AUSTRALIAN
Wood
REVIEW
94

STUDENT AWARDS
WINNERS ANNOUNCED

MACHINE MASTERCLASS
Thicknesser Jigs & Setups

DES KING
Kumiko Artist

HEIRLOOM CHEST
For Your Hand Tools

PROJECTS
- TABLE FOR TWO
- HAND MIRROR
- CHIP CARVING
- FLUTED VESSEL

TESTED
- VERITAS MITRE PLANE
- 3M SANDBLASTER ABRASIVES
- KNEW CONCEPTS COPING SAW
- WOODRIVER #2 SHOULDER PLANE

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Australian Wood Review 94

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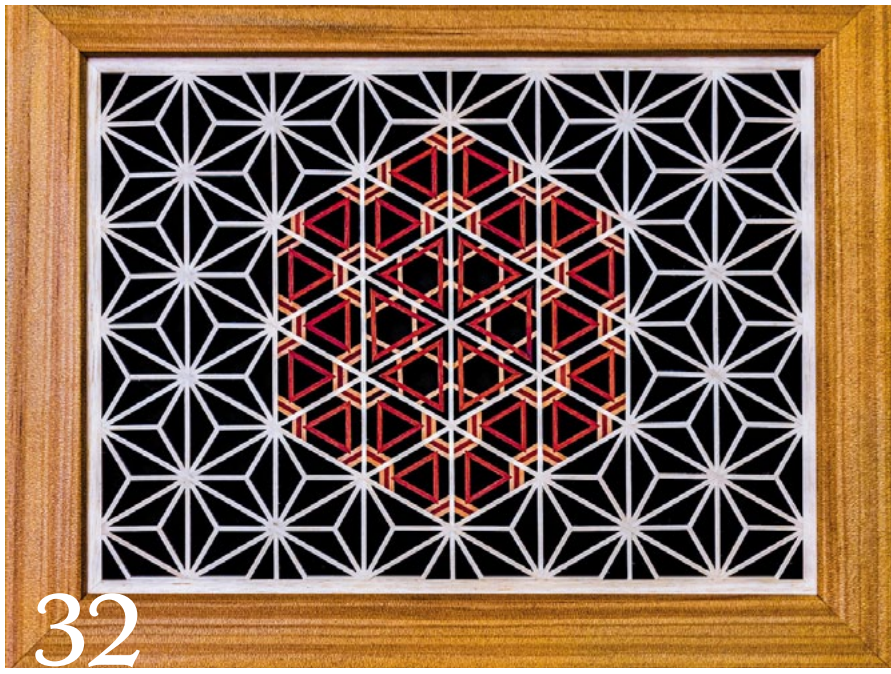

Editor's Letter

I sometimes wonder about the meaning of making in a world that increasingly consumes more and more objects made to a price, as opposed to concepts of longevity and relevance.

Take a walk around the burbs on the days prior to council hard rubbish collections and you'll see the best and worst of all (furniture) worlds. The best – because you'll witness recycling at its most spontaneous and grass roots level as many take what others don't want.

But the worst is the reflection of our world that's left lying on the verge. Flatpack furniture now useless with joins gone gappy and chipboard panels disintegrating. Cheap stuff that was 'all we could afford' and fashions we fell prey to are turning out to be expensive in the long run.

None of this is new, but it's what drives a lot of makers I've met over the years. Several have told me that it's visions like these that inspired them to make things that didn't fall apart, that had enough functional and aesthetic value to make people want to hang onto them, and even be able to repair them if need be down the track.

Of course, as woodworkers, respect for finite materials is top of our list. Last year, when I met Simon Parsons, who is featured this issue, he spoke about using wood economically and how the sight of furniture made from overly large slabs makes him think, 'I could do so much with that wood!'.

Why am I writing about this? It's a new year and often some questioning comes up. What I'm trying to say is that making things well is worthwhile. That, and respecting the provenance and sustainability of materials are ideas that underpin this magazine and its online communications.

All over the world

While we will always call Australia home, Wood Review is becoming more and more international. Our online subscriber numbers and social media platforms are growing, taking us wherever there is wifi.

Recent editions have featured stories by authors from Canada, USA, New Zealand, the UK and as of this issue, wood artist Zina Burloiu is the first to represent Romania.

Des King is an Australian who is taking the Japanese art of shoji and kumiko making all over the world via his detailed and technical books which really are groundbreaking. Learn more about Des and his books on p.32.

I did some travelling last year and during a stopover in China visited the largest manufacturer of wooden bodied handplanes in the world. It was interesting to learn about a family run business that is guided by principles of profit and quality geared towards ensuring the job security of its workers. Read about Woodwell Tools on p.58.

Barriers broken

Once again our Student Awards have shown that age and gender are no limitation to what can be achieved where woodworking is concerned. View the entries on our website to see young men and women equally engaged in processes that involve the use of power tools and machinery to fashion all kinds of things from wood.

The results vary but don't travel along lines of gender. I think we're getting closer to evaluating and appreciating creativity and skill without favouring one group of people. Guided by some amazing teachers and mentors, these younger woodworkers are doing really well.

Lastly, I wish to thank and pay full credit to our competition sponsors for having the generosity and foresight to invest in the next generation.

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COVER:
Troy McDonald in his home workshop.

COVER PHOTOGRAPHY:
Troy McDonald

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- JAMES
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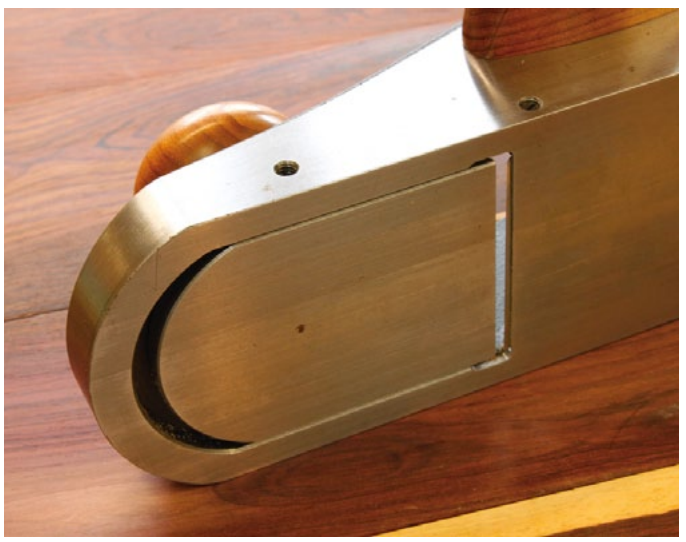
From top:
The quality of casting is excellent.

Blade components disassembled.

Norris-style adjuster.

The mouth adjustment system works well.



Veritas Mitre Plane

Reviewed by Robert Howard

This Veritas low angle mitre plane is a recent addition to their already comprehensive line-up of high quality hand planes. The 5lb, 10-1/2inch by 2-5/8 inch, stress relieved, ductile cast iron body carries a bevel-up blade, bedded at the usual 12°, and ground to a 25° primary bevel angle.

As a mitre plane, its main body casting is flat and square as required, and the small shooting handle or horn, that can be used on either the right or left side, is comfortable enough in use.

The sides with their curved top edge do not favour the use of an enclosed track shooting board, which some people prefer. The blade is set square rather than skewed which permits right or lefthanded use.

Its cousin, the Veritas shooting board plane with its skewed blade is arguably a better performing plane for shooting. A skewed edge gives a soft start because it enters the wood at one point only, rather than with the entire edge all at once and gives a lower effective cutting angle.

As a smoother it works well with so much mass that once moving it glides over the wood. However it is not as comfortable to use a normal smoother. In my opinion, although it is versatile, it is a somewhat in-between plane with some compromise in its shooting and smoothing abilities as it is hard to be all things in one tool.

I am, as usual, deeply impressed by the production capability of Veritas, and their command of all the latest design and manufacturing technology. I could probably have written much of this review without even seeing this plane. Its blade is exactly what I expected, its depth and lateral adjustment mechanism works as well as always, its sliding front plate mouth adjustment system with its stop screw works sweetly, the quality of its casting is excellent as usual, and so on. This reputation for quality has been well earned over many years, and this plane is further proof of it.

The plane is supplied with an A2 blade for $539 or with PM-V11 blade for $566.

Review tool supplied by www.carbatec.com.au

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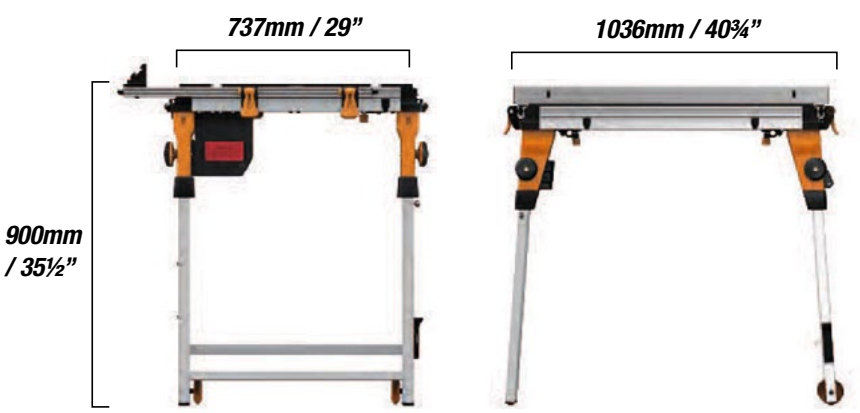

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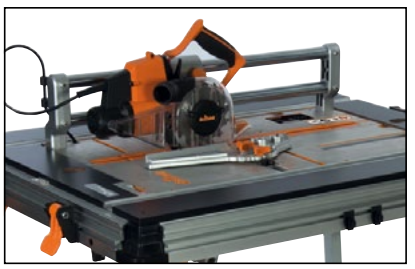

Project Saw Module
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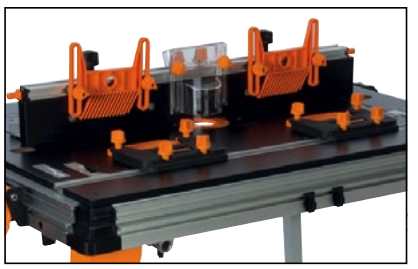

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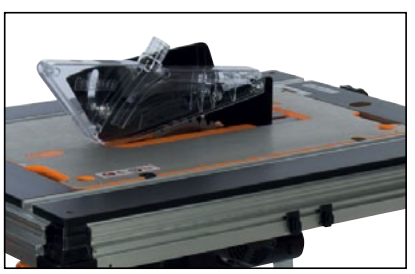

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3M Sandblaster Abrasives

Reviewed by Raf Nathan

In the old days cabinetmakers used shark skin as an abrasive for wood. The coarse skin was able to smooth down surfaces after hand planing. Then along came manufactured sheets with crushed glass or sand acting as the abrasive. Today of course we may still say 'sandpaper' as the active agent is a newer mix of silicon (sand is mostly silicon).

Sandblaster is the name of a new range of abrasives from 3M. With a flexible plastic backing, the range comes in standard sized 9" x 11" sheets and also in convenient smaller sizes to fit hand blocks. The range of grits goes from 60 to 320.

The large sheets performed to me as well as any other abrasives used in my shed. The finer wet and dry sheets are very flexible although I found they had a tendency to tear with hard use.

A new hand sanding tool with a comfortable handle also accepts small Sandblaster sheets. This plastic tool has quick action clips for sanding sheets to attach to and worked a treat, and is superior to wrapping sheets around a cork block.

Ultra Flexible all-in-one sanding sponges in various grits are also a good option for hand sanding. These have a raised pattern to allow the dust to escape and conform to both the shape of your hand and curves on the workpiece.

I thought the abrasive rating on the sponges was less than the rating would be in abrasive sheet. For example the 120 grit cut more like 150 and the 180 more like 220 would in regular sanding sheets. Both the sheets and sponges can be washed out for longer life and are great for finer sanding jobs.

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Knew Concepts Coping Saw

Reviewed by Robert Howard

If you want the short version of this review, I recommend that you stop reading now, and go buy this saw (or its Titanium mate if you want to spend the extra money). You will not be sorry. If you need further justification, read on.

Most readers will be familiar with using regular, hardware store coping saws, and know how the blade bends in the cut. A better coping saw would not allow this to happen.

Now, roughly speaking, a blade secured with end pins can only bend significantly if the ends of the blade move closer to each other, and this can only happen if the frame flexes in the required direction.

So what has been the problem? Well, making a stiff enough frame is easy enough. Making it light enough for comfortable use is a bit harder. Doing both cheaply enough for it to be commercially viable is a lot harder.

The essential frame stiffness problem, and the Knew Concepts solution, can be quickly demonstrated by bending a 300mm steel ruler. It flexes easily across its broad face, but not at all (by hand) across its edge. That is where the strength is. The light weight is gained by using aluminium, and the principle of trusses, which allows cutting away much unnecessary material. Finally, modern, computer controlled manufacturing technology brought the costs down far enough to make the final product, if not exactly cheap, at least within reach of anyone who was prepared to spend extra for the very real advantages these saws offer.

The blade clamps have been improved by the addition of lightweight, knurled locking screws, which replace the original allen key operated set screws. Tension is applied directly by a lever operated cam, and indirectly by a screw thread that sets the point at which the cam begins to work. The amount of tension created is impressive, and allows the blade to stay almost dead straight in the cut (assuming the saw is not being pushed too hard).

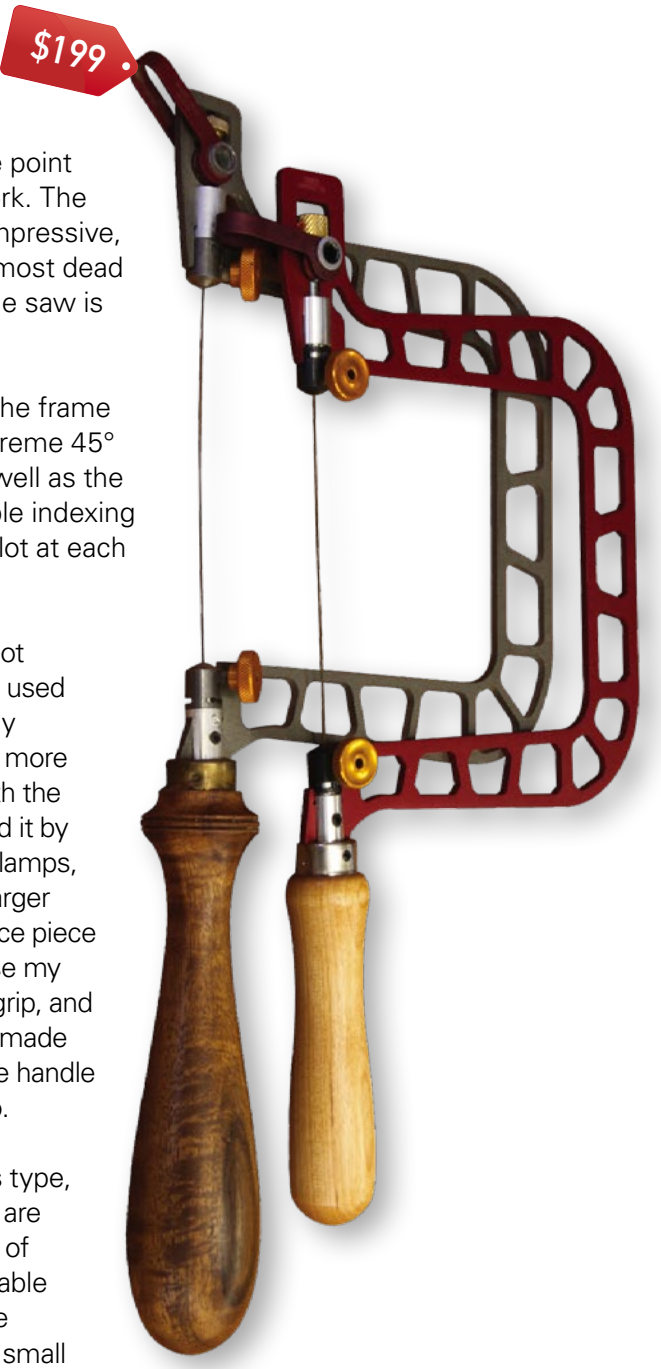
The clamps can be twisted in the frame to the left or right, with the extreme 45° position in either direction, as well as the central position, held by a simple indexing pin that slips into a notch in a slot at each end of the blade.

The saw handle is adequate, if not particularly beautiful, and can be used with either one or two hands. My own Knew Concepts saw is the more expensive, Titanium version, with the original flat frame. I have updated it by adding the new knurled screw clamps, and I have also made a longer, larger diameter handle made from a nice piece of figured blackwood. I like to use my coping saw with a two handed grip, and wanted a slightly longer handle, made from a more beautiful wood. The handle substitution was very easy to do.

The blades used are the pinless type, both Pegas and Pebeco brands are recommended. One advantage of these is that there is a considerable variety available, which could be essential if you use the saw for small or delicate work.

Now that you have the necessary information, I urge you to go and buy one of these saws. As I said above, you will not regret it. They are, without doubt, the best new coping saws on the market, and a joy to use.

Available from www.knewconcepts.com and www.henryeckert.com.au



Aluminium and Titanium Knew Concepts saws, above and below. The author substituted a shopmade handle in his own titanium saw.

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GRIT SELECTION CHART

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*Based on backing life during hand sanding when compared to 3M conventional sandpaper of comparable grit.

Caleb James Scrapershave

Reviewed by Damion Fauser

Caleb James is a maker of fine hand tools based in Greenville, South Carolina, USA. Focussing on wooden-bodied traditional tools, one of his latest developments is a tool he has dubbed the scrapershave. Essentially a member of the spokeshave family, this tool has the blade mounted in a perpendicular fashion to make a scraping cut akin to a card scraper, as opposed to the shaving cut taken by a standard spokeshave.

I make a reasonable amount of curved components that I shape by hand. What I've found, particularly in our Australian hardwoods, is there is always one or more points along the curved profile where the grain shifts and it can be troublesome to achieve a clean surface with a spokeshave alone, so I immediately saw the potential in this tool and placed an order.

Throughout his trials and development Caleb kept me up to date with his progress, including successes and hurdles, so I know this tool has undergone significant refinement through various iterations.

A single piece of hardwood is shaped to form the body of the tool and the mounting hardware is a piece of machined brass that locks the blade firmly in place with two knurled brass lock nuts. The sole of the tool is quite narrow at approximately 15mm and has a slight radius, allowing it to reach into shallow concavities.

