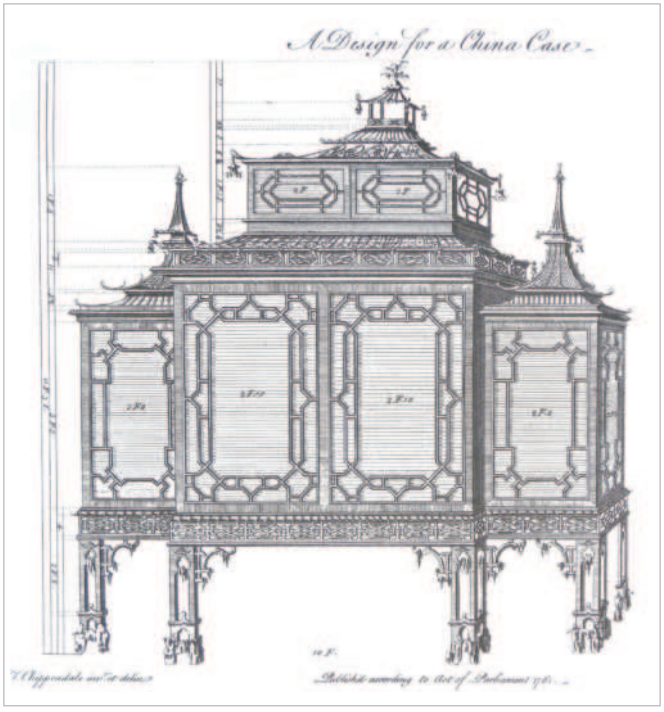
The Gothic style was still much in use for libraries, especially in colleges and ecclesiastical buildings, and the *Director* includes many examples of Gothic cabinets, chairs and tables. The 18th-century Gothic (or Gothick) style was much lighter than true Medieval Gothic.

There are only a few Neo-Classical designs in the *Director* as the style was just coming into fashion when the 1762 (third) edition was published. Chippendale started working with the celebrated architect Robert Adam in 1768 and thereafter worked mainly in the more restrained Neo-Classical style.

Chippendale was criticised by some craftsmen for the impracticality of many of his designs. Although the *Director* claimed to give 'proper directions for executing the most difficult pieces', the illustrations cannot be regarded as working drawings. For the heavily carved pieces there is only the suggestion that 'it would not be amiss if the whole was modelled before it is begun to be executed'. Chippendale would have expected a competent craftsman to be able to turn the designs into practical pieces, and he assured 'all Noblemen, Gentlemen, or others, who will honour me with their Commands' that they could have any design in the book made by 'Their Most Obedient Servant, Thomas Chippendale'.

Chinese-style clothes press made by Thomas Chippendale in the 1700s for Harewood House, Yorkshire

PHOTOGRAPH COURTESY OF WIKIMEDIA COMMONS

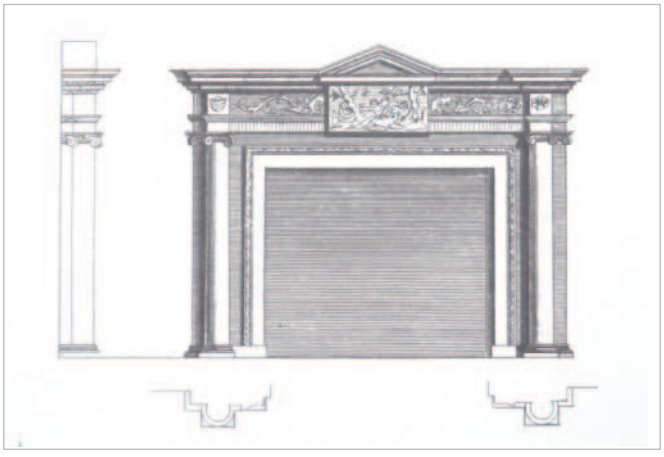


Chippendale included many designs in 'the Chinese style', reflecting the popularity of Chinoiserie in the 18th century

The 18th-century version of Gothic was also popular and Chippendale included many Gothic designs in the *Director*

THE CHIPPENDALE STYLE IN THE USA

Chippendale's influence extended beyond the UK and copies of the *Director* appeared in the US soon after its original publication. His style was popular among the aspiring merchant classes in America's major cities, who wanted to fill their homes with fashionable furniture. The Chippendale style remained influential in America throughout the late colonial period, particularly in cities like Philadelphia and New York where many European cabinetmakers had emigrated. In the 1780s, however, tastes changed and the cleaner, simpler Neoclassical (also known as Federal) style of furniture took over from the elaborate Chippendale fashion.

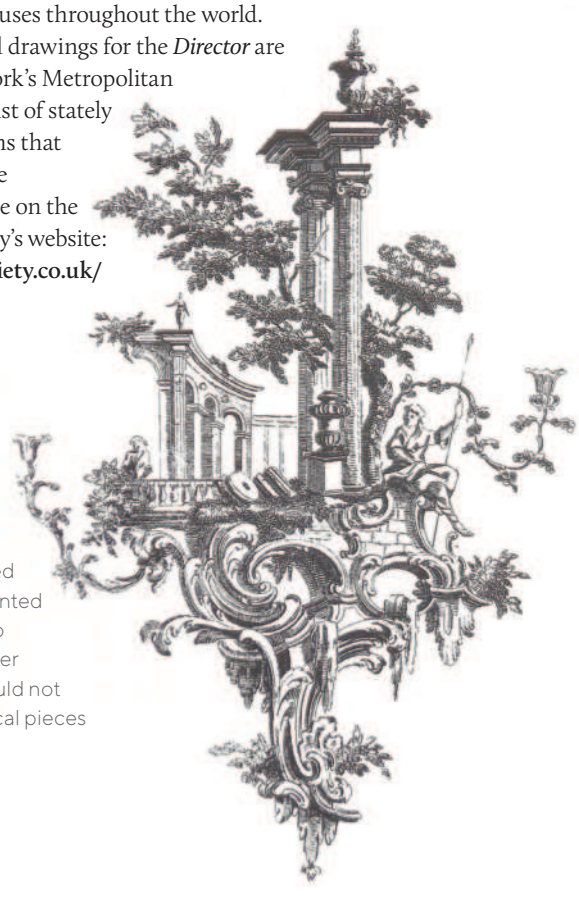


The simpler Neo-Classical style was just coming into fashion when the *Director* was published, so there are only a few designs in this style

CHIPPENDALE'S DEATH AND LEGACY

Thomas Chippendale died of tuberculosis in 1779 at the age of 61 and wasburied in a churchyard that is now under the National Gallery. He had 11 children, the eldest of whom – also named Thomas – continued the business from the same site until it gradually declined and went bankrupt in 1813.

Chippendale furniture continues to achieve record-breaking prices at auction houses throughout the world. Most of the original drawings for the *Director* are now held in New York's Metropolitan Museum of Art. A list of stately homes and museums that exhibit Chippendale furniture is available on the Chippendale Society's website: **thechippendalesociety.co.uk/other-collections/**



Some designs like this fantastical carved girandole (wall-mounted candle holder) led to complaints from other makers that they could not be made into practical pieces

PHOTOGRAPH: BLOOMICON/SHUTTERSTOCK.COM

READY TO SHARE?

FROM TED TALKS TO INSTAGRAM AND CROWDFUNDING, SHARING IDEAS HAS NEVER BEEN EASIER – AND THE GOOD NEWS IS THAT IT ENCOURAGES CREATIVE THINKING

For many, part of the daily routine includes logging onto Facebook, keeping up with WhatsApp groups and flicking through Instagram for design ideas. Such is the popularity of social networks that the World Economic Forum has estimated some 2.44 billion people now use them regularly.

In her article, 'Let Your Ideas Go' for *Harvard Business Review*, businesswoman, public speaker and author Nilofer Merchant argues that the desire to share ideas and work collaboratively is becoming the new norm. She writes: 'Ideas are actually organic, living things. If they have room to expand, they can quite possibly spread, and be picked up by others and grow into something much, much bigger than what you imagined. What I'm talking about more broadly is openness, which changes everything when used. Openness is a stance — to share with, to collaborate, to distribute power to many.'

Ranked by Thinkers50 as one of the world's leading business thinkers, Nilofer uses the term 'the social era' to describe this phenomenon, especially companies that are embracing social technologies like crowdsourcing and e-commerce to become more agile, unlock innovation and connect people.

Social media and other social technologies from apps to online forums have led to a fundamental shift in how people interact and share ideas. No longer something to be held onto and protected, ideas shared are the starting point for innovation, growth and learning whether that be in business, philanthropy or exploring your creativity.

DEMOCRACY OF IDEAS

For all the published concerns about social media – the amount of time we spend on it, the highly edited, unrealistic images or the marketing content – at its most positive, it has democratised creativity. Through platforms such as WordPress.com, Blogger and even Tumblr, creativity is no longer limited to the world of galleries, art schools and publishing. Blogs are how people explore ideas, document projects and pursue passions. The Over the Wireless blog by *F&C* regular Kieran Binnie, for example, is dedicated to Kieran's love of traditional hand woodworking. Another *F&C* writer, Anne Briggs Bohnett, started her Anne of All Trades blog as a way to document her journey as she learnt new woodworking and other practical skills.

Beyond the world of blogs, the sharing of ideas has led to the proliferation of online dedicated communities. One of the best-known examples of this is TED. Since 1984, it has grown from a conference into a social phenomenon. TED Talks are now available online in more than 100 languages. Such is the power of its mission of 'ideas worth spreading' that in April 2018 it launched The Audacious Project – an annual programme with a funding target of $634million for 'seven world-changing ideas'. So far, they include GirlTrek – the largest organisation for Black women in the US, it wants to see more women walking to tackle rates of obesity – and One Acre Fund, which aims to reduce the poverty of African farmers.

Similarly, OpenIDEO uses an online platform to promote open innovation for social good. Founded in 2010, by the global design and innovation consultancy IDEO, the platform has generated more than 17,000 ideas with 59 social challenges addressed from food waste to designing Kenya's first bike-share programme. Its mission is simple: 'Today's societal issues are too complex to tackle alone. Through Open IDEO, people worldwide come together to build on each other's skills and ideas for good.'

In his book with co-author Henry Timms, *New Power: How Power Works in Our Hyperconnected World*, Jeremy Heimans argues this growth of online communities is representative of new power. He writes: 'New power operates differently, like a current. It is made by many. It is open, participatory and peer-driven.' He views social networks as one of the main drivers for this change, citing the examples of accommodation-sharing site Airbnb and crowdfunding site Kickstarter. Kickstarter, for instance, was launched in 2009 to aid creative projects. At the time of *F&C* going to press, $4,079,695,945 had been pledged by 15,681,325 people, providing entrepreneurs and small businesses with much-needed investment.

Add other sites such as Etsy, Wikipedia and Crowdcube to this line-up and it's possible to see the trend that Jeremy is describing. These initiatives have tapped into something big – communities of people who want more participatory consumption and agency.

CULTURE OF SHARING

In the workplace, sharing is happening in co-working spaces and incubators. The Myreside Studios provides an incubation space for graduates of the Chippendale International School of Furniture, for example, where they can share ideas, benefit from teaching support and using the School's equipment as they set up their own businesses.

While the promotion of team working is hardly new, there's increasing recognition that a sense of belonging and inclusion is central to a business's success and this is directly linked to how ideas are shared.

While the promotion of team working is hardly new, there's increasing recognition that a sense of belonging and inclusion is central to a business's success and this is directly linked to how ideas are shared.

In his article, 'Sharing ideas… and emotions: why innovation needs cooperation' for *Paris Innovation Review*, Norbert Alter, Professor of Sociology at the University Paris-Dauphine Alter, discusses the dynamics of innovation, highlighting how co-operation fosters a culture of empathy and openness. 'People are moved, reveal themselves, are brought together by something in common and in doing so, they open up the possibility of circulating everything that actually constitutes cooperation.'

In 2012, Google launched Project Aristotle, a three-year project investigating what makes teams successful. Its research involved studying 180 of the company's own teams.

What Google's researchers discovered was that success was not attributable to the intelligence or experience of team members. Instead, it was group norms or the unwritten rules of how the group worked together that proved most critical. And while the leadership of the team was important, psychological safety – the degree to which people experienced and exhibited empathy, an openness to communicate, a willingness to try new things and to share ideas without recrimination or censor – proved the singular most decisive factor.

How we share ideas has radically changed through the use of social media and networks. Even if you work alone or in a very small team, as many furniture makers do, you can now connect with other designers and creative people around the world. Ideas are powerful calls to action, the catalyst for personal change, and a way to foster innovation and even promote social good. When we let go of ideas, we promote openness and generosity, where difference is celebrated as well as community. This is the power and hope of sharing.

WORDS: FIONA SYMINGTON

PHOTOGRAPH: VASIN LEE/SHHUTTERSTOCK.COM

IDEAS CHALLENGE

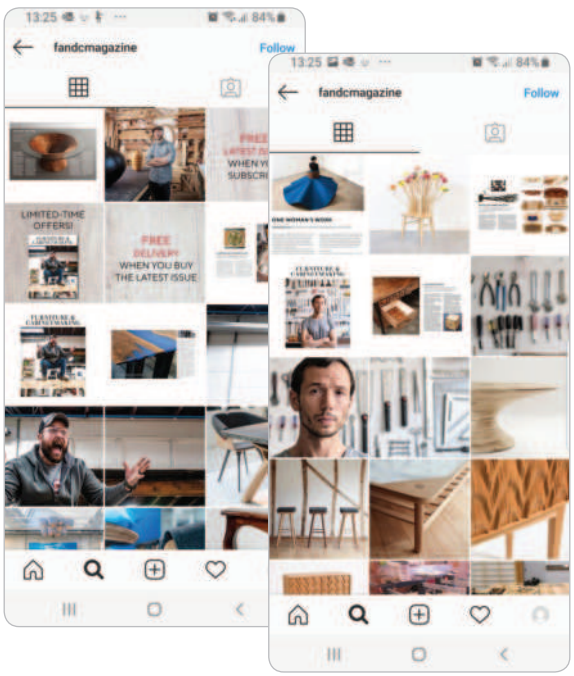
Don't be afraid to share: the reason why some people keep their ideas to themselves is the fear of appearing stupid. Create a dedicated time to share your ideas online via your own blog or on social media.

The diversity challenge: at companies like Google and IDEO, diversity is seen as critical to fostering innovation. Sharing ideas with people who are different from us can help grow an idea or even reject it. Seek out designers whose work is completely different from your own and see what you can learn from them.

Exercise your creative muscle: try writing down five ideas a week. So whether it's a book you want to write, designs you want to try or ways to make your workshop more efficient, the more ideas you have, the more you can share.

Resilience: when you share your ideas, you open yourself up to feedback – both positive and critical. Embrace this opportunity to grow and to learn from others.

Share with *F&C*: if you're an Instagram user, you can share your work with us using the hashtags #fancmagazine and #furnitureandcabinetmaking. Got a great idea for an article? Drop us a line at: FCEditorial@thegmcgroup.com



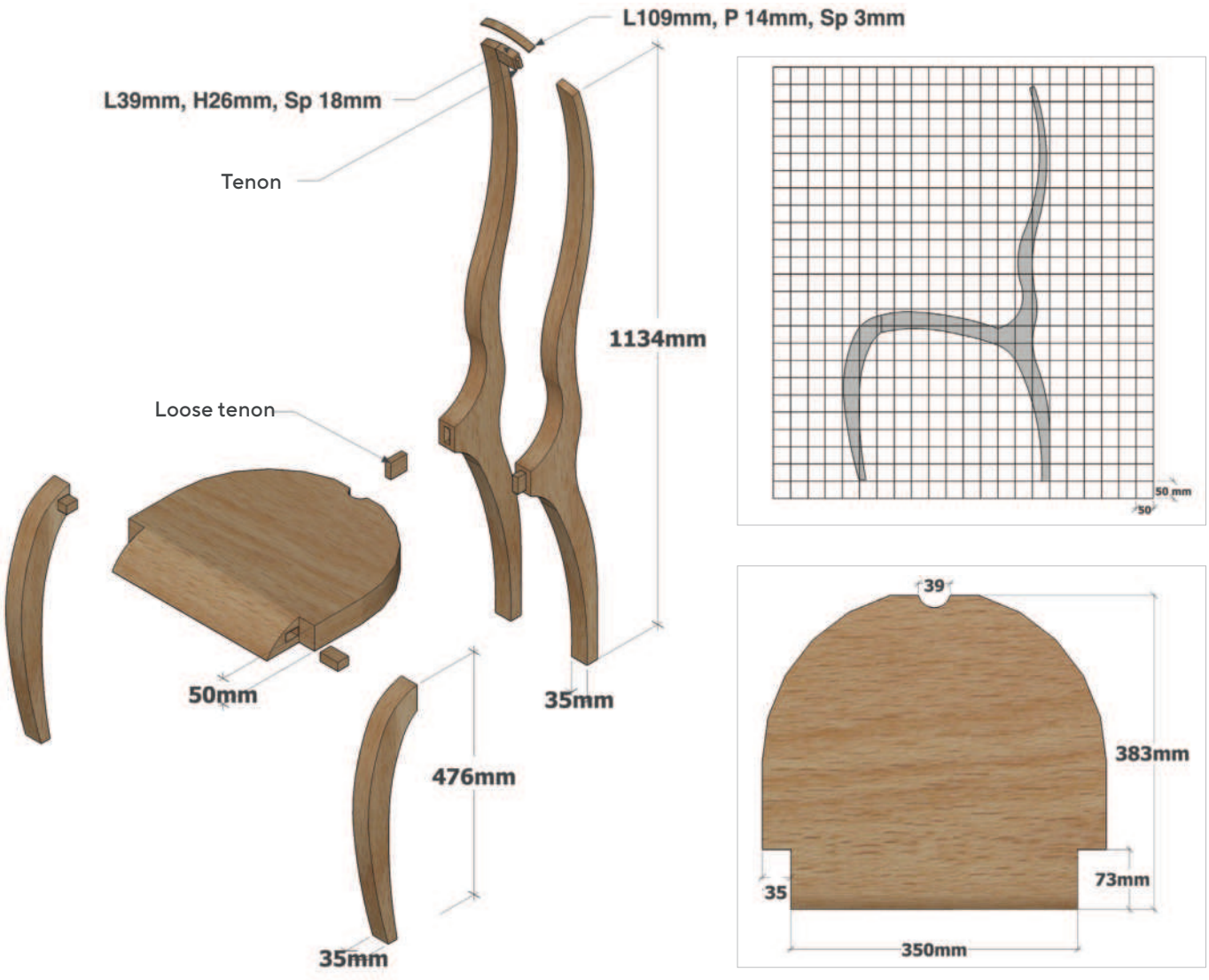
PHOTOGRAPH: STILLFX/SHHUTTERSTOCK.COM

CURVES, CURVES AND MORE CURVES

PAOLO FRATTARI APPLIES ALL HIS EXPERTISE TO THIS CHALLENGING DESIGN

This chair occupies a prominent place in my workshop because such a lot of my technical knowledge has been condensed into it. The real challenge with this chair lies in its shape. Past centuries, particularly the 20th century, have seen an infinite number of design models for chairs, so it is often tempting to say that everything has been done already and there is nothing new to come. Some novelties will probably emerge with the use of new materials, but it is my firm belief that really interesting objects arise from different interpretations of existing shapes, and for this reason the most important thing designers of the future need is a good understanding of what has been done in the past.

PHOTOGRAPHS BY PAOLO FRATTARI



ROCK SOLID INSPIRATION

I only had two certainties in mind when designing this piece: the chair had to be unusual in shape and I wanted to experiment with the solid wood seat. I've seen many designs by other furniture makers that are characterised by solid wood seats, especially those influenced by the Shaker tradition. The thick, solid wood seat of my chair would eliminate every crosspiece and, to obtain an even more essential line, the backrest had to disappear too. The traditional shepherd's three-legged stool, with the rear leg also extending as a backrest, was the real starting point for my design.

DESIGN DIMENSIONS

Three essential measurements must be used to make a comfortable chair: the seat front should be 430–450mm high, the rear one 10–20mm lower, and the backrest must mainly support the lumbar area. These are the ergonomic parameters I set before drawing my design. The legs are fixed firmly on the solid wood seat, so no front or transverse battens are necessary. This creates the chair's essential elements.

I began my design by drawing the seat. To make it comfortable I looked at an old plastic garden chair; in this the slightly concave side profile becomes convex from the front. For my chair I extended the lateral curve on the two front legs, giving a shape that arched backwards. Adding the typical curve of the back to the portion of the hind leg that rises from the seat completed this side of the design.

In the front view, the legs remain straight, but the back with its 35mm thickness was too slender and therefore uncomfortable, so I had to abandon the idea of three legs and place another side by side, so the back is doubled and no other elements are needed.

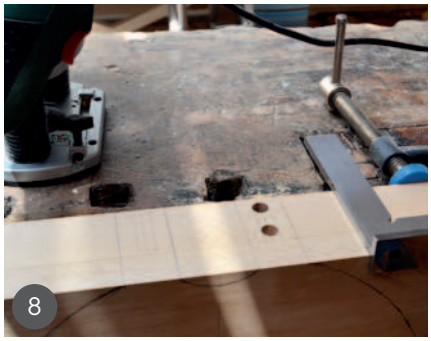
NO PROTOTYPE

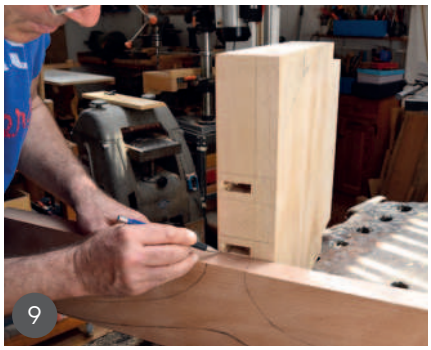
For my important projects, I make a prototype out of cheap wood or ply to check for any errors in the design. However, I was keen to get straight on with the making and skipped this stage.

I used beech for the chair legs and lime for the seat, although ash for the seat and oak for the legs would also work well.





1 Using a No.5 jack plane and a low angle jack for the end grain faces **2** One front leg part shaped on the bandsaw, the second being marked off it **3** Measuring the distance between the front and back legs, using the seat blank as a guide **4** Marking out the curvature of the seat on the plan **5** Now for the sides, including how the legs will mate with the seat **6** The seat mortises were machined before the seat blank was shaped … **7** … as were the leg blanks. The mortises were squared out with a chisel **8** Drilling hole markings where the back leg mortise joints will be **9** Transferring the mortise sizes to one of the back leg components

PARTS PREPARATION

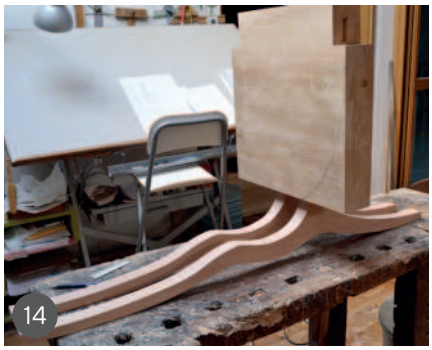
The seat blank size was too big for my machines so the preparation was done entirely by hand, both sawing to size and hand planing. I cut the four pieces for the legs and let them settle for two days, as beech is always unpredictable. In the meantime, I cut out the drawn outline of the foreleg on paper. When I resumed work, I transferred it to the wood and shaped the forelegs with the bandsaw.

Before making the back legs, I placed the first three pieces that make up the chair side by side and checked the alignment on the ground, and also outlined the point where the back leg connects to the seat. The point of insertion of the front legs will therefore be 30mm higher than that of the rear legs. Before cutting the contours of the hind legs, with the blanks still squared, I made the mortise and loose tenon joints that fix them to the seat.

LEG JOINTS

I outlined the parts of the seat where the legs are inserted, two rectangles in front and two smaller ones behind. At the same time I also traced the outline of the seat itself. I prefer to draw these curves by hand, first one half, then replicating on the opposite side.

I started working from the front legs, which join the seat by means of a cutout with a mortise for a loose tenon. I drew the spaces for the legs and traced the profile of the seat, both side and front. All the joints of this chair were made with a slot mortiser.



10 Cutting out the second back leg shows how much waste will be created **11** Trial fitting of both legs to make sure they will go together correctly **12** Back legs clamped together to ensure the spokeshaving matches on each **13** On end grain a file works much better than a spokeshave **14** The seat blank dry fitted in place to check it is at the correct angle to the legs **15** To mortise the leg sides, the leg waste is clamped on to guide the router fence **16** Marking up a block to make one of the loose tenons needed **17** Shaping the top block that holds the two back legs together

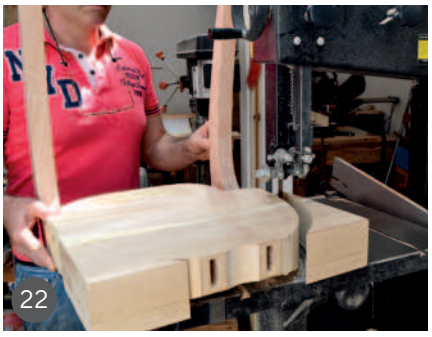
SEAT SHAPING AND ASSEMBLY

Before proceeding with the assembly, I started to shape the seat. I made part of the cuts, leaving some of the square edges for fixing the clamps, then I used various chisels to remove the excess wood, first above and then below.

I then assembled the front legs and, while the glue was setting, I worked on the small rear crosspiece. I traced and cut it with the bandsaw, then glued it to the legs to finish shaping it, first with a gouge and then with a file, with a profile identical to that of the legs, both in front and behind. In the end I extended the upper arch on the ends of the legs, also shaping these parts on the bandsaw, and then finished the entire profile with a planer.

To hide the ends of the wood I decided to cover the top of the back rail with a 1.5mm layer of beech. With the front legs glued in place, I was able to shape the seat by eliminating the square parts used for clamping. To secure the front legs in place I inserted two beech dowels from below that engage the loose tenons on the side of the seat. The consolidation would also take place on the side of the legs later on.

With a chisel and gouge, I started to remove excess wood from the seat, first one side then the other, but always keeping to the shapes as sketched. Before fixing the back legs, I completed all the areas of the seat adjacent to them, using a small plane on the bottom and a small travisher on top.



18 The block in place prior to trimming right across **19** Using a gouge to shape the depression at the rear of the seat blank
20 Using a wide shallow gouge to shape the top face of the seat **21** Clamping the legs in place before more shaping
22 Once the front legs are glued the rear curves of the seat are bandsawn out **23** Beech dowels being fitted to lock the loose tenons in place
24 Refining the major seat curve before shaping **25** A wide flat gouge and mallet being used to remove the bulk of the wood
26 Working towards the seat centre to create the depression for sitting **27** Nipping off the front seat corners so the shape will flow into the legs
28 Now for the underside. The seat needs to look good from all angles **29** Trimming the thin beech capping on top of the back legs
30 Using a small plane to level the gouge marks on the convex underside **31** Using a spokeshave minus its handles as a travisher on the concave top face **32** The chair now assembled but needing proper shaping at the front **33** Additional strength added to the front legs by using sunken screws
34 Dowels used to cover the screw heads for a neater finish **35** Smoothing the surfaces where the back leg and seat meet
36 Bevelling the feet so they cannot catch on carpet and will look neater **37** Using a chain wheel to rough shape the seat front edge curve
38 The easiest position for spokeshaving the roll-over seat edge **39** A file helps to remove all previous shaping marks before sanding

NEARLY THERE ...

After the glue had cured, I inserted two more beech dowels in the back legs from below to help strengthen the loose tenons. On the short side of the front legs, the only place where glue holds the joint, I inserted two diagonal screws from underneath with lime plugs to hide the heads. The shaping of the front part of the seat, left incomplete to allow the fixing of the rear legs, could now be completed; I preferred to use a chain disc mounted on an angle grinder to eliminate the small amount of remaining waste wood. Finally, I completed the work using a spokeshave and wood file.

FINISHING

I sanded all the parts – some before gluing, others after gluing – working up to 320 grit. I then applied two coats of transparent water-based sealer and two more coats of transparent water-based polyurethane varnish, interspersed with denibbing using 320-grit abrasive paper.

This is an unusual chair design and not lightweight, but I think it works well visually – and it's comfortable too!

IT'S A KIND OF MAGIC

ILLUSIONIST **ZACH KING** HAS SHOWCASED A SELECTION OF FURNITURE THAT ISN'T QUITE WHAT IT SEEMS. BUT HOW DOES IT WORK?

A beautiful piece of furniture can be like a piece of magic. But some pieces of furniture really are a kind of magic.

American YouTube star Zach King creates 'magic' illusions using digital cutting techniques, sleight of hand and pure ingenuity. He has a massive 7.41 million YouTube subscribers, so when he focused on furniture optical illusions *F&C* was intrigued to find out more.

The video, which can be found by searching 'Zach King Furniture Optical Illusions' features clever, eye-defying pieces by Australian furniture maker Josh Carmody, a beautiful chair created by Richmond, Virginia-based artist, Vivian Chiu, and illusions Zach built with his friend Chris Tomes, a custom woodworker who founded the business Gift & Grain.

NO LEG TO STAND ON

Josh Carmody's Legless bar stool featured in Zach's furniture illusions video, and is just one in a series of pieces he has designed which trick the eye into thinking they have one more leg than they really do. Josh started a small bespoke furniture business when he took a year off between two architecture degrees, and it was during that time that he created his first Legless stool.

PHOTOGRAPHS © CHRIS TOMES

He remembers: 'At that stage I would draw for hours at a time, with one idea leading to the next. I recall drawing the simplest stool I could imagine. It had a square seat and four legs, one extending down from each corner. Then I simply erased one leg, and imagined ways to make it stand without that leg.

'The now somewhat well-known form emerged immediately. Throughout the subsequent design process of drawing and redrawing various side views and perspectives, it occurred to me that managing the overall proportions and the form of the design would produce an almost Escher-like effect when viewed from certain angles.'

He experimented with proportions, stance and joinery to make sure the stool would be strong and stable enough to sit on as well as giving the illusion of having four legs from certain angles. The first Legless stool was a short one, 450mm high. Growing that into a bar stool was more of a challenge.

Josh says: 'Simply increasing the height was not an option, as the extra leverage on the joint would have compromised the structure under any real weight. So I let the bar stool ideas simmer for a few years before the form took shape one day in another sketchbook, and that same level of excitement took hold. I prototyped it a week later and released it to market within a couple of months.

'The first comment is often surprise at the optical illusion, the second comment is usually a question as to whether the stool will hold up under weight. Needless to say, I tested the strength back on day one, albeit with myself and my brother both standing on it at the same time. And it passed.

'But as the market for the Legless stools increased I decided to have them both officially tested at AFRDI (the Australasian Furnishing Research and Development Institute) in Tasmania. During the testing process both stools underwent a number of structural tests, including but not limited to 50,000 seating cycles at 95kg. Both stools passed.'

WORLDWIDE FAME

One morning Josh woke up to a number of messages from friends who had seen his stool featured and name-checked on Zach King's channel. But when he saw the clip himself, he realised that while it was his design, and had been credited to him, the featured stool was not one he had produced himself.

'This left me with a bitter-sweet situation on my hands,' he says. 'On one hand, a world famous creative whom I admire had shown great interest in my work – and promoted it to millions of people globally. A huge deal to me. Yet on the other hand, I hadn't made the piece used in the clip.

PHOTOGRAPHS © JOSH CARMODY

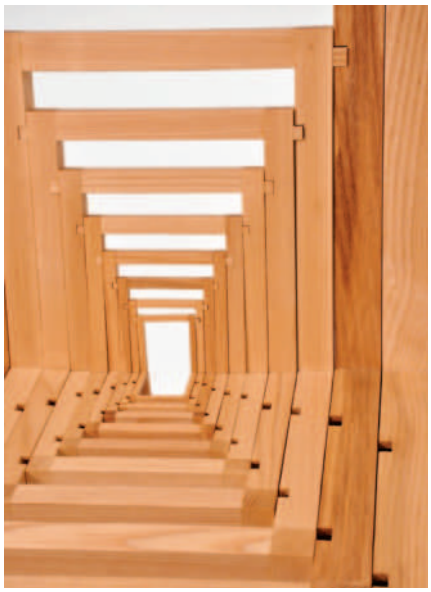
'That may sound quite minor, but in Australia designers have a regularly recurring problem with their work being reproduced without permission or remuneration. It was clear to me though, that it was not Zach's intent to do anything untoward. So I made contact with him directly to sincerely thank him for taking interest in my work and for including the Legless Bar Stool in his piece. I also let him know that if I had only known sooner, I actually would have just sent one over to California for the shoot.

'To my surprise I received an immediate reply, and realising the oversight, Zach offered to ship one of my stools over to the US himself and reshoot a special clip with my stool to further credit my work. That was beyond incredible to me and I gratefully accepted. It was a very surreal few days.'

'A beautiful piece of furniture can be like a piece of magic. But some pieces of furniture really are a kind of magic.'

Since then, Josh has added a range of painted chairs to his Legless range. 'I tinted them and painted them in such a way as to further accentuate the optical illusion,' he explains.

PHOTOGRAPHS © JOSH CARMODY



PHOTOGRAPHS © VIVIAN CHIU

WORKS OF ART

Artist Vivian Chiu plays with furniture, structure and texture in her work, which includes a number of pieces of furniture. Her beautifully made Inception chair was featured in Zach King's Furniture Optical Illusions video. From behind, the viewer sees what appears to be a long line of arches, one in front of the other. But from a different perspective you can see that it is actually just one full-size chair which then, like a Russian doll, turns out to contain a number of chairs of the same shape in diminishing sizes.

PHOTOGRAPH © CHRIS TOMES

PHOTOGRAPHS © CHRIS TOMES

Zach also teamed up with his woodworker friend Chris Tomes of Gift & Grain to create a series of optical illusion chairs for the video, including one made specially to create the illusion from a certain viewpoint that it is facing in one direction when it is actually facing another way, which only becomes visible when Zach sits down in it. A miniature chair is 3D-printed so that it appears to swivel so that it continually faces the camera, and another chair is placed on top of a mirror so that it looks like it is floating. Chris has been friends with Zach since their student days, so he was delighted to work with the illusionist's talented team to create the four optical illusion chairs. With just a few photos for reference, Chris used CAD software to replicate some designs by talented woodworkers and artists around the world, but incorporating the illusions.

'Some of them I built out of cardboard first, in order to get the right angles and dimensions,' he says. 'A few I had to build multiple times because I kept iterating and finding better ways to create the illusion. I went back and forth with Zach and a couple of guys on his team in order to make sure the chairs would work, and we finally landed on the designs you saw in the video.'

He admits the process was very challenging. 'Since I was only working from a couple of internet photos for the designs, it really was like starting from scratch. The biggest challenge was taking the designs from the CAD software to real prototypes. Everything looks great on a computer, but when I started trying to get the wood to curve and behave in ways it didn't want to, things got tricky.

'The black chair (the one that looks backwards) was the most difficult. I built close to 20 cardboard prototypes before even starting to build it from wood. The thing with optical illusion chairs is that all the weak points are the most visible spots and the strong points have to be hidden. It took a lot of patience and coming to terms with the fact that I would have to build multiple iterations of all the designs before getting them just right,' he says.

As well as being brilliant illusions, each piece was built as a fully functional standalone chair. 'Some were a little more delicate and couldn't be tossed around too much, but all were able to be used as normal chairs after filming,' Chris says. 'After the video aired, I had a ton of requests for entire dining sets built from the different optical illusion designs.'

For anyone wanting to explore the possibilities of optical illusion furniture, Chris's advice is to 'be ready to fail and find joy in the creative process'.

He says: 'Working on these chairs for Zach's studio forced me to find creative solutions to problems I had yet to face in my normal builds. Taking on new, difficult projects that are outside your comfort zone helps you to expand your understanding of your trade and come up with innovative ways to accomplish your goals. John Malecki [profiled in *F&C* 292] and I were chatting about the optical illusion chairs and laughing together about how many changes you have to make along the way. However, the end result, no matter how frustrating it was to get there, is so worth it!''

Zach's final illusion looks like a chair – but is actually a painting on the floor. Furniture makers need not worry too much about the utility or loadbearing capacity of that one!

Zach King's furniture and other illusions can be found on youtube.com
joshcarmody.com.au
vivianchiudesigns.com
giftngrain.com

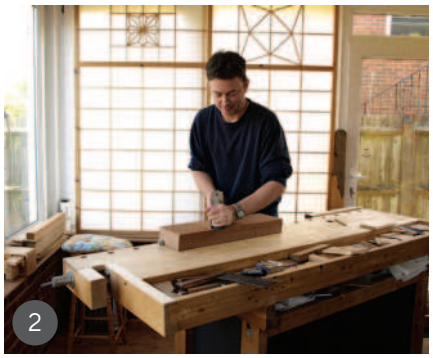
COUCH TABLE

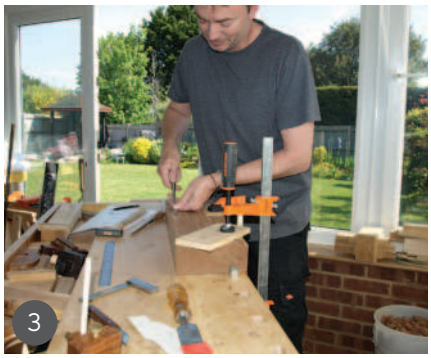
MITCH PEACOCK BUILDS HIS OWN VERSION OF A JAPANESE TABLE

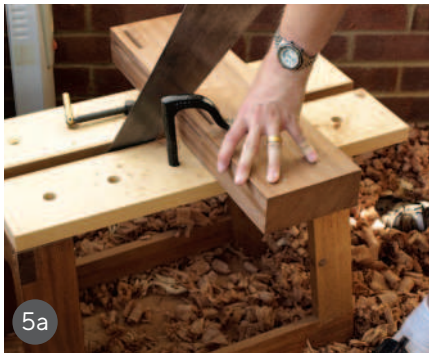
Inspired by furniture in the samurai films of Akira Kurosawa, I designed a simple, solid wood couch table. These are ideal for use when seated on the floor, or kneeling, and also make for interesting, albeit low, coffee tables. Throw a loose cushion on top and you have a perfect footstool.

MATERIALS

1 I wanted to use walnut for this table but that plan was scuppered by the Covid-19 lockdown, so I looked through the limited stocks I had to hand. I feared that I may have to laminate some of the thicker parts or even combine different woods, but eventually I came upon two old planks of sapele. I had ordered one plank online to build some prototypes for a potential new customer. I ended up using something else, after delivery had been delayed, and when eventually it turned up there were two. Needless to say, it was not as pleasant, or easy, to work with as the walnut would have been.







PHOTOGRAPHS BY MITCH PEACOCK

LEGS

2 I selected and cut a length of sapele that would yield all four legs, and set about squaring it up with minimal waste. In its rough state it was a little thinner than my design, so I wanted to preserve as much as possible.

3 With the four legs marked out but still joined together, I chopped all the mortises. It's so much easier to do this before separating them and doing any shaping work.

4 I cut my leg design out from a cereal packet, and this template was used to transfer the design to the two adjacent faces of each leg, flipping it over to achieve a symmetrical layout.

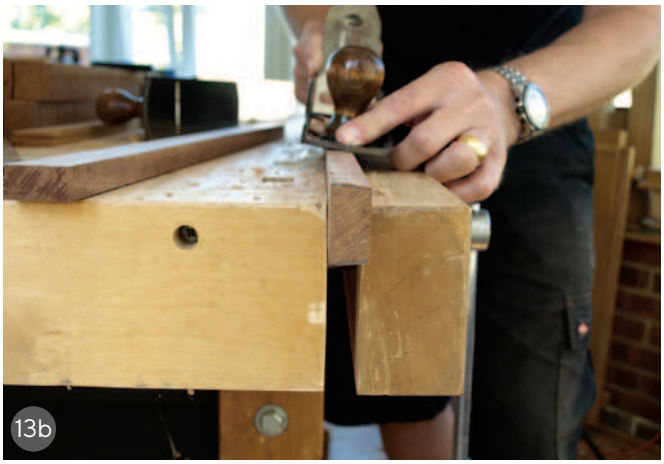
5 Finally the legs were sawn apart, and the profiles cut.

6 The clean-up of the sawn legs was done with rasps, spokeshaves, files and card scrapers. Machine-made legs are disturbingly identical, whereas hand-crafted ones are uniquely beautiful, in my eyes.

APRONS

7 The four aprons were sawn, squared and marked up. Because they would be heavily shaped, it wasn't crystal clear what the show figure would turn out to be, so selecting the blanks was based on instinct.

8 With the tenons prepared, I hogged away a large rebate on the show side to match with the top of the legs, before shaping the curved lower section. The curve was transferred directly from the fitted leg, so that when assembled there would be minimal fairing of the joints.



BASE ASSEMBLY

9 Legs and aprons were glued, assembled and clamped, checking for square and level.

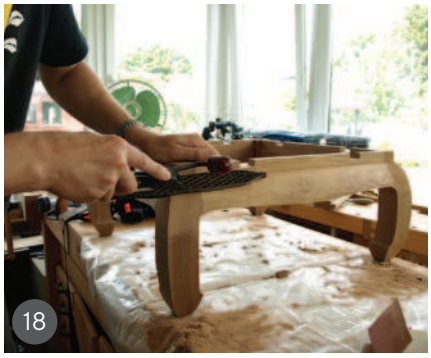
TABLE TOP

10 My table's top was glued up from four boards, which were resawn from one of the planks – my love of unplugged woodworking did not extend to that on this occasion, so I used the bandsaw. The boards were flattened and thicknessed.

11 Butterfly jointing the boards helped ensure a nearly perfectly flat panel when assembled.

12 To keep the top flat, tapered and dovetailed grooves were first run in on the underside.

13 Tapered and dovetailed splines were then prepared and fitted.



14 In a further change to my original design, I decided to glue the edging with the grain, and mount it as a breadboard end across the grain. This would hold up better to wood movement in the future. A tongue was prepared on the ends of the table top.

15 A shallow groove and mortises were cut in the two ends, allowing for some movement.

16 Tenons were formed on the tongues.

17 Sapele pins were prepared by whittling and driving through a dowel plate.

SMOOTHING OFF

18 After the glue had thoroughly cured, the leg to apron joints were faired with a saw rasp, conventional rasps and files.

19 I then sanded the whole table, in preparation for the lacquer finish.

I really like the finished table. It's so much more appealing than the two rough planks it came from. Now to convince Julie that we should ditch the sofa and sit on the floor...

womadeod.co.uk

CRISIS PLANNING

FROM VIRUSES TO FAULTY PRODUCTS, CRISES COME IN MANY FORMS, BUT THEY NEEDN'T BE ENTIRELY NEGATIVE FOR YOUR BUSINESS. IN FACT, A CRISIS CAN BE A BLESSING IN DISGUISE...

PHOTOGRAPH: GAJUS/SHHUTTERSTOCK.COM

The Coronavirus pandemic has caused major challenges for all businesses, including furniture makers. At such times of crisis, it can be useful to look at examples from the past where companies have overcome problems and thrived.

LEARNING FROM THE PAST

Cast your mind back to 2014. Ebola was in the news as was the death of actor Robin Williams. Can you recall anything about the death of a pilot who crashed while testing out a space craft for tourists over the Mojave Desert?

If you can, you may remember the response given by the space craft's parent company Virgin Media. Leading from the front, owner Sir Richard Branson flew immediately to the site, keeping followers updated every step of the way on social media. The Virgin Communications team immediately went to work creating messaging around how hard space travel is to conquer, but how ultimately worthwhile it is. They told us this poor man's death wasn't in vain and that the project would move forward in his honour. We believed them, we believed Branson, the news cycle moved forward and in 2019 Virgin Galactic launched its astronaut readiness programme.

Flashback to 2010 when a BP-owned oil rig exploded off the Gulf of Mexico, leading to one of the largest oil spills in US history. It took almost 90 days to get the spill under control – and BP's boss? He started a blame game. Two months later he told journalists: 'There's no one who wants this thing over more than I do, I'd like my life back'. Just months later Tony Hayward was forced to resign and BP's reputation lay in tatters.

Crises come and go, some are of the proportion that Virgin Media and BP faced, others can be characterised more as blips in the road. However you look at them, whatever their scale, you are faced with a choice. Burying your head in the sand will go some way but it might just be possible to reframe the story, build a different narrative and, like Virgin Media, turn a tragedy into something positive and impactful. At the very least you can make a serious dent in damage limitation.

How to go about this? How do you capture the right tone or tell the right story? The answer is by learning from history and believing that almost every crisis can be used to change the way you do business, for the better.

Take for example a faulty product. Something about it is off, it's attracting criticism on social media. Perhaps there are some fears over its safety. From washing machines to car parts, this isn't an unknown phenomenon. How can you use it to tell a better story?

'Remember that reality is just perception, so make your reality one that chimes with your customers and turns a crisis into an opportunity'.

COMMUNICATION IS KEY

First and foremost, take the issue seriously and see it from a customer's point of view. Recognise that if you have a great reputation you already have credit in the bank. Draw on that credit and don't be afraid to engage with your public. Secondly, if you need to, say sorry. Be more Branson and less Hayward. Passing blame and refusing to take credibility chips away at trust. This is the perfect opportunity to show your human face. This is the perfect opportunity to talk directly to the people who matter most, your customers. There is publicity, there is a chance to show you care and a chance to move the story on, on your terms.

There's also the chance to be clever with your messaging, turning bad news into an opportunity to talk about business in a positive light. Talk about how quickly you responded, talk about the measures you've put in place to deal with the issue and how you've changed your processes.

Take KFC as an example. In 2018, its restaurants ran out chicken. Hungry customers across the UK and Ireland were left open-mouthed, hungry and angry. The KFC PR team jumped into action with some brilliant adverts in newspapers and on their own website immediately owning their mistake, rearranging the letters to spell FCK. They set up a page allowing customers to check the chicken status of nearby restaurants and, perhaps most impressively, managed to demonstrate that they were human and knew exactly the kind of apology that meant customers smiled and moved on from the situation quickly.

Perhaps the biggest takeaway here is that KFC knew its customers. The PR team knew something funny and a little quirky would cover over a multitude of sins. They knew how much their British and Irish customers would like the cheeky wording, while also being present to deal with complaints and enquiries.

The opportunity to reveal a human, playful character was a blessing in disguise and indeed some would say a masterclass in crisis planning. And this brings us to the nub: planning. If you're planning on being on a success, then you need to plan for when that success falls by the wayside.

Spend some time planning your worst-case scenarios. See them from both your business's and your customers' viewpoints and decide how you can achieve the twin goals of minimising damage and reframing the story. Remember that reality is just perception, so make your reality one that chimes with your customers and turns a crisis into an opportunity.

CHANGING LIVES

In the Australian military **Damion Fauser** saw furniture making play an important role in rebuilding a nation torn apart by civil wars – and was inspired to make woodworking a key part of his own life

As a United Nations military observer in Sudan, Damion Fauser saw carpentry play a strikingly positive role in rebuilding a country ravaged by decades of civil war. As part of his mission he helped set up a furniture-making project in the village of Yei in what is now South Sudan. Former soldiers were given basic tool sets and trained to make rustic furniture from locally sourced teak and mahogany.

Damion recalls: 'I was on a deployment to the far south of Sudan as a military observer with the United Nations in 2006. At that time, Sudan had been in a state of civil war for the better part of several decades and the nation was destroyed, in both a literal and cognitive sense. Our role was to assist with the disarmament, demobilisation and reintegration of former soldiers, from both sides, back into society. Part of this was employment, and many former soldiers were given basic tools and the opportunity to learn basic woodworking skills to assist with refurbishing local villages.

PHOTOGRAPHS: FRANK PRONESTI, HEIRLOOM STUDIO, YARDLEY, PENNSYLVANIA/NAMAN BRINER, BRISBANE, AUSTRALIA

'I had never been interested in woodworking at that point, but what was clearly apparent was just how much of a difference having a creative and tangibly productive outlet made to these men who'd been fighting for so long. It didn't occur to me straight away, but over the coming months, as I observed these men go about their woodwork and how clearly happy and purposeful it made them, I decided I would give woodworking a go when I returned home to Australia.

'My wife was horrified, saying: "Eww, that's such an old man's hobby!" But for me the fire was lit, and once I'd made a few cuts and a few basic projects that was it, I'd commenced on a new path.'

And he adds: 'This has all come kind of full-circle now as I regularly run classes and workshops as rehabilitation for veterans suffering from post-traumatic stress disorder, and I see the same expressions on their faces as I saw in Africa in 2006. It's extremely rewarding.'

Damion was in the Royal Australian Air Force for 20 years, serving in East Timor, Iraq and Afghanistan as well as Sudan. As he approached the 20-year stage he decided to change career. 'I didn't want to be a lifer,' he explains. But he didn't want to move to a corporate office job either. 'I strongly considered taking up a trade as an electrician or plumber, but what I really wanted to do was make furniture for people,' he says.

MOVING ON

'While I was still in the military, I resolved to use that remaining time to become as skilled as I could, endeavouring to acquire tools and equipment so that I would have enough to start without the burden of finance. I negotiated a flexible work arrangement with my commanding officer at the time, which saw me able to have every Thursday afternoon off to go home to the workshop. I also spent several evenings a week working till the early hours of the morning, which is how I got to become fast and competent with hand tools, as I needed to be able to work quietly!

'After hours, I spent time working up a business plan and budget to ensure that it would be feasible. Once the decision was made (not without significant levels of nerves and apprehension I might add), I set about finding a workshop space to rent, getting a website developed and getting as much woodworking done as I could while I counted down the days to my discharge. Once my discharge was finalised I went about the mandatory bureaucratic processes to register a business name, with the tax office and so on. Probably the best thing I did was find a great accountant and tax planner.'