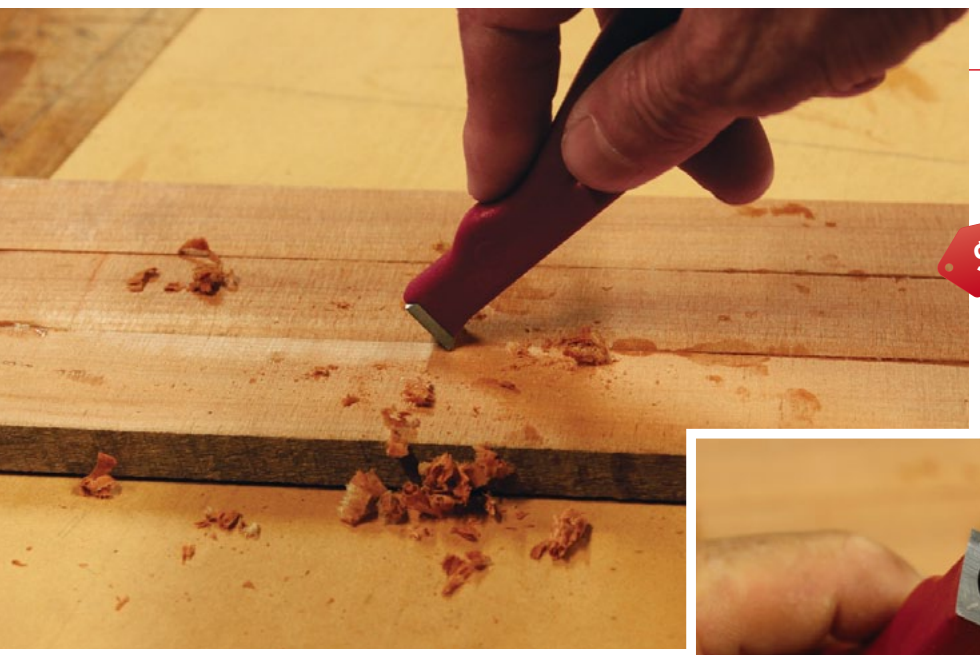
The ergonomics of this tool are incredible. Whilst asymmetrically-shaped from front-to-rear, the scrapershave is equally comfortable to hold and use in either direction. Furthermore, Caleb has cleverly designed the tool so the blade is held perpendicularly, meaning the blade can be reversed if needs be.

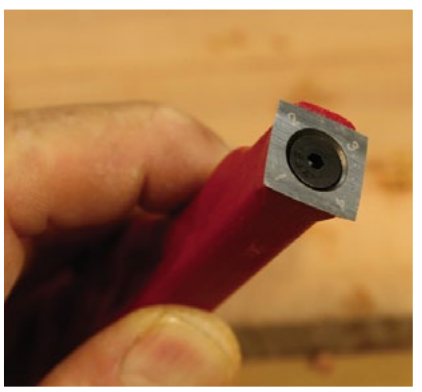
The O1 steel blade is 2mm thick and is a little short to be held in most honing guides, but I do not see this to be a major issue as the 45° primary bevel is so small it requires so little metal to be removed for sharpening that a few careful strokes by hand are all that is required. Caleb designed this tool to be operated without turning a burr, but there is sufficient room in the mouth of the tool should you wish to experiment with this.

Since receiving mine late last year I've trialled it on jarrah and hoop pine and it performs exactly as advertised. I am confident it will see regular use in my work.

Available in persimmon and East Indian rosewood (although this species was recently listed under CITES and may not be able to be exported for much longer), this tool is very reasonably priced for the materials used and quality of the build. If you like to shape curved components with hand tools this will be a very useful addition to your tool set.

Review tool supplied by author. Available from calebjamesmaker.com





Woodpeckers Mighty Mini-Scraper

Reviewed by James Brook

Glue runs can be a mini nightmare to cleanly remove. You can try chisels, chisel planes, planes or sanding to get rid of glue squeeze. This new tool from Woodpeckers is a square carbide cutter with four slightly convex edges. As edges dull the cutter can be rotated to a fresh edge. Pull the tool over the glue and wood at a low angle to shear off glues lines and then raise the angle for a scraping cut. It is a very effective tool. The sharp edge can quickly flatten off excess glue making a somewhat tedious job a breeze.

Available from www.woodworksupplies.com.au

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WoodRiver No.92 Shoulder Plane

Reviewed by Raf Nathan

This tool is based on the classic Edward Preston shoulder rebate plane that has decorative detailing on its sides with the EP two cherries symbol logo. The old Preston was nickel-plated with a shouldered, full-width cutter and its design has seen it become an icon for similar modern plane designs.

The WoodRiver medium sized shoulder plane is made in China and has a ductile steel body. It is a beautiful looking tool that weighs a substantial 1kg. An improvement over the Preston is the addition of the adjustable toe which allows fine setting of the mouth.

The body is machined square to the sole. The lever cap is a polished pivoting arm that locks with a thumbwheel. The sole was pretty flat with a bed angle of 15° holding the 3/4" wide blade which is 3mm thick.

The blade came flat and sharp ground to 25° and ready for a final hone. My personal opinion is that the blade steel is somewhat soft – meaning it is easy to sharpen but loses out a bit to edge retention. However my experience is that after a reasonable amount of use new blades toughen up.

The blade sits in a toothed groove for depth adjustment and this works well. Lateral adjustment is a little difficult because the blade does not extend beyond the body at the rear where it could be tapped sideways if needed. However as long as the blade edge is ground to 90° there is no problem. This is the advantage of honing jigs for sharpening.

I planed blackwood and myrtle shoulders with good results, although edge retention in these woods was only reasonable. Do tighten the toe adjustment screw down hard, as with some of my rougher tests it slipped back in towards the blade. Softer oregon with a freshly honed blade was a dream, it slithered through the endgrain.

Overall this is a very good tool that performs well. The design is excellent and echoes the great Preston plane. Apart from my personal experience regarding lateral blade adjustment, it is a fitting plane to carry the flag.

Tool supplied by www.woodworksupplies.com.au

$279

From top:
The WoodRiver No.92 is based on the classic Preston design.
Close up to the attractive decorative detailing on the sides.
Showing the plane disassembled.

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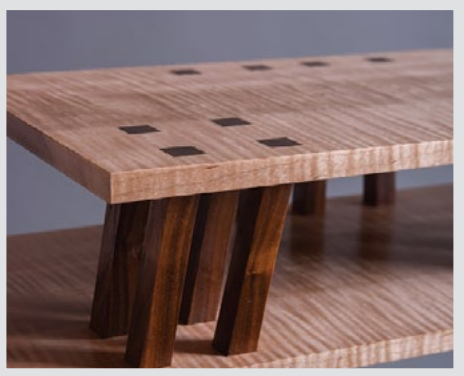

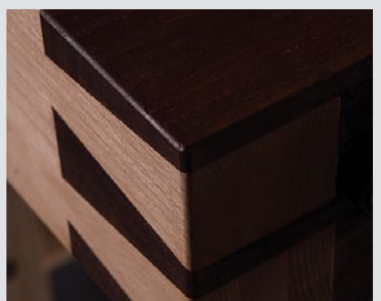

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Good Grips

Here's a product that threatens to take hold of the market. From Slipstick, these orange, hard wearing, non-slip rubber compound bench grips serve conveniently for holding, leveling or providing a non-slip or insulating base for a multitude of workshop and domestic uses. Sold in packs of eight for $22.50. Available from Bunnings.
www.timbermate.com.au

Product news

A round-up of tools and products to take notice of.

Bucket of Chips

This straightforward collection system for larger chips and particles aims to take the load off your shop vac. Simply attach said shop vac to the Titanium 305 cyclone dust collector and switch on to allow it to separate and trap larger particles without the need for messy filters. Clear PVC lets you see when the 19 litre bucket needs emptying. The unit mounts on four castors for easy mobility.
www.timberbits.com.au

New Makes For Old

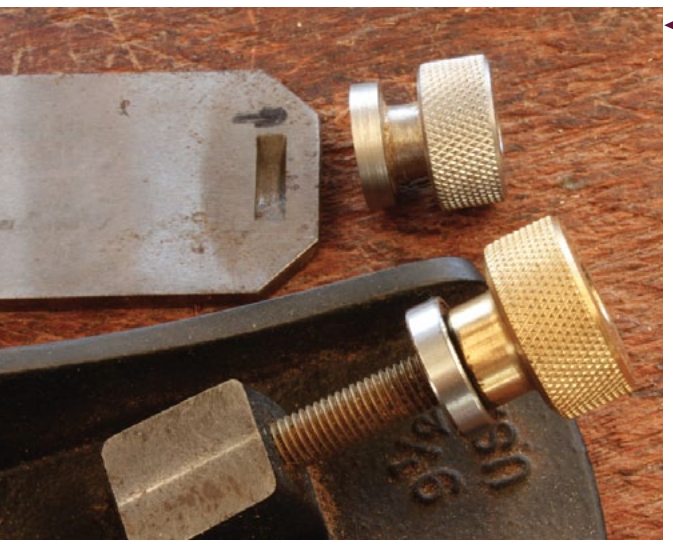
Upgrades for your vintage Stanley and Record handplanes are now available from Canadian manufacturer Veritas Tools. Top quality replacement blades and cap irons are available in A2, O1 or PM-V11 Veritas grade steel. From Veritas tool retailers. For info visit:
www.veritastools.com

Digital Drill Press

The world's first 'smart' drill press aims to combine the best features of a drill press with state of the art digital technology to make your work more efficient, safer and hopefully more fun. The Nova Voyager DVR Drill Press is versatile enough to handle wood, metal, plastics and glass and combines DVR technology with intelligent 'adaptive control' software to produce optimum conditions for your specific projects. The Nova sports speed selection, load and digital depth readout, self-start, electric braking,1.75hp variable speed motor (50–5500rpm) as well as a 2MT spindle with 152mm of travel.
www.teknatool.com

Dust Monster

Woodworking professionals know just how essential a dust extraction unit is to create a clean and safer environment in your workshop. New to the Hare and Forbes range is the DC-100 industrial dust collector, affectionately known in-house as 'the big monster'. The DC-100 stands 3.5 metres tall, weighs in at 148kg and has a huge 5hp, 415V motor that produces a whopping 3860 cfm of airflow, sufficient for many industrial applications. This LPHV (low pressure, high volume) system has four 100mm inlets for direct connection to individual ports for maximum performance.
www.machineryhouse.com.au



Howard Adjuster

If you have a Lie-Nielsen plane there is now an aftermarket upgrade which is worth the spend. Designed by AWR contributing editor Robert Howard, this neatly made brass knob holds a bearing that sits on the blade in the groove for depth adjustment. The bearing gives smoother adjustment than the original system which has a turned ridge in the groove. In the photo you can see the original knob in the background. Knobs are available for block, low angle and shoulder planes from $29.
www.thetoolworks.com.au

Anti-Kickback Feathers

Designed by Keith Bow of Bow Products, Featherpro featherboards aim to offer greater infeed control and kickback protection when machining wood. The shape of the feathers is designed to lock in if the workpiece moves backwards. The hardened foam feathers are also less likely to mar wood surfaces while absorbing pressure. Also available as single or duo stacking featherboards.
www.featherpro.com

New Standard

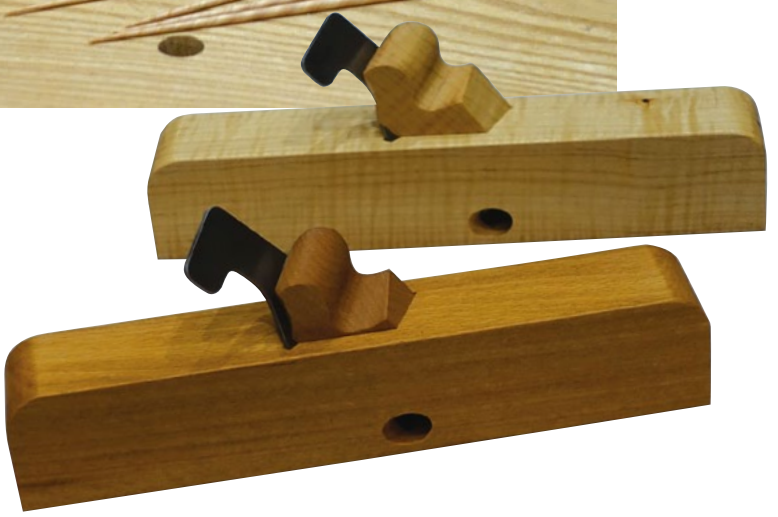
Workbench World have released a new standard bench. 'The new model is a significant development over earlier benches and has several new features', said James Shadbolt, who took over the company a year ago. Improvements include fully rebated rails for greater bench stability along with increased clamping surfaces. The new standard bench has a 135mm wide front apron for clamping, and the legs are chamfered to reduce splintering of the base. Solid jarrah adds strength and weight to the frames, while laminated jarrah gives benchtops durable and smooth working surfaces. Marine ply shelves add further weight and stability along with a pleasing contrast.
www.workbenchworld.com.au

Blackwood Alternative ▲

Tasmania's harvest of specialty timbers from mature and old growth forests has now decreased and with it the availability of non-eucalypt timbers for craft and furniture. Silver wattle or *Acacia dealbata* regenerates and grows strongly with eucalypts after regeneration burns or disturbance and is a lower cost alternative to its cousin blackwood (*Acacia melanoxylon*). It has some similarity to blackwood but is pinker and lighter in colour and weight, and has wider growth rings. The wood machines and sands well but can be prone to splitting near the heart.
www.islandspecialtytimbers.com.au

◀ Fixed Base Router

A new fixed base router option, as opposed to the handheld variety, is now available in Australia. Swiss-Tec's router motor suits fixed base router lifts and some small CNC machines. It's supplied as a gutsy 1800W (2.5hp) motor unit that delivers 10,000–22,000 variable speed with built-in soft start. More information from the suppliers.
www.gregmach.com



Two Bandwidths ➤

The humble rubber band is fundamental to more things that most of us are aware of and in the wood workshop they also have many uses. For small clamp-ups and holds these wide WoodRiver rubber bands are a simple and quick solution. Each packet contains 12 bands in two sizes and sells for around $17.50
www.woodworksupplies.com.au

▲ For Making Shavings

Trading as Red Rose Reproductions, US woodworker and toolmaker Dan Schwank handcrafts wood-bodied moulding handplanes to the highest standards. Amongst his range is the popular spill plane. 'This is a little bit of a backwards tool, in that the shaving is what you use,' said Dan. In fact this tool dates from a time before electricity when the spiral tapered shavings were used to transfer flame when lighting candles. The planes can be bought complete or as a blade and instruction 'kit' where the maker supplies the wood.
The planes shown are made from beech.
www.redrosereproductions.com

Making a Hand Tool Chest, Part 1

Troy McDonald makes a traditionally styled chest to house his treasured tools.

Left: The finished chest for carving tools contains dividers and storage for different tools.

1. The top rail of the box front was shaped to add enough depth to take an escutcheon for the box lock.
2. After the rails were glued on, the posts were mortised with the domino jointer.
3. Use packers to even the pressure when gluing the posts to the long sides.
4. Nailing 4mm decorative beads to decorate the panels.

I'm sure that we've all got projects on our list that we never seem to make time for. Often they're the sorts of projects we look forward to completing but continually defer due to a host of more critical priorities. One such project for me has been a chest to store my carving tools. Since I bought my first carving chisel almost 20 years ago, I've been storing a growing collection of them in cardboard shoeboxes. Clearly they deserved better.

5. Flushing the corner post rebates.
6. After sanding the rebates, internal dividers are fitted.
7. After the ply base is fitted, the corners are sawn off on the tablesaw.
8. Rough out the rounded corners on the frame components on the bandsaw before cutting rebates for the internal panels.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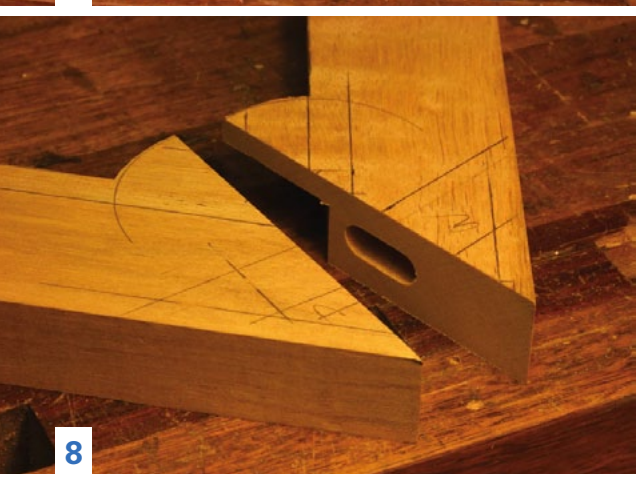
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Design

There are an almost endless number of uses for a small chest like this and the design allows for customising to suit your specific needs. As such, **fig.1** only provides general guidance on layout and I'll concentrate more on the principles applied to constructing a project of this sort.

My chest was designed to store chisels and knives in trays, whilst dividers provide dedicated internal spaces for strops, mallets and slipstones. Although I have accumulated around 50 carving chisels over the years I find myself doing 90% of my carving with no more than a dozen chisels, so a chest of this size will be more than adequate for most carvers needs.

As I was intending to store trays of chisels inside the chest I wanted flush walls to the interior. A traditional dovetailed chest would have been fine but I settled on a design that imitates the look of frame and panel construction whilst preserving a flush interior. As shown in **fig 2**, the chest consists of corner posts joined to solid timber sides with the inside corner of the posts rebated to produce flush interior walls.