Damion is largely self-taught. When he started woodworking as a hobby he learned from magazines, periodicals, DVDs and online and practised the skills in his basic workshop. 'Where opportunities have arisen, I've sought short-term vocational training such as summer workshops at Rosewood Studio in Ontario, Canada and the Centre for Furniture Craftsmanship in Maine, USA. There I learned specific skills from specific teachers I'd identified who would expand my skillset in terms of design and execution, such as veneering with Adrian Ferrazzutti, inlays and details with Garrett Hack and exploring curves with Tim Rousseau.'

The first project he ever completed was a matching hall table and floating mirror frame for his home's entryway made from Victorian ash. 'It's still there, and it's a great reminder of where I started and how far I've come. The first commission piece I made was a contemporary sideboard for my brother-in-law and his family, and it's wonderful to be able to regularly visit it and see it loved and in use in a family home,' he says.

'PRACTICAL CONTEMPORARY'

Damion's work covers a wide range of techniques, styles and pieces, from traditional classics to mid-century pieces, inlaid boxes and shoji work. He calls it 'practical contemporary' and says he aims for clean lines, subtle curves, solid construction and elegant proportions that make each piece fit for purpose. His business is wholly commission-based, although he notes: 'I prefer speculative work as it lets me go crazy with my inherent desire to explore and develop. Having said that, the last time I made something speculative was a dining table in 2018 for our home, as I had had an idea for a design concept in the back of my mind for some time and I had some nice stock left over from a bulk order.'

Favourite techniques include veneering and bent laminations. 'I really enjoy veneering with the design and construction details it opens up while minimising the issues of wood movement,' says Damion. 'I enjoy bent laminations, for me there is a simple pleasure in the mathematical simplicity and design and construction possibilities available with this technique. Plus I also like to explore different options with decorative little details, either with inlays or by adding contrasting elements to exposed joinery. In future I'd love to further develop myself by exploring marquetry and steam bending.'

A ROOM OF ONE'S OWN

After renting for five years, Damion bought a unit in an industrial estate in Willawong, Queensland, to be his permanent workshop. 'It's a typical concrete tilt-slab style complex. I have 256 square metres of space, split to form 180 square metres of high-ceiling warehouse floor with roller-door access, which is where I primarily work. Then I have two built-in, climate-controlled office spaces. One I lease out to Felder Queensland to display their machines, the other I have set up as a dedicated hand tool teaching room for when I run vocational classes.

'It was a totally bare unit, so I had a blank canvas when I moved in to locate my machines where I wanted them and have the electrician wire in dedicated circuits. It is very liberating to be in my own space with free rein to arrange things as I want them, and I've arranged everything to optimise workflow, maximise light at each station, have dedicated overhead or wall-mounted electrical circuits so there are no cables on the floor, maximise run-in and run-out lengths at each machine so I don't have to move stuff around to process long stock. I can't see myself moving anytime soon.'

In terms of tools, Damion will use whatever best suits the job. 'I'll use any tool I can to get the best result in the fastest time,' he says. 'While many of your readers may assume that automatically defaults to machine use, this is not necessarily so. Because I'm confident and fast with hand tools, I have a rule of 12. This means if I have up to 12 times to repeat a process, I'll generally do it with hand tools. Twelve or more and I'll take the time to use the machines.

'Fundamentally though, I buy bulk raw stock in slab and rough sawn board form, use my suite of large machines to break it down to manageable components and then work on those components at the bench. Specifically, I love bandsaws and do the bulk of my raw stock breakdown on the two of those. I have two sliding table panel saws, one which is generally used for smaller work and is fitted out with a set of crosscut sleds, the other larger one is for accurate dimensioning of stock, joinery, shooting veneer packets and so on.

'I enjoy the utility of vacuum-pressing and have three dedicated bags permanently set up, all of which can be run simultaneously and independently controlled through a manifold. I have two under-over jointer-thicknesser machines, which allows for versatility when more than one person at a time is working on processing stock, plus I have a 625mm thicknesser which is my workhorse for processing large stock.

'Hand tool-wise I have a good selection of Lie-Nielsen, Veritas, Starrett, Colen Clenton, Chris Vesper and HNT Gordon & Co tools and, truth be told, these are what I enjoy using the most. Layout and marking out for me are key – my perspective is that it doesn't matter how good you are at using cutting tools, if the layout lines are sloppy or in the wrong spot then you're just cutting a mistake into your work. Consequently, I focus intently on and greatly enjoy the layout process, knowing that I'm setting the foundations for success. For this reason I have invested heavily in and love using high-end layout tools from makers such as Chris Vesper and Colen Clenton.'

DESIGN FOR LIFE

Damion starts his design process with rough sketches of a concept. 'This is then translated to a full or partial-scale drawing on 3mm MDF, which I can place at floor level across the room and stand back to observe proportion and scale etc. For simple projects this will then suffice and from here I'll develop cut lists and a build plan and go from there. For some projects though, I take the time to build 1:8 or 1:12 scale models. These take time for sure, but for me, not being strong on computers, they give me the best chance to convey my ideas to clients, they serve as a useful library to show to potential clients and they also often reveal construction and assembly clues and challenges, that might not be immediately apparent from a drawing, in the act of making them,' he says.

'From either the model or scale drawings, I'll work up story sticks, jigs and templates and commence work. From that point on I rarely refer back to the drawings, rather I work to workshop reality from each component and sub-assembly that is produced chronologically through the project. For specific details such as inlays, surface finishes, edge profiles, joinery options, shapes and so on I'll also often work up samples and options to show clients. I now have years' worth of models and samples, and I find clients love seeing them and having something tangible to hold in their hands.'

His favourite wood to work with is American walnut – 'due to its ease of use with both machines and hand tools, the way it takes polish and the overall appearance' – but he also likes Tasmanian blackwood, Queensland maple, lace sheoak, American white oak, rock maple, American cherry and New Guinea rosewood, each of which have their different strengths and advantages for different projects and budgets.'












PHOTOGRAPH: DAMION FAUSER

In terms of finishes, he prefers hand-rubbed finishes such as shellacs, waxes, oils and wipe-on polyurethanes. 'It is mainly for their ease of use, but also because I don't have the room to install a spray booth for now. With a commission job, for me the discussion on finish is one of the first to have – I discuss with clients factors such as cost, durability, ease and regularity of maintenance required, environmental friendliness, appearance, tactile feel and so on. Practically, I strongly advocate pre-finishing components before assembly wherever possible, as it makes the process that much easier.'

PROJECTS GALORE

The early days of the business have been 'a whirlwind', and Damion's current roster of work shows the wide range of projects he is comfortable with. 'I've just finished a set of jobs for a domestic home renovation, including a set of custom stair treads, some kitchen cabinet doors, a waterfall kitchen island bench and an internal sliding door made with solid core veneer construction and featuring a kumiko-style internal pattern. Right now I'm about to start a nearly 7m hanging wall unit made from decoratively arranged shop-sawn veneers and including a concealable TV and a built-in electric fireplace. Concurrent with this I'm working on a coffee table with a complex 500-year-old Chinese three-way mitre joint in the frame. Following those two I have a matched set of a document box and a small chest for antique cutlery and silverware, to be made from components reclaimed from an antique closet from the same family.'

Since he started his business his favourite project has also been his most challenging job so far – the Quinkin table, a commissioned dining table he made for a family in Boston last year. 'This piece gave me the opportunity to really explore some new design and construction ideas, but more importantly the stock came from the family farm and I was provided with images of the client as a boy standing next to the tree with his father on the day they brought the tree down in the 1970s. For me, having that kind of stock provenance and family history made it a very special piece.'

The table top was a veneered torsion box which was challenging to have fully flat in space so it looked as if it were levitating, without having any subordinate base structure to support it. 'For the legs I chose to make a pair of elliptically-coopered pillars instead of the usual four post legs. I had the shape and profile that I wanted, then I needed to translate that to a drawing to empirically determine the various coopering edge angles and then design and make a set of very precise jigs to execute these angles. This was all done with an extremely finite resource.'

INSPIRED TO LEARN

Inspiration comes from the drive to continually learn and grow. Damion explains: 'What inspires me is to be continually challenged and to always develop and refine my skills. For this reason, where possible I work new techniques, or more complex versions of my existing skillset, into my projects. The ideas themselves come from many sources, such as directly from the client (particularly when the client is a third party such as an architect or interior designer), from my desire to learn or incorporate a new skill, from galleries, the media and so on. Where possible, I try to get to know the client as much as I can and to incorporate some level of personal detail into the project, such as using a species from a favourite tree that they grew up with, adding personal details such as engraved or carved initials and so on.'

Looking ahead, Damion would like to have the chance to do more speculative work, and would also like to explore using computer-assisted design and CNC for his business. It remains all-consuming, but when he can take time out he likes to be with his wife Bronwen and daughters Emma, 13, and Molly, 10, and to get outdoors to fish and exercise.

damionfauser.com

Above and below Quinkin Table

'What inspires me is to be continually challenged and to always develop and refine my skills. For this reason, where possible I work new techniques, or more complex versions of my existing skillset, into my projects.'

ARTS AND CRAFTS-STYLE TOOLBOX

ISRAEL MARTIN MAKES AN OAK BOX WITH A SINGLE DRAWER TO STORE HIS HAND TOOLS WHEN HE'S ON THE MOVE

I've always thought that the workshop is a reflection of the work the craftsman does. So when I started travelling around Spain to teach, I thought that carrying my tools in a plastic toolbox would not be the best way to showcase my work! I decided that I needed to make a nice toolbox that showed different joinery techniques as well as some details such as inlays and beads.

PHOTOGRAPHS BY ISRAEL MARTIN

1 The carcass components **2** The back dovetails **3** Carcass detail **4** The carcass front and back **5** Making the grooves for the panels **6** Checking the finished carcass **7** The drawer front **8** Detail of the bead **9** The drawer front and sides

The carcass of this toolbox is just like any other box carcass, but bigger. Instead of making the lid with dovetails, I wanted to make a frame and panel one as a way of showing off this joinery. As a tool chest, easy access to all the tools was important, so my idea was to keep the bigger tools (mainly planes and saws) in the main compartment, and to fit the smaller items such as measuring and marking tools, and also a set of chisels, inside the drawer. The box also had to be light enough to be carried by one person, so thickness was an important matter in all the different components. It is mainly made with oak from the forest near my workshop and the inner panels and divisions are made in pine.

DOVETAILED CARCASS

I used the same piece of oak for the carcass boards so that I got continuous grain. After dimensioning all the boards, I started laying out the through dovetails for the carcass. I dimensioned the tails so that the ones on the sides of the board would be half the size of the middle ones. That way I had more glue surface on the most exposed joinery. Normally when I distribute tails it is just a matter of trial and error until I get the tail dimensions I'm looking for. I made the tails then marked the pins. In order to leave space for the drawer, the size of the dovetails on the front side is different from the ones on the back side, but they have more or less the same proportions.

Next I used chisels and the small router plane to make the grooves for the dust board and drawer division panel. At this stage, it is important to check and correct the top and bottom so that they are nice and flat.

THE DRAWER

To keep the grain continuous through the carcass I sawed the front board in two, keeping the lower part for the drawer. I made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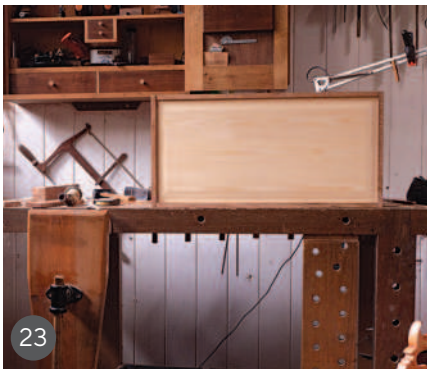
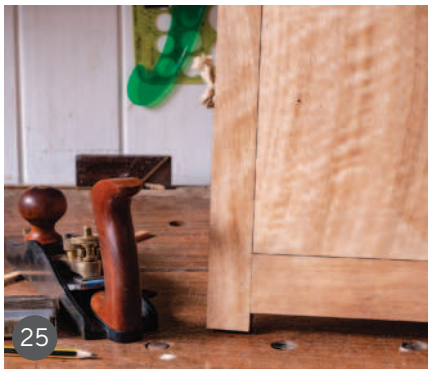




10 The drawer side and back sliding dovetail **11** Checking the sliding dovetail **12** Detail of the drawer division **13** The drawer bottoms
14 The frame components **15** The haunched mortise and tenon **16** The frame joinery done before sawing the excess from the stiles
17 The frame components after sawing away the excess **18** Checking the lid for flatness **19** Detail of the lid pulls
20 Planing two boards together before joining them **21** The main compartment and drawer division
22 The pine dust board to go under the drawer **23** The finished drawer dust board **24** The lid panels with matching grain with stiles
25 Panel detail **26** The ebony and cord lid holder **27** Detail of the top lid holder **28** Detail of the lower one (the wedge is in the inside)

a small error when sawing so the gap between the drawer front and the carcass front side was going to be bigger than I wanted, so I glued up a thin oak strip. I added a small bead to make the difference between that strip and the drawer front less visible. The bead hides it well and the difference can hardly be seen, even when you look closely.

I then made the half-blind dovetails to join the front and sides and the sliding dovetails for the back. Given that it is a wide drawer, I divided it in two and the division is joined to the front and back with sliding dovetails. That way I used two drawer bottoms instead of a wider one that would probably have bent with time.

MAKING THE FRAME FOR THE LID

I wanted my toolbox to be a kind of compendium of different joinery techniques, so I made the lid with a frame and panel structure. I looked for the stiles to match the panels so I sawed them to be book matched. I used haunched mortises and tenons for strength, and three panels. I usually leave a bit of wood excess on the mortise stiles to prevent any cracks while making them or when dry fitting.

With the dry fit, I again checked for flatness on the completed frame. I had a sturdy but nice looking lid. I used rosewood pegs to secure all the lid joinery and I added small ebony pulls, joined with half laps.

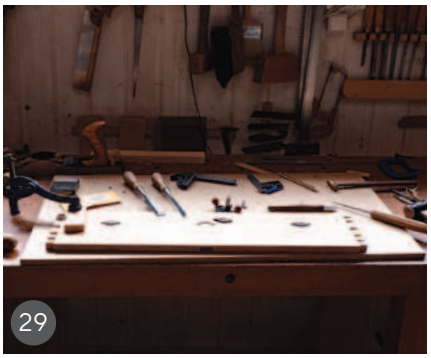
MAKING THE PANELS

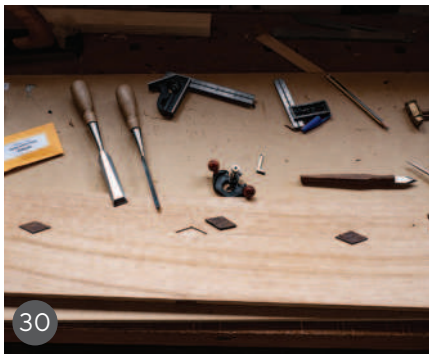
I used pine for the panels that separate the main space from the drawer. I also used pine to make a dust board under the drawer. I joined three pieces using just glue and spring edge joinery. These panels have a small chamfer from 10mm to 5mm to fit in a 6mm groove on the carcass sides.

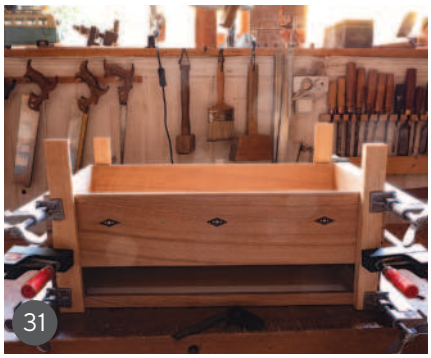
To make the panels for the lid, I used the same oak as the carcass; the four pieces are from the same board, book matched. The one in the middle is made of two glued pieces. The two outer ones have a rebate to fit in the corresponding grooves, and the middle one has splines on its four edges.

HOLDING THE LID

To keep the door open I used a simple solution: two ebony pieces shaped a bit and with three holes, two for the screws and the middle one for a black cord. The cord is glued and wedged from the inside to prevent it from slipping.







29 Working on the rosewood diamonds **30** Details of the inlays **31** The finished mother of pearl and rosewood inlay details
32 Main compartment division layout **33** The division dovetails **34** Divisions for the tools **35** The joinery details
36 The tray for storing waterstones **37** Overview of the tray and divisions

CARCASS DETAILS

I wanted to add some details to the carcass front, just a small touch to add interest and to show different possibilities to my students. I inlaid three rosewood diamonds and 11 mother of pearl dots. I first made the diamonds, then marked them into the oak front and, using the small router plane and chisels, I made the places and then glued them. After planing them flush with the front I added the three mother of pearl dots. As they are very close to each other, I put dots on the previous drilled hole while drilling the next one, to prevent tearing out the fibres between dots. I left the dots a bit proud on the surface and made them flush with a fine file. I normally don't use sandpaper on my work.

INSIDE DIVISIONS AND TRAYS

I laid out my main tools to figure out how they will be accommodated in the main space. I used pine to make a main division joined with dovetails and narrow pine strips to make the inner divisions. These strips are joined with half-lap joinery. I made small trays for the chisels, for some measuring and marking tools and another one that goes on the main space to keep my waterstones for sharpening. These trays are all in pine with plywood bottoms, because they will probably wear a lot with time, so they need to be cheap and easy to replace.

PHOTOGRAPH: ISOGOOD_PATRICK /SHUTTERSTOCK.COM

CARVING OVOLO MOULDINGS

FREDERICK WILBUR CARVES A DECORATIVE EGG AND DART PATTERN

PHOTOGRAPHS BY FREDERICK WILBUR/GMC PUBLICATIONS

Decorative mouldings can be used for a variety of reasons: to create shadows, and therefore depth; to divide surfaces visually, creating balance or pleasing proportion; or to create a finished delineation to a corner, joint or edge. There are functional uses as well, such as covering joints. Mouldings, for our purposes, are strips of wood (or edges of wider pieces) which have a distinctive shape or, more properly, profile; and it is this profiled part which is carved.

The style of moulding I'll concentrate on in this article is the ovolo. This is a convex moulding whose profile may vary from a quarter-round to a quarter-ellipse, with or without a quirk between the convex surface and the projecting fillet above.

The design most commonly used to decorate the ovolo profile is the egg and dart, although many other designs are also used on this versatile moulding. Occasionally, leaves of various kinds are carved across the run of the moulding.

EGG AND DART

The orientation of egg and dart is perpendicular to the length of the moulding, and this gives it some distinctive characteristics. The quarter-circle or quarter-ellipse profile of the ovolo more or less dictates a similar shape in its carved elements: hence the half-elliptical 'basket' holding an egg. This basket is common to all the variations, whether it holds eggs, shells or flowers. The baskets can be separated by a fairly literal depiction of a dart, or they can be connected with a short band. The dart is often simplified to a 'tongue' or a pointed petal. The egg and dart needs to be laid out with particular care because of the bold shapes it contains.

Egg and dart is usually laid off from the centre of the run of moulding, with either dart or basket in the middle. The most visible length should be symmetrical; the shorter lengths can be manipulated to make the corners appear to work out well. Some mouldings are matched at the outside mitres and allowed to run as they will into inside corners, but egg and dart requires attention at both ends. When working with different lengths, it is extremely unlikely that the design will always split nicely in the middle of an egg to make the corner symmetrical. Stretching or compressing the design might make the overall effect visibly jarring when compared to adjacent pieces. Some solution has to be found for this awkward juxtaposition. In quality work, a half-leaf is carved on each side of the mitre, so the joint is 'covered' by a leaf. The egg and dart appears to continue under the leaf, and the eye is tricked into seeing an uninterrupted design.

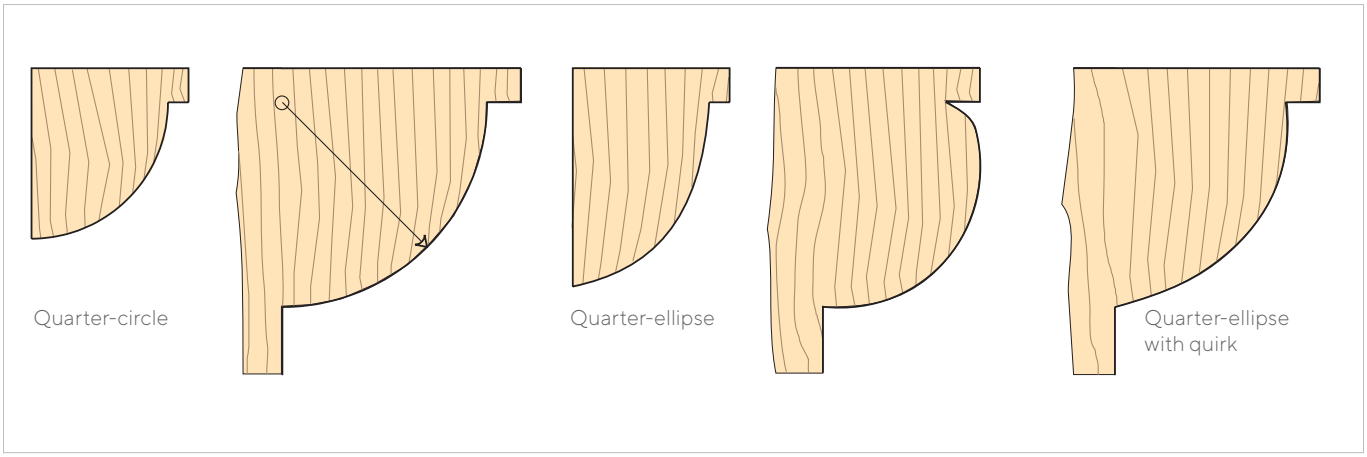
An increment has to be found that allows a pleasing plumpness to the egg – though in historical examples there is wide variation in the relationship of egg to basket and of basket width to the width of the ovolo. The basket is generally an elliptical shape. In the literal interpretation, space is needed between baskets in order to carve the shaft for the dart.

CARVING THE EGG AND DART

To get started, lay out your practice piece and decide on the tools which are likely to be required. Remember that, because the basket is elliptical, the bottom curve will be of smaller radius than the upper sides as they reach the back (or upper) fillet. It is easier to carve the egg without the upper fillet, but usually smaller mouldings are machined as one piece.

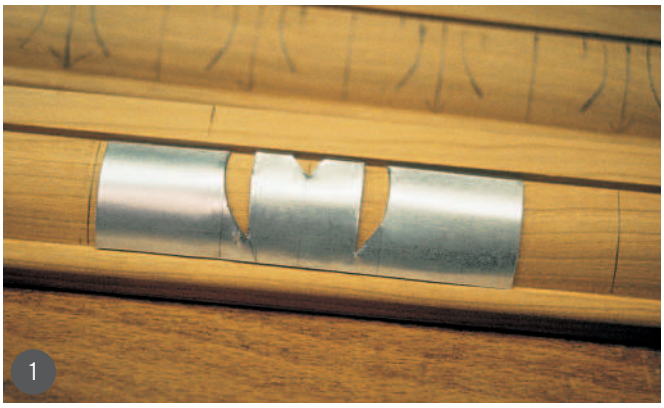
Begin with a No.5 or No.7 gouge at the bottom of the basket; the tool chosen depends on the narrowness of the elliptical basket. Place the gouge right on the junction of the ovolo and the flat ground (or backing board), or on the edge of the quirk between the ovolo and its associated astragal. The angle of the gouge should be slightly higher than perpendicular to the ovolo. (In some 18th-century examples the basket is so wide that the two sides don't actually meet at the ground, but seem to plunge under it.) With the same tool or an appropriately shallower one, overlap the previous cut and work up towards the upper fillet. For instance, a No.7 might be used at the bottom and a No.5 to extend the basket to the top fillet. Setting in both sides in this way defines the outside of the basket.

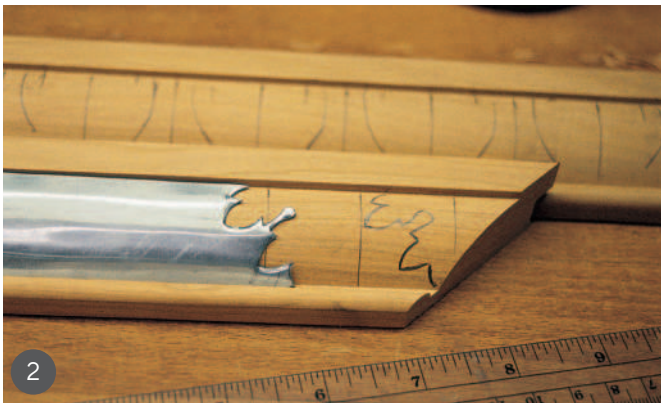
A Ovolo with large egg and dart **B** Egg and dart moulding with leaves masking the mitre joint **C** Carved cornice showing (from top) leaf and dart, egg and dart (each with bead and reel beneath) and anthemion **D** Egg and tongue **E** Egg and dart with corner leaf

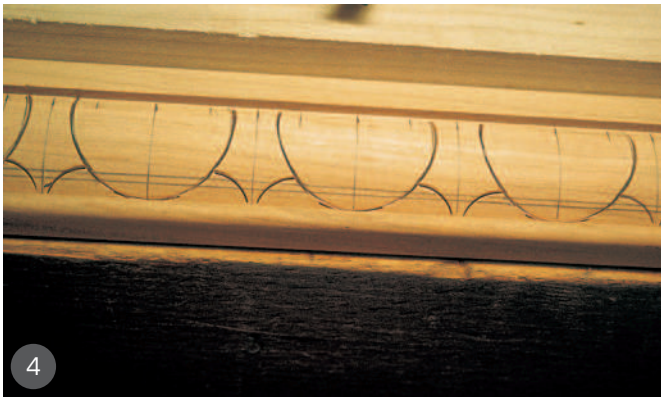


Moulding profiles: the ovolo

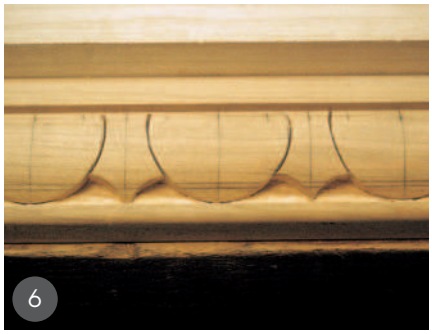
Next, set in the 'flares' or wings at the tip of the dart. Mark the upper extent of the flares with a pencil marking gauge, and then stab in with a No.7 on either side of the dart centre line at about a 45° angle, so that the width of the edge of the gouge fits between the ground at the bottom and the edge of the basket. Clean out the resulting triangular piece, setting in again as necessary. This ground should be parallel to the back of the moulding (that is, parallel to the wall when the moulding is in position), which means cleaning out the deep corners. Good light helps here. If an astragal is attached, a shallow front-bent gouge is handy to extricate the triangular piece and smooth the ground. The basket at this point can be slightly undercut. Because the valleys on either side of the dart shaft are quite deep, it is good to have as much material to the basket side as possible for strength, and this is why the dart is done before the egg – no conundrum here!







1 The carving sequence: using a metal pattern to lay out the eggs
2 Using a metal pattern for the corner leaf
3 Setting in the basket with a No.5 gouge: the initial cut at the base is being extended towards the upper fillet
4 Baskets and flares of the darts set in



5 Grounding between dart and basket with a shallow front-bent gouge **6** The grounding completed **7** Carving the dart: the flares have been bevelled on either side, and the valleys are being set in **8** Using the chisel to form the valleys **9** The darts completed: uniformity is all-important **10** Beginning to form the valley between egg and basket **11** Rounding the egg with an inverted gouge **12** The completed moulding, with the basket edges slightly fluted

To shape the dart itself, first bevel off the two flares below the level of the basket perimeter. Then, alternating between the No.5 gouge that defined the basket and a straight chisel, form the valleys on either side of the dart shaft. Before reaching full depth, define the inside or back side of the flares by stabbing in with a narrower No.7, parallel to the front edge of the flare (these stab cuts can be seen clearly on the left-hand dart in photo 8); then return to the chisel to work the valley down to its full depth. Use a skew chisel to make the various planes join crisply. It is perfectly acceptable for the perimeter of the basket to be undercut slightly. Try to place the tools identically each time in order to maintain continuously smooth surfaces.

The inside of the basket slopes in to meet the egg, so do not set in vertically with stabbing cuts, but angle the tools so as to create a valley. Work downwards from the top of the moulding towards the tip of the egg. Usually this valley is started with the same No.5 gouge as was used to set in the outside perimeter of the basket. As you work down the egg from top to bottom, the front surface of the basket decreases in width, making more room for the egg (which of course is decreasing in width as well). If the moulding is viewed straight from the top, a smooth ellipse should be seen. As the valley is worked down, the surface of the egg can also be shaped by turning over the gouge and rounding the form so as to echo the outside shape of the basket. A smaller No.7 can be used to form the narrow end of the egg. The shape of the egg as it meets the back fillet should be semicircular. It does not matter if the eggs lie slightly below the original profile of the ovolo, as long as they are all even. Finally, to soften the strap-like effect of the basket rim, the surface can be slightly hollowed.

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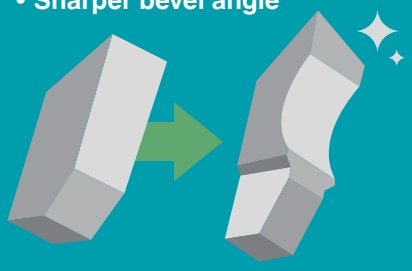

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WHEELS ON FIRE

STUNNING DINING TABLES THAT ROTATE TO EXPAND AND CONTRACT HAVE TURNED CABINETMAKER **GEORGE JOHNSON** INTO A WHITE-HOT INTERNET SENSATION. HE CHATS TO *F&C*

PHOTOGRAPH: RUTH O'NEILL

PHOTOGRAPHS UNLESS STATED: GEORGE JOHNSON

Cabinetmaker George Johnson has designed a unique mechanism for an expanding dining table and the beautiful videos of how his tables work have gone viral, earning him a massive 82,800 followers on Instagram alone. George has a Master's degree in physics that helped him to design the table, which he has worked in a number of different woods and on different bases and which is often finished with striking veneers in intricate natural patterns. We caught up with him for a conversation.

You learned woodworking from a young age – who taught you?
Both my dad and granddad were keen woodworkers and had workshops in their garages which I would spend lots of time in. My granddad had copies of woodworking magazines dating back to the 1970s, and every time I saw him I would take a few home and try out the projects. But the first thing I really learnt to do was woodturning, on my dad's 1920s Shopsmith, and that was my route into cabinetmaking.

Does your education in physics have a bearing on your work now?
Yes, definitely. The complexity of the grain patterns in wood, particularly burrs, really remind me of fractal patterns I worked with in my degree, and I think that is what attracts me to starburst veneer layouts. They have similar qualities to patterns generated when studying chaos theory, and they look really cool!

What is it about wood and working it that you love so much?
I think it is how every piece is different, so everything you make will be unique. And the smells, I love how distinctive each species is, so when for example I haven't made anything from walnut for a while, and I make the first cut, it brings back all the memories.

Are there particular timber species you prefer working with?
Probably one I haven't worked with before, or at least recently! I don't think I dislike any, but wenge probably gives me the worst splinters. I do like burrs and cluster veneers though.

You seem to have cornered the market for expanding tables, what is it about that style and design that you like?
Circular tables are my favourite for sitting at, you can see everyone, and no one is left out stuck at the end. Also, people always have occasions where they need extra space, so combining the two is a great problem to solve. I had a client whom I had made several other pieces for, and they came to me with this problem. I had always loved the Jupe tables from the 1830s and they were happy for me to spend six months experimenting and coming up with something that worked.

Your swirl-type table bases look like a real challenge, can you tell us how you create them?
That was an interesting challenge, the design came about from seeing how I could bend a two-dimensional sheet of veneer around in three dimensions, and create something that didn't look like it would be possible. In the end I made the core up from staking offset hexagons, and cutting every face to a different angle, then smoothing them all out.

You obviously like highly figured woods, usually in veneer form, are they harder to work with?
They take a bit more time to use as they always need flattening, and are more brittle, so need more care. It would not be possible to use that type of wood in solid form, which is why I think they are more special, and the mirror images that can be created from the fact the veneers are so thin are what I love the most.

How important is social media to your business?
When I started out in 2006, social media didn't exist as an advertising form. I got the majority of my work from having a stall at Greenwich Market in London, which is an arts and crafts market with lots of designers selling their things. They didn't have a furniture maker at the time! I would set up a display of a dining table and benches, a coffee table and wall shelf in a 2.5m by 1.5m space and hand out flyers. Word of mouth was important from there. Once social media came on the scene I was lucky with videos of my expanding tables going viral, and from then on almost all my new commissions have been driven by that.

Do you have any future plans you can share with us?
I am in the middle of redesigning the expanding table mechanism. I have compacted it down so the mechanism and expansion leaves are only 9cm deep, which means the table can have a more elegant profile. Also I really want to make more chairs, particularly ones to complement some of the more unusual base designs.

johnsonfurniture.co.uk
@georgejohnsonfurniture












THE LOG STACK CABINET

MADE WHILE HE WAS STILL A STUDENT, **CHARLES BYRON**'S CABINET 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 Log Stack Cabinet by Charles Byron of Byron & Gómez. Here, Charles tells *F&C* the story behind the design.

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

What I really wanted to do with this piece is show off the beauty of end grain. It's an aspect of wood that is so often hidden away, yet to me it is every bit as stunning as other grain and deserves to be shown off. Everything about the Log Stack Cabinet revolves around showing end grain at its best.

What materials did you use for the cabinet and why were they chosen over others?

With end grain in mind I was delighted when I discovered that I could source large leaves of true end-grain oak veneer, as opposed to oysters. I based the whole project around this veneer and what I could do with it. I really wanted to create the look of having sliced cleanly through a tree, showing the full circle of growth rings. The veneer came as two stacks of consecutive half circles, but due to shrinkage and the inevitable breakage of the fragile, crumbling edges it was not possible to simply join the two leaves back together. I had to introduce a third leaf, which came from the next layer of veneer so the rings wouldn't line up. That leads me to the other main material in this project, white resin. The white resin fractures were my way of distracting the eye from the fact that the rings didn't line up, creating that slice of tree illusion that I was after.

What features – subtle or obvious – are you particularly proud of and make the design unique?
It's undoubtably the use of end grain that makes this project unique, but the supporting act that often goes unnoticed is the grain direction on the carcass. Using one piece of crown-cut oak per drawer front, I ran the grain front to back, lining up the crown with where it would be if the front and side were two aspects of one solid block of wood. It's not something that jumps out at you, but it helps to sell the whole illusion.

How long did the cabinet take to create, from initial design to completion?
In all honesty I don't know. I was a student at the time I made it and I wasn't very good at recording my hours back then. It took a long time, that much I can say for sure. There were some quite repetitive tasks involved but I guess that's just good practice when you're learning.

What modifications did you make along the way and why did you make them?
None at the time. Some designs go through a lot of iterations and get repeatedly tweaked as I make them but this is one of those ones where it pretty much ended up looking like the first sketch I ever did, but I have since made a base for it to make it a floor-standing piece. I felt this would make it easier to place in a house rather than a gallery.

What was the most challenging aspect of the design?
Working with the end-grain veneer presented some unique challenges that had to be overcome. It's quite fragile and doesn't stick down as well as normal veneer. It's also very porous so bleed-through is an issue. You have to work very quickly when you press it as the moment it makes contact with the glue your nice flat piece of veneer tries to turn into something resembling an ice-cream cone!

What does the Bespoke Guild Mark mean to you?
I was absolutely blown away to get it. As this was a student piece and I was making a bit of a life change to study furniture making, it was a real vindication that this was something I could make a success of.

What do you see as the benefits of being awarded a Bespoke Guild Mark?
For me it really opened a lot of doors. I was only just starting out and I was being invited to exhibit along with all these fantastically talented and long-established Guild Mark holders. The Furniture Makers' Company is a fantastic organisation that really supports makers and I'm grateful to be affiliated with it through the Guild Mark.

byronandgomez.co.uk

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

PHOTOGRAPHS COURTESY OF BYRON & GOMEZ

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WAX AND WANE

SOMETIMES THE SIMPLEST OF FINISHES IS THE ONE YOU CAN REALLY TAKE A SHINE TO

There are so many ways to finish a piece of furniture but there is one substance that will do far more than just add a finish, one that is ingrained in our collective memory more than any other – wax. Why is this? Say wax and we can easily think of beeswax because of its natural association with nature and bees, or perhaps spray wax for housework and easy polishing of furniture, even if it does contain unlovely silicone rejected by antique lovers and restorers. We tend to recognise wax in general terms as a constant in life. Wax, the thing we need or don't need but it's always there. So, what is so special about wax as a substance?

According to Wikipedia, 'Waxes are a diverse class of organic compounds that are lipophilic, malleable solids near ambient temperatures. They include higher alkanes and lipids, typically with melting points above about 40°C, melting to give low viscosity liquids. Waxes are insoluble in water but soluble in organic, non-polar solvents. Natural waxes of different types are produced by plants and animals and occur in petroleum.'

So there you have it, hopefully that makes sense. Now let's put it into practical terms by looking at some handy forms of wax that we can use in our everyday woodworking activities. Bear in mind that waxes are always a blend, even if it is a single wax and it's solvent, but most will be a more complex mixture of components. Wax compounds are used for other things, such as car body finishing, but we are concerned with wood.

SAFETY NOTE

All solvents are hazardous to a degree, being formed of hydrocarbon compounds, so always read the label on the tin and, if necessary, visit the manufacturer's website to download the relevant safety data sheet.

TYPES OF WAX

BEESWAX

This is perhaps the simplest and most pleasing wax to use. It is basically refined beeswax produced by using the empty wax chambers that bees make to create a hive. A fantastic product of nature that has many applications but looks and smells distinctive and pleasant due to the presence of oil of turpentine as the solvent, itself a natural product derived from pine resin. It is considered moderately toxic, so if used in quantity good ventilation is essential during wax application.

PHOTOGRAPH BY JOHN BULLAR

PHOTOGRAPH BY BOB CHAPMAN

PHOTOGRAPH BY JOHN BULLAR

1 Wax can be solid, semi-solid or liquid, depending on the formulation **2** Beeswax is a component of many different paste and liquid waxes **3** In solid form, beeswax can be heated to melt and apply to a surface **4** Carnauba wax is incredibly hard in a pure form **5** Applied to turned items, carnauba makes a complete finish on its own **6** A hardening wax compound is the standard way to finish bare or sealed wood

The wax is non-hardening so, although it will shine an existing complete surface finish such as French polish, it cannot repair it or make up for the lack of any finish. It is generally supplied as a paste but can also be obtained in stick form.

CARNAUBA WAX

Carnauba comes from palm leaves on trees grown in parts of Brazil. It is incredibly hard and is the essential main ingredient in a typical hardening wax. It has a complex chemical makeup which gives it its essential strength and usability after refining and bleaching.

Although it can be used on its own, for instance in stick form for applying to turnery when it is rotating so the heat melts the wax, it is otherwise normally blended with other waxes and solvents to make a useable paste or liquid wax. Carnauba on its own is capable of scratching a highly finished surface due to the degree of hardness.

HARDENING WAX

Hardening waxes are a combination of waxes such as beeswax, carnauba and micro-crystallite dispersion agents and a solvent. Since carnauba isn't guaranteed to break down into a fine enough state, possibly making the wax compound lumpy, a micro-crystallite ingredient ensures that all the waxes, especially carnauba, do disperse so the finish achieved is a smooth, even shine without any risk of the underneath finish becoming scored in the process of application.

PHOTOGRAPH BY ALAN HOLTHAM

PHOTOGRAPH BY PATRICIA SPERO

7 Wax with micro-abrasive included can give a good sheen to wood **8** Wax fillers are useful in restoration work **9** Hardwax oils have the benefits of wax finish in an oil-based form **10** A clear machine wax gives the necessary slip without contaminating the work **11** Always use non-silicone spray wax on woodwork **12** Repaired pine drawer runners ready for waxing to help them run smoothly

MICRO-ABRASIVE WAX

A newer form of very refined wax capable of being used on finished wood surfaces or plastics, depending on the product. It is intended to increase the level of finish by the use of ultra-fine abrasive particles in the wax. The wax acts on those particles so it reduces their tendency to score surfaces. The result is an ultra-fine shine where the object will benefit from the additional treatment.

WAX FILLERS

Wax filler sticks come in hard or slightly softer form and can be worked into holes and then buffed off. They can be used to repair cracks, splits and small holes without sanding or having to strip the finish. They can be applied without a heat source, are quick drying and have no shrinkage making them ideal for restoration work.

HARDWAX OIL

This gives the best of both worlds when wood finishing. It can be used on furniture or flooring and is applied as an oil but with waxes present, so once it has dried it has the more lasting shine of a typical wax finish. It can be applied in more than one coat

13 Tallow is a very solid, sticky form of blade lubricant useful for handsaws **14** Dark hardening wax is good for filling gaps and helping the antique look **15** Hardening wax needs positive pressure to stick evenly to a highly finished surface **16** A natural bristle brush is good for buffing without damaging surfaces

for a complete finish. It has become increasingly popular because of its ease of application and the quality of finish achieved.

MACHINE WAX

There are various different wax compounds which can be in a solid or paste form and are intended to improve the performance of machine tooling and machine feeding, such as giving a thicknesser bed more 'slip' by reducing friction. For woodworking machines it needs to be a clear type that doesn't stain into the wood grain.

SPRAY WAX

Standard silicone spray waxes are not approved for antique furniture and are not suitable for woodworking processes as the silicone can allegedly scratch a delicate finish and it will create a 'resist' effect that will prevent lacquer, etc. from bonding to a surface and will 'reject', i.e. roll back. There are specialist spray waxes without silicone.

CANDLE WAX

This is the traditional method of preventing drawer runners from sticking where two dry wood surfaces slide against each other. It works, but a hardening wax will also do a pretty good job.

TALLOW

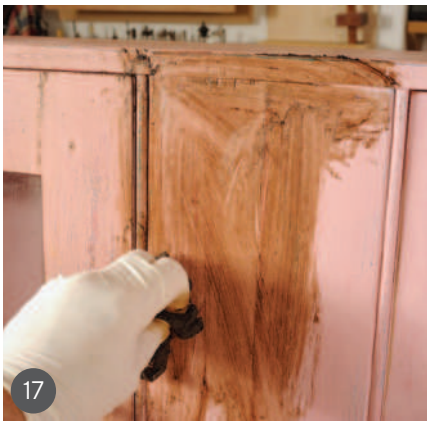
This is a rendered animal fat compound that has limited use in woodworking but is sometimes used as a lubricant on handsaws. More recently it has been subject to objections from animal rights organisations as it is a by-product of the meat industry. It is a component of candle wax.

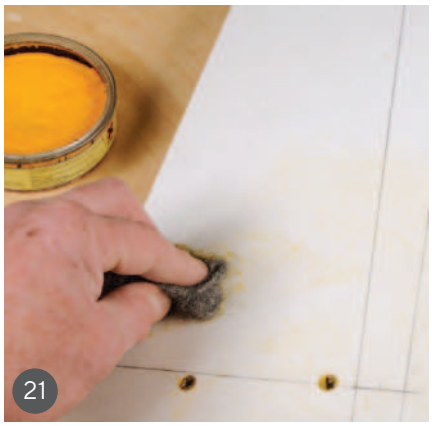
WAX USAGE TECHNIQUES

Hardening wax is the favourite type for most work. The colour can make a big difference and you can get it in different shades, from clear, tinted and various colours depending on the brand. Clear or a light tint is fine for most purposes, but those with a colouring medium added in, such as 'antique pine' or 'Georgian mahogany' are extremely useful for adding a richness, a completeness of finish which may be lacking, especially on restored work. A dark shade can fill small gaps and cracks on old pine or an antique without resort to filler sticks or indeed wood filler.

When applying the wax use very fine 0000 wire wool or mutton cloth which has an open weave. Both can make the wax stick to an already shiny surface and are good for rubbing the wax into bare wood. If you want a quick result use more wire wool or mutton cloth to wipe off the surface and buff to a sheen. If you leave the wax to dry out, once the solvent has evaporated it becomes hard and difficult to shift. The answer is to apply more wax to soften the first lot.

Keep a clean cloth for the final buffing and you should achieve a nice level of sheen on the surface. Intricate detail or carving can be waxed and finished using suitable brushes, preferably natural bristle for a strong action without damaging surfaces.





PHOTOGRAPH BY JOHN BULLAR

17 Rubbing coloured wax on to a painted surface alters the appearance considerably **18** Liming wax infill can be white, black, metallic or any colour you want **19** Paste wax applied with a buffing wheel is an effective option for turned work **20** Cast iron can be very 'dry', so waxing helps a great deal to reduce friction **21** Waxing a jig will prevent components getting stuck as it acts as a release agent **22** Beeswax is an easy way to help screws drive into their holes

FINISHING ON PAINT EFFECTS

If you are using special paint finishes, such as milk paint, waxing over the paint will change it dramatically. It can take away the rawness of new paintwork instantly and, combined with tricks such as 'rub thru' to paint layers or wood underneath, can create a shabby-chic effect.

Liming wax is used for a decorative effect on open-grain timber, generally oak. It can be white or any suitable colour but the underneath surface may benefit from a sealing coat so the liming paste doesn't colour the entire surface.

TURNERY

Turnery can be polished using neat carnauba wax while turning on the lathe at low revs and gives the highest, shiniest finish but needs a bit of skill to do well – it relies on the wax heating up and softening. A safer option is using paste wax on a buffing wheel and offering the work up to the wheel to get a good finish rather than just rubbing on with a cloth.

MACHINE USE

Having some 'slip' on machine tables, whether cast iron or MDF, makes a real difference. It is particularly noticeable when thicknessing because the pressure of the rollers on boards causes a high level of friction. Machine wax is fine for certain engineering purposes but standard clear hardening paste wax does the job perfectly well. If you machine one face and then turn it over any traces of wax should get removed as the thicknesser bed gets repeatedly used.

JIGS

Wax is very useful if you want non-stick jigs when gluing up. That way you can avoid components for laminating, etc. from damaging a jig if the glue won't bond to the jig.

SCREWS

Traditional slot-head screws often need a bit of help driving neatly into wood. Brass ones are particularly vulnerable to slot damage by the driver tip. Using a spot of wax on the threads will help the screws into the wood without effort.

CONCLUSION

The use of wax is a varied and wide-ranging subject but hopefully you can put waxes to good use in your furniture projects.

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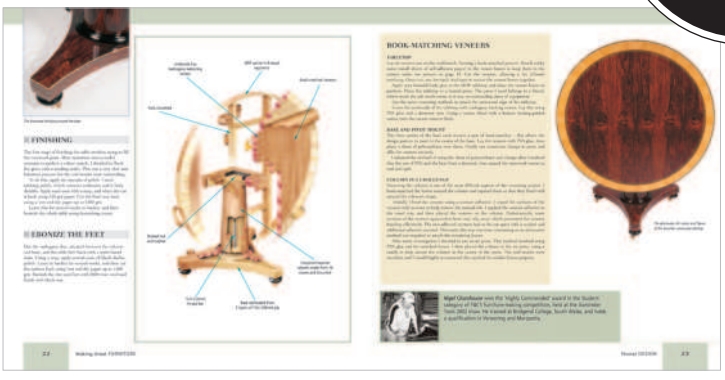

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A GRAND WORKBENCH JOURNEY – THE GRAND FINALE

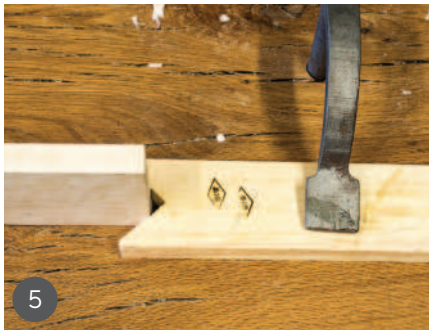
KIERAN BINNIE LOOKS BACK AT THE PROCESS OF MAKING HIS 18TH-CENTURY STYLE BENCH

I spent much of 2019, and the early months of this year, embarked on the largest project of my woodworking career, and one which in many ways has felt like a rite of passage – a slab top oak workbench following the description in *L'Art du Menuisier* by 18th-century carpenter and author André Roubo (translated and reprinted by Lost Art Press as *With all the Precision Possible*). The parameters I set myself for this project were to build it by hand, to follow Roubo's description as closely as possible and to use the same base unit of measurement as Roubo – the 'Pied du Roi' or King's inch. The aim was to build a bench that Roubo would instantly recognise (aside from the modern vice hardware).

Most of the build process has been chronicled in this magazine, and also in depth on my blog (overthewireless.com). With the bench finally completed at the end of March, I've been pressing it into use on new furniture builds, and getting to understand how these traditional benches function. In this article I will look back on the build process to talk about what specialist tools are necessary to undertake a project of this scale, and then examine how the bench functions in practice. If you are considering building a Roubo-style bench, hopefully my experiences will be of some use.







PHOTOGRAPHS BY KIERAN BINNIE

OPPOSITE The completed Roubo workbench **1** The bench was built following the engraving on Plate 11 of Roubo's seminal text, and a Pied du Roi ruler made by Brendan Gaffney **2** The leg vice holds the workpiece in place for working edges and cutting joinery. The hardware is the Glide C vice by Benchcrafted **3** The planing stop holds work on the bench top, and can be raised or lowered in height depending on the thickness of the work **4** A doe's foot held in place with a holdfast secures the rear edge of the workpiece **5** A doe's foot can also hold narrow boards on their side for edge jointing or chopping mortises **6** Edge jointing a panel in the leg vice **7** The only dimension not taken from Roubo's text was the bench height, which was measured from my body proportions to ensure a comfortable height when in use

DON'T YOU NEED SPECIALIST TOOLS FOR BENCH BUILDING?

Building a bench of this type is more akin to timber framing than furniture building, particularly if like me you use a slab top instead of a modern-style laminated top. But does that mean you need to invest in a whole new tool kit just for the bench build? Fortunately not. While there were a few additional tools which I found to be invaluable, most of the build was done with the planes, chisels, auger bits and saws I routinely use for furniture making.