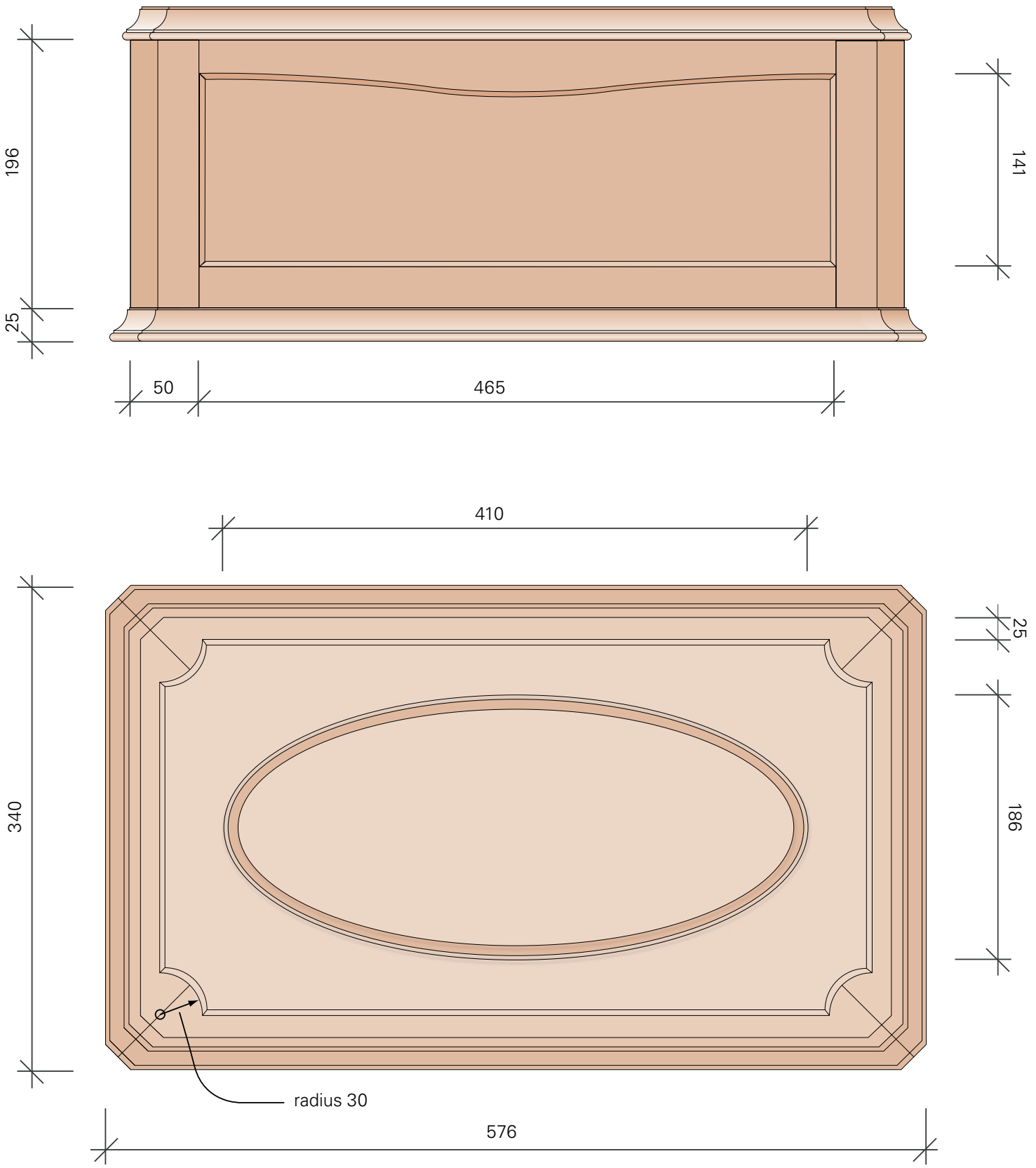
The appearance is enhanced by the addition of thin 4mm rails glued to the solid timber sides. After assembly these thin rails along with the corner posts produce the illusion of a more decorative frame and panel construction. The lid of the chest consists of a mitred frame with more decorative panel work.

Construction

Machine the sides, posts and thin rails to rough dimensions and glue the 4mm rails to the sides. I chose to give the top rail of the box front some shape to ensure it had enough depth to take an escutcheon for the box lock (**photo 1**).

With the rails glued in place reduce the assembled sides to their final dimensions and cut the joints for assembly to the posts (**photo 2**). Dominos were used here, however, any similar method such as dowels or slip tenons would be equally effective.

Fig. 1 Top view and front elevation



DIAGRAMS REDRAWN BY GRAHAM SANDS

Fig. 2 Corner detail

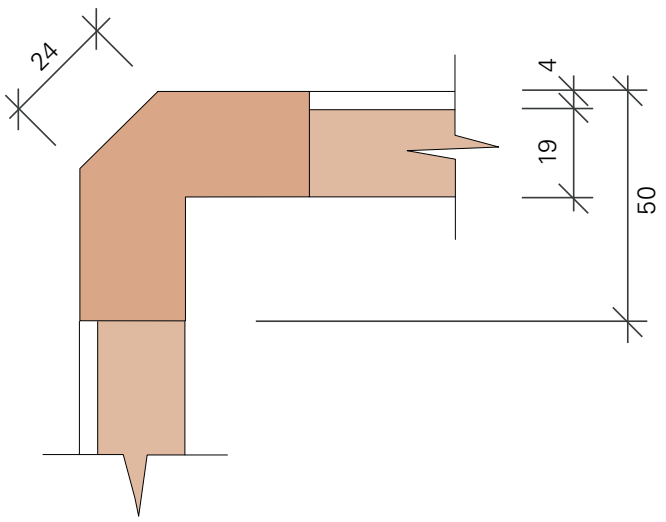
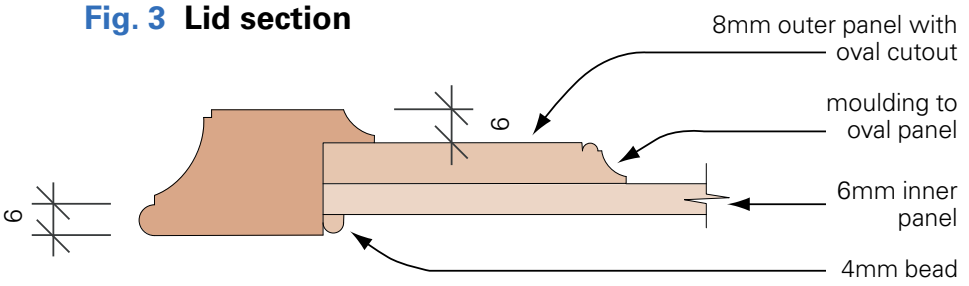
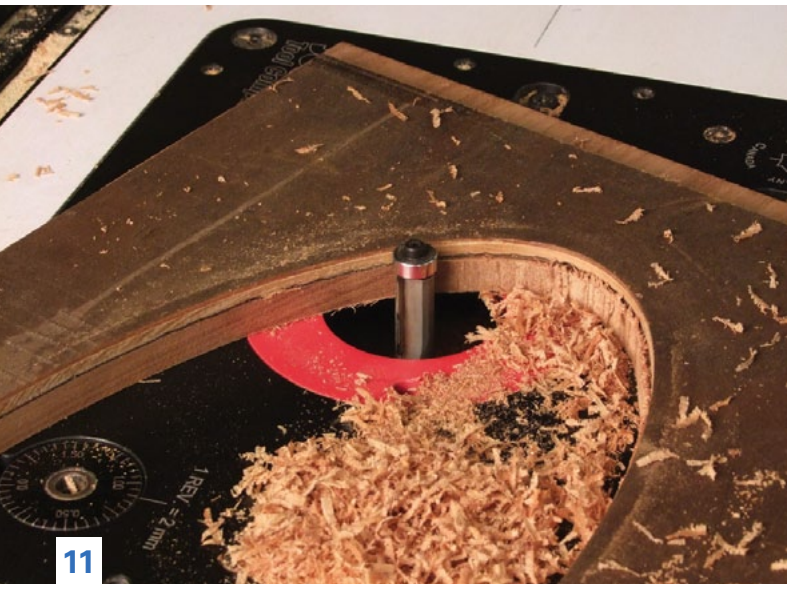


Fig. 3 Lid section



Measurements in millimetres

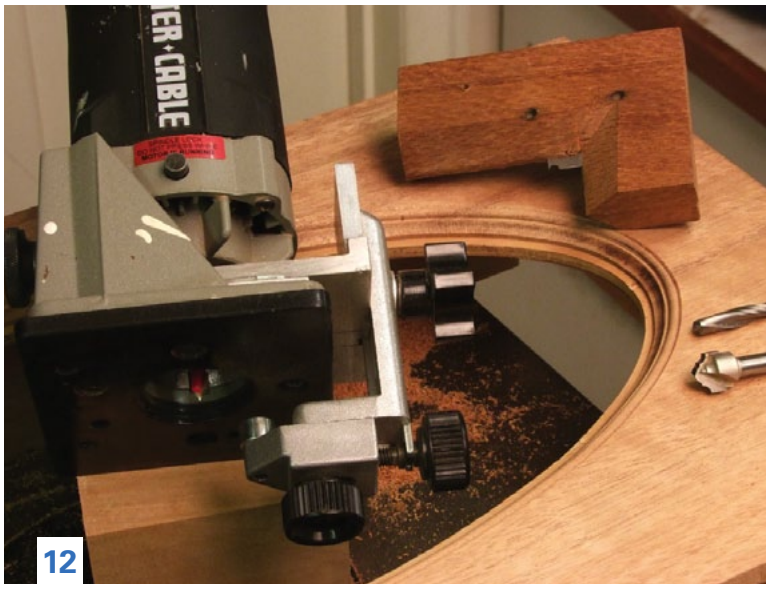


9. Support the frame when routing the lid corners.

10. Square up the rounded corners with a gouge.

11. Routing the oval template with a pattern following bit.

12. Tools for profiling inner moulding edge: scratchstock, router bits, trim router base.



The joints should be cut to allow the posts to finish flush with the thin rails previously glued in place. You will find it much easier cut the joints on the posts prior to rebating the inside corners on the tablesaw. Any grooves required to take internal dividers should be cut ahead of the glue up which needs to be done in stages.

Firstly, the posts are glued to the two long sides. With the corners of the posts removed, you will find it useful to use thin packers between your work and the clamps to ensure no racking occurs when pressure is applied (**photo 3**). Finally the two assembled long sides can be glued to the short sides to complete the box. It's crucial to check for square during glue-up or you'll be left with the task of fitting out of square trays to the internals at a later stage.

On removal from the clamps the external surfaces of the box can be cleaned up before nailing small 4mm beads in place to decorate the panels (**photo 4**). Internally, the rebated corner posts can be brought perfectly flush with the internal sides with a shoulder plane (**photo 5**) ahead of sanding the internal surfaces and fitting the internal dividers into the routed grooves from below (**photo 6**).

To complete the box, a plywood base is glued and nailed into position before the external corners of the posts are removed on the tablesaw (**photo 7**). Finally, decorative mouldings are applied to hide the edge of the plywood base.

Constructing the lid

A mitred frame and panel construction was chosen for the lid to allow for the rounding over of the internal corners of the frame to match a decorative oval panel (**fig.3**). The oval panel and rounded corners adds considerable challenge to the project and can easily be substituted for a much simpler rectangular frame and panel if desired.

With the mitres cut, rough out the rounded corners on each of the four frame members on the bandsaw and cut the rebates to take the internal panels (**photo 8**). Whatever joint you choose for the mitred frame, be sure to leave enough space on the outside edge to cut the moulding so the joint isn't exposed.

Remove the outside corners of the frame to match the canted corners of the box and prepare the frame for routing the outside edge on the router table. You will need to ensure that additional support is provided to the frame whilst routing the short relieved corners of the lid as shown in **photo 9**.

Routing the openings

The inclusion of an oval opening to the panel and rounded corners on the lid frame adds to the traditional styling of the piece and requires a pair of templates to be made to complete the moulded openings.

With a template made for the internal opening of the frame, a bearing guided cove bit can be used to cut


13

13. Dividers will ensure accurate spacings as required for fine detailing.

14. Finishing off the bead with #11 gouge and V-tool.

15. With the carcase completed, work on the interior can now commence.


14


15

the internal frame moulding. You will be left with a rounded profile to the internal corners that will require squaring up with a gouge (**photo 10**). To complete the oval opening in the top panel, mark up the desired shape on both the panel and an identical plywood template and rough out the oval section on both pieces with a jigsaw or fretsaw.

Smooth the oval edge of the plywood template with a spokeshave and sand smooth. The success of the final panel is entirely dependent on the smooth lines of the template so persevere until you have a smooth continuous curve.

Nail the template to the panel and with a bearing guided trim bit fitted to the router follow the template to replicate the oval shape on the panel (**photo 11**). Repeat the procedure with small router bits to produce a nicely moulded edge.

I also chose to add a tiny bead to the upper inner edge of the moulding with a scratchstock. The tools involved, including scratchstock, router bits and a modified base for my trim router to allow profile routing, are shown in **photo 12**. With the routing complete you will need to do some cleaning up with fine sandpaper, particularly in the quadrants where the routing direction travels against the grain.

Take your time with this to ensure you don't round over the sharpness of the moulded edge. With the clean up complete, a suitable small beaded moulding can be cut to size and nailed in position on the underside of the lid to support both the oval upper panel and the full panel beneath.

Carving the mouldings

It seemed only appropriate that a chest for carving tools should carry at least some carved decoration. When decorating pieces like this I strongly believe that less is more and as such chose to restrict the carved decoration to some simple ropework detail worked on the mouldings.

The tools and process involved in producing detail like this are very simple with my suggested minimum tools including a fine #11 gouge (11/3), small V tool (12/3) and a set of dividers. Layout is critical with fine carved work like this so be sure to use dividers to guarantee accurate spacing (**photo 13**).

The decoration is completed by carving across the bead at approximately 45° with the #11 before finishing off with two or three very fine scores to the surface of the bead with the V tool. The work being progressed is shown in **photo 14**.

Next issue we will take a close look at fitting the half mortise lock in addition to completing the internal fitout of the chest with custom tool trays.

Photos: Troy McDonald

Troy McDonald is an engineer and woodworker based in Brisbane. Email him at: helenoftroy1@optusnet.com.au

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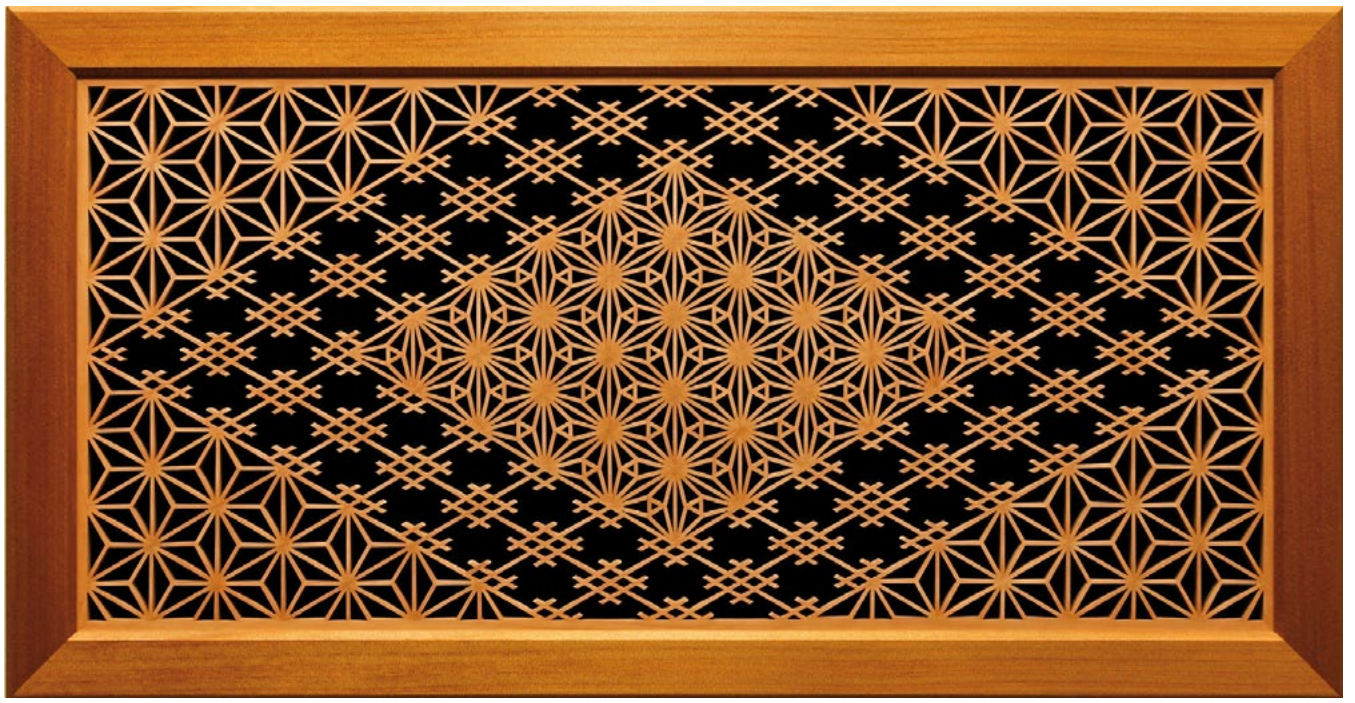
Des King studied the art of shoji and kumiko making in Japan and has now written three books on the subject. Precision and attention to detail are required to achieve good results. Photo: Rebecca Nathan

Opposite:
A framed kumiko panel by Des King which features asa-no-ha, hishi ta-no-ji and kawari asa-no-ha motifs.

Three kumiko patterns look striking on black backgrounds, left to right: Yae wa-tsunagi, asa-no-ha and yae kikyo asa-no-ha.



Kumiko King

Desmond King's books on the making of shoji and kumiko are the most detailed explanations available.

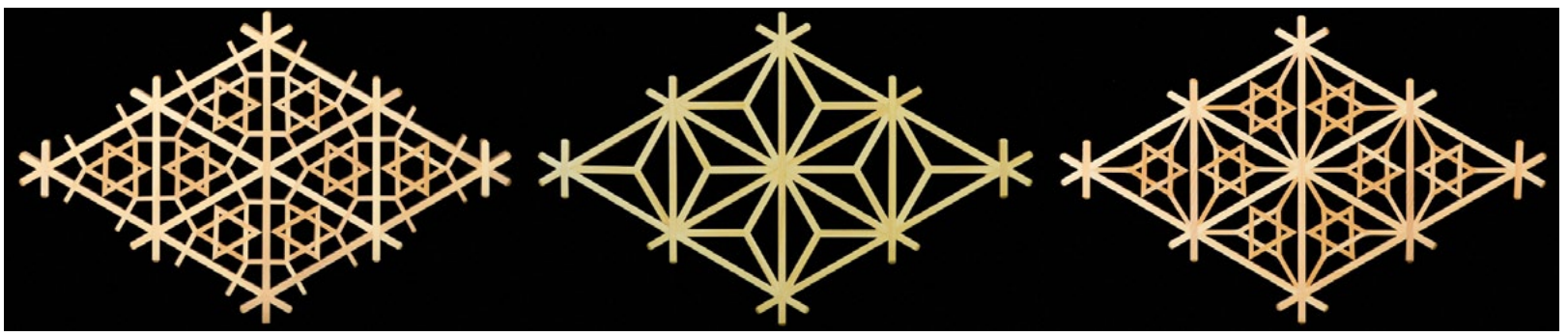
A last century woodworker teleported to 2017 would find him or herself in a world where the refined and gentle Japanese art of making kumiko was well on trend.

Exposure through social and print media has allowed the appeal of this delicate and subtle form of woodworking to be taken up by more and more people who wish to try their hand. Hand tools, jigs, a passion for keeping edges sharp and the discipline to develop accuracy will bring success. Traditional patterns, and there are many of them, can be mastered, and that can lead to experimentation as well.

At the forefront of this in the Western world, specifically in Australia, is Desmond King, who after a military career and working as a translator in both Japan and Australia, undertook a trade apprenticeship in shoji making in 2008 at Shokugei Gakuin (Toyama International College of Crafts and Art)[1]. In fact he was the first foreigner ever to do so. Des wrote about his experiences in Wood Review in 2010, and wrote a story on crafting kumiko in another edition as well[2].

Visually shoji play on the rhythms of repeated geometric patterns. The effect is of a calming 'simplicity', however making them well is not easy. There are all kinds of angles and complex joins that need to be made without gaps and with only minimal amounts of glue.

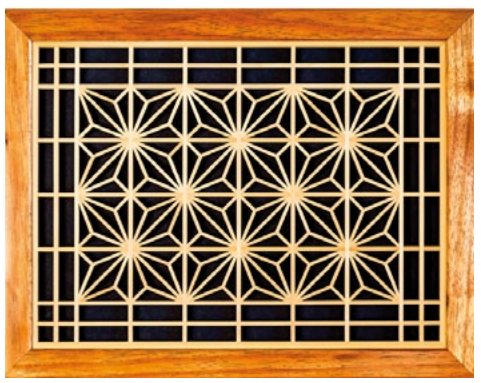
Unless you are just making small feature panels, there is zen aplenty cutting a multitude of same-sized components, often thousands for a single screen or panel which need also to be systematically grouped and assembled. There is much to enjoy for those so inclined.



Left: Des King makes annual trips to Japan. Here he's shown at Sawayama Castle. Photo: Mariko King

Below: Framed panel with asa-no-ha, kawari yae-zakura, and yae asa-no-ha kumiko, and below that a panel featuring repeated asa-no-ha squares.

Centre: Shoji screens made by Des King when he was studying at Shokugei Gakuin in Toyama.



An Interview with Des King

What is about kumiko art that attracts you and resulted in you devoting years to mastering the art of creating them?
Very early in my course at Shokugei Gakuin, I went along to a local exhibition of shoji. This was my first contact with kumiko art, and from that moment I was hooked. I was amazed by the intricate patterns that could be formed by small pieces of wood. At that point, I decided this would be my woodworking focus. But first I had to learn everything I could about shoji, and this foundation was critical to becoming proficient in kumiko patterns.

Is there a dimension to this craft that differs from other woodworking practices?
Perhaps the main difference between kumiko art and other forms of woodworking is possibly the level of patience necessary. Cutting, trimming and inserting thousands of kumiko pieces is very repetitious, and often frustrating, and without the patience of Job, it can become quite tedious. Therefore many highly talented shoji shokunin (craftsmen and women) are not necessarily suited to making elaborate kumiko art pieces.

Are there new trends in Japan? Are people using CNC and if so, how do you feel about that?

Competition is quite fierce among the new generation of kumiko shokunin in their 30s, and this is taking the craft to new levels. Many are striving to create their own unique patterns—some successfully, some less so—and this, too, is taking the craft to new heights.

Many of the major shoji-making businesses in Japan today use CNC radial arm saws. These are expensive, highly accurate machines in which kumiko move on a base as joints in the kumiko are cut at the appropriate angle. These are used for making the base of very large kumiko art panels with pieces numbering in the hundreds of thousands. The individual pattern pieces are still cut and trimmed by hand though.

Naturally this is causing a drop in hand sawing skills compared to past generations and this is a shame, but this technology has allowed kumiko shokunin to create art that is incredibly detailed and absolutely stunning. They also make us realise just how skilled the past masters were in the days before computers.

What are your favourite kumiko patterns?
If I had to choose, I would say the futae kozu (Book 2) in the square arrangement, and the yae asa-no-ha (Books 2 and 3) in the hexagonal arrangement.

The futae kozu is one of the first complex patterns I made at the College, and I think I surprised even myself at how well it came together. This gave me the confidence to push myself further, so I've always had a fondness for this pattern.

The yae asa-no-ha is one of those patterns that look incredibly difficult, but with a bit of practice, is surprisingly easy to make. It has a tremendous wow factor, and this is what I find appealing about it.

What do you most enjoy about this art?
I enjoy the precision required to make the pattern pieces fit smoothly into the base kumiko. It's very satisfying to see patterns and designs that demand great accuracy gradually take shape. The route to that final destination is often very frustrating as pieces refuse to fit or snap because of inaccurate cutting, but the result makes it all worthwhile.

What do you think of the new appreciation for kumiko art in the West?
I'm thrilled about it, and I'm also excited about the various innovative ways that woodworkers in the West can apply and are applying kumiko patterns and art to their work. Some of the work I've seen on Instagram by woodworkers who have only just started with kumiko is quite amazing and inspiring. Exciting times ahead I believe.

What are the best Australian timber species for making kumiko?
I use a lot of Huon pine for my kumiko work, but this can be quite expensive, so hoop pine also works well. For practice work, even inexpensive radiata pine can be used. Any reasonably straight-grained timber is fine. Softwoods tend to be easier to use, certainly in the early stages, but hardwoods give greater scope for colours in patterns.

For pieces in which the kumiko is thicker than about 3mm, I would stick to the hoop pine when starting, as it's probably easiest to cut. Other timbers I've used include Queensland maple, Tas oak, silver ash, kauri and blackwood.

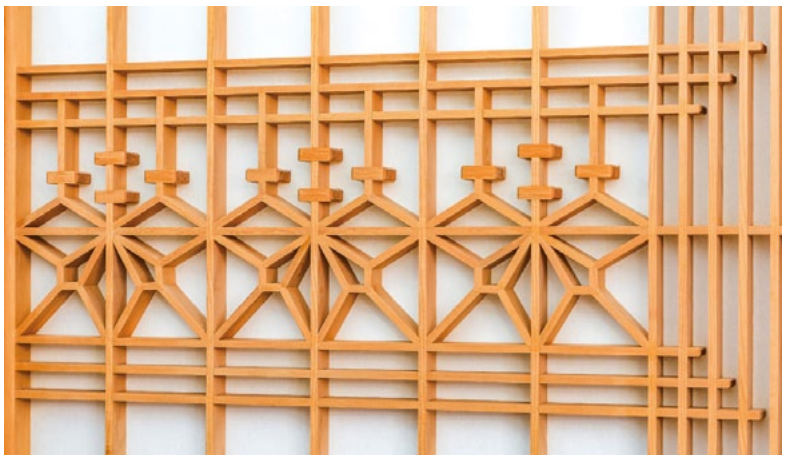
Will there be another book?
Nothing planned at this stage, but never say never!

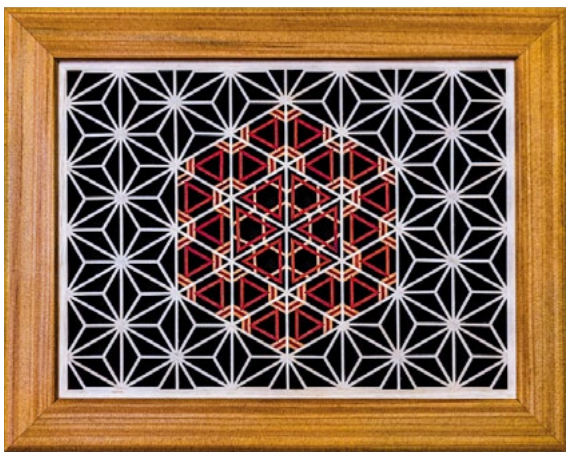
Nowadays there are machine and computer-driven processes for cutting kumiko, however, Des explains, without access to these makers must rely on hand tools and hand skills. Trying to simplify an artform that is defined by a minutiae of complexities is dangerous territory, but that is the challenge successfully undertaken within the three volumes self-published by Des King.

Shoji and Kumiko Design Book 1, The Basics (2011) introduces the subject with a few definitions. Tategu are the internal and external doors and windows in traditional Japanese buildings. They need to be durable, yet light both physically and visually, however they may be imbued with elements of the maker's style.

Shoji doors and windows are characterised by the soft light their rice paper backing creates. The latticework of thin timber strips therein are called kumiko, and these in turn can be repeated and combined to build geometric and also thematic imagery.

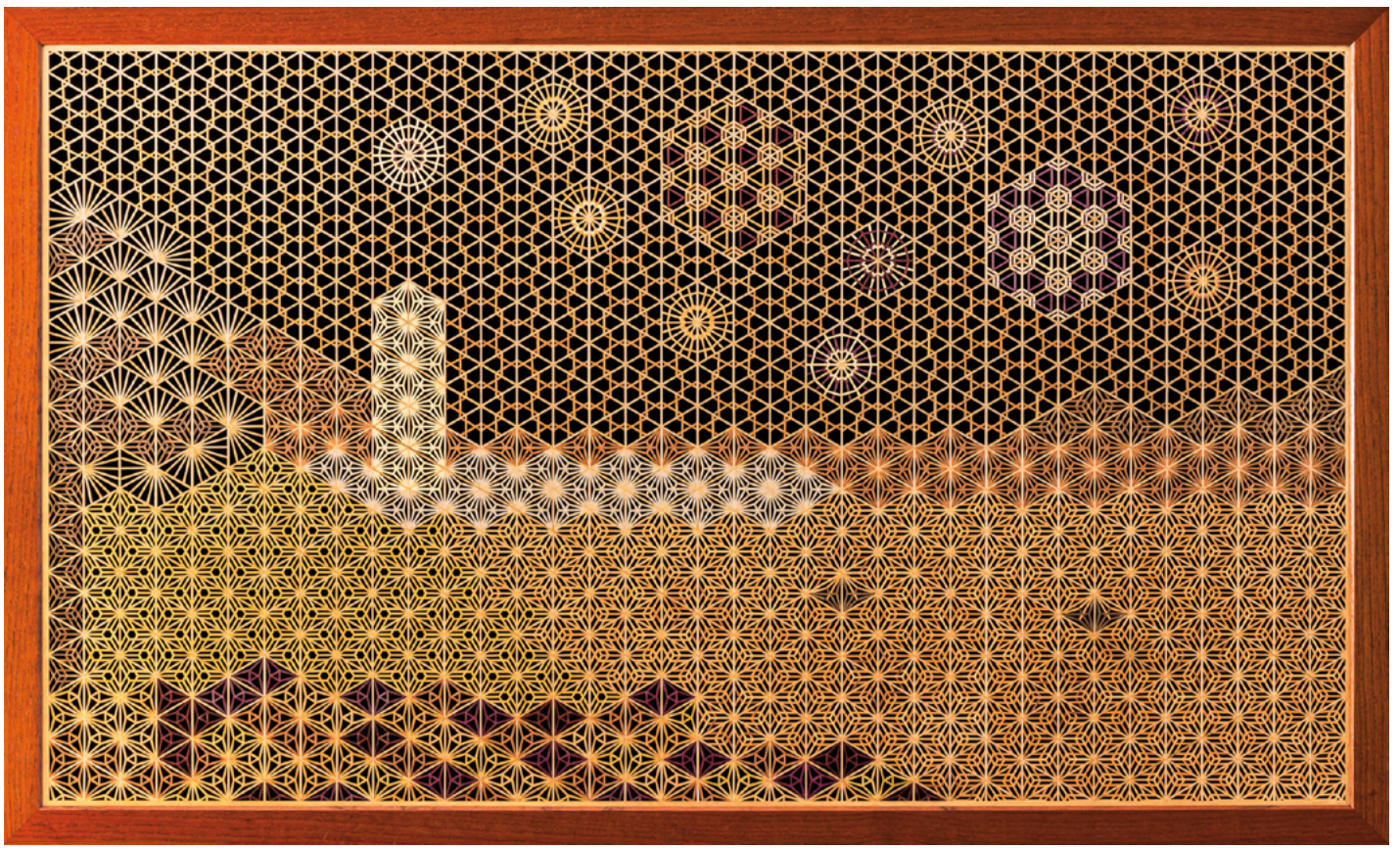
Des stresses that it is possible to make kumiko with western hand tools, however Japanese kanna (handplanes) will achieve the best and most lustrous surfaces off the tool. These require considerable skill to condition and tune, although here Des feels there is a certain surrounding mysticism that he hopes to dispel with his detailed explanations and line drawings. Notes on maintenance and usage are included as well.





Above: Kiri (paulownia) kumiko pattern made from Huon pine.

Left: Colour can be used to further define patterns. Here asa-no-ha, kaza-guruma (pinwheel), and yukigata kikko kumiko are combined.



Left: Hanabi, meaning fireworks in Japanese, is a complex shoji which combines a number of kumiko patterns. Up to 12,000 individual pieces were cut and assembled to achieve the final result.

Book 1 contains 173 pages and provides the beginner with initial cutting exercises that lead on to instructions for making three types of shoji (standard, kasumi-gumi and kawari-gumi) as well as two kumiko patterns. *Shoji and Kumiko Design Book 2 Beyond the Basics* (2015) builds on the techniques learnt in the first book to expand the maker's repertoire with a range of kumiko patterns that are grouped in several families and square, diamond, and hexagonal types. *Book 2* comprises 220 pages of detailed processes accompanied by line drawings and black and white photos as with *Book 1*.

Shoji and Kumiko Design Book 3 Hexagonal Patterns is 202 pages long and presented in a similar format. This volume takes the reader into higher realms of kumiko complexity. Mastery of construction techniques and familiarity with a range of patterns is assumed as more complex kumiko are introduced, along with the limitless possibilities of combining patterns.

Like the kumiko and shoji made by the author himself, the explanations are concise and elegantly expressed, but with enough style and background information to make the text highly readable. These volumes now exist as the most comprehensive explanations ever written on the subject.

'Traditionally the techniques and finer points of making shoji were passed down through generations of families or to disciples', explained Des. 'While a six volume set of drawings was produced between 1948 and 1956, these lacked any written detail or explanation.'

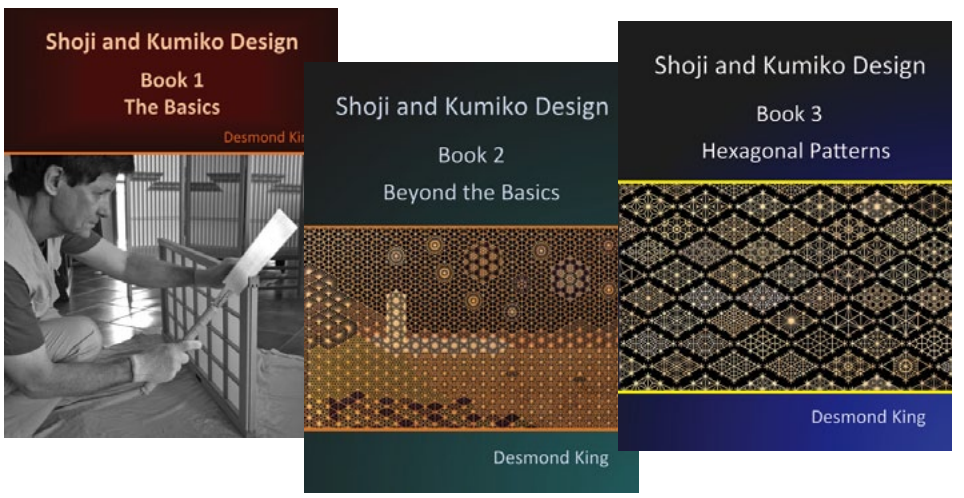
Desmond King's books are ground breaking publications as there simply are no others that present this information in such detail. If you have an interest to learn more about the art of making shoji and kumiko, buying these three volumes could be your first creative step.

Reviewed by Linda Nathan, Wood Review Editor

Available from Amazon books, or those with an Australian address may order direct from Des King's website www.kskdesign.com.au See also some of Des's videos on kskdesign on YouTube.

1. Des King, Screening in Japan, AWR#67, June 2010

2. Des King, Making Shoji, AWR#68, Sept 2010



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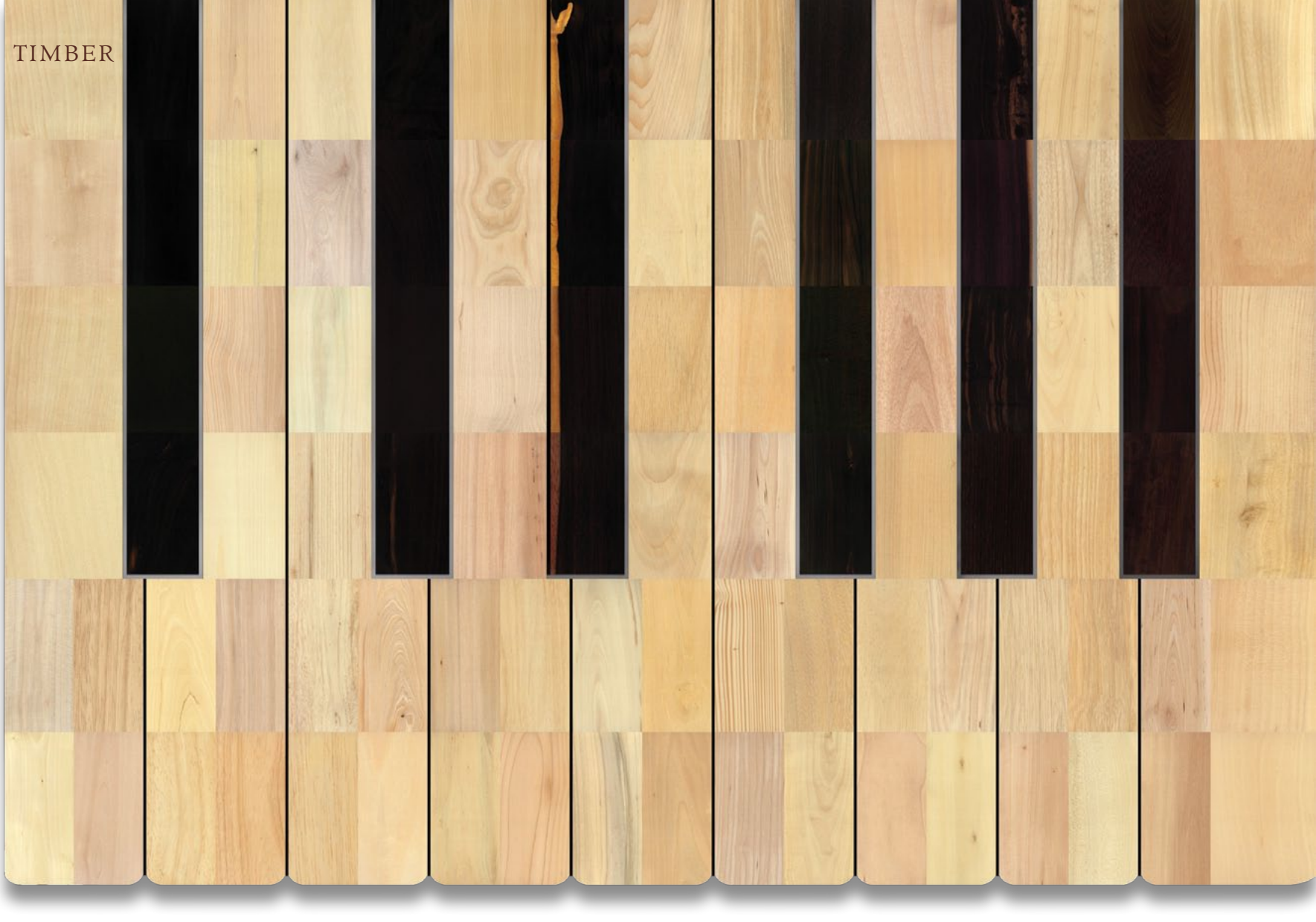


Black and White

Vince Manna reflects on how his life interests developed in an interconnected way.