The joinery for the Roubo bench employs different varieties of mortise and tenon joints, which most furniture makers will be familiar with. The same techniques and tools can be used to cut these bench-sized joints, but I did find a 1½in-wide timber framing chisel and a 1in diameter ship's auger bit to be essential, particularly for the joinery connecting the top of each leg to the slab. While it is possible to use a standard issue bench chisel and auger bit to cut these joints, the extra length of both is very helpful when cutting joinery in a 5¾in-thick oak slab. The ship's auger is 18in long instead of the 7in length of a typical auger bit, and this extra length makes it easier to judge when the bit is perpendicular to the work surface, particularly when drilling holdfast holes.

I've used a lump hammer in the workshop for several years now, and it earned its keep when building the bench, both for knocking the large joinery together and for driving the timber framing chisel. A lump hammer is also very useful for setting holdfasts, so I now keep two lump hammers in the workshop – one at each end of the bench, so that I am always within arm's reach of one.

8 Blending modern and historic technology – holdfasts and a sturdy bench top also facilitate using power tools such as a track saw
9 Traversing a 13in-wide board using the planing stop and doe's foot – this work holding arrangement is rock solid and quick to set up

The only other specialist tool was the Pied du Roi ruler (made by Brendan Gaffney), which I used for all measuring and layout duties. This was not essential, as it is possible to convert Pied du Roi measurements into modern inches (one Pied du Roi is equivalent to 1.066 modern inches), although I expect that most folk building a Roubo bench will stick to contemporary units of measurement!

DID THE PIED DU ROI MAKE A DIFFERENCE?

When you tell other makers that you're building a project using an archaic unit of measurement, most of them ask if you've gone mad. The rest ask where they can get historic rulers from.

My initial reason for using the Pied du Roi as my unit of measurement was to build a bench that was to the scale of the benches described by Roubo, as well as to the same design. But now that I've been using the bench for a few months, I've been able to answer a question that nagged away at me during the build – would the Pied du Roi make any difference once the bench was in use? In short, the answer is probably not. The difference between one Pied du Roi and one modern inch on a unit for unit comparison is negligible, although over the length of the bench top (which I built to Roubo's advised length of 8ft) that extra length adds up to an extra 6in in length, which is certainly helpful for sticking long runs of moulding. Having all components sized to the Pied du Roi certainly results in everything being overbuilt, which adds both mass and longevity to the bench. That is no bad thing – extra mass means that the bench will be stable when doing heavy hand planing, and I certainly intended the bench to outlast me. Both of those objectives have been met.

The only key measurement where I did not use the Pied du Roi was the bench height – instead I took the bench height from my own body, specifically the distance between the floor and the knuckle attaching my little finger to my hand, to ensure that the bench top was the perfect height for me rather than an 18th-century worker. That all being said, I'm glad I built the bench using Roubo's native unit of measurement. Even if there is little practical benefit in doing so, it placed me closer to Roubo's description, which was a key part of the build process.

ROUBO IN USE

The build process is one thing, but a workbench must be functional, so how does the Roubo perform in practice? After several months' hard use, I'm pleased to confirm that it performs very well indeed. In fact, I'd go so far as to say that it is my ideal bench, which is a relief because after 13 months' work I'm not sure I could muster the enthusiasm for another bench build! But enough of the superlatives, exactly why does the Roubo bench perform so well?

When you boil it down, a workbench is simply a large clamp – its purpose is to support and secure the workpiece when working both the edges and face of timber, and to provide stability. The design of the Roubo bench is focused on performing these tasks. The sheer mass of the bench, with its thick top and heavy legs, ensures that it is stable and not prone to wracking or to moving when in use. As a test, when processing stock I tried using as heavy a cut as possible, to see if I can get the bench to move at all. Heavy planing would send my previous (lightweight) bench skittering across the workshop floor, but with the Roubo I can increase the cut until it is impossible to push the plane further, and still the bench does not move.

That's stability taken care of, but how about work holding? The work holding solution provided by the Roubo bench is based around a planing stop and holdfasts. The planing stop (at the left-hand end of my bench) is a wooden post friction fit into a mortise through the bench top, into which a toothed metal stop is fixed. By using a wooden mallet or lump hammer, the height of the post can be adjusted depending on the thickness of the workpiece. Driving the workpiece onto the teeth of the stop secures the front end. The back end of the workpiece is then held either by a holdfast, or preferably by a doe's foot secured by a holdfast. The doe's foot is nothing more than a piece of scrap into which a notch has been

10 For working along the grain of wide boards, a thin batten can be held in place with a holdfast and planing stop
11 Working into the planing stop is also helpful when laying out dimensions with a panel gauge, or laying out joinery

cut with a 45° angle. The notch engages with the rear corner of the workpiece and prevents it twisting off the planing stop. While this arrangement may appear rudimentary, it is very effective, both for planing the face of boards, and also the edges of narrower boards. Not only does the combination of planing stop and doe's foot hold the workpiece stable for planing, but it is also very quick to set up and to adjust – no more wrestling with clamps whenever I want to measure or move the workpiece. Efficiency of workflow makes for a much more enjoyable and productive experience.

For boards that are wider than can be reasonably restrained by the planing stop, I use a thin batten across the bench, held in place by the planing stop and the left-most holdfast, with a doe's foot at the rear of the workpiece. While it may seem counterintuitive to not have the workpiece cinched down hard to the bench, I've found that working with this arrangement is just as easy as with a modern tail vice, and a lot quicker to set.

There is a further advantage to the work holding functions of the Roubo bench – they improve your technique. If you skew the plane too hard in the wrong direction, or don't have good control over the weight distribution and balance of the tool, then the workpiece may move. Particularly if you are edge jointing with the board held by the planing stop instead of in the leg vice. That feedback is actually very helpful, because it encourages a greater degree of control with the tool.

For cutting joinery, the workpiece can be held in place with holdfasts when cutting dados or rebates, or in the leg vice when cutting tenons and dovetails.

That brings me on to the leg vice and the design of the legs and stretchers. The substantial vice chop (mine is over 3in thick) adds mass to clamp the workpiece in place, but also significant is that the legs and stretchers are all coplanar to the edge of the bench top. This means that unlike benches that have a benchtop overhanging the legs and stretchers, every surface of the Roubo bench can be pressed into use for clamping. Take for instance working the edge of a large table top – the table would be held in the leg vice and also against the side of the bench top, the stretchers and the opposite leg. This provides a lot of surface area to hold the workpiece.

So far I've talked about using the Roubo bench for hand work, because that is what the majority of my work is. But it also works very well for power tool focused work. The same work holding arrangements make the use of track saws, routers and Domino machines easy and safe to set up, with holdfasts cinching down the workpiece so that power tools can be used with ease.

CONCLUSION

Building this bench has been a rite of passage, very much like when I built my tool chest and my first guitar. With all three of those projects I learned a huge amount, not just about building those specific things but also wider hand work skills which I will take forward to the rest of my work. This has been a hugely rewarding project, and the result is a rock-solid workbench that offers a great deal of functionality. I'm looking forward to spending the rest of my days working at the bench, and learning other ways of using it. This is the last article in this series, but my Roubo journey is only just beginning.

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PHOTOGRAPHS BY LOUISE BIGGS

COFFEE TABLE RESTORATION

IT TAKES REAL SKILL TO MAKE AWKWARD SHORT-GRAIN REPAIRS, AS **LOUISE BIGGS** SHOWS

This much-used coffee table had a rather unusual leg arrangement. It resembled two tripod bases with a leg missing on each and replaced by a stretcher rail. The tripod pedestal arrangement was traditionally used on smaller, round tables known as tripod tables. In some cases the top would tilt upright, but in nearly all cases they were a turned pedestal with three cabriole legs. They were popular from around 1730 up to Victorian times.

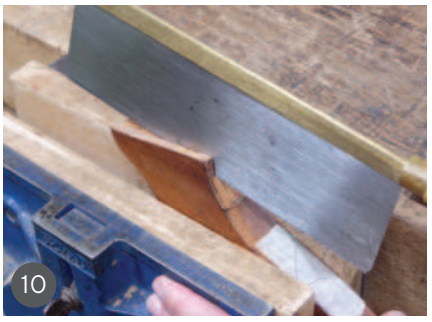
STAGES OF RESTORATION

1 The table had suffered an accident leading to two of the cabriole legs becoming detached from their pedestal. The joints for the stretcher rail and other pedestal were still solid, so how best to restore the broken legs? Pieces of the sliding dovetails were on the pedestal and pieces of the pedestal were still attached to the legs.

2 First I separated the pedestal pieces from the legs – a gentle tap with a chisel and mallet along the joint line released the sections with little difficulty. The pieces were then aligned back on the pedestal to ascertain whether they would fit cleanly back in their correct places.

3 The smaller pieces of the sliding dovetails were prised from the pedestal in the same way. Before doing anything else the old glue was removed from the legs, the pedestal and all the various pieces.

4 The pedestal pieces fitted cleanly and there would also be room to reinforce the joints. Initially using animal hide glue, the three sections were glued in place. To hold the pieces in place until the glue set, I wrapped masking tape around the pedestal as this put the required pressure on the angle of the breaks. Clamping blocks could have been cut to fit, allowing



clamps to be used, but with three broken sections there was the risk of one or more moving out of line.

5 While the pedestal was drying I separated which of the sliding dovetail pieces went with which leg. The first leg was straightforward – in four pieces and from the edges of the breaks it was clear how they went back together. Each piece was glued in turn, forming a rub joint. This entails moving the pieces side-to-side or up and down with the glue until the glue becomes tacky and holds the piece.

6 Using blocks that had been pre-cut to mirror the angle of the dovetail, the joint was clamped until dry. The blocks were coated in candle wax to prevent them sticking. Once dry the sliding dovetail would be strong.

7 The second leg required a bit more work – I was faced with eight pieces and several much smaller pieces and trying to find which order to glue them and where they went was a jigsaw puzzle. What did become evident was that several much smaller pieces were missing, which prevented the pieces lining up, and left gaps in the sliding dovetail.

8 As a stronger and more economical repair option, I decided to replace the sliding dovetail. This entailed cutting a sliding dovetail into the leg, then re-cutting the dovetail for the pedestal. First, two lines were marked which indicated where the dovetail joined the leg.

9 The damaged sliding dovetail was sawn off and the pencil marks followed round to the leg joint surface using a mortise gauge. The depth of the sliding dovetail could then be established as well as the length, keeping the top of the joint down from the top of the leg.

10 I cut the sides of the dovetail using a gent's saw at an angle so the cut reached the furthest points on the dovetail. Care was taken not to disturb the shoulder line of the joint.

11 Using a chisel and mallet, the remaining waste was removed by cutting down the dovetail sides and clearing out at the bottom. In this situation I was aware of the grain direction of the leg when cutting down the sides as it could split the leg if the grain was running in the same direction.

12 A piece of timber was prepared, large enough to make the two sliding dovetails, and using the leg and a sliding bevel the leg dovetail was marked on the block. The dovetail was cut using the gent's saw and trimmed to fit using a suitable chisel.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13 Applying glue to the dovetail, but not the shoulder line, the leg dovetail block was glued in place. When dry the pedestal dovetail was marked on to the block in the same way as the leg dovetail. The angles of the dovetail were cut and a haunch was cut at the top of the leg to correspond with the pedestal. The angles of the shoulder lines were cleaned of any excess glue.

14 With the legs repaired, my attention turned back to the pedestal and how to strengthen the breaks on either side of the legs. There was enough shoulder line that small 3mm holes could be drilled to accept dowels. Initially, the drill was started square to the timber to get a starting point, before turning the drill to angle the drill bit through the breaks.

15 In each of the three shoulder lines two dowels were angled up and the top dowel was angled down, as shown by the extended ends in the upside-down photograph. Angling the dowels locked the repair in place. When stress is put on the joint it will be more difficult for the break to come apart again. Before gluing the dowels in place, I cut a small groove on both sides of the dowels with the corner point of the chisel. This allowed any air trapped behind the dowel to be squeezed out with the excess glue as the dowels were inserted. Once the glue had dried the dowels were cut flush to the surface of the shoulder line.

16 The leg with the replaced dovetail was test fitted into the pedestal, the dovetail was trimmed slightly with a chisel to acquire a better fit then the two legs were glued in place. As the dovetails were a tight fit no further clamping was necessary. When the glue had dried the existing metal plate was relocated on the bottom of the pedestal.

17 With the table back together the legs were checked with winding sticks to make sure they were level so that the table did not wobble.

18 The repairs around the legs and pedestal were stained and polished out as required and the table was ready to be returned to its owners.

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SPLINE JOINTS

JOHN BULLAR REVEALS A GREAT METHOD FOR FIXING MITRED JOINTS

A spline is the traditional name given to a long thin strip of wood. The spline joint works by holding the mitred corners of a frame together with one or more splines. These are glued into slots cut through both sides of the corner.

In this article I'll show you how to make simple lightweight spline joints using hand tools. Simple spline joints can be used for small-scale work but they do not have much strength, so I'll also look at making a sturdy alternative called a keyed spline joint, made with basic power tools – a mitre saw and a small router fitted with a dovetail cutter.

PHOTOGRAPHS BY JOHN BULLAR

PREPARATION

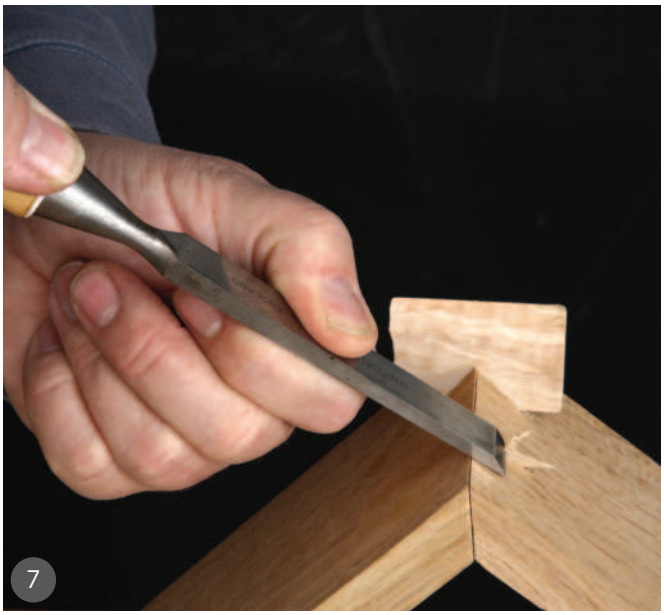
1 First, all the wood needs to be planed straight and square before marking out or cutting spline joints. When you plane narrow edges, pinch the front of the tool between fingers and thumb so as to guide it underneath with the fingernails – this keeps the plane central and the edge level. To plane the wider faces, grip the front knob of the plane. Remember to press down the front and support the weight of the back of the plane at the start of the stroke, and press down the back, supporting the plane's front, at the end of the stroke.

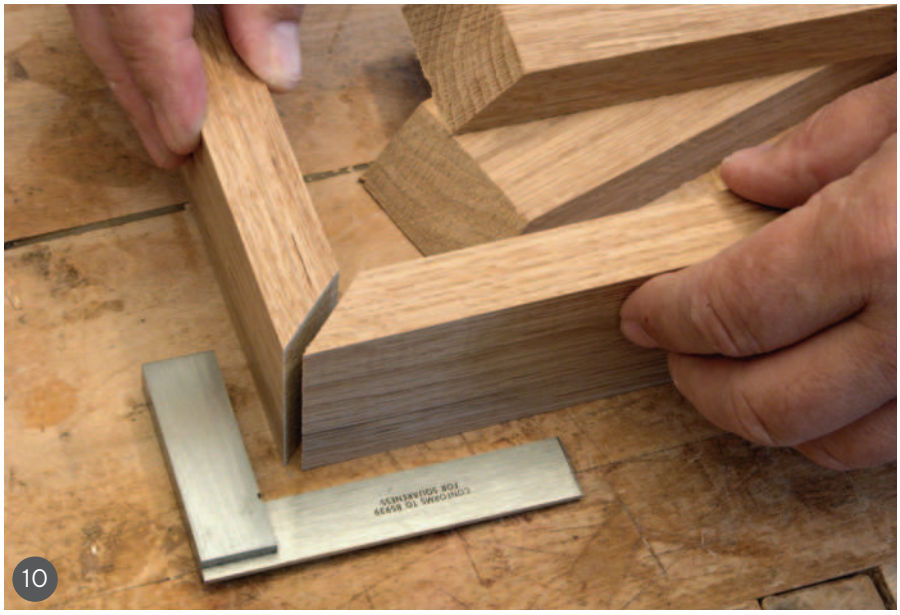
SIMPLE SPLINE JOINTS

2 After marking 45° lines across the edges and right-angled lines across the faces, saw carefully down the lines to produce a mitre joint. Alternatively, use a mitre box to guide the tenon saw blade, or use a mitre saw with its own adjustable frame to guide the blade automatically to the correct angle.

3 With both sides of the joint sawn to 45°, clamp them so the mitred ends are butted together in alignment to make a right-angled joint. Now make a series of saw slots, or kerfs, across the pair of ends, slanting the saw one way and then the other.

4 The spline itself is a thin strip of wood sawn along the grain direction. This needs to be cut to match the thickness of the kerfs – quite a tricky job. Cut a strip of spline, and then try to fit it in the slot. If it is too tight or too loose, adjust the next one accordingly. Alternatively, set up a bandsaw with the fence adjusted close to the blade, so you can run off strips of wood to make splines.





GLUE-UP

5 Squeeze PVA glue into the kerfs from the nozzle of a glue bottle. Press the nozzle tight against the wood so the glue is forced into the slot. Don't apply glue to the strips of spline as this would just scrape off as you pushed them in, making a mess outside the joint.

6 Slide the splines into the slots, easing them by rocking from side to side as they work their way in. The glue will act as a lubricant, but work fairly quickly once you have applied it, as water from the glue will swell the wood and soon make it tight.

7 Once the glue has set but before it is too hard, pare away the surplus wood from the splines outside the joint, using a razor-sharp chisel. Remove any traces of glue from the chisel immediately as the water in it will pit the steel.

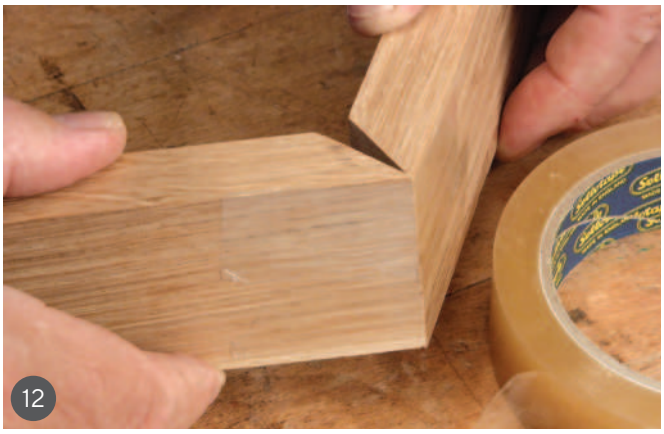
KEYED SPLINE JOINTS

8 Modern benchtop mitre saws make cutting joints like this at 45° – or any other angle – a piece of cake. The skill comes in accurately setting up the saw and then using it safely.

9 Once the machine has been set up, copying the mitre angle time and again is easy. Ensure the wood is tightly held against the fence. Use clamps to secure it if necessary, particularly when the wood is short.

GET IT TAPED

10 An additional check on the accuracy of your 45° mitres comes when you butt the ends together as a joint. Any error in the adjustment of the mitre saw will be doubled when you join two ends together to make a right-angle corner. This error would be multiplied by eight when you joined the last corner of a square frame.



11 Use sticky tape around the outside of a mitre joint to bind it together while you cut the splines. This might sound crude but it is a very effective trick, so long as the wood is dust-free and the tape can stick.

12 Tape securely stuck across the outside of both halves of the joint is stretched as you fold the mitre together, keeping the outer corners tightly in alignment, ready for the next stage.

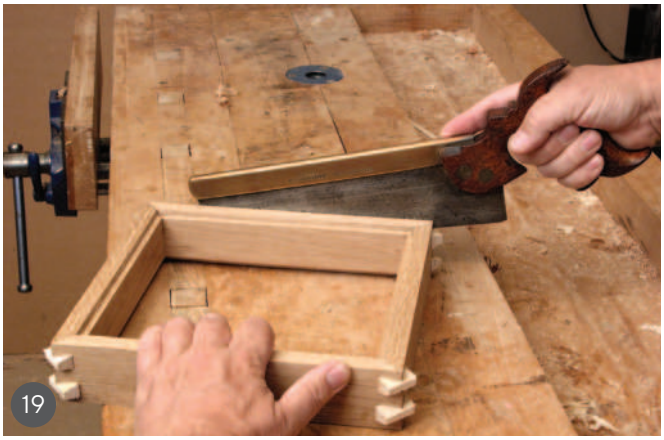
IN THE VICE

13 Use the front vice on a workbench, or alternatively a Workmate-type vice. Measure the distance from your router base to cutter centre. Clamp a straight-edged offcut of wood alongside the vice jaws and perfectly parallel to them. This offcut will act as a fence to guide the router cutter in the gap between the vice jaws.

14 Clamp the taped-up mitre joint in the vice jaws at 45°, with the corner just level with the top of the jaws.

ROUTING THE KEYWAYS

15 Adjust the router so the full cutting length of the dovetail bit just protrudes through the router base. Now route a keyway slot through the taped-up mitre joint that is clamped in the vice.



This needs to be cut in one slow, steady pass with the motor running full speed.

16 Lay a second straight-edged offcut alongside the fence to shift the router across, ready to make a second keyway slot through the taped-up mitre joint.

FITTING KEYS

17 Use the same dovetail cutter bit to shape both sides of the edge of a piece of contrasting coloured wood. This will form a tapered key suitable to fit the keyway slots in the joint. This calls for a careful clamping arrangement to make the key fit the slot and to avoid the router marking the vice.

18 After shaping with the router, the key material is sawn off the edge of the wood and then sawn into short lengths. These are suitable to act as spline joints fitted in the tapered slots cut in the mitred corners.

19 With the slots glued, the tapered keys or splines are all fitted and the frame clamped tightly together while the glue sets. Next, cut the excess length from the keys to make them flush with the outer faces of the frame.

20 Finally, plane the frame flush so the tapered keys are revealed as a butterfly patterned feature, enhancing the appearance of the joint and displaying its excellent strength.

PHOTOGRAPH BY SHUTTERSTOCK

VENEER MAINTENANCE

AMBER BAILEY LIKES TO MAKE SURE HER VENEERS ARE IN A RESPECTABLE CONDITION

As anyone knows, the further into a craft you get, the harder it becomes to store all your ever-accumulating materials and equipment. As a buyer of veneers, I find myself constantly rearranging my stock for more advantageous storage and access. Although it can be relatively easy to store timber, it isn't quite so straightforward for delicate veneers. There are a number of factors that really need to be taken into consideration to maintain veneers' longevity and usability.

PREPARATION AND CARE

REHYDRATING THE WOOD

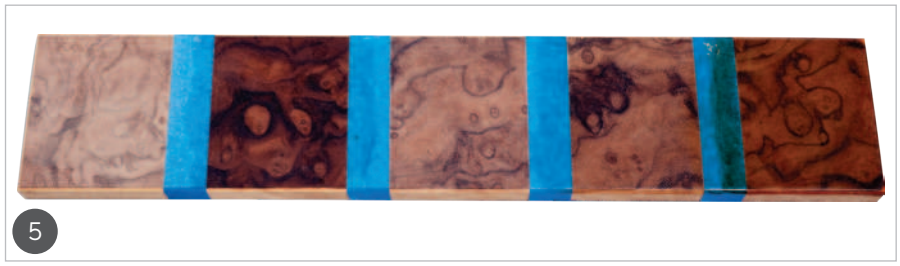
Over time and if stored in less than humid conditions, veneers will naturally dry out and begin to crack if you aren't careful. If veneer leaves are in a very bad state and begin to warp it is advisable to rehydrate them slightly and you should certainly do so before using them. This can be done by applying a fine mist from a water spray gun or, if necessary for very badly curled or thick veneers, leave to soak in water for a while. After dampening always make sure the veneers are pressed flat as they dry out.

REPAIRING DAMAGE

The thinner veneers are cut, the more susceptible they are to splitting. When you come to work with the veneers, you may well be able to avoid these splits and work around them. However, if there is a split in a piece of veneer it is never advisable to leave it until the day you actually use it. Any jostling that may occur while in storage is likely to encourage the split to develop further as the wood will have a natural tear line down the length of its grain.

To temporarily hold the veneer in place, cut and wet a strip of veneer tape to cover the length of the split and a series of short horizontal strips to go across, binding the split together as tightly as possible. Once pressed into place, work over with a scrubbing brush to ensure there are no air bubbles under the tape.

Veneers should be backed with newspaper or kraft paper, adhered with diluted protein glue (hide or fish glue – which is easy to remove later). This sort of preparation can easily pre-date the making of a project, particularly when you have veneers set aside for the task.



PHOTOGRAPHS BY AMBER BAILEY, UNLESS OTHERWISE STATED

1 A spray gun can be picked up extremely cheaply from a garden centre **2** I have made a very simple drying rack with mesh that allows the veneers to air dry flat **3** Paper is pressed on to glue-covered veneer **4** Once glued up, cut away the excess paper to keep the veneers neat and manageable **5** Different finishes will drastically alter the colouring of wood **6** It can help to keep veneers or banding in bundles so they do not get mixed up **7** I often work with offcuts, so have plenty of small pieces of veneer to store

COLOUR TESTING

When working with veneers bear in mind that natural veneer will always look different after it has been treated with a finish. To give you an idea of how your veneer will eventually look, dampen it with water to reveal its true potential.

STORAGE SOLUTIONS

HANGING RACKS

For extremely long leaves of veneer, storing them at ground or workbench level simply isn't practical. The best way to store these to keep them from damage is actually to create hanging storage. My solution is simply made up of hooks and lengths of rope – a very cheap but extremely effective storage method.

If your workshop has the space and resources you could use a series of long wall storage or hanging drain piping for stringing and banding. It all depends on the surroundings that you are working in. Choose a darkened area without direct sunlight or artificial light that will bleach the veneers.

DRAWERS

For easy access to small or waste veneers, having a system of drawers makes life incredibly easy. Boxes are all well and good until you have to keep sifting through them to look for what you want. The best types of drawers are those normally used by artists or architects to hold wide technical drawings. They are an expensive buy if not found second-hand but give ample allowance in veneer sizes.

8 I prefer to keep my veneers divided up between coloured veneers (blonde wood, red woods, brown woods, etc.), decorative veneers and then species-specific drawers **9** I use metal filing cabinets to store some materials and others for storing flammable goods. This helps to reduce the chance of a serious fire occurring **10** A proper temperature and humidity monitor can be quite an expensive purchase, but a standard thermometer will do for keeping a general eye on the environment

LABELLING SYSTEMS

When your veneers are packed up in storage it is always a good idea to have clear labelling, this avoids unnecessary rummaging through to find what you need.

There are several ways that this is conventionally done, labelling by species works well if you have a large volume of particular species (although this can be quite space consuming if you only have small amounts of each veneer type). If you are a real wood identification buff you could even include the Latin family genus for each species.

The traditional labelling technique noted throughout history and often still used in workshops today is to label up by colour. In marquetry workshops, makers were looking to match colours for their designs; they weren't trying to follow a strict pattern of species. Even in restoration workshops today, when replacing missing veneers you tend to look at matching the wood grain and colour up the wood afterwards for a closer match, this means you won't always use the correct original veneer type.

STORAGE CONDITIONS

HAZARD PROOFING

Your materials are an investment and you want to do your best to keep them safe. Workshops are a naturally hazardous scene of electrical equipment, chemicals and flammable goods. The best way to protect certain materials is to make sure they are stored in metal rather than just left in the open air. Actual metal cabinets can be very expensive but filing cabinets can be picked second-hand extremely cheaply.

TEMPERATURE AND HUMIDITY

Like all wood, veneers are susceptible to the environmental climate, anything too dry or damp will cause the leaves to distort, so try to maintain a steady environment where possible. Keep an eye out for dramatic changes in temperature and humidity as this is where the problems will lie.

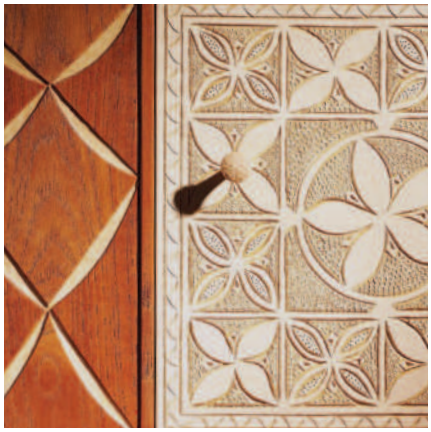
INTEGRATED PEST MANAGEMENT

Always be aware of the outside getting in when it comes to your workshop, it is the perfect environment to harbour critters of all shapes and sizes. Look out for the various forms of furniture-munching beetles by monitoring activity with insect traps placed in prime positions around the workshop. Any immediate dangers need to be dealt with to avoid your veneers being left with a series of holes spread across them.

LEFT Make sure your veneers are in a respectable condition

PHOTOGRAPH BY DEAN POWELL

PHOTOGRAPH BY TIMOTHY COLEMAN



PHOTOGRAPH BY BILL TRUSLOW

THE ART OF VENEER

WHETHER IT'S POSTING ON SOCIAL MEDIA OR RECREATING FAMOUS HISTORIC PIECES OF FURNITURE, MARQUETRY STAR **TIM COLEMAN**'S WORK GOES FAR BEYOND THE SURFACE

From recreating historic pieces of furniture to a 21st-century Instagram presence, Timothy Coleman's curiosity has led him to explore all corners of the world of furniture, marquetry, parquet and cabinetmaking. His striking collection, mainly focused on cabinets and tables, shows historic influences and up-to-the-minute style, and his stylish photos and engaging videos have won him nearly 22,000 followers on IG.

From an early age, Tim loved making and tinkering with things. 'I had a workshop in the basement where I could escape the clamour of a house with four siblings,' he recalls. 'I immersed myself in projects, cutting up scraps of wood and piecing together little sculptures. I wanted to learn more about how to work with wood and engage in something that felt so natural, but it was hard to find instruction. The school woodshop programme wasn't so good, and I didn't know anyone who did woodworking by vocation.'

Instead he took an undergraduate degree in writing, graduating in 1983, and looked for ways to work with his hands and build things, training on building sites and learning to build houses. He says: 'I remember bringing home scraps of cedar siding and cobbling together a little desk. It was so satisfying to make something that I could use, and I loved the process of taking an idea, gathering materials and going to work. Time would zip by.'

Two years after graduating he moved to Seattle, Washington, and for the first time met people who were making a living from designing and building furniture. He spent a year working as an apprentice to furniture maker and woodturner Curt Minier, which is where he learned the basics of furniture making. 'He was quite artistic and expressive with his designs, and he introduced me to the world of contemporary furniture by suggesting books and magazines to read,' Tim says. 'Shortly after beginning my apprenticeship, I went to a presentation by [well known woodworker] James Krenov. The way he talked about wood and the spirit you bring to your work resonated with me. I took a summer course at the College of the Redwoods – now the Krenov School – where Krenov was teaching, and then attended the full-time programme from 1987 to 1989.'

STRIKING OUT ALONE

It was in Seattle that Tim completed his first furniture projects – a round dining table with a laminated apron, a bed frame with two bedside cabinets and a dining room cabinet with shelves above. 'All had their own challenges and learning experiences,' he recalls. From those very first days he planned to set up his own workshop, and the opportunity arose when he and his then girlfriend – now his wife – moved back to their home in Massachusetts on the US's East Coast, to be near friends and family.

Tim says: 'At the time there were a number of top-notch furniture makers in this part of New England, and I visited as many as I could. Every shop was similar, but also highly individual depending on the type of work the maker engaged in. It was inspiring to see so many thriving makers, male and female, creating furniture that had its roots in tradition, but was being conceived and crafted in innovative and contemporary ways.'

PHOTOGRAPH BY DAVID RYAN

A loan from a local community development organisation allowed him to buy his first machines, and he rented a space in the body's 'small business incubator building'. 'I took whatever jobs came my way, always with my focus on developing my skills and reputation as a furniture maker,' he says.

Now Tim has a 1,000 sq ft building next to his home in rural Massachusetts for a workshop, where he works alone and stores both heavy duty machines and smaller tools. 'I am often working on relatively small, complex projects, so the machines don't get really heavy use and they stay the way that I set them,' he says. 'There's enough room in the shop for several small to medium-size projects to be in process at once, but the shop is configured in a way that I can also work on rather large pieces.

'Last year I was building two large tables – one 12 feet long with leaves extended, and the other 10 feet. By the end of the project they took up every available inch of the workshop and I could barely move in there! It's nerve-racking when there are many months of work that could be damaged quite easily by moving about the workshop carelessly.'

ON THE SURFACE

Marquetry, parquet and veneer work are some of the most striking features of Tim's designs, and he started out on these surface techniques while he was still at the College of the Redwoods. 'It wasn't taught per se, but anyone who wanted to learn had instructors who could teach them,' he explains. 'I learned the double bevel method, and it was all done with a hand saw and a birdsmouth platform. There were some wonderful marquetry pieces made at the school around that time, and I was inspired to see what I could do with it.

'I often work with shifting grain direction to create patterns and achieve effects rather than making more complex pictures with multiple woods. I combine marquetry with parquet work as well, such as in my cabinet Summer, with silhouettes of dragonflies on a parquet background,' he adds. Tim says all you need to try out marquetry is a fretsaw, a birdsmouth platform and some veneer. 'Buy an assortment of fine-toothed blades so you can see what works for you, and buy plenty because they break easily. Improvement comes quickly with practice,' he advises.

In 2012 Tim was hired to recreate a pair of large tables that were missing from a Frank Lloyd Wright home in Buffalo, New York. That commission led to other works recreating pieces from historic homes across the US, including a room full of French provincial-style furniture for the Dwight D Eisenhower National Historic Site in Gettysburg, Pennsylvania. He says: 'Recreating historic pieces represents a shift in the way historic homes are curated. There is a new willingness to recreate missing pieces rather than have the spaces vacant. This gives museum visitors a more complete feeling for the home.'

Tim adds: 'They are well-paying jobs that bring me into the museum and conservation world, which I find interesting. With missing furniture pieces, we may start with old grainy photos or a significantly altered remainder of the original. There's a lot of detective work before anything is made. Often I learn techniques from these projects that I incorporate into my own work, such as the use of lumber core substrates for veneer work, which is how the Wright tables were built. The jobs are a great adjunct to my contemporary speculative and commissioned pieces, and at times an important part of my income. Eisenhower helped put one of my children through college!'

TOOLS OF THE TRADE

Tim loves working with veneer he cuts on his 24in bandsaw. 'This thick veneer allows me to do many things that I couldn't with commercial veneer, such as bevelling the edges of pieces and doing shallow carving into the surface,' he explains. 'Thick veneer is a part of many of my designs, and I am well set up to create and work with it. I have a small wide belt sander, and most of my pressing is done with a vacuum press. The techniques I have developed with thick veneer and how I use it for decorative effects are hallmarks of my work.' He avoids loud tools when he can, but admits it's not always possible. 'Some, like a router, I can't live without,' he says.

When he's not working on commission Tim lets himself be guided by the 'mood and details of a piece'. 'Am I expressing something that is vibrant and bold or subdued and quiet? The material can steer things one way or another. I try not to be limited in my choices, and I am always buying special boards that go into my inventory. I often make small tables that combine different woods, so small quantities, especially when cut into veneer, go a long way.' He enjoys working with cherry, figured maple, bubinga, white oak, pear, yew, walnut and English sycamore. 'I avoid woods that are hard on my machines and hand tool blades,' he says. 'They are much more time-consuming to work with, but if it is what the customer wants, such as teak, then I comply. I have some woods on hand that I am dying to work with, but the right ideas haven't presented themselves yet. Fortunately there is no expiration date for wood!'

For commissioned work, wood choices are guided by clients' desires and the function of the piece. 'I will make suggestions based on what they are asking for and what else is in the room where the piece will reside,' Tim says. 'I show samples of what I have on hand, generally steering them towards woods that I like to work with or am eager to work with.' Apart from wood he will occasionally work with stone for surfaces, and enjoys making upholstered pieces with leather or fabric. 'I love the combination of shapely wood elements and plush upholstery,' he says.

All Tim's pieces are finished using a brush or pad, as he does not have spray equipment. 'I use a lot of shellac, mixing small batches from flakes – it's best when freshly mixed. My other staple is a tung oil and urethane mixture. There's a company in Vermont, Sutherland Welles, and I buy a container of their tung oil product and a container of gloss urethane, intermixing them depending on the application. If the surface needs more durability, there's more urethane in the mix. If I want more of a low-sheen oiled look, then I use more tung oil. It's a versatile and forgiving finish that can be repaired easily. Lately I have been using it for some high-gloss finishes. I need to be extremely careful to keep the dust down in the workshop for a day before brushing on the finish to save time in the rubbing-out phase. I also use dyes on figured wood to create interesting colour effects.'

PHOTOGRAPH BY BILL TRUSLOW

PHOTOGRAPH BY DEAN POWELL

PHOTOGRAPH BY BILL TRUSLOW

PHOTOGRAPH BY JONATHAN BINZEN

PHOTOGRAPH BY TIMOTHY COLEMAN

PHOTOGRAPH BY TIMOTHY COLEMAN

PHOTOGRAPH BY WILL ELWELL

PHOTOGRAPH BY DEAN POWELL

PHOTOGRAPH BY TIMOTHY COLEMAN

PHOTOGRAPH BY DEAN POWELL

PHOTOGRAPH BY TIMOTHY COLEMAN

PHOTOGRAPH BY BILL TRUSLOW

PHOTOGRAPH BY JOHN POLAK

PHOTOGRAPH BY TIMOTHY COLEMAN

PHOTOGRAPH BY BILL TRUSLOW

DESIGN FOR LIFE

Tim has been following roughly the same design process that he learned from James Krenov – which Krenov calls 'composing' – throughout his career, and often takes his Instagram followers through the different steps as he works. He explains: 'Initial sketches are developed into a full-size, rough mock-up to get an idea of scale and volume. From there I come up with a flexible plan for how to build the piece. This is a general sequence of steps, and I usually begin the work without knowing all the details. I want the freedom to improvise and make discoveries along the way. I'm a curious person, and that drives a lot of my designs. It's a dynamic and engaging process, but there can be doubt and confusion along the way when things don't feel resolved.'

His inspiration mainly comes from nature, which again features strongly in his social media presence. 'I work with a lot of plants around my property, and I love seeing how they change through the seasons,' Tim says. 'Natural forms such as leaves and flowers often find their way into the decorative motifs I use. Nature informs the structure of my furniture as well as decorative elements – gracefully tapering legs that are almost leaf-like, structural elements that are thicker where they join other parts, like a tree branch as it emerges from the trunk. There is a tension and flexibility in many plant forms that I try to bring into my compositions.

'Travel is always inspiring. Asian and Islamic art and design have always been major influences on my decorative surfaces, and a trip to Istanbul a few years ago inspired a decorative cabinet called Arabesque that used design motifs similar to what I saw there. Also, historic furniture styles – Art Deco, mid-century modern and 18th-century French among them.'

Looking back, his favourite project is the Fluted Cabinet he created in 1991. 'It's a cabinet on a cabinet in white oak and maple, with a single coopered door on the upper maple cabinet. I hand-planed deep flutes into the convex surface of the door with a custom-made fluting plane. The work was full of discoveries and new techniques and I couldn't pull myself away until it was done. It's also a favourite because it was the first major speculative piece that I created in my own independent workshop.' His most challenging project so far has been a cabinet on a stand called Yew and Me. He says: 'Two elliptical cabinets nestled together on a lattice-like stand. Technically, it was nearly impossible to build, but it also had complex carvings around the borders of the cabinets to make it even more difficult to pull off. I was using a new technique where I applied a layer of English sycamore veneer over a yew wood substrate, and then carved away sections of the sycamore to create patterns in the yew. There were over 24 lineal feet of carved borders, and it took over a month to do the carving alone. I didn't think I would ever finish the project, but it is a dynamic showpiece that has received a lot of attention.'

SPREADING THE WORD

Encouraged by his teenage children, Tim started creating short instructional videos for IG. 'I had never paid much attention to Instagram,' he admits, 'but once I did I discovered a vibrant group of makers and enthusiasts spread all over the globe. I started experimenting with video clips when the limit was 15 seconds! I liked the challenge of coming up with something that was visually accessible and compelling in such a short time frame. Now we have a minute, and I've embraced that in a different way by stringing together clips that explain a process. It's a lot of work to put the videos together, and I love the result and the way that people respond and learn from them, but I will never like it as much as actually making furniture!'

For more than 30 years Tim has been teaching at schools

PHOTOGRAPHS BY DEAN POWELL

PHOTOGRAPH BY CHARLEY FREIBERG

around the US. 'I encourage students to be curious about what they are doing, and to explore different ways to approach a certain task,' he says. 'My goal is that they learn and develop techniques that expand their way of expressing themselves with woodworking and furniture. When I am teaching surface embellishment techniques, there's a lot of experimenting in the class. Students are inspired by each other, which is always fun to see. I would like to do more teaching directly from my studio in an intensive small-group format.'

Tim splits his making between speculative projects and commissioned designs, and says the two sides of his work inform each other. 'I like the flow of ideas that happens when working with a client and meeting a practical need, and I love the feeling of exploration and discovery in my own work,' he says.

He is currently working on a series of small tables using a Chinese decorative pattern called Cracked Ice. He explains: 'I piece together geometric veneer patterns in curly maple and dye each table a different colour. The effect is fascinating as the shifting pattern and figure are highlighted by the dye. I have some commissions coming up for a couple of coffee tables and a sideboard cabinet, and new ideas for my own work will undoubtedly present themselves as I am working on commissions. I work nearly every day, deriving a lot of energy from being engaged in the process of designing and making.'

LOOKING AHEAD

Tim says he has been fortunate during the Coronavirus pandemic and lockdown measures because, working from his home workshop, he has been able to continue making throughout. In his rural Massachusetts location he has also been less affected than more populous places such as Boston, which is two hours away from him. 'From a business standpoint, I have been impacted by the cancellation of several exhibits for which I had created new pieces, and several jobs have been put on hold. In March when things began to shut down, I was motivated to develop a purchase page on my website so that people could buy items directly from me rather than through a gallery. These are smallish tables, generally, which can be easily shipped. I sent out an email campaign to my mailing list about the purchase page and the response was wonderful. I immediately sold one table, and received a commission for another! I had been meaning to set it up for a long time, and right now I want to make my work more accessible to purchase when a lot of traditional sales avenues are shut down.'

Looking to the future, he says: 'I am concerned about what the market for handmade furniture is going to look like in the next few years as the world economy tries to recover. But I also see a desire in people to connect with the arts in meaningful ways, especially at a local level. Many things are becoming less centralised as our mobility is restricted, such as food production and distribution. People are looking to their local communities more for ways to meet their needs. I hope this trend continues.'

In terms of his own work, he doesn't know where he will be in a few years – and that is the way he likes it. 'I am a curious person, and I'm willing to dig in and experiment with a process and see where it takes me. I have a bunch of techniques that I already use that I would like to combine in different ways to create entirely new effects. I love making cabinets and I can see some of these new techniques playing out on cabinet doors.'

When he's not working Tim loves to explore his local landscape of small farms, rivers and hills on his bicycle. 'I also spend a lot of time with my family, enjoying simple pleasures such as good food, sunsets, snowfalls and starry nights.'

timothycoleman.com

ASYMMETRIC CHEST OF DRAWERS

MARK RIPLEY MAKES A CABINET THAT IS CONTEMPORARY IN DESIGN, BUT TRADITIONAL IN CONSTRUCTION

This chest of drawers was designed for the master bedroom of a spacious apartment. My clients were open-minded about the design with only one proviso – they wanted the piece to be clearly a one-off, without being wacky.

DESIGN AND TIMBER

The design was composed of traditional elements with a slightly unusual configuration, aimed at creating a pleasing asymmetry while retaining practicality.

I would never suggest a wood like olive ash unless I had already found a supply. Nonetheless, a lot of wastage must be accounted for in order to ensure consistent colour. I used English white ash and English oak for the drawer linings. I usually use American white ash for its consistent colour, but was assured this really was white, and ordered enough for the whole project on the basis of a small sample. The oak was bought as 19mm but was actually slightly under. However, it was so flat and clean it machined up beautifully and, despite some worrying moments with stick marks, I was very happy with the prepared cutting list.

The selection of components from rough-sawn stock through to planing and dimensioning can be a nerve-racking process, as well as a physically tiring one, but once accomplished I could settle down and enjoy making the piece.

CONSTRUCTION

The jointed-up boards for the top and ends were prepared, and then faced off with a bench plane. This was a pure delight and boded well for workability in the joint making. This stage is, I reckon, to be about a third of the way through a project and is a good time to work on finishes, jigs and fittings if these have not been finalised already.

PHOTOGRAPHS BY GMC PUBLICATIONS/MARK RIPLEY

1 The front frame is biscuited on to the main carcass **2** Interior, showing the veneered back panel and drawer runner strips
3 Plinth support blocks **4** Plinth with bevelled lipping located on rebated fillet

The construction consists of a frame and veneered plywood panel back screwed to the solid wood ends. The front frame is biscuit jointed to the end panels. The plinth is a separate carcass and the top is screwed to the main cabinet after assembly. Because the drawer runners are so complex they are fitted after the assembly of the cabinet. To incorporate them in the main construction would have resulted in an impossible glue-up.

Mortise and tenons were used for all but one of the front frame joints, the exception being a single cross-halving. Apart from the corners, the tenons are all the width of the rails. This saves time and, because the inner faces of the frame will eventually be covered by the drawers, any marginal discrepancy will not show. It goes without saying that marking out the joints for the front frame is critical.

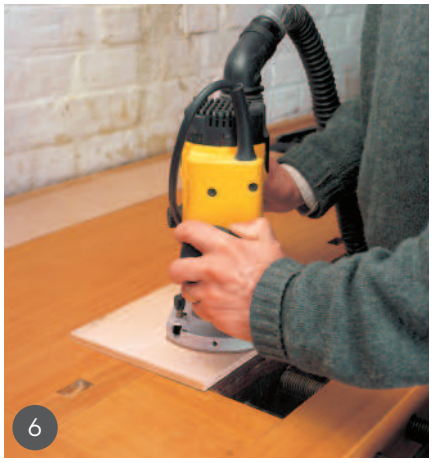
At this point I cut the recesses for the handles. I had visions of making a clever routing jig to do this, but a mock-up of the handle detail made on the bandsaw revealed a jig would be difficult to make, and that the bandsaw was an efficient alternative. The curve was marked on the frame and I set the bandsaw table to 45°. With a careful touch and a sharp 6mm blade, the cut was quite straightforward. The job was finished on the end of the linisher.

A full dry assembly was required before gluing up, to check for fits and overall accuracy. It was necessary to glue and clamp the frame in a number of operations.

BACK FRAME

This was a reasonably straightforward procedure, but remember the back frame is shorter than the front frame by the combined thickness of the end panels.

For simplicity the three vertical components were all tenoned and the mortises were in the corresponding top and bottom rails.



5 The template for the drawer slots **6** Routing the finger slots in the drawer front bottom **7** The completed finger slot and scallop

I dry assembled and faced off the frame before dismantling it to rout the grooves for the back panels. It is important to check the router cutter against the thickness of the ply. A 6mm router cutter will be just that, but 6mm ply may be anything from 5–7mm. Fortunately for me this time it all matched, but it doesn't always!

The end panels, back frame and front frame now needed to be justified so they were exactly the same height and the correct widths. Once trued up the battens could be fitted, which will take the drawer runners. These are 10mm square except where additional depth was required to enter the recess formed by the back panels. They were screwed in place from the back, on the ply back panels.

Assembly began with the end panels and the back, which were glued, screwed and plugged. The front frame was biscuit jointed to the end panels.

PLINTH

This was a complicated construction because it was made from 25mm ex-stock. If it had been made from 50mm material it would have been quick and simple, but may have run the risk of the mitres opening up over the wider joint. So, when using 22mm finished stock, the process is as follows:

- A simple carcass is constructed using biscuits for butt joints at the back, and mitres at the front.
- The back piece of the plinth is 15mm higher than the rest to allow for the addition of the bevelled lipping.
- Rebated strips are biscuit jointed around the inside top of the front and ends of the plinth, and trued up to provide an even face for the lipping.
- Reinforcing blocks are glued into the corners of the plinth and at intervals to the front and ends. This is to strengthen the joints and create a load-bearing structure.
- The outside corners of the mitres are routed and lipped to give protection to this exposed area.
- A bandsaw is used to cut the bevels for the lippings, which are cut over size and planed back after being glued in place.
- The deep chamfers on the top are hand planed, allowing a margin for final fitting.

SETTING UP

The plinth and top were fixed to the main carcass with small, screwed blocks. At the top and bottom of the end panels these double as drawer runners.

At the front and back, screw blocks were used again. At the front these needed to be rebated to fit on to the plinth. I spent a whole day on this job, setting up, planing in the top and bottom chamfers, checking for square and fine sanding, but this effort certainly paid off when it came to fitting the drawers. The whole job could now be sealed – to retain the lightness of the ash I used a clear water-based lacquer.