My passion for timber actually has musical roots. Mine was a childhood filled with music that ranged from pop to heavy metal and even opera. After being asked to sing Ave Maria in Latin at a wedding, it was decided that I should have proper singing lessons.

Luckily, a singing teacher, experienced in the world of opera was found. She was as inspirational as she was gifted as a teacher and soon I aspired to be the next Mario Lanza or Caruso. She decided that piano lessons would be the perfect adjunct to my singing.

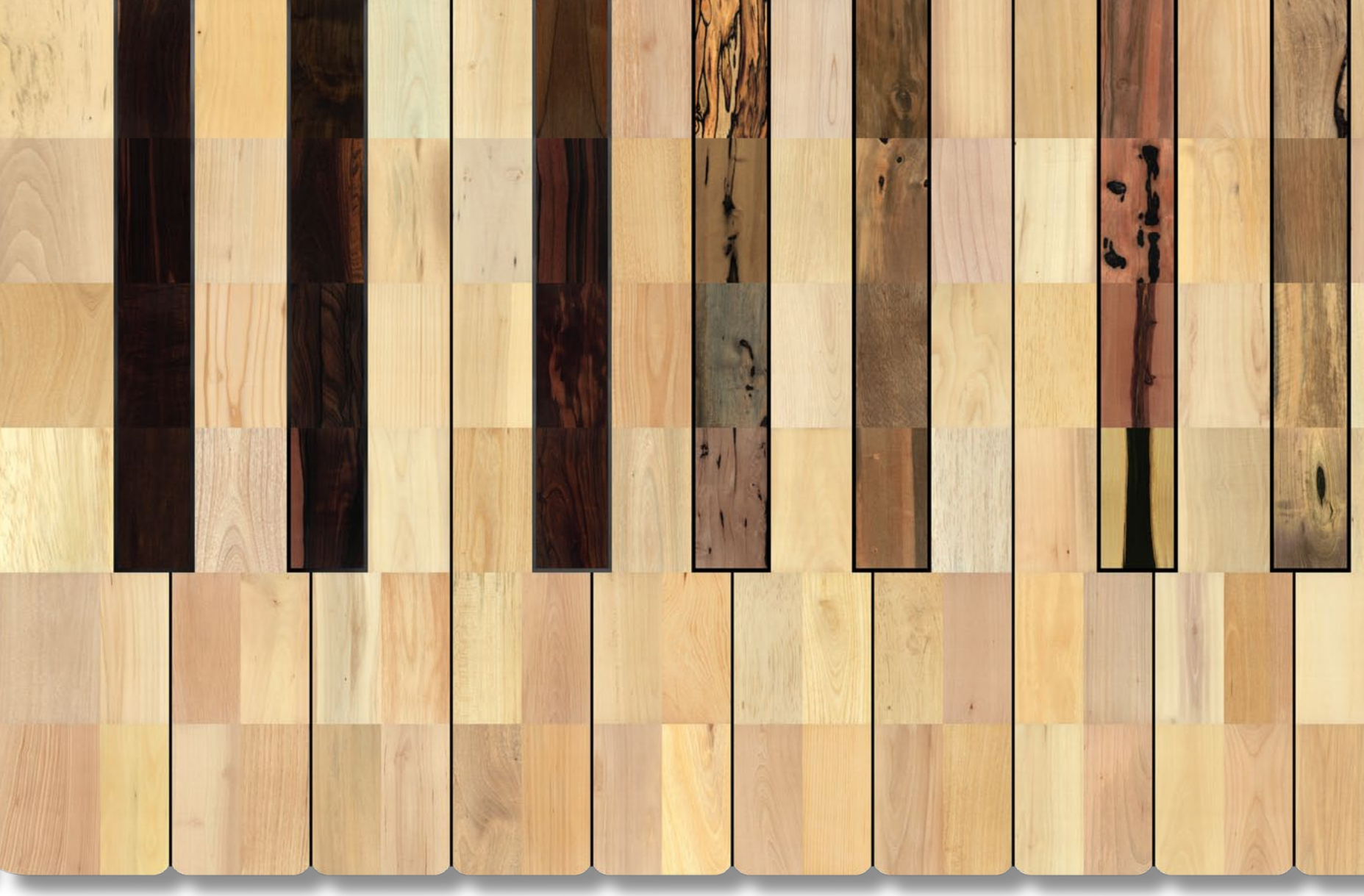
An old upright piano soon found its way into our household. As it needed a stool, I decided to make one myself. It was modeled on one that I had seen in an antique store. The woodworking skills might not have been of the very first order, but when finished, the stool stood replete with leather upholstery and even a compartment below to store my ever-growing collection of sheet music.

My attention next turned to the piano itself which was in such a dilapidated state that I decided to 'fix' it. Within a very short time, the lounge room was arrayed with piles of piano parts and tools. Dust was ever-present. The family was not happy. Nor was my singing teacher, especially after she learnt that I had taken the piano apart. And she certainly was not amused when I started turning up with music bearing such names as Black Sabbath and Deep Purple. But I knew how to pacify her. My rendition of her perennial favourite, *Trees*, written by Kilmer and Rasbach, did the trick every time.

When it was time to repair the keyboard, I remember trying to scrape and sand what I thought was paint off the black keys of the piano. I soon learnt that it was not paint at all, nor was it timber that had been stained black. It was to remain a mystery to me for some time.

I had a eureka moment when purchasing some tools and noticed what appeared to be a pack of black acrylic sticks covered in a layer of wax. Close inspection revealed beautifully textured wood grain. I became hooked on this mysterious black 'African ebony' (*Diospyros crassiflora*).

It was inconceivable to me that wood could be as black as the night sky and yet completely



organic in origin. I was to discover that there are hundreds of species of ebony across the world. Black timber is not confined to the *Diospyros* species nor is white timber limited to one genus. I became eager to learn why some timbers are black while others were such a variety of colours.

My wood collecting passion began with this discovery and an insatiable desire to travel welled up within that is still with me to this day. The dichotomy between wanting to travel and having the funds to do so would remain for some time. Not to be deterred from pursuing my dream, I decided on a career in woodwork and furniture making, despite warnings that 'there is no money in woodcraft' from well-intentioned elders.

I trained for several years in cabinetmaking, travelling to night school as well as attending my daytime trade classes. And it was not long before work started trickling in. 'No job is too small or too big' was my motto. The place echoed to the sounds of timber being ripped, cut or hammered – and, of course, Neapolitan classics being belted out by yours truly.

This trickle of work turned into a flood several years later. Many high-profile commissions, as contrasting as my choice of music, came my way. I have reached the 'top C' of woodcraft. This translated into new machinery and tools; but more importantly, it meant that my wanderlust was soon to be assuaged.

On a recent and memorable trip to Madagascar, I came across a remarkable species of ebony. *Diospyros greveana* is jet black and beautiful beyond description. Not only is it used extensively locally, but it is illegally exported too. I was dumb-struck when I entered a small restaurant in a remote region to see an entire wall covered in it. It seemed to have the same value as a coat of black paint. Is it any wonder that many species of black timber are fast becoming endangered?

The keyboard mosaic created by the author is made up of images of 204 timber species. Only the 'black' key species are named here left to right, top to bottom.

1. *Diospyros crassiflora, Diospyros greveana, Ocotea rodiei, Diospyros ebenum*
2. *Caesalpinia kavaiensis, Dalbergia nigra, Diospyros tomentosa, Diospyros dendo*
3. *Diospyros tessellaria, Dalbergia melanoxylon, Swartzia bannia, Diospyros celebica*
4. *Libidibia punctata, Diospyros ebonasea, Zollerina paraensis, Guaiacum officinale*
5. *Diospyros humilis, Swartzia cubensis, Diospyros melanoxylon, Millettia laurentii,*
6. *Tabebuia rufescens, Swartzia aptera, Diospyros durionoides, Combretum imberbe*
7. *Eucalyptus microtheca, Diospyros mun, Acacia Argyrodendron, Guibourtia conjugata*
8. *Pithecellobium flexicaule, Geijera salicifolia, Cordia dodecandra, Diospyros philippinensis*
9. *Diospyros guianensis, Diospyros papuana, Brownea latifolia, Olneya tesota*
10. *Diospyros embryopteris, Diospyros texana, Diospyros maritima, Diospyros marmorata*
11. *Diospyros digyna, Diospyros verae-crucis, Diospyros pentamera, Diospyros virginiana*
12. *Diospyros blancoi, Diospyros mespiliformis, Diospyros fasciculosa, Diospyros sandwicensis,*
13. *Diospyros kaki, Diospyros ierensis, Diospyros ferrea, Diospyros lotus*

Posters of the keyboard mosaic with all 204 species botanically named are available from www.vincemanna.com/product/posters

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The Colour of Wood

The natural colouration of timber is a complex process. While dead cells transform into heartwood, they become impregnated with tannins, resins and other substances secreted by the living cells.

The black colour is due to the deposition of black melanin-like polymeric pigments and extractives in some species of ebonies, while a variety of coloured organic extractives (purple, blue-orange and red), fill the dead cells of other species.

The process of black colouration is similar in other black woods, but the actual pigments, coloured salts and extractives differ. The natural genetic program of the species determines the colour of heartwood.

White and pale species of timbers are due to little or no extractives found in the dead cells. Clear, oily and fatty extractives and how light plays on wood surfaces and these substances also affect the colour of timber.

The impregnation of these organic chemicals in wood affects the colour, texture, physical and mechanical properties of the wood, while bands or stripes in wood are caused from the effects of heartwood substances unevenly distributed due to growing conditions.

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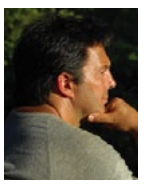
1. One of the ‘white’ species shown on the previous pages, sitka spruce (*Picea sitchensis)* is native to the west coast of North America. The tree shown was planted around 100 years ago on remote and subantarctic Campbell Island, New Zealand and is now known as the ‘world’s loneliest tree’.
2. Turned serpentwood vase photographed in a roadside craft shop in French Guiana.
3. *Diospyros greveana* is one of the most rare ebony tree species, here photographed in Madagascar bathed in evening sunlight.
4. Judging by its exterior, the extremely black wood of uhiuhi is in no way apparent.
5. A sawn section reveals why serpentwood is also known as marblewood.
6. ‘Black and white’ tones in a felled serpentwood (*Zygia racemosa*), shot in the Venezuelan interior.
7. Absolute black: a sample of Hawaiian uhiuhi (*Caesalpinia kavaiensis*) wood, now critically endangered.

A species of black timber that recently caught my attention is *Caesalpinia kavaiensis*, known in Hawaii as uhiuhi. Also called ‘black gold’ by locals, it is much sought after for its beautiful grain, density and colour. It is on the critically endangered list, growing only in small pockets on the O‘ahu and Wai‘anae ranges in Hawaii. Unfortunately, the rarer a timber is, the more sought after it becomes; prices escalate and this serves only to speed up its road to extinction. Black species and in particular jet-black ebonies face greater risks.

I am lucky that in my lifetime of working with wood, I have been able to travel widely, seeking the wonders of the natural world – photographing and documenting them as well as collecting specimens. Every time I work with one of these amazing timbers with their gorgeous colours, delicate grain patterns and scent, I am yet again thrust back in time to the day when it all began.

Photos: Vince Manna



Vince Manna is a woodworker, photographer and adventurer. Email: diverseimpressions@gmail.com

The thicknesser is capable of so much more than machining parallel faces.

Getting More From Your Thicknesser

Techniques and jigs for achieving tapered and bevelled surfaces. Story by Damion Fauser.

There is so much more to your thickness planer than you might imagine. Generally considered a one-trick pony, understanding how the machine is built and how it functions can expand your horizons as far as the many functions this tool can perform.

What it does

The primary function of the thickness planer is to dress the opposite face of a board that has had an initial face dressed on the jointer. When I run machinery classes, one of the most common questions I get is, 'Why can't you just dress both faces on the jointer?'.

Sure, the jointer will dress the opposite face, but what it won't do is guarantee that both faces will be perfectly co-planar and further, if machining multiple boards, won't guarantee the exact same thickness on each board. It is for these two reasons that I consider the thickness planer absolutely essential equipment in the workshop.

How it's built

The thicknesser is a very simple piece of machinery. A flat reference table sits underneath a rotating cutterblock. By setting the distance between the table and the cutterblock, and then ensuring your face side is registered on the table, the cutterblock removes material off the top face of the workpiece in a continuously flat plane.

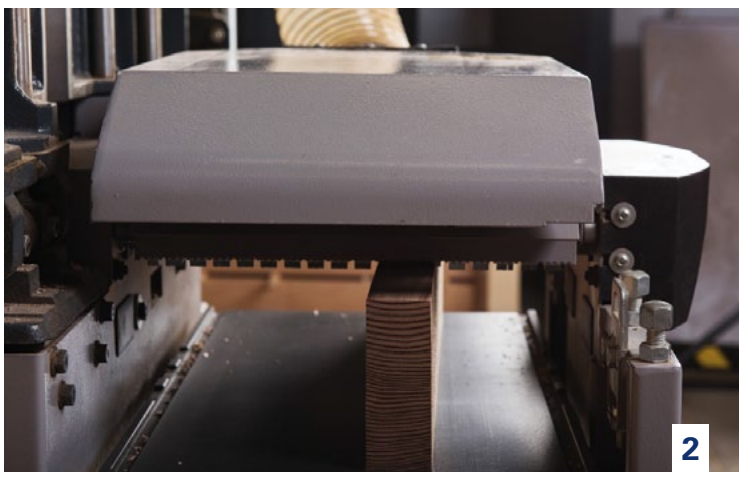
To aid in control, two feed rollers engage the workpiece, one ahead of and one behind the cutterblock. These feed rollers safely carry the stock through the machine, and by applying pressure down onto the workpiece, ensure a high degree of control and accuracy.

Understanding the concept of a 'continuously flat plane', as well as the role of the feed rollers in the machine, will assist you in understanding the simplicity with which some of the following operations can be undertaken.

Machining edges

Wherever possible, I dress both edges of my stock through the thickness planer because the resulting surface is so much cleaner than off the tablesaw – one or two swipes with a handplane and it is finish-ready.

Accordingly, in my machining process, I rip the stock a little oversize at the bandsaw and then dress down to finished dimension in the thicknesser. There is only one thing to bear in mind when doing this and that is the ratio 5:1, which relates to the ratio of the stock width to thickness. For example, if your stock is 25mm thick, then you can safely run it through on the edge up to a maximum width of 125mm (**photo 1**). Any taller than this and you risk the stock tipping over under the pressure of the feed rollers (**photo 2**).



1. Feeding stock through on edge.
2. Infeed view of edging stock.

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3. Attach longer runners onto the sides of a short workpiece for safe machining.
4. Receiving the resulting machined assembly at the outfeed end.
5. Preparing for machining a face side by inserting thin wedges to support the stock.
6. Infeed view of machining a face side.
7. Close view of shimming the edge of a board to create a bevelled face.
8. Using shims and wedges of varying thicknesses to prepare a piece for tapering.
9. Attaching double-sided tape and shims.
10. Tack down end and edge guides to support the stock during the cut

4

Machining short stock

One safety issue when using the thicknesser is that you should never run a short workpiece through, otherwise you risk having a piece of wood trapped inside the machine that is not under the control of either feed roller.

So how short is 'short'? The distance between the feed rollers on your particular machine will determine this, but in my workshop I have a rule of nothing shorter than 300mm.

The question then becomes how do you machine something short? The answer is to temporarily attach some sacrificial runners to either side of your short workpiece, thereby creating a 'longer' piece. The additional length of the runners helps keep everything under control at all stages of each pass. The runners must be initially taller than your short piece, then gradually machine them down in stages until you start cutting your actual stock piece.

5

I use some particularly strong double-sided tape, but I know of others who use hot-melt glue. In **photo 3** you can see the short workpiece (highlighted with the red timber crayon) in between the two longer runners. In **photo 4** you can see the resulting clean surface coming out of the machine.

Machining a face side

Unless you have a combination planer/thicknesser, you may well find yourself in the situation where you have a 150–200mm (6–8") jointer and a 300mm (12") thicknesser. Well, if you have a nice piece of stock that is wider than your jointer you can use the thicknesser to machine an initial face side, preventing you from perhaps having to rip the wider down just to dress the stock and laminate it back together again.

First you'll need to create a flat sled as a reference platen. I like to use a piece of 32mm MDF, covered in adhesive-backed sandpaper (120 grit is good for this). You'll also need some nice fine wedges.