DRAWERS

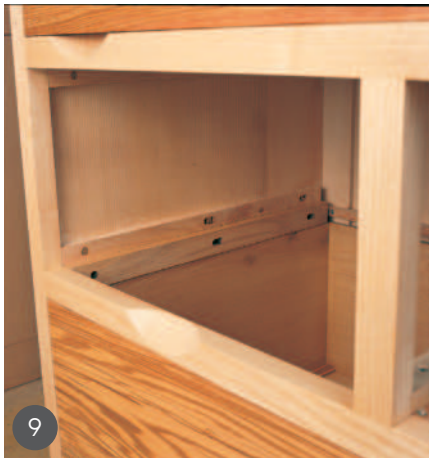
The drawer fronts were prepared from three boards 250mm wide and 1,500mm long, finished at 22mm. The selection of the drawer fronts was particularly important here, because of the contrasting colour. Having the grain running through from one side of the piece to the other ties the whole thing together visually. The linings – drawer sides and backs – were finished at 11mm. Given the size of the bigger drawers this was too narrow to fit the bottoms into grooves, so drawer slips were used.

Veneered ply was used for the drawer bottoms. This is strong, stable and economical and I generally use it for drawer bottoms in preference to solid wood. Olive ash was used for the slips to create visual interest inside the drawer.

The individual drawer components were fitted into the main carcass before the joints were marked out.

The drawer fronts were cut marginally over size and then very slightly bevelled all round by hand, until they pushed into their opening by about half their thickness. Recesses were routed into the underside of the drawer fronts to correspond with the recesses on the cabinet frame. I made a simple template for this, which was screwed to a batten enabling the template to be clamped to the drawer front.

As with the fronts, the sides were cut about 1mm over width and then slightly tapered until they entered by about half their length. If possible, the grain should run from front to back of the drawer so when cleaning up and fitting later you are planing



8 Traditionally lapped dovetails on the drawer fronts **9** Runners and kickers **10** Central runners and kickers

away from the front, and not towards it. The backs were scribed off the fronts for length.

DRAWER RUNNERS

As indicated earlier, the solution to this problem was driven by pragmatism rather than elegance. The runners at the ends of the cabinet were slot-screwed. These were planed to the width of the frame members. Additional strips were prepared to fit above and below these to guide the sides of the drawers. Again, these were slot-screwed to allow for movement in the solid carcass sides.

The internal runners were cut to length and notched to fit on to the battens fitted earlier. These were screwed in place using 2 x 19mm No. 6 screws at each end. Battens planed to the width of the front frame were screwed to the runners to guide the drawer sides. This was a full day's work and then some!

Supporting the cabinet on its end gave the best access, but final checking had to be done when the piece was set up level and true on its base.

DOVETAILS

A marking gauge was used to mark the length and width of the dovetails. These were marginally less than the thickness of the linings – except on the ends of the drawer fronts – to allow for planing in after assembly. The setting out of the dovetails on the front was largely an aesthetic decision but here, where the drawer sizes vary, the dovetails gradually get bigger towards the bottom of the piece while the pins remain the same size.

Grooves were cut in the fronts to take the bottoms. These run straight through and are covered by the lap dovetails.

The drawer backs were cut to their finished height which will allow the bottom to run underneath. Dovetails can be cut effectively with a bandsaw, and the waste cleaned out with a coping saw and chisel down to the scribed mark made by the gauge.

The pins were scribed off the dovetails with a marking knife and were cut with a dovetail saw. Much of the waste between the pins was removed with a router, which produced a perfectly flat face, and the remaining corners were cleaned up with a chisel.

The joints were masked off and the insides of the drawers waxed before assembly. I pulled the joints in with sash cramps – this is gentler than the traditional hammer and seems to make a tighter joint.

Finally, the drawers were cleaned up and fitted with a constantly sharpened bench plane, before sanding and waxing. The runners were also waxed to ease running. The slips were prepared, glued and clamped in place and the drawer bottoms fitted. The bottom can distort a drawer so care was required.

The method outlined above differs in some respects from traditional practice and other makers will have developed their own variations, but such developments keep both our craft and its traditions alive.

FINISHING

The lacquer was cut back and two further coats applied; then cut back with 320grit silicon carbide paper, and three coats of clear finishing wax were applied before finally burnishing with 0000 wire wool. In order to maximise the colour contrast, the drawer fronts were finished with Danish oil. The slightly grey tones of the sanded olive ash burst into life with the first coat of thinned Danish oil. The marble-like figure flows through the front and I was pleased that I had decided not to put handles on it, as this would have disturbed the effect.

Pure oil finishes lie in the wood, rather than on it, so preparation is particularly important as minor abrasive marks will not be 'filled' with the finish. Ash is coarse-grained and planing by hand will tend to leave it open.

My preference is to fine sand to 180 grit with a palm sander, and sand by hand to 240 or 320 grit. The resulting surface more than justifies the effort. To check that all abrasive marks have been removed, use a magnifying glass and low-angle light, preferably sunlight.

Thinning the Danish oil 50/50 with white spirit for the initial coat, and 80/20 for subsequent ones, prevents a thick build-up of finish and really drives it into the wood.

UNDER THE HAMMER – THE HOME & INTERIORS SALE

BONHAMS' HOME & INTERIORS AUCTION FEATURED AN ECLECTIC RANGE OF DECORATIVE ART. HERE WE TAKE A CLOSER LOOK AT THE TOP-SELLING FURNITURE LOTS

◀LOT 355
£12,562

A William and Mary kingwood, or 'princeswood', rosewood and oyster veneered escritoire (writing desk), made circa 1690 in the manner of Thomas Pistor. It features radiating veneered roundels, lunettes, spandrels and heart-shaped veneers. The ovolo frieze drawer sits above a fall enclosing 10 drawers, eight pigeonholes and four secret drawers, encompassing a central door, which encloses three drawers, over two short and two long drawers. The squat bun feet were added at a later date. Certain aspects of the radiating and oyster veneering on this piece are very similar to those that appear on a kingwood escritoire which used to be part of the collection at Buxted Park, East Sussex. The Buxted Park escritoire is inscribed: 'Mr Thomas Pistor, Ludgate Hill, London'. Although two people called Thomas Pistor (evidently father and son) were cabinetmakers, it is only documented that one of these worked at The Cabinet, Ludgate Hill from 1694 until 1711. However, it seems highly likely that one or perhaps both individuals produced furniture before 1694 as well.

◀LOT 308
£1,657

A small, late George III satinwood and purplewood inlaid cylinder desk, made circa 1795. The desk has four mahogany-lined drawers, three pigeonholes and a slide with a hinged adjustable leather inset surface, over one frieze drawer.

▲LOT 292
£6,312

A French late 19th/early 20th-century gilt bronze mounted kingwood vitrine, attributed to Francois Linke. The moulded marble top sits above a ribbon-tied floral garland-mounted frieze centred by a pair of addorsed Bacchic satyrs and a figure of a young Bacchus reclining on a vine leaf stretcher. Below the bevelled glass door there is a gilt bronze plaque depicting a classical maiden burning incense. This plaque is set within a surround decorated with scrolled flowers and foliage. Francois Linke (1855-1946) was born in Bohemia, but moved to Paris, where he established his business around 1880. Linke made a huge impact at the 1900 Exposition Universelle in Paris, at which he presented his reinterpretations of the Rococo style. He was honoured with a gold medal and his success attracted wealthy patrons from across the world.

PHOTOGRAPHS COURTESY OF BONHAMS

▲ LOT 353
£5,312

A George I burr elm and elm lowboy, made circa 1725-30. It is inlaid with stringing, the top has a reverse ogee-moulded edge and re-entrant front angles, above one long and two short drawers. It features a shaped apron and cabriole legs.

▼ LOT 354
£5,062

A Queen Anne walnut and feather-banded bureau with an unusual concealed drawer. Of small proportions, the fall encloses six pigeonholes, six drawers and one door, above lopers and a concealed elm-veneered drawer, over two short and two long graduated drawers.

▲ LOT 424
£1,020

A Regency mahogany five-division stand. This type of low, open-topped stand with slatted partitions and a single drawer is known as a Canterbury. This example was possibly made by Gillows, the renowned furniture company founded by Robert Gillow in 1730.

▼ LOT 404
£2,295

A George III solid mahogany open armchair, made in the Chinese Chippendale style. The chair has a fretwork back and curved and downswept arm supports, on square chamfered legs. The drop-in seat is covered with an 18th-century gros and petit point needlework. Chippendale's work was made in three main styles: Gothic, Rococo and Chinese. The Chinese style featured fretwork designs which were made to suit rooms decorated in the popular chinoiserie style.

▼ LOT 445
£4,812

A George I walnut open armchair, made circa 1720, with 18th-century gros and petit point needlework upholstery. The chair has shepherd's crook arm supports on lappet clasped cabriole legs, with a ring-turned block-and-baluster H-stretcher.

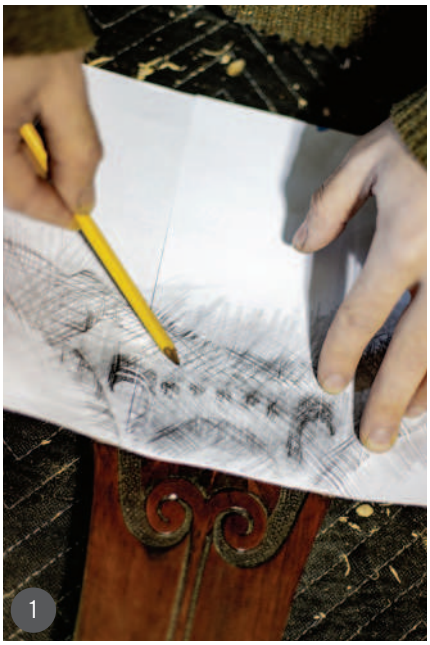
▼ LOT 307
£1,530

A George I red walnut side chair, made circa 1725. The vase-shaped and pierced splat is surmounted by a scrolled top rail. The chair has cabriole-style front legs and splayed columnar rear legs.

ANTIQUE CHAIR REPRODUCTION

BRIAN KAWAL TAKES ON THE CHALLENGE OF RECREATING A CARVED CHAIR

Reproducing an antique chair can seem a daunting task, especially if a piece contains a lot of organic shapes, has multiple curves connected by compound mitres and is covered with carving. And to be fair it is probably one of the more challenging projects one can take on. The good news though is that by breaking the process down into multiple steps and using a few tricks, building one becomes a lot easier.



PHOTOGRAPHS BY TASHA KAWAL @TASHAMARIEGALLERY

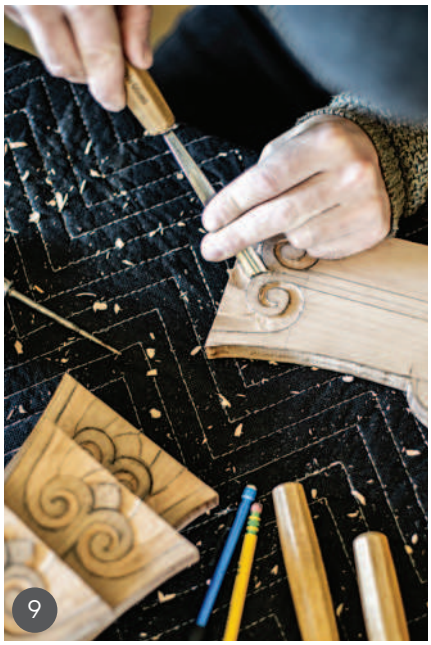
OPPOSITE Brian's reproduction (left) and the original antique chair (right) **1** Making the graphite rubbing **2** Transferring the rubbing to the workpiece **3–6** Cutting the profiles

WHAT IS YOUR CHAIR FOR?

Before starting it is important to consider the use of the chair you are making. Is the chair going to be actively used or will it be a display piece? Will it be paired with an original? Will the original piece be refinished as well at the same time?

These are important factors to consider and discuss with the client. Most of the chairs that I have built reproductions of are for active use and are also paired and mixed in with an original set. In these situations, I examine the old piece and see what parts of the chair failed. Almost all antique chairs have areas of weakness and evidence of repair can often be found. I like to take this opportunity to make the new chairs better. Figure out a way to make yours just a little stronger. Sometimes this can be as easy as using a superior wood. For instance the antique chair I looked at for this article used a cheaper and softer wood for the back legs and rails. The maker had glazed this to look like the better upper portion. Because of this the legs had multiple cracks and the joints had fallen apart much more than the upper half.

Along these lines it is important to remember that the original maker wasn't superhuman. They used tools just like us to build their craft and in many cases didn't have access to a lot of really great modern tools.



7 Completing the cuts to the profiles **8 & 9** Beginning the carving **10–12** Adding shaped details to match the originals

APPROACHING THE PROJECT

This is one of the more advanced chair projects to try so it is good to have a well-rounded skill set. Joinery, turning and basic carving knowledge are all required for the job. You don't have to be amazing at them though. In fact when looking over antique chairs you will often find that the original builder wasn't amazing at all of them either.

Looking at the original chair, decide how you want to join it all together. If the piece is for active use then use whatever you can to make it solid. I have had great success using Festool Dominoes in places where a series of dowels would traditionally be used. The joint is stronger and it's easy to be very precise. There is certainly nothing wrong with hand-cutting all of your joinery (for museum work where authenticity is more important this is actually the best way).

THE PROCESS

To begin, you'll need to make a series of templates. I trace out as many shapes as I can from the chair onto 3mm material and cut and sand them to shape. I do this from both side and top down views.

13–16 Using an awl to match textures in the carvings from the original chair

Using these, cut out your entire chair in rough blocky form. For curved pieces I keep the part as a block for as long as possible until my joints all fit well. I cut all my joinery before starting any final shaping or carving. I mark all points of contact so that each piece can flow into the next when I shape them.

Once the basic shape is there I lay out my carving. I use a standard pencil and paper to create a graphite rubbing of the existing shapes. I then cut out each shape and transfer them to my new parts. Having the original is very handy for carving, as opposed to working from a photo, in that you can hold each gouge or chisel up to the shape and see what creates the most accurate cut.

When two parts go together and the carving flows between them as in the chair in this article, I never finish my carving in either piece until after gluing the two. This way a small change during glue-up doesn't wreck hours of work.

Look over each original piece as closely as possible to find clues as to how the shapes were created. In an example like this, the original mounting points could still be found for the turning of the legs so combining these points with the templates made leg shaping fairly straightforward.

17 & 18 Turning the front legs to match the original profile
19 & 20 Using a rasp to finalise the shape of the front legs

After final assembly it's a good idea to check the angles and make sure everything looks good next to each other. If you are refinishing an original set this is a great opportunity to really observe the lines of the original chairs. By sanding the originals first you can get the sense of what each part should feel like and how the lines all flow. After sanding to your satisfaction comes perhaps one of the harder things to do to your hard work. If you are matching an existing chair you may have to purposefully do some poor sanding (I have yet to find an antique chair that doesn't have original or subsequent refinishing cross-grain sanding marks) so that the final chairs have a similar patina. You may need to take various objects from around the shop and add some dents and dings. I'm a big fan of awls and small peen hammers for this. Once the patina is complete, it's time to apply the finish.

One of the most rewarding times of a project like this is when the new chairs have been stained and clear coated and they become hard to tell apart from the originals. Few people will ever look as closely as you have at these pieces and you will have the satisfaction of knowing that your chairs will become the prize possessions of their new owners and that no dinner party will ever be complete without the dinner guests being forced to guess which one is original and which one is not!

TURNING TAPERED LEGS

PROFESSIONAL TURNER **RICHARD FINDLEY** EXPLAINS DIFFERENT TECHNIQUES FOR MAKING TABLE LEGS

Tapered legs for various types of furniture are a fairly common thing for me to make. There are certain aspects that vary, but essentially they are a straight line between two dimensions. Some might think this job is too simple to write an article about, but tapered legs are not as easy as they first appear, and while I've made enough of them over the years so that they no longer pose a problem to me, I have seen people struggle to make this apparently simple item. In this article I will look at the techniques involved in making two different types of tapered legs, along with the challenges that they present to the turner.

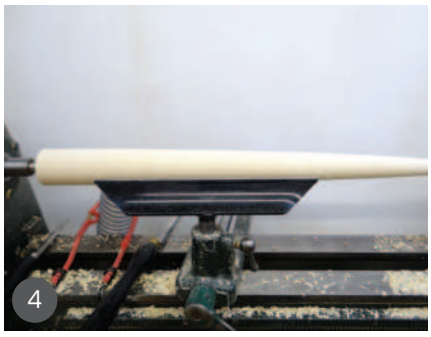
I had two separate orders for tapered legs, several weeks apart and from different customers. One order was for four ash table legs, 720mm long, tapering from 65mm to 28mm with an M8 stud screw fitting. The second was for a set of eight smaller European oak legs for a sideboard, 210mm long, tapering from 40mm to 20mm with a rounded bottom and a turned tenon fitting. While the end result is similar, I approached each set slightly differently.

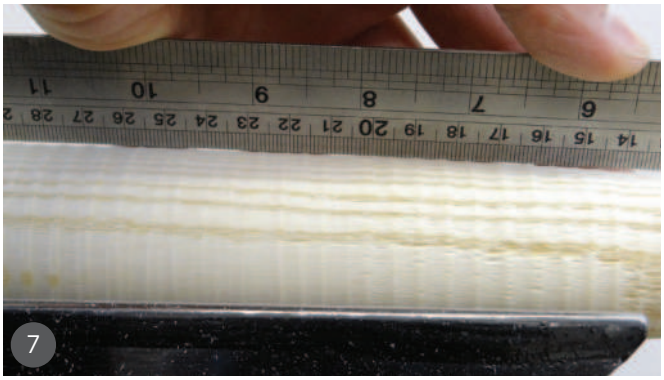
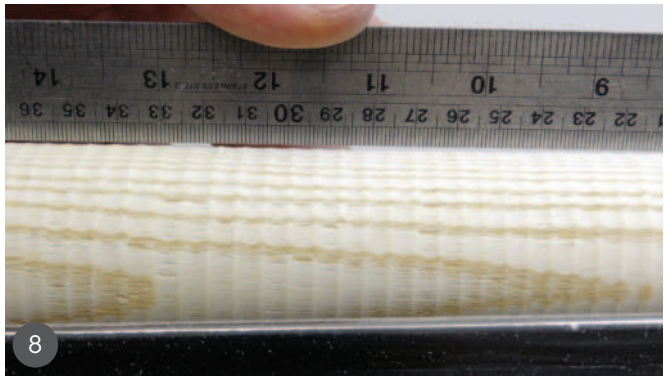
In my never-ending quest for efficiency, I always try to use the fewest tools possible for any job. Here I used a 32mm roughing gouge and 10mm beading and parting tool, along with my Vernier callipers, a steel rule as a straight edge and abrasive.

PHOTOGRAPHS BY RICHARD FINDLEY, UNLESS OTHERWISE STATED

1 The tools for the job. From left to right: spindle roughing gouge, beading and parting tool, Vernier callipers and a straight edge





2 Sizing the bottom of the leg **3** Beginning the initial shaping stage at the bottom of the leg **4** The roughed-out taper, showing three clear facets
5 Safely moving the toolrest with the lathe running **6** Using the straight edge with the lathe running
7 The straight edge shows a high point at 190mm **8** The straight edge shows a low spot

SHAPING THE TABLE LEGS

The timber blank for the first ash leg was mounted between a toothed drive centre and live ring centre and I used my spindle roughing gouge to quickly turn it to a cylinder. The required diameter at the top of the leg is 65mm, so I ripped the blank to around 67mm on my saw bench, meaning that as soon as I felt the spinning wood was round, I could be sure that the diameter was right. The next step was to size the bottom of the leg, which was quickly done with Vernier callipers and my beading and parting tool to the necessary 28mm. With the diameters at the ends set, I could turn my attention to the taper.

I chose to use the longest toolrest I can in a single banjo, which is 380mm long. I could have used my long wooden toolrest, but this requires two banjos to be used and so would be permanently fixed at the start of the job, leading to a fairly large tool overhang at the bottom of the leg. Not an impossible or particularly dangerous overhang, but an overhang nonetheless. For longer legs like this I prefer to adjust my toolrest as the taper develops, as I find that it helps me to see high spots and easily achieve the perfect taper.

I began the initial shaping stage at the bottom of the leg, using the 28mm diameter cut as a starting point and guide. The 380mm toolrest can cover the length of the leg in three positions, or two movements, so the second position covers the centre section of the leg where the taper is further extended, followed by a final toolrest movement to the top portion of the leg. This gives the beginnings of a tapered leg but with three distinct sections, or facets. Next, I needed to blend these together to ensure a perfect taper.

MOVING THE TOOLREST SAFELY

Something often referred to by woodturning demonstrators, and usually with a hint of sarcasm, is the need to stop the lathe when moving the toolrest and banjo. There is no doubt that the safest way to do this is to stop the lathe, but with round timber spinning in the lathe there is almost no danger to the turner in moving the banjo or toolrest while the lathe is running. I would always stop the lathe if the work is square, very large or with protrusions of any kind such as a natural edge, where contact with a toolrest would damage the work or cause a potentially serious accident, but for a basic round bowl or spindle, done with a little care, there is virtually no risk to the turner in doing this. As with all things, if you don't feel comfortable doing this, then don't do it.

STRAIGHT EDGE

A straight edge is a vital tool for producing a perfect taper. I found for the first leg I needed to check my progress a dozen or more times to get it right. By the fourth I had my eye in and only needed to check about four times, so practice very much makes perfect.

The combination of the long toolrest and a 600mm steel rule allowed me to flatten the angles between the three facets produced in the initial shaping stage. I kept returning to the lower portion of the leg to develop the taper, kind of working 'uphill' although generally cutting 'downhill', with the grain.

In these early stages the straightness of the toolrest is enough to be able to see the high points, but the further along I went, the more I needed to rely on the straight edge.

I apply a steel rule to the spinning work quite safely, although if you don't feel confident with this then please do stop the lathe before checking with the straight edge. Use of the straight edge is simply a case of finding the high spots, which are easy to find as the straight edge rocks over them like a seesaw. These high points can be marked with a pencil if you feel the need but I find that just having my attention drawn to them is enough to show me where they are and remove them. By applying the straight edge like this, low spots are as easy to see as high points. Low spots generally indicate there is a high spot elsewhere on the leg. I find methodical working, repeatedly returning to the lower part of the leg and working towards the top, flattening out the taper with each pass, is the best way to achieve the perfect taper.

ALTERNATIVE STRAIGHT EDGE

I simply use a steel rule as a straight edge throughout these jobs, which I find works well. An alternative could be a length of straight timber or metal. A tip that can help, although I've not used it myself, is to rub chalk or even felt-tipped pen along the edge that comes into contact with the work. High spots will be highlighted and so can easily be identified and removed, eliminating any guesswork from where you should or shouldn't be turning.

THE PERFECT TAPER

The aim of a leg like this is to achieve a perfect taper. I am often asked if they should be made with a slight outward curve like the ancient Greek columns, a principle known as entasis. The simple answer is no – a perfectly straight taper is what we're after, the use of entasis would just look like the taper is badly made.

As far as I can find through my research, the use of entasis is strictly for large-scale architectural work (there is evidence of its use in Egyptian pyramids and Medieval church spires, among other places) or scale models of Greek columns, rather than relatively small turnings such as this.

PHOTOGRAPH BY MARK BAKER

The columns of the Parthenon in Athens showing entasis

ENTASIS

The discussion about the use of entasis has come up a number of times, so I thought a little research was called for. Internet sources repeat the common belief that it is used to counteract an optical illusion that a perfectly straight column would look hollow on such large scale. I've often felt this explanation sounds a little weak because, having seen many examples of ruined columns in real life, I can say that the curve of entasis is easy to spot, and very rarely, if ever, appears perfectly straight. A little deeper digging offers a few more explanations and confirms that the common belief is just that – a belief and not hard fact. There are, after all, not too many ancient Greek architects left to ask about it. It seems that there are several theories as to the use of entasis but, of course, none can be confirmed as the definitive answer.

One theory is that it was used to make the columns look more substantial, or perhaps to try to show or emphasise the weight of the roof bearing down on them. Some say entasis is inspired by the shape of the trunk of a palm tree, which has a similar bulging curve. It has also been proven that a design that uses entasis is actually structurally stronger than a straight column, although no one knows if the ancients knew this.

Whatever the reason for it, the one thing I know for certain is that, unless you are making a pseudo-Greek column, you most likely don't need to use it in your design – aim to keep your tapers good and straight.

9 Planing the timber and offering support to the work with my front hand **10** Sanding the large tapered legs with a strip of abrasive, keeping arms and clothing well away from the work **11** Beginning the cut with the tool handle low **12** At the end of the cut, the tool handle is much higher to produce the taper **13** The straight edge is just as important on the small tapers as it is for the large legs

CHECK AND CHECK AGAIN

Once you feel the taper is right, check it again. Often, it can feel like so much timber has been removed there can't possibly be any more to take off. In this case I would say: trust your straight edge. Such tools are there to make life easier for us, so believe what they're telling you and don't skimp, because with these long tapers there are no details with which to hide poor turning or laziness. Tapers have to be right or it shows, so check your work against the straight edge, adjust and check again. Then keep repeating until you have it right. Patience and thorough methodical work will pay dividends. Practice will speed up the process and improve the eye. A set of four will get you some of the way, but making a couple of hundred, as I have in the past, will make them almost second nature.