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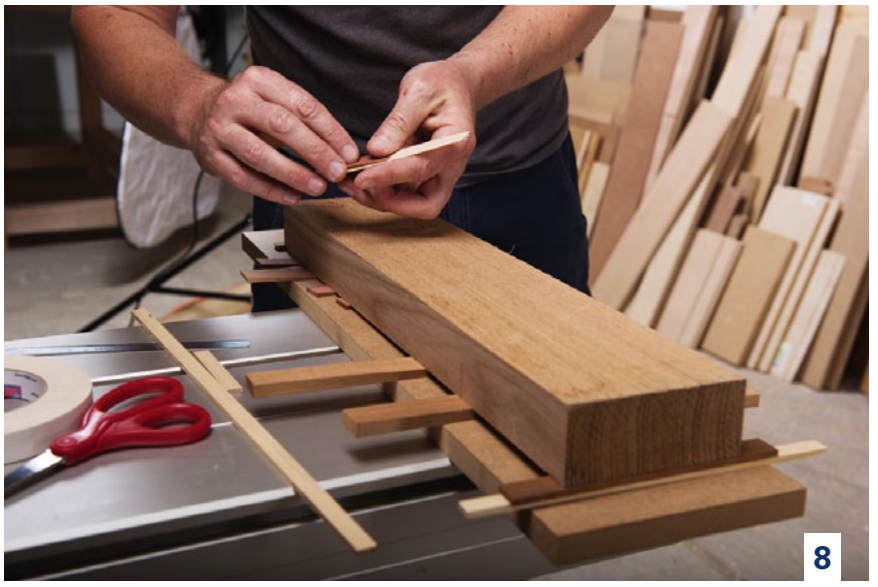
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Place your roughsawn piece on the sled and carefully insert wedges underneath the gaps **photo 5**. Be careful to place them so they just take up the gap so they don't raise the stock off the platen. Insert enough wedges so the workpiece doesn't rock in any direction. Check this with significant force as the feed rollers are strong.

Place the assembly down onto a bench and measure the total height, including that of the sled. Set your thicknesser depth to take a light initial pass (**photo 6**) and continue taking passes until you've dressed your initial face. Now you can dress the face edge on the jointer as usual and then dress the opposite face in the traditional fashion.

Bevels and tapers

Timothy Rousseau of Appleton, Maine in the USA is one of the smartest woodworkers I know. He once told me 'think of the thicknesser as a 12" horizontal shaper'. What this means is that whilst the thicknesser is generally used for machining a face perfectly co-planar to its opposite, this is only because the reference table is perfectly parallel with the cutterblock. By presenting the stock at a different plane to the table (**photo 7**), you can create non-parallel faces, such as bevels and tapers. In this case, a bevel is where one edge of the board is thinner than the other, while a taper has one thinner end.

Again, you'll need a nice thick and flat sled as a foundation. By using fine wedges and shims of varying thicknesses (**photo 8**), you can prop your workpiece up at varying angles and pitches. You must remember the downward forces applied by the feed rollers and ensure that you do not create any fulcrums underneath the stock, or it will pivot once under the machine. Carefully tack (again, I use strong double-sided tape) some end and edge guides to help keep everything aligned (**photos 9, 10**).


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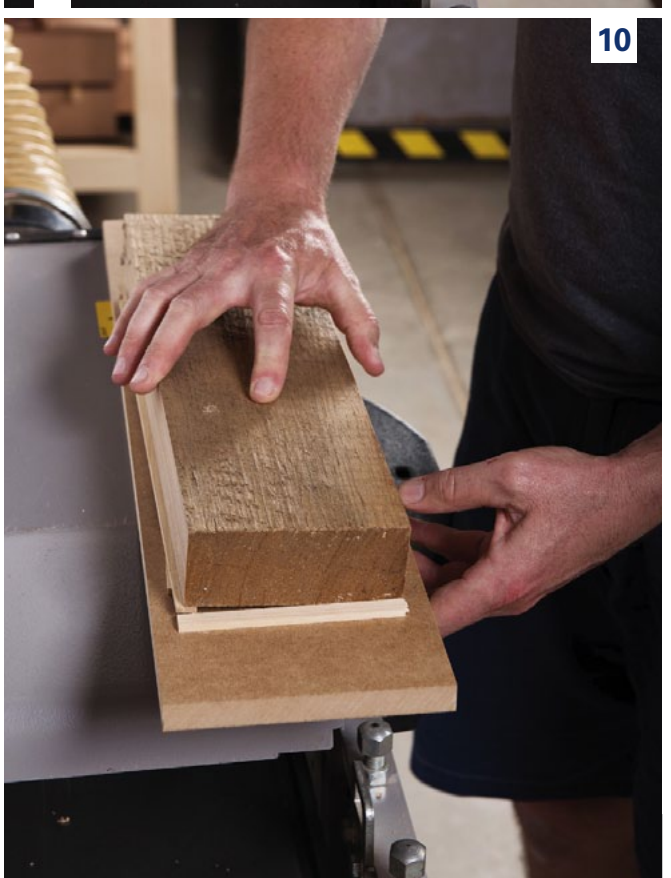
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11. A completed bevelled face

12. The author's *Claw* chair employs finely machined laminations created on the thicknesser. Photo: Frank Pronesti

Determine the total height of your assembly and take small passes until you've dressed the top face to your desired end state, be that a partial or total bevel or taper (**photo 11**).

I find this technique useful for so many things, such as tapered coopering, or when creating jigs for presenting stock to another machine at a consistent acute angle. I also often use these resulting tapers to create supplementary thicknesser jigs for machining fine tapers for creating tapered bent laminations, such as used in the chair prototype shown in **photo 12**.

Machining thin stock

To prevent the cutterblock from inadvertently coming into contact with the steel table, most machines will have a physical stop at around the 6mm mark. Many of us wish to machine stock far thinner than this however, such as for inlays, bent laminations and box inserts.

By using a supplementary flat sled, we can artificially raise the working surface of the machine table and therefore reduce the cutting thickness without hitting the built-in safety stop.

One way of doing this is with a fixed platen. A flat sheet of melamine with some cleats screwed to the underside will remain in place over the primary table and act as a slick surface for the thin stock to glide over as it is cut (**photo 13**).

Another method is to use a moving sled. Here a piece of MDF with some adhesive-backed sandpaper will grip the workpiece in place as the whole assembly travels through the machine (**photo 14**).

Stock selection is crucial to the success of this activity. Try to choose straight-grained stock where possible and always take care to send the material through in an advantageous grain direction. Understand that you will likely lose some material at the ends of the workpiece as the thin stock can flutter away from the table due to machine vibration, and as a result get chewed up by the cutterblock (**photo 15**).

To make sure I am left with enough stock I cut my pieces overlength so any damage at the ends can be trimmed. I also use my knowledge of the anatomy of the machine to proactively feed the stock in and take it out with a pronounced flex in the stock to force the end down onto the sled to prevent the fluttering from occurring **(photos 16, 17**).

I also keep the cut depth in each pass fairly thin when machining thinner stock. As a rule, once I get below 5mm

16

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13. Here you can see the author's melamine sled with cleats underneath to hold it in place.

14. A moving sled with sandpaper for traction.

15. Close-up of the damaged ends common when working thinner stock.

16. Carefully flexing the thin stock to force the end onto the table can minimise snipe.

17. Flex is also used at the receiving end to avoid damage.

I go down in 0.5mm increments, once below 4mm, I reduce this further to 0.25mm. By exercising patience in this regard, as well as carefully choosing stock and following these simple tricks, I am confident of machining down to 2.5mm in thickness, with the ends of some tapered laminates down to under 1mm. The back slats on the chair shown in **photo 12** are made from 10 laminations and at the top are a mere 8mm thick in total.

With attention to the anatomy of this machine, as well as the interaction between the table, feed rollers and cutterblock, you can see there is so much more to the thicknesser than at first glance. Yes, for me it is primarily a machine for machining flat and regular stock, but more and more I'm learning to use it for far more advanced operations, making my woodworking both more versatile and interesting. Grab some offcuts and experiment, you'll be amazed at what you can do!

Photos: Donovan Knowles

Damion Fauser is a furniture designer/maker who lives in Brisbane. He teaches woodwork from his Darra workshop. Email: damion@damionfauser.com.au

A Little Love Job

Richard Vaughan makes a special gift for his niece.

The long stored blackwood seems ideal for the shimmer of her very regularly brushed hair.

When my beloved 12 year old niece unselfconsciously lamented to me that there weren't enough mirrors in her home I had to act. A hand held mirror was required. Her hair is now well past shoulder length and is a constant focus of her preening so sketches alluding to her long hair were commenced.

Getting the form right

I don't use computer modelling, mainly because it would require regular use to achieve competence, but also because even a skilled screen rendition can't match seeing an object from different angles and experiencing the way light works with it, as well as the feel of any curves. Which is why painters continue to do studies, sculptors make maquettes, and furniture makers model and prototype, and so on.

Scale models and/or prototypes are essential to developing an idea into a form, so even for such a simple item as this hand mirror, full size drawings and cutouts on cardboard and then versions in hoop pine followed (**photo 1**).

Most of us have select bits of wood stashed away. For this mirror I remembered a board of Tasmanian blackwood with some glorious fiddleback that had waited a long time for recognition of its destiny.


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Shaping

The profile was traced onto the dressed blackwood to make best use of the figure, then bandsawn and sanded to a clean edge. Note the tabs that were left at each end to make the subsequent processes much simpler.

You could also use pattern following router bits to get the final shape but for just one or two mirrors I judged it quicker to bandsaw accurately and clean up the outline with a linisher and hand held sanding block. A good rasp is also effective in getting a bump and dip free line, because there is no need for a fine surface finish here as that comes later.

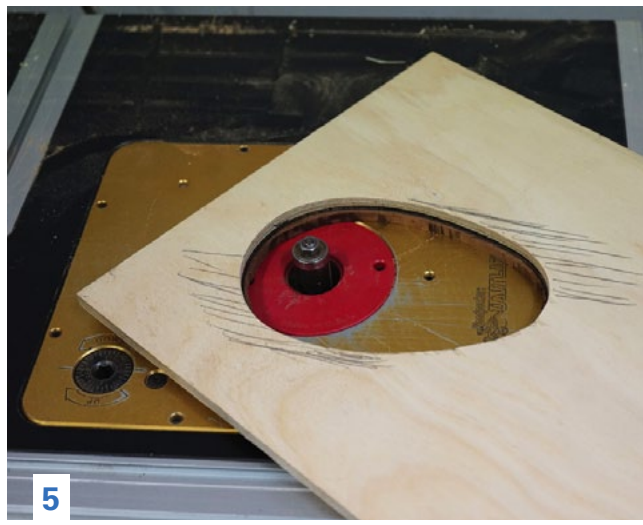
This profile was split on the bandsaw (**photo 2**). The bandsawn faces were then skimmed over the jointer to remove the irregularities of the sawn surface so they would rejoin inconspicuously.

The opening for the mirror was first cut out with the jigsaw several millimetres inside the line to avoid any breakout. Note the simple plywood stands that I constantly use for holding work above the bench (**photo 3**).

Routing the mirror opening

The ply template was used with pattern following router bits to achieve the clean accurate edge that will frame the mirror. The tabs provide a simple and secure way of attaching the workpiece to the pattern so it can be used for both top and bottom bearing bits.

Blackwood is particularly averse to being machined against the grain so both top and bottom bearing router bits were used in the router table to be sure of working with the grain (**photos 4, 5**). You can see that I have two router tables but one will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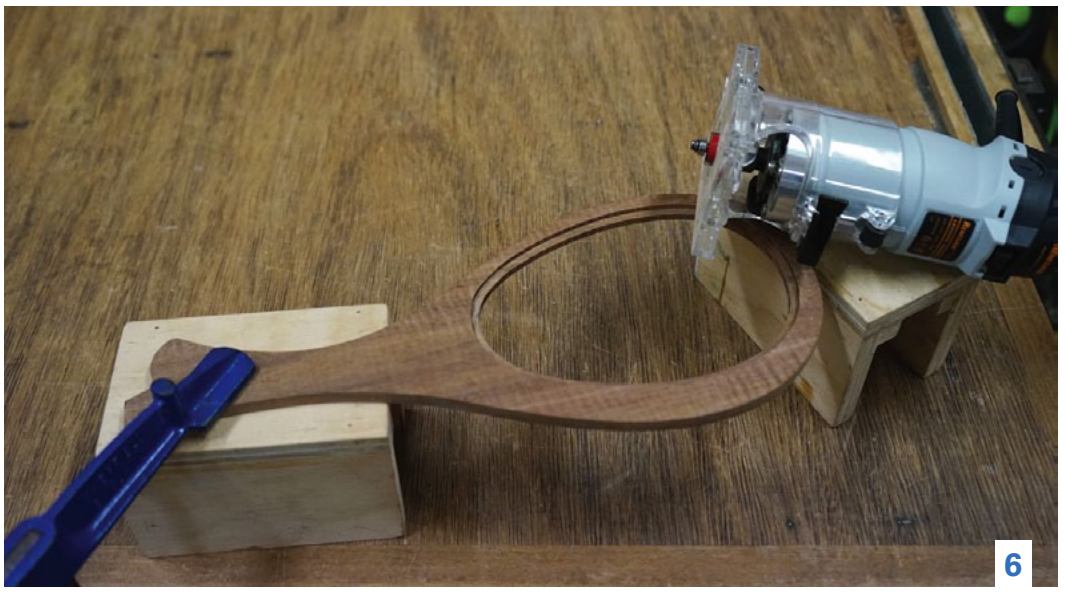
1. Prototypes and test shapes when designing the mirror.
2. Pushsticks and featherboards for safe and secure ripping of the mirror blank.
3. Jigsawing the opening leaving a margin for breakout.
4. Setup for routing the inner bottom edge.
5. A different bit was used to rout the top inner edge.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The two halves are then screwed together for the rest of the shaping (**photo 8**). My No.12 Auriou rasp and cabinet scraper were the ideal tools for this, as figured blackwood really does resent you ignoring its grain. Using a spokeshave for example would be a brave decision.

6. Using a trim router to create the rebate for the mirror.

7. Taking due care while shaping the edge of the now slender front half.

8. The tabs of both halves are now screwed together as the outer profile is shaped.

9. Prior to glue up the mirror halves have now been shaped all over.

10. The inner edge of the front half and the inner back where the mirror will sit were oiled before gluing the two together.

11. Plenty of clamps to ensure a good fit all around.

12. The finished mirror.

13. The back of the finished mirror in particular highlights the shimmer of the fiddleback blackwood.

do just as well with bits changed according to grain, and you could even manage it with careful use of a handheld router or two.

The next step is to rout the 3mm deep rebate for the mirror. The trimmer with a dedicated bit is ideal for this but you must take particular care when working against the grain. Using the trimmer like a chisel and paring only a little at time while back cutting dealt with the potential for breakouts (**photo 6**). And once again those stands proved their worth.

The workpiece is reattached to the ply to support it while the inner edge is shaped (**photo 7**). It would be disappointing to break the now increasingly slender frame. Once it has a totally smooth line this is the time to take this inner edge to 320 grit. Any imperfection will only be exaggerated when the mirror is behind it.

Photo 9 shows the final shape now ready for gluing. Rather than risk getting oil on the mirror it was simpler to apply finish to the inner edge before glue up. The inside of the back was also oiled to ensure stability over time (**photo 10**).

I decided to use 3mm acrylic* mirror because that meant I could cut it exactly to the shape I wanted without needing to count on accuracy by others. Acrylic cuts easily on the bandsaw and cleans up with sandpaper. It is also much lighter and won't break should it be accidentally dropped.

A beveled edge on the mirror could be a nice detail but you'll have to find a reliable glass cutter unless you can find a way to get a satisfactory result on the acrylic. I haven't yet.

Glue up

With so much material removed in the shaping there is bound to be


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slight deviations from the dead flat surfaces off the jointer so plenty of clamping is appropriate to get a tight joint all round (**photo 11**).

Once the mirror frame is glued it is simply a matter of cutting off the tabs and shaping the stubs. Then comes the joy of applying Osmo oil and watching the figure come to life.

Love jobs like this are rewarding beyond words and I hope you have someone in your life you'd love to make a mirror for.

** Acrylic is more easily scratched than glass but there are readily available means for removing marks. I carelessly wiped the mirror with a dirty cloth once it was ready for presentation and left a very obvious scratch. I was saved by a kit of three dedicated products by Novus to remove scratches and polish acrylic.*

Photos: Richard Vaughan

Richard Vaughan is a Brisbane-based furniture designer/maker in Brisbane who also runs woodwork classes. Contact him via richardvaughan.com.au


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Breaking Down Barriers

Announcing award winners for Wood Review's Student Awards 2016.

Once again this year's entries in *Wood Review*'s online competition for secondary school students in years 11 and 12 have not failed to impress. Having seen the work that students in previous year's competitions have come up with, there should be no surprise factor, and yet, in the lingo of today's social media hype, I just want to say that the entries were stunning, amazing, awesome and more. And many really were that good. The work of award winners is shown here, however you can see all the entries on our website and Facebook pages.

Where do the sensitivities to design for ergonomic, environmental sustainability, social and even compassionate needs arise from? (The latter was the case for Angel Hay who made a toy that would be safe for people who have cerebral palsy.) Who gives these kids the confidence and wherewithal to tackle constructions that range from basic right up to downright complex competencies?

The drivers in achieving these results must be the teachers. To come to grips with a range of techniques after having successfully passed the first stage of developing an idea, a drawing and perhaps a model requires more than technical explanations. Inspiring, encouraging and perhaps even a gentle push can get people over the line when it comes to developing skills to such a commendable degree.

Once again this year we had a dream team of judges. Laura McCusker and Stuart Faulkner are both professional designer/makers and in the case of Stuart an accomplished teacher. Both have sensitivities towards younger makers and great insight into what they have achieved.

Viewing the entries reveals that age and gender are no barrier. You can be a beginner at any age and whether you are young or old, your achievements are important in the handing down of skills over time. For others there can be the enjoyment of witnessing other people's progress and playing a small part in that by offering encouragement.

Linda Nathan, Wood Review Editor

OVERALL BEST

Impact and hammer drill drivers with battery and charger, Value $299

Isaac Williams, Year 12,
Freshwater Senior Campus, NSW
Guitar Stand Hall Table,
American walnut, American oak
Teacher: Ben Percy
Photos: Ben Percy

'Music and playing guitar are a part of my life that I am very passionate about. In my room, which is my practice space, there was a lack of any way to organise the large and growing amount of equipment I have attained.'

Judges' comment: 'Isaac's Guitar Stand Hall table is the perfect design solution to a practical brief. The storage integrates seamlessly into the table component of the piece, creating a confident design that is well proportioned and visually interesting. The splay and shape of the legs and the way they are thoughtfully angled into the under structure makes this an imaginative and visually interesting design. The use of contrasting timbers adds further interest by enhancing the linear nature of the top. A high skill level is evidenced in the joinery and build quality.'

Best Hand Skills

carbatec THE HOME OF WOODWORKING

Veritas Apron Plane, value $159

Frazer Crowe, Year 12
Haileybury College,
Springvale, Vic
Tortoise Kayak, Western red cedar, paulownia, jarrah and fiddleback redgum
Teacher: Stephen Hughes

'The name Tortoise represents a slow and steady motion as well as an enjoyable ride. The construction method used is called strip planking where wood strips are cut and routed to fit.'