ACHIEVING A PERFECT FINISH

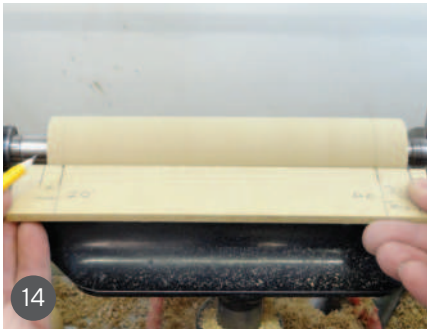
With the perfect taper turned, the next stage was to perfect the surface, which is best done with a planing cut. This can be with a skew or, my preferred version of a turner's chisel, the beading and parting tool. This is a cut that requires practice, but once perfected is reasonably straightforward. Cutting below centre on the edge of the tool, a smooth movement and light touch should produce an equally even and smooth finish. I found that a small amount of vibration occurred during this cut so I changed the grip of my front hand to support the work as well as offering support to the tool with my thumb. Very little pressure needs to be applied to the spinning wood with the front hand to counteract the vibration. If you find there is any vibration during the roughing and shaping part of the process, a similar grip can be employed with the roughing gouge too.

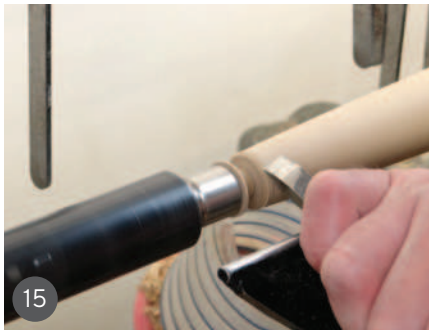
I find the best way of sanding long, straight turnings like this is with a long strip of abrasive, which covers a wide area of the job in one go. This helps to maintain and improve the straightness of the leg. I used 120, 180 and 240 grit in this form before switching to a hand pad and, with the lathe stationary, sanded in line with the grain with 240 grit to remove the cross-grain sanding scratches which normal sanding produces. This is an important step on such a plain leg, which lays your technical ability bare for the world to see. Remember there are no beads and coves to hide poor turning or rushed sanding.

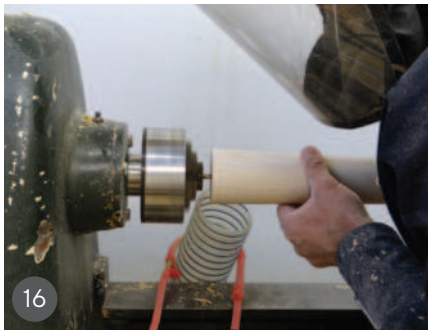
MAKING THE SMALL TAPERED LEGS

The small tapered legs are similar to the larger version. The main difference being that I didn't move the toolrest at any point during the turning process. These legs are 240mm long, so my 300mm toolrest is plenty long enough to cover them. This slight change in approach means the technique employed to shape them is slightly different. With the long legs I kept the toolrest mostly parallel to the work throughout, which meant that I was effectively cutting a straight line. With the shorter leg I needed to manipulate the roughing gouge slightly differently to form the taper.

To produce a taper with a roughing gouge is reasonably straightforward but, like so many of these techniques, requires a little practice to perfect. By picking up a cut at the top of the leg and moving the gouge straight across the toolrest throughout,







14 Using a storyboard to carefully mark the positions of the fixing tenon and the bottom of the leg **15** Rounding the bottom of the leg with my beading and parting tool **16** Drilling the pilot hole using tailstock support to ensure perfect concentricity
17 Fitting the stud screw into the ash legs **18** The finished ash legs **19** The finished oak legs

a straight cut is achieved. By applying a little more forward pressure and gradually lifting the handle as the tool moves along the toolrest, a taper is formed. Repeating this several times, with just the right amount of handle lift and a smooth movement, produces a perfect taper between the two diameters that have been set at the beginning.

As before, I checked and double-checked the taper against a straight edge and refined it before planning with the turning chisel. The planing cut requires the same lifting of the handle motion to achieve a continuous cut and a smooth end result.

THE BOTTOMS OF THE LEGS

There are two common options for how the bottoms of tapered legs are finished. They are either left square, as the longer legs were, to be cut to the correct angle once fitted to the furniture, or have a curve cut into them. This curve is sometimes specified as a full hemisphere, or sometimes, as in this case, with a radius on the corner.

If the legs are left square, there is no issue in leaving the drive marks from the lathe as these either won't be seen or will be cut off. When a radius is specified it is slightly more tricky as the drive marks really need to be removed. This calls for careful marking and turning to ensure the legs are all the same length.

In this case I used a template or storyboard to mark the position at the start of the turning and rolled the radius with my beading and parting tool after making the planing cut. Not particularly difficult, but certainly an area where extra care and attention is needed.

FITTING THE LEG

The way the leg is fitted into the piece of furniture will almost certainly have some effect on the turning of the job, and both of these jobs have a different fixing method.

The longer table legs were made for a shop display table so needed to be simple, rigid and removable, so an M8 stud screw was specified. I have used several types of these stud screws over the years. They are a kind of double-ended screw with a wood screw at one end and a machine screw at the other. Often they are a pain to fit as some sort of jig needs to be made with the corresponding nut to drive them in. I have had some where even this doesn't work because of how poorly they were made. The best I've found were recommended to me by a production turner friend a few years back. Made by Wurth, they come with a star drive screw head in the machine screw end, so they can simply be driven into the work with a power driver.

I drilled a small pilot hole 6mm wide and 20mm deep in the top of the leg using the lathe, holding the drill bit in engineers' jaws in my chuck, and used the tailstock to centralise the work and wind the tailstock quill to move the wood on to the drill. This is a very accurate method, but it could also be done with a hand drill.

The smaller legs were for a bespoke sideboard and so had a tenon turned into the top, which can be permanently and securely fitted into a corresponding drilled mortise, most likely with glue and possibly with a wedge inside the joint.

SAW STORAGE BOX

DAVID BARRON TRIES OUT HIS NEW SAWS BY MAKING A DOVETAILED BOX TO KEEP THEM IN

PHOTOGRAPHS BY DAVID BARRON

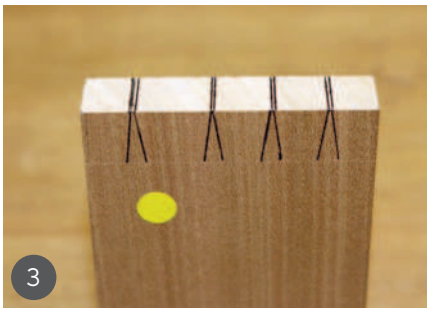
I recently received delivery of a lovely pair of dovetail saws made for me by Skelton Saws – they have matching handles made from some Honduran rosewood that I bought many years ago. The larger saw is a Gentleman Jaq gent's dovetail saw, which feels great in the hand and has a fine 20 TPI. The smaller saw is a Dual Kerf Starter created by Shane Skelton following a conversation we had at the Harrogate Show last year. It has a very specific purpose, enabling identically sized pins to be cut. Used against a square, it creates a pair of dead square, even kerf lines in which a saw can be dropped to cut dovetails. Both these saws arrived in nicely branded large cardboard boxes but I felt something smaller and more attractive was appropriate. As the saws would always be used together it made sense to make one box for the pair.

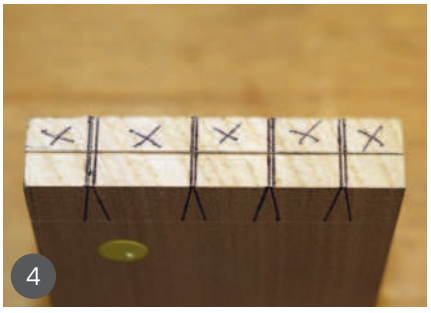
BOX MATERIALS

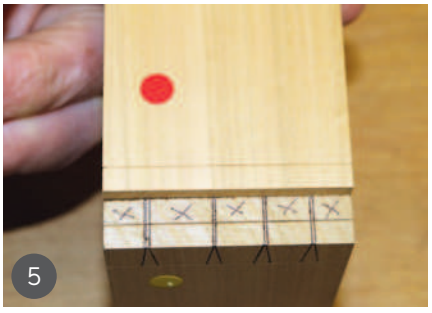
I wanted to use the same rosewood offcut from the saw handles to make the storage box, but as there wasn't much left I cut it into 3mm-thick pieces, which yielded just enough to make eight panels for the lid. I matched the red tone of the rosewood with some nice English cherry. I decided to make the box as a whole and cut the lid section off on the bandsaw, in the same way I build my toolbox. I also wanted to use Andrew Crawford's Smart Hinges, so I needed to make sure the box material was wide enough to accommodate them. The hinges are 8mm wide, so a material width of 12mm would leave 2mm spare wood on each side. As I wanted the hinges to be fitted along the grain, to avoid cross-grain breakout, I didn't use end pins for the dovetails. Also, the width of the bandsaw cut needed to be allowed for when laying out the dovetails to make sure of even spacing in the finished box.

PUTTING THE SAWS TO USE

With all the planning and layout done it was time to put the Dual Kerf Starter into action – a single stroke along the length of the blade was enough to give perfect pairs of even, square lines. At this stage I decided to make the tails narrower for a more delicate look on the finished box, so I scribed across the end grain of the tails and used the same setting on the wheel marker to scribe the depth of the pins (this is definitely an optional step). The tails were cut freehand by angling the board in my vice by the desired dovetail angle (1:6 in this case) and then cutting vertically. The Gentleman Jaq saw made quick work of these small tails. After cleaning out, I chiselled back the tails to the scribed line before marking out and cutting the matching pins. I set the router table to cut a 3mm-wide groove for the MDF lid and base using the same fence setting for both. As the lid and base would be covered on both sides none of the MDF would show in the finished box.







1 A pair of beautiful saws with matching rosewood handles **2** A board of book-matched English cherry. Note the pen marks which will yield the straightest grain **3** All the dovetails marked out. There are no end tails – this was done to reduce the risk of break-out when routing the hinges **4** The tails scribed to reduce their width in the finished box **5** The matching scribe mark for the depth of the pins **6** Marking out the kerf with the new Skelton Dual Kerf Starter **7** Perfect evenly spaced and square kerf marks ready for the tails to be cut **8** The profile of the tails after cutting out and then reducing the width **9** Routing the grooves for the base and lid panel

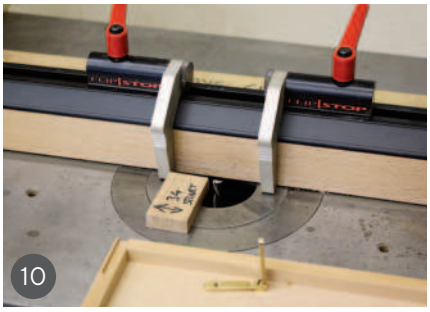
ACHIEVING PERFECT FLATNESS

Gluing up went well and the lid was carefully removed on the bandsaw, remembering to mark up the mating sides beforehand. For a good-looking box, it's vital that the two halves of the box are flat and even, this could be done with a block plane or even a large plane spanning both sides at once. However, the easiest way I've ever seen was shown to me by Andrew Crawford and involves using a large flat surface with a single sheet of sandpaper attached. By using a variety of circular motions (not up and down) each part of the box was perfectly and quickly flattened to a fine fit.

Andrew sells these large sheets on his website in a variety of grits so you can work down to a fine finish straight from the board. I use two 18mm-thick boards of 600 x 400mm multi ply with a different grit on each side.

ROUTING THE HINGES

It was time to rout the hinges, which need very careful set-up to give the desired result. Due to the position of the hinges two of the grooves are routed in one direction and two from the other, which means that stops for both these settings had to be set at exactly the same distance from the edge of the cutter. This was achieved with a spacer block, but the resulting groove lengths still needed to be checked on some scrap wood. Having stops that can swing out of the way without losing their setting, such as the brilliant Flipstop ones I use, is very useful. The other issue of coming from both directions is that the left to right direction is a 'climb cut' working against the cutter, so the work must be taken very slowly and firmly held to avoid unwanted damage or worse. I like to use a sacrificial board that enables the climb cut to be taken in two passes and this makes things a lot easier. After all the set-up and testing, the actual cuts themselves took less than a minute and the result is a perfect match and a very discreet hinge.



10 The router table set up for making the hinge recesses for the Smart Hinges
11 The simple pig suede lining stuck down with double-sided tape
12 The panel parts are made to a tight fit on the shooting board
13 The edges of the panels and the sides of the rails are bevelled on a 45° shooting board

THE BOX LINING

For the lining I considered French fitting the saws, but in the end I went for a much simpler method with a two-tier interior lined with pig suede. This enabled the saws to sit nicely without the teeth catching the surface. The suede is also non-slip so I can tilt the box up to 45° without the saws sliding into each other. I lined the inside of the lid in the green suede to match.

Underneath the base I stuck on a piece of 7.5mm walnut to give a rise of 5mm and create a nice little shadow line under the box. This also adds useful weight to the base.

MAKING THE LID

For the lid I took the four book-matched pairs of rosewood and worked out the required width for the cherry rails to get a tight fit in the opening. These were perfectly sized on the shooting board and their positions marked. To give the effect of a proper frame and panel lid I bevelled the edges on the 45° shooting board, taking care to leave a little of the square edge to maintain the tight fit. The rosewood panels were bevelled on all four sides but the cherry rails were only bevelled on their long edges as these would normally be tenoned at the ends. I applied three strips of double-sided tape to the MDF lid and carefully attached each of the 15 pieces in their correct order, taking care to make sure there were no gaps between.

FINISHING TOUCHES

The panels were hand-planed flush with a high angle smoother and scraper plane, followed by the sanding boards and hand sanding with finer grits. The finish I used was Skelton's Regal Red Peacock Oil, building up six coats for a lustrous sheen.

davidbarronfurniture.co.uk

SKELTON DUAL KERF STARTER SAW

Skelton Saws has launched a saw with a very specific purpose. Fitted with two blades, it is used up against a square to create a pair of kerf lines for a dovetail saw to drop into. This helps produce identically sized dovetails as well as ensuring they are cut dead square.

Over the years I've seen a number of techniques used to get even spacing between dovetails, most notably Alan Peters' use of calipers. However, small differences in spacing are not picked up by the eye, what is noticeable is variances in the size of the tails and pins. I have been using a homemade version of the saw for the past year with great success, and it has also proved very popular with my students.

The build quality is immaculate, and it's surprisingly heavy for a small saw. The teeth are 19 TPI and are filed for a pull cut. There is also no set so it can be quite happily used against a square with no damage. The kerf is suitable for both English and Japanese dovetail saws and the pin size created is 1.85mm, which looks great for boxes and small chests. Larger pin sizes of 3mm and 4.15mm are easily achieved by making additional cuts, using the first one as a guide.

If you are a keen dovetailer, this saw would be a great investment and last a lifetime. Considering the workmanship, it represents great value at £275.

skeltonsaws.co.uk

DECONSTRUCTING FURNITURE

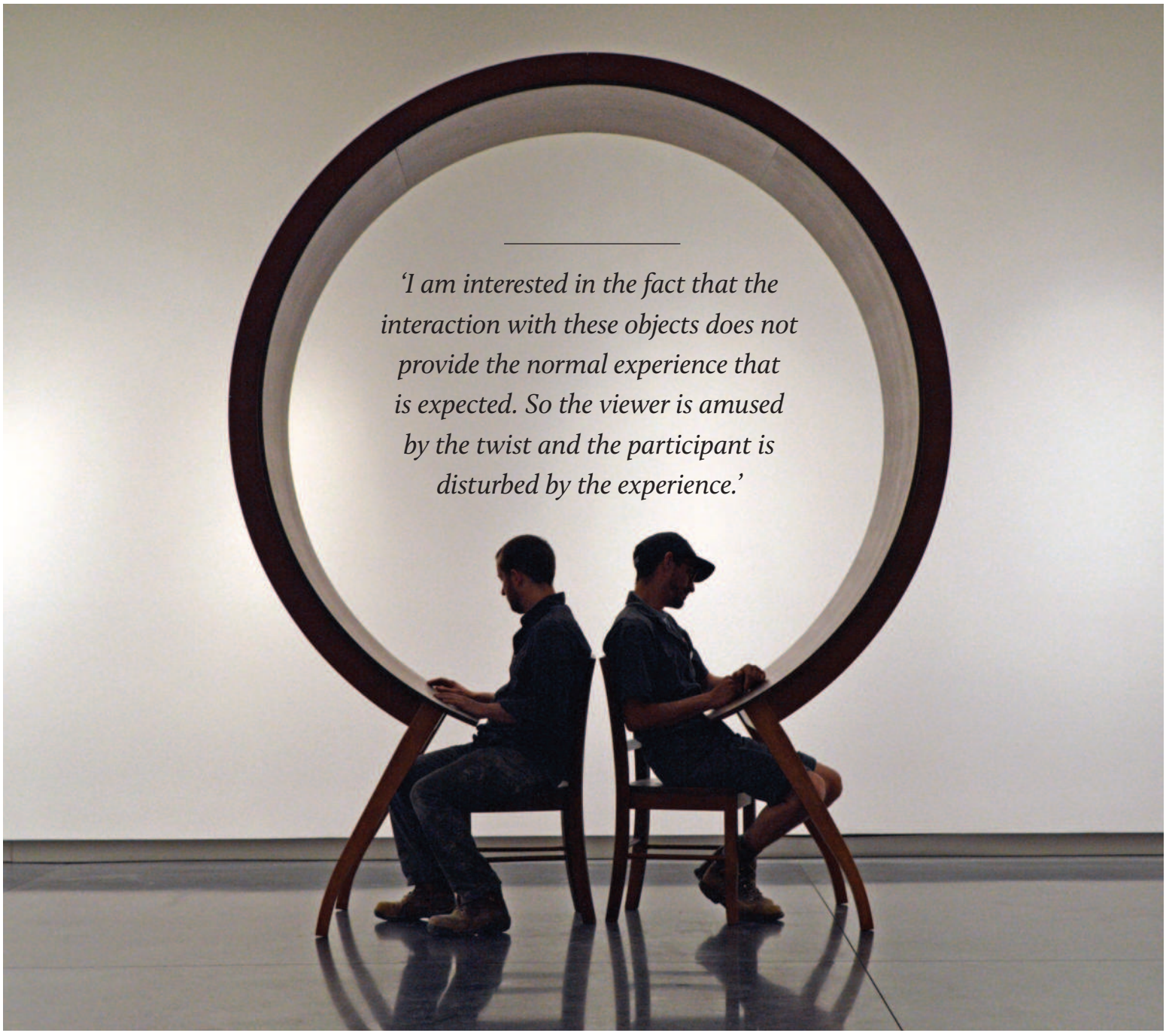
SCULPTOR AND FURNITURE MAKER **MICHAEL BEITZ** DISRUPTS PRECONCEIVED IDEAS ABOUT FURNITURE WITH HIS FINELY CRAFTED INSTALLATIONS

A dining table with a huge central knot made from bent wood. A bed covered in a massive lump of hardened sludge. A picnic bench that looks like a waterfall. When Michael Beitz starts making a piece of furniture, it almost always ends up messing with your ideas of what that piece of furniture should be doing – and telling you something completely different about the world.

Take The Knot, Michael's first major furniture piece – a sofa with a giant knot tied in the middle. He explains: 'It was a knotted sofa that I created while in grad school. I cut a sofa in half and sewed in a 20-foot long extension and proceeded to tie it in a knot. I was interested in going through the process of creating this knot and not making the illusion of a knot. I was addressing my feelings about furniture. At the time, I was living in a town where houses were being torn down, it seemed like the idea of comfort was unavailable there, which I wanted to reflect in this piece, working on the idea of cancelling out the form.'

There is something about many of Michael's works that is oddly disturbing, as they deconstruct ideas about furniture and furnishings, disrupting the sense of comfort that can often come from them. For example there is a collapsed, varnished upholstered armchair; a set of park benches spelling out the word idiot and another armchair with a giant phallus protruding from its seat.

Michael says: 'Looking at the form is so much different from interacting with it. Usually people say looking at it is very funny, but interacting with it is uncomfortable and that is what I am interested in. I do make some pieces to be uncomfortable. People will really feel isolated and disturbed when they sit at it. Dining Table, a piece I made a few years back, is a long wooden table with a hump in the middle that blocks participants from seeing each other. It creates a very lonely feeling when you sit down at it but the person viewing the entirety of the piece has a completely



PHOTOGRAPHS UNLESS STATED ©COURTESY MICHAEL BEITZ

different experience. It is the difference between physically sitting there and feeling it rather than looking at it conceptually. I am interested in the fact that the interaction with these objects does not provide the normal experience that is expected. So the viewer is amused by the twist and the participant is disturbed by the experience.'

BEYOND CRAFTSMANSHIP

All Michael's pieces are designed to be functional as well as works of art. He explains: 'I am interested in the interactions we have with objects. I think the furniture objects that I am making reflect our domestic environment in a more accurate way than the common objects. Everybody wants that clean flat surface because it is so calming, you need it to respond to.'

He is involved in the whole process of creating each piece, which means he uses a high level of craftsmanship – although 'I don't want the craft to be the subject that the viewer is made aware of'. For special projects he sometimes uses assistants or outside fabricators to help with upholstery or metalwork.

Michael says: 'I am involved in every step of the process, from conceptualisation to design, engineering and fabrication. All my pieces being unique artworks, they are systematically new discoveries and these discoveries are made along the way, new challenges appear as I create and build, the wood reacts in different ways, it is a constant dialogue and play with the material.

'Regarding the execution of the pieces, the way I work is to start making them with the materials, so I generally don't work from models or plans, I just start working with the materials. For instance, with the knotted table, I started gluing pieces together to see if it was possible, I didn't really know that I could do it. I have an idea and I am curious about it, I want to see if it is possible.

PHOTOGRAPH @ARUALLAN - ARTSTREETANDSTORIES.COM

'It is a very challenging style of working. As I am going into it, I don't know how difficult the work is going to be, and the pieces usually turn out to be pretty difficult. I never really feel that I know what I am doing. Each new piece has its own set of problems to solve and the solutions are usually unique.'

TRADITIONS AND EXPERIMENTS

Michael has been making sculptures since he was a teenager, and has been experimenting with ideas and form ever since. He studied ceramics and sculpture at Alfred University, a private university in New York State where he learned traditional casting and mould making, graduating with a bachelor's degree in Fine Arts. After graduation he had the chance to work with furniture artist Wendell Castle, and then worked for several years as a furniture maker, where he learned all about woodworking and structure, before moving into conceptual art.

Now he produces works for public spaces, private collectors and museums, funded publicly, privately and sometimes out of his own pocket. 'I often need to develop new ideas and projects outside the realm of the art world or any funding considerations, as it allows me to move forward and be free to create,' he explains.

Creating pieces that are both conceptual and usable is a key priority. Michael says: 'I trained with very skilled furniture makers and learned a lot about traditional processes, which I use in my own work. It is important to me that the work is built to function in a utilitarian sense, even if it is an art object.'

The idea of making a 'straight' piece of furniture still holds an appeal. 'I have a lot of ideas for functional designs that I think

would work well,' he says. 'But when it comes down to creating them, I usually deviate from any initial idea and end up with something that is more interested in expressing a conceptual idea than functioning as a straight design.'

One of the favourite pieces he has ever made was the Tree Table he built for an urban farm project in Buffalo, New York. 'Along with five other artists, I was asked to design a sculpture for an abandoned lot that would be used as a community farm. I designed a tree-shaped table where the branches became smaller scale benches for children. The place was beautiful, set in an orchard with apple and pear trees,' he says.

So what inspires him? 'I like objects, I am excited about form. I am inspired by civic design, hostile architecture and how those things shape our daily experiences. I am also inspired by people who are honestly involved in making authentic creative work,' Michael says. 'For some time now, I have been obsessed with designing coffee tables that would disrupt the space they exist in. I feel they are this little exhibition space of who you want to show you are and I find it interesting to disrupt the image of one's identity that is displayed on a coffee table.'

The Coronavirus pandemic has given Michael food for thought. 'Most of my designs are about social distancing on an emotional level, and seeing it happening physically as well all around the world is unsettling,' he says. 'I feel grateful to work, and isolation allows me to spend time reflecting on the importance of people and relationships in my life.'

michaelbeitz.com

THE CONVERGING JOINT

CHARLIE CAFFYN EXPLAINS THE DEVELOPMENT OF HIS 'X' JOINT

I have fond memories of the kitchen table from my childhood which had the farmhouse-style X-shaped legs. When designing the coffee table for my range of furniture (see page 4), I wanted to make a nostalgic but contemporary version of that table. After a multitude of prototypes, I settled on a converging tapered detail with all the legs angled. So, rather than just two lengths of wood with a simple lap joint, this joint is made up of four different lengths, all tapering away from the centre at an angle. To achieve this I had to develop a laborious but essential five-stage process to complete the converging 'X' detail.

charliecaffynfurniture.co.uk

PHOTOGRAPH BY CHARLIE CAFFYN

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