Judges' comment: 'The Tortoise Kayak is without question an impressive and beautiful piece of work that demonstrates Frazer's accomplished level of craftsmanship. Being a wholly strip built kayak, means every strip is individually fitted. The inlays also need to be planned for in advance and built in. The build quality is of a very high standard. A project of this magnitude demonstrates extraordinary commitment in time as well as well as developing the required skills.
A truly admirable project made to a very high standard.'

Best Carving

carbatec THE HOME OF WOODWORKING

Pfeil 6 Piece Carving Set $219

Cameron Cornish, Year 11, Gisborne Secondary College, Vic
Floral Woodcarving, Huon pine, jarrah
Teacher: Ray Ohlsen
Photo: Lachie Cornish

'I was offered the opportunity by my woodwork teacher to learn an old time craft that is a dying skill that is no longer taught or seen in many places. This opportunity was not only an amazing experience it was a huge learning curve in this slow and skilful art.'

Judges' comment: 'Cameron's Floral Woodcarving presents a complex design highlighted by good depth and balance, within a demanding piece that is beautifully executed. Carving is a specialist skill within woodworking, and requires the carver to visualise the finished object in three dimensions before and during the carving process. Carving has fallen out of fashion in furniture in the past couple of decades, so it is encouraging to see a young student taking the opportunity to learn this traditional craft.'

Best Design

Power Chisel and 5 Chisel kit, value $405

Kate Spencer, Year 12,
Freshwater Senior Campus, NSW
Timber Bathroom Vanity,
American oak, American walnut
Teacher: Ben Percy
Photos: Ben Percy

'The most complicated component was by far the legs. The joint used was an angled bridle joint made using three different jigs, a router, chisels and a handplane before then being turned on the wood lathe with a slight taper as well. The vanity bowl was coopered with a slight taper.'

Judges' comment: 'Kate's bathroom vanity is an elegant design solution that belies the practical and technical considerations underlying the piece. Like all good design, these aspects have either been concealed or incorporated to enhance the overall appearance and function of the piece. All of the elements within the vanity, including tap ware, bowl and stand, are perfectly harmonious within the piece.

A number of woodworking techniques have been used to create this piece, including coopering to form the basin and turning for the legs after forming the T-bridle joint with shoulders for joining the legs to the rails. Overall Kate's piece ticks all of the functional boxes for a bathroom vanity while using strong and bold shapes to create a contemporary design.'

Best Turning

Hamlet 5 Piece Miniature Turning Set, value $179

Samantha Fulwood, Year 12,
St Joseph's Catholic College, NSW
Banksia Nut Bowl, camphor laurel,
Banksia grandis
Teacher: Matt Toby
Photo: Terese Fulwood

'Designed as a large fruit bowl to match a newly renovated kitchen. The banksia rim was made by segmenting.'

Judges' comment: 'The image of the platter on the website clearly showed a beautifully finished turned platter. Nice proportions, simple and elegant detailing, high level of finish. Samantha has demonstrated a good level of skill.

Best Use of Native Timbers

Blue Spruce Toolworks

Marking knife set

Harrison Bennie, Year 12,
Scotch College, Claremont, WA
Modern Outdoor Refectory Table, jarrah, Tas oak
Teacher: Ashley Keatch

'Australian outdoor furniture needs to be strong and durable. To achieve this my project used native eucalypts, jarrah and Tasmanian oak.'

Judges' comment: 'Harrison's piece delivers on its title and highlights Australian timber for its visual properties as well as its durability. The species chosen are a perfect choice for this design. Contrasting timber colours in the curved laminated legs bring emphasis to the shape and create a strong decorative design element. The inclusion of the two narrow lighter strips on the top unifies the design and visually ties the table top back to the legs. This project presents a high level of construction, and finish.'

FROM OUR JUDGES

Laura McCusker,

furniture designer and maker, Tasmania

www.lauramccusker.com

Over the last 12 years or so I have been asked to judge many competitions and assess applications for grants and funding within the arts and creative industries. This is always a difficult task and completely counterintuitive in many ways. Judging the relative worth of creative and artistic endeavours is by it's very definition a subjective process rather than an objective one so how can there ever be a 'best entry' or 'winner'?

That said, it is clear the students who participated in this year's competition all had certain things in common: a commitment to craft; tenacity and resilience, and an appreciation for the value of the handmade.

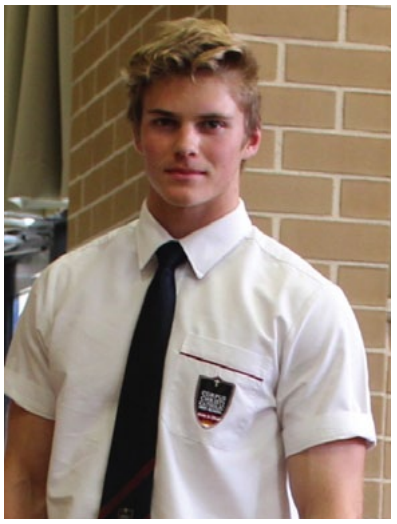
There are not many subjects taught in high school which give students the opportunity to develop creative, analytical and practical skills simultaneously. I truly believe that this is a vital aspect in leading a fulfilling adult life, maintaining the connection between head and hand that we have as children. All the students here have shown that they understand not only the value of making, but they also have the determination to stick with a project for the long haul. They should be rightfully proud of their achievements, and excited at what their futures hold.

I would also like to acknowledge the schools, teachers and teachers aides who mentor and guide students to this level of proficiency at such a young age; and make a special commendation to Ben Percy of Freshwater High. What an incredible job!

Gone are the days when each student turned out a similar version of the same project each year, year in year out. Gone are the days when woodwork was a subject you chose if you didn't want to be challenged, and I'm also very pleased to see that gone are the days of the exclusive boys club! I have met many adult women who've told me

stories about being turned away from enrolling in wood or metal skills subjects when at school, so I am very glad to see the high representation of young women in this competition as well as the high quality of work submitted.

All of this can only happen when the culture of the classroom is both nurturing and challenging; supportive and inclusive. So a big congratulations to all.



Popular Choice Award

Interwood WORKSHOP TESTED TOOLS

Brass Rule in blackwood case, value $93

Architecturally Inspired Study Desk, New Guinea rosewood, cambria oak
Nathan Jurd, Year 12, Corpus Christi Catholic High School, NSW
Teacher: Andrew Kenneally
Photo: Andrew Kenneally

'The desk has a predominantly traditional body design with some contemporary aspects. It involved many challenges because of the number of components as well as new skills such as flared legs and handmade handles.'

Stuart Faulkner,

furniture designer/maker and woodwork teacher

www.heartwoodcreative.com.au

For the last 15 years, the majority of my work life has been spent teaching furniture making and design. I have taught emerging designers, sat on panels critiquing student work and assessed my fair share of projects and assignments. I have also been involved with RTOs (registered training organisations), writing and developing national course curricula for Furniture and Product Design. Most recently my focus has been on teaching recreational courses.

For adults the opportunity to pursue woodworking is obvious. A few hours in the workshop can be an act of meditation; some quiet time away from a busy schedule. For younger people, it can represent an opportunity to engage with an activity that encompasses a broad range of practical and problem solving skills. For some, a potential career path is being explored.

Judging this competition was no easy task. I found myself returning to the entries over several days and reviewing the images and videos. I was impressed by the level of design and the standard of construction as well as the variety of techniques used. Overall, the entries demonstrated both high levels of technical making and design thinking.

The role of teachers, technical support staff and schools should be recognised for their contribution in helping these young woodworkers accomplish their goals. It is clear from the entries that we have some very dedicated teachers out there and some very supportive school communities.

I would like to congratulate all the students who participated. It is great to see the craft of woodworking flourishing in our schools and in the hearts of young people. You should all be very proud of your endeavours, well done.

SCHOOL AWARD PRIZES

OVERALL BEST

triton Precision Power Tools

Triton TWX7 Workcentre with Contractor Circular Saw and Router, total value $3427
Freshwater Senior Campus, Freshwater, NSW

BEST HAND SKILLS

HARE&FORBES MACHINERYHOUSE

Hafco B-360 Bandsaw, value $902
Haileybury College, Springvale, Vic

BEST DESIGN

ARBORTECH

Power Chisel and 5 Chisel kit, value $405
Freshwater Senior Campus, Freshwater, NSW

Well Made in China

A visit to Woodwell Tools in Guangzhou, China reveals a company that is dedicated to family values and traditions of toolmaking. Story by Linda Nathan.

Established in 1982, Woodwell Tools claim to be the largest manufacturer of wooden bodied handplanes in the world. In the early days the tools were not branded so retailers could sell them under their own brand labels, but now the name Mujingfang, meaning literally 'wood-well-square', is known the world over.

Guangzhou, capital of Guandong (formerly Canton) province, is one of China's industrial heartlands and home to some 10 million people. From the air it presents as a vast grid of tall apartment buildings, criss-crossed with a complex network of freeways, flyovers and bridges. Every year Guangzhou hosts some of the largest trade shows in the world.

The Mujingfang factory site in nearby Foshan City takes up 30,000 square metres of land. Visitors enter through a security gate and proceed to a large building which houses administration offices and a showroom where an extensive range of handplanes, marking gauges, spokeshaves, chisels and other tools are displayed.

The showroom also houses a large boardroom table. The top is a huge 200mm thick slab of huanghuali (*Dalbergia odorifera*), one of China's premium cabinet timbers. The same tree provided timber for the giant handplane which greets visitors

The extensive Mujingfang range is displayed in the company showroom.

Opposite page: Master craftsmen at Woodwell Tools; at the rear Master Guanqi Jiang, front left Maoguang Qin (Master Mao), and on the right, Maoguang Qin (Master Mao).

in the foyer. Although 2.8 metres long and 700mm wide it's fully functional, if unlikely to be ever used. 'It's made from real wood and real steel. If someone was strong enough they could use it. We don't make anything that doesn't function here', said managing director Jennie Ho, underlining one of the many guiding manufacturing principles of her father, company founder Man Kit Ho.

Near the table stands a cabinet of utilitarian and humble construction. Made decades ago by Man Kit Ho, it serves as a reminder of the company's starting point as his story is a remarkable one. A trained carpenter, Ho fled China during the turbulent 1970s with the equivalent of around $60 in his pocket.

In the years after, he married and travelled between Hong Kong and the USA, where his three children were born and partly raised. At the end of the Cultural Revolution, Ho established his hand tool making business back in China. Woodwell Tools is a subsidiary of Wah Tat Hardware & Tools Ltd, and both are owned and managed by the Ho family who commute between China and Hong Kong.

The factory complex that was built in Foshan has separate buildings for wood storage, initial breaking down, kiln drying, machining, hand finishing, and final assembly and packaging. Nearby is an apartment block where company employees live, because another important company principle is to look after its workers and to sustain their livelihoods.

The processing buildings are long and light-filled. Impressive are the machined stacks of timber, notably because of their species. When Man Kit Ho started producing tools his innovation was to match fine craftsmanship with premium timbers such as shungee rosewood and ebony. Up until the 90s the wood species used were bought from local suppliers who sourced their timber from Indonesia, however nowadays, due

to scarcity, Africa and other parts of Southeast Asia are the point of origin.

Traditionally, in Asia at least, hand tools were made by those who used them. As a carpenter, Man Kit Ho also made his own, but then started making them for others, and developed a reputation for making fine hand tools. He was in fact the first in all of Asia to mass produce hand tools.

Just two years after establishing markets in Hong Kong and Macau, the company started exporting to Singapore, and then later to Taiwan and Japan. Over the years the Mujingfang brand has evolved to reflect the preferences of users by producing Hong Kong, Singapore and Taiwan style handplanes.

Surprisingly, local sales of Mujingfang tools were not significant until the mid-90s. 'Woodworking is not regarded as prestigious or profitable in the Chinese mindset, especially by younger people', said Jennie Ho. 'There are very few woodworking schools in this country as compared to Western countries. In China, woodworking is generally a profession rather than an art or a hobby.'

With the rise of the middle class in China the hobbyist market is predicted to grow and in fact within the last three years has done so already. Woodwell Tools now has a separate domestic sales team because China is the company's biggest woodworking sector market.

Opposite page: Premium timbers are sawn into sections and roughly dressed before kiln drying and machining.

Clockwise from top left:
Tool blanks are sized, shaped and mortised on custom designed and made machinery.

Showing the complex angles that are machined into the handplane bodies to receive blades and wedges.

A CNC machine is used to trim the curved profile of signature Mujingfang Hong Kong style planes.

Clockwise from far left : Fitting brass wear strips into the plane bases is done by hand and by eye.

'The handwork is where the Mujingfang style is added', said managing director Jennie Ho.

Well used and frequently sharpened tools of the toolmakers.

Jennie Ho (right) and Melody Chen in the Woodwell Tools showroom.

Mujingfang tools are sold worldwide in over 30 countries, in Canada by Lee Valley, in the USA by Woodcraft, in Germany from Dictum and in Australia and New Zealand via Carbatec.

Woodwell Tools is a family owned business that has a family ethic. 'All of the craftsmen here have been with the company for over 10 years', Jennie explained. 'There are even second generation employees. When we moved here, everyone moved with us', said Jennie, 'they're all like uncles and aunts to me. We're like one family, because everyone in the craftsmanship department started in the factory before I was born so they knew me when I was growing up – they know everything about me,' she laughed. 'Master Gao used to look after us when we were young and when we were kids we used to do packing.'

Despite the fact that Mujingfang products are mass-produced, each tool is hand finished and 'the handwork is where the Mujingfang style is applied', said Jennie, 'taking into account that each craftsman will add their own small elements of style.'

In the early stages, production is batched and expedited by various machine processes, only one of which is computerised. 'When you look at us, we have a lot of people to support, so we do need to focus on mass production. Customisation and making small quantities is not something that we can do at the moment…because we cannot forego anybody in the factory, everybody is so important.'

Nowadays Man Kit Ho has passed the day to day running of the business onto the next generation. At 30 Jennie is the eldest, and acts as managing director of global sales and marketing. Her brother Perry takes care of the Hong Kong and Macau side of the business which is the largest, while younger brother Tim is in charge of production at Woodwell Tools.

'We're trained to take over the business and prolong the legacy – it's in our blood,' said Jennie. 'At this point it is very important to me. It's a good and meaningful platform for us to expend our energy on and we have a lot of respect for the craftsmen.'

The quality of Mujingfang handtools at the pricepoint offered is remarkable. 'Ten years ago people had a hard time associating Chinese products with high quality,' said Jennie, explaining that perceptions have changed in line with the reality of production standards. Within a framework of mass production this is a company that focuses on preserving its own culture of family and tradition.

Photos: Linda Nathan, Raf Nathan

Spiral Cutter Refurb

Richard Vaughan shows how to do a complete removal and clean-up of helical cutterheads.

It's over five years since I was able at last to convert my main thicknesser/jointer to the Shelix cutterhead. It immediately became the standard by which I judge other jointer and thicknesser finishes and now stars as the reliable way to deal with wood with glorious 'personality'.

No surprise that after several years I converted my other combination machine. It has proven to be a financial no brainer in terms of long term resharpening costs as well as giving a superior result. There are variations on the design of rows of rotatable cutters on jointer and/or thicknesser blocks, but this is not a comparison. From my experience, the following tips should be relevant whichever type you have.

The combination of the shearing action of this style of cutterblock and the hardness of tungsten carbide means that chips in the cutting edge are less likely than with HSS full width knives, but they can still happen. Being able to simply turn the affected cutter, or perhaps cutters, is convenient but does require some awareness of possible issues.

Cutters from reliable manufacturers and or suppliers are machined with exquisite accuracy so the primary concern is making sure they are seated perfectly.

For years I had simply rotated the cutters as necessary but had never thought to do a complete removal and clean up as described here.

Above: The cutters have now been removed and cleaned before being carefully refitted to the head which has also been cleaned. Colour coding marks the used edges.

Left: Prior to servicing, tell-tale machining markings showed some of the cutters on the helical head were not properly seated.

We can tend to postpone regular maintenance in the focus on immediate work, but then comes the alert signal.

When I saw the results of a cutter rotation as shown in photo 1, I knew I had to do a thorough service. In the past I had not removed the cutters when changing the edge, though I did use compressed air to clean under them when loosening the screw to rotate the cutter.

Proper maintenance

Set yourself up with a stool and tools on a nearby worksurface. Clean both the machine and nearby floor so that any dropped screws or cutters will be easy to find. Using containers is a safer way to keep these small parts where you want them to stay.

Photo 1 on p. 63 shows the result of badly seated cutters. It is quite easy when rotating the cutter to a fresh edge to have the cutter slightly askew on some versions of these cutterheads, even when there is no build-up of fine sawdust underneath.

Photo 2 shows the fine sawdust that can build up under cutters, preventing them from seating well.

Photo 3 Note the rust on the screws which is also in the screw holes in the block. This was a bit of a surprise, but of course friction generates heat, and humidity will confirm that rust never sleeps. I wiped them clean with a brass wire brush then put them in the container of Lanotec, a long lasting lanolin derived rust preventative. Well you don't see rusty sheep do you?

The bottoms of the cutters are ready to be given one firm rub on the 400 grit abrasive paper in the foreground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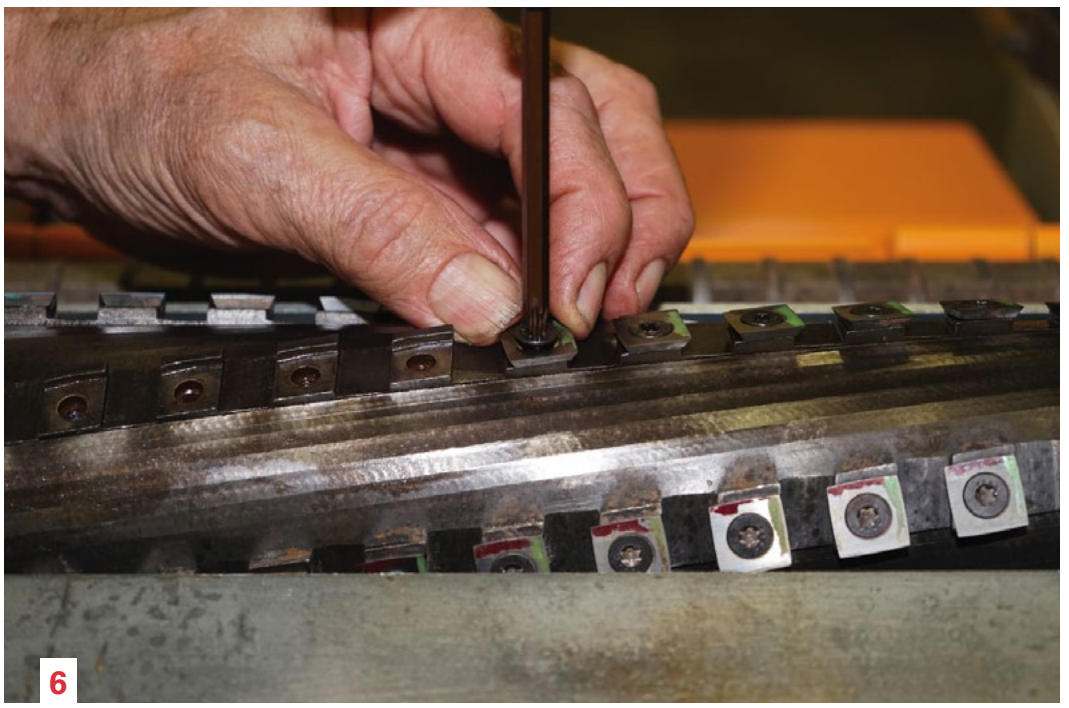
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to ensure they are totally clean. I don't see much risk of messing with the dimensions in this because a maximum of three rubs over their lifetime won't affect the tungsten carbide to a noticeable extent.

Photo 4 The cutter bases on the block were cleaned with the brass wire brush and blown clean with the compressor blower. Note the rust in the screw holes.

Photo 5 Lanotec was brushed into the screw holes and the excess ragged off.

Photo 6 Once all components have been cleaned, it's really critical to position the cutters correctly. Tighten the screw gently as you wiggle the cutter into position trusting your fingertips.

It is possible to overtighten and crack the cutter even when it is well positioned, so using a torque wrench may be wise. I offer this good advice even though so far I have trusted my uncalibrated but gently firm fingers.

Photo 7 When a row of cutters has been changed you can mark each cutter with nail polish to keep track of which edges have come into service. Cheap nail polish is surprisingly durable as you can see on the cutters in the photos.

I hope that these tips will improve your enjoyment of this revolutionary type of cutterhead.

Photos: Richard Vaughan

Shelix cutterheads are supplied by Woodcraft Supplies, phone 07 4129 4644 or see www.woodcraftsupplies.net.au

Richard Vaughan is a Brisbane furniture designer/maker who also teaches woodwork and router usage workshops. Email: richard@richardvaughan.com.au

The Craft of Collaboration

Romanian carver Zina Burloiu describes how she added a delicate pattern to the bowl that Terry Martin turned and wrote about last issue.

When I opened Terry's parcel, the room was flooded with the smell of camphor, which I had carved when Terry and I did a project in China. You can never forget that crisp aroma. We first worked together nearly 20 years ago in Canada and by now both of us have an instinctive knowledge of how the other works. We have developed a great way of collaborating: we talk on the internet, plan, make sketches and inspire each other.

Before Terry started making this bowl we had discussed its form, its thickness and the best way to shape the rim to show my carvings. So I already knew the bowl when I lifted it out of the box, and it settled immediately and comfortably into my hands. The curve was just right, and the colour and grain pattern were beautiful. I could hardly wait to start the carving but, as I always do, I put it aside where I could look at it every day to let my thoughts settle.

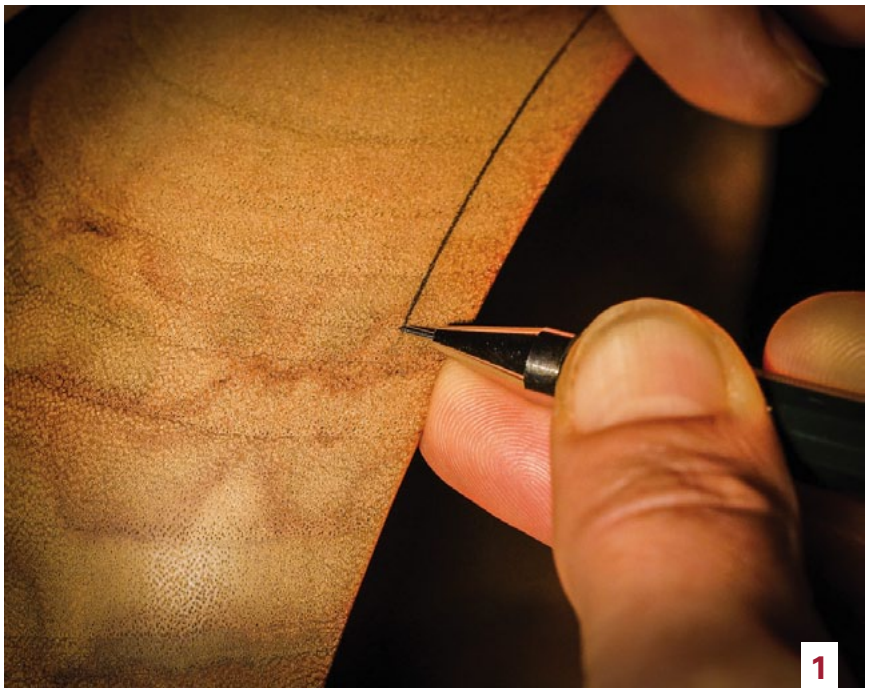
I have been carving wood since 1990 and have developed my own style and interpretation of traditional Romanian chip carving. For this piece I wanted to achieve the right balance between the simplicity of the bowl and the sometimes complex patterns of my carving. The first step was to draw the pattern on the bowl.

Because my work is so tiny, it requires an accurate layout, so I used a 0.35mm pencil and a flexible plastic ruler to conform to the curves of the bowl. I quickly drew the six lines around the circumference by the traditional carpenter's method of using the fingers as a gauge (**photo 1**).

Once the lines were drawn, I used the flexible ruler to mark every 3mm on two inner lines (**photo 2**) and then drew lines at 90° across the middle four lines to create three rows of squares (**photo 3**).

Accuracy at this stage is important. When the squares were complete I could assess the proportions of the pattern and decide if the distance from the rim was right. I was content with what I saw – experience helps! The final stage of marking out was to draw diagonals across every three squares to subdivide the whole inner band into tiny triangles (**photo 4**).

Next I started the carving. Early on I realised that with traditional knives it was not possible to create the designs that swirled in my head, so I developed my own knives with a shape and grind that are different from traditional shapes.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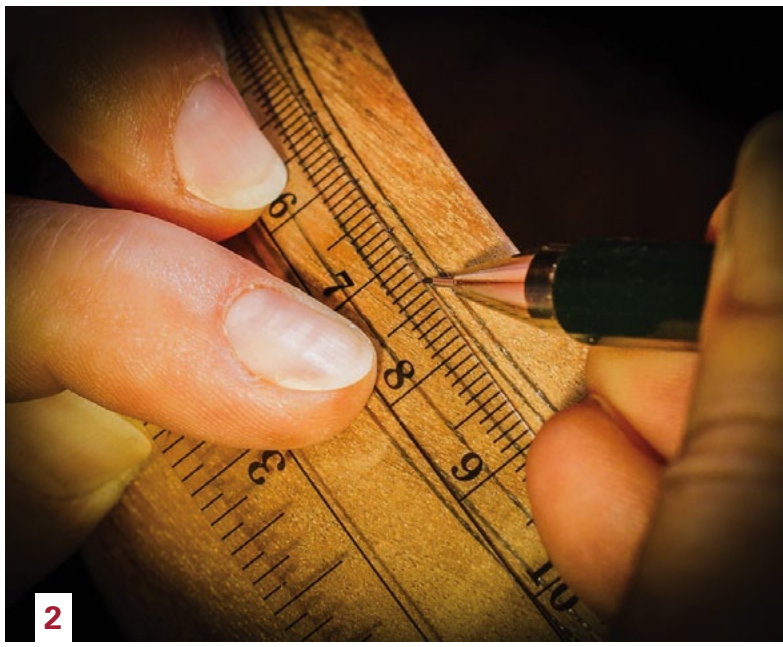
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Opposite: The finished collaboration in camphor laurel, 160mm dia x 70mm high.

1. Scribing the circular lines with a fixed finger as a gauge.
2. Marking 3mm increments on an inner line.
3. Drawing lines at 90° to the first lines to create squares.
4. The finished pattern drawn on the bowl.


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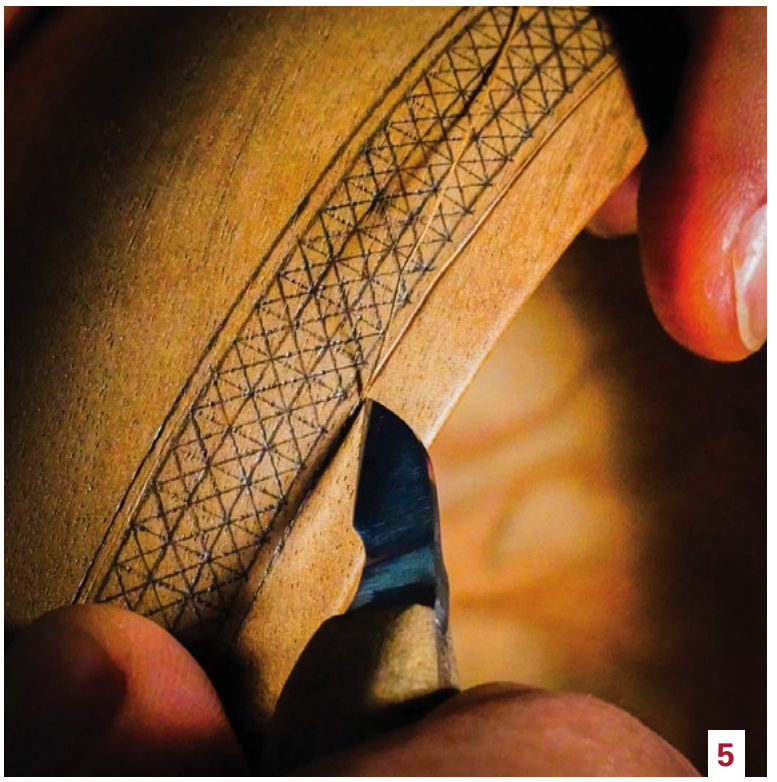
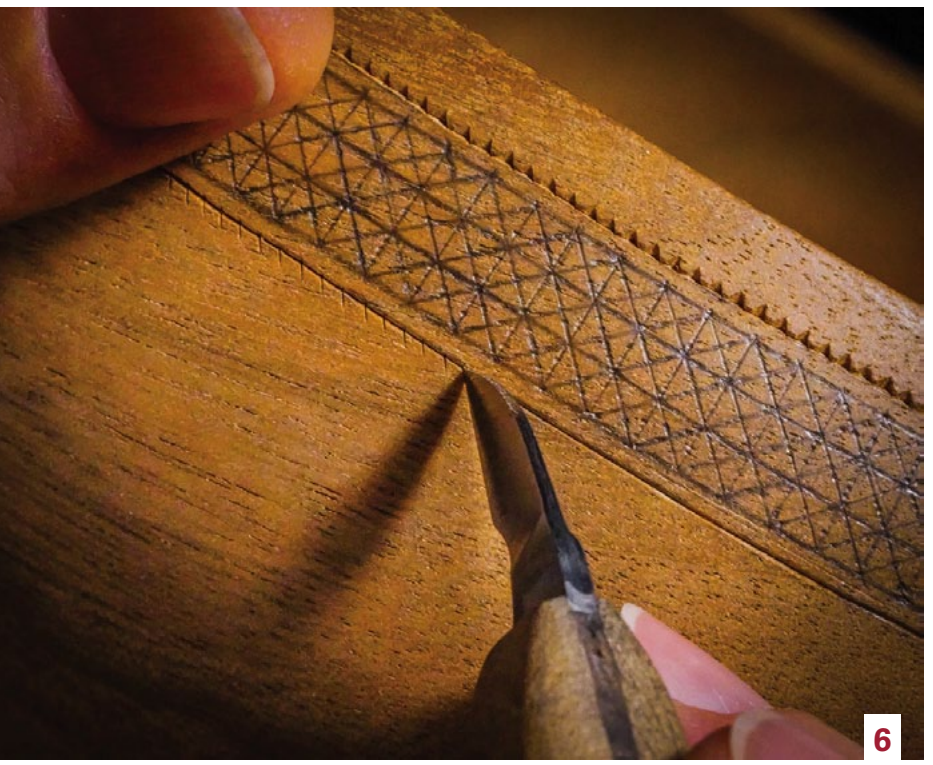
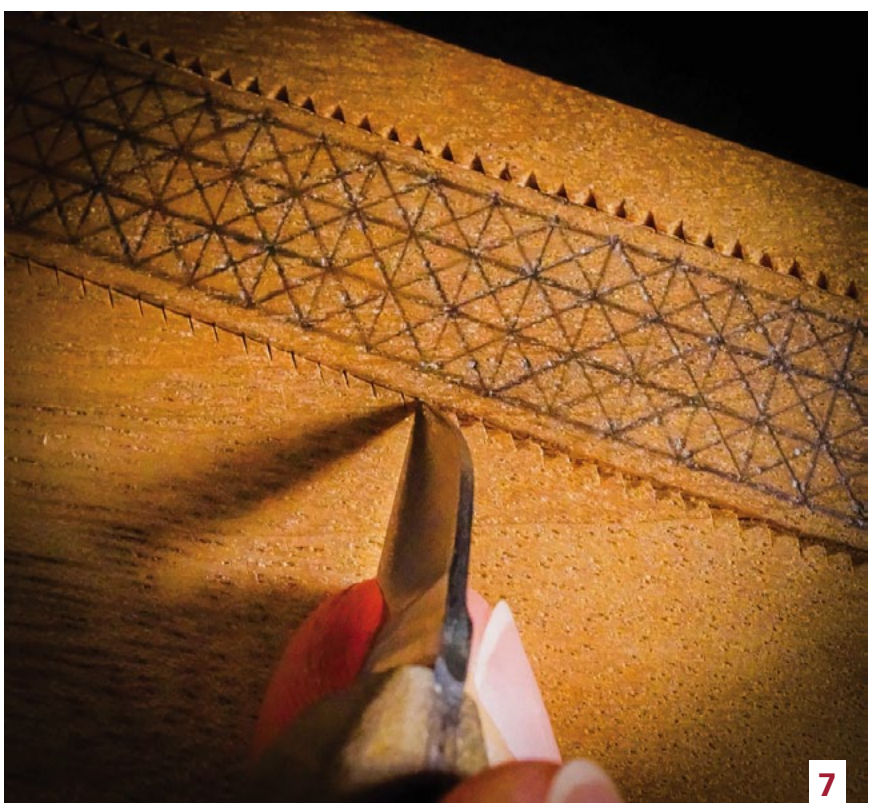






5. Using a pull-cut to create a continuous V-groove.
6. First cuts to create notches on the lower line.
7. Second cut to free the chip.
8. First cut to create a triangular chip.
9. Mirroring the first cut.
10. Undercutting the chip.

I used to be an engineer and I have experience in toolmaking, little knowing at the time that it was an ideal preparation for my chosen profession. My knives are thin and the whole face of the knife is one continuous bevel without a secondary bevel, which gives me more control. The tip is designed for rolling down into the wood.

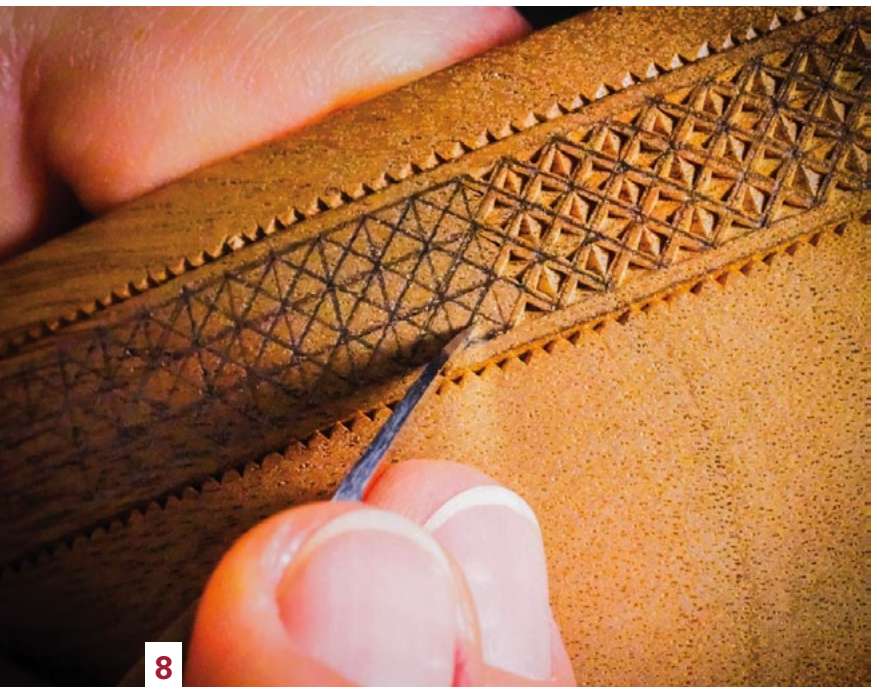
I wanted to carve the two outer lines to create a 'frame' to visually hold the whole thing together. I cut along the first line in one continuous pulled action, angled at 45°, and then repeated that from the opposite side to create a continuous 'V' (**photo 5**).

Next I made a series of cuts along the outer side of the groove by rolling the blade into the wood so the tip penetrated at an angle to the depth I wanted (**photo 6**). I continued this series of cuts until I went full circle.

This is where repetition and muscle memory are so important in chip carving, and after tens of thousands of hours I know exactly the angle and depth. It is not necessary to measure the distance because the visual clue is already established once you have the first two cuts.

As I returned to the first cut when I came around the rim, I slightly adjusted the distance between the final few cuts to make sure they met neatly. It may not have been 100% accurate, but this is handwork and it is the tiny variations that distinguish it from machine work. The next cuts completed each triangle and the chips fell out as the cuts joined (**photo 7**).

After the top and bottom rows of chips were completed, I began the central pattern. I cut the first chip inside a drawn triangle and because that chip would need to be repeated hundreds of times, I had to get the proportions right. Experience told me where to cut and the 'X' of wood left between the triangles framed them just as I wanted. In this case I cut approximately 0.5mm from the pencil line.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This is the basis of all my chip carving: Cut #1 is done by rolling the tool into the wood with the tip defining the apex of the triangle (**photo 8**). Cut #2 is the mirror image of the first cut, making sure that the cuts meet precisely and cleanly (**photo 9**). Cut #3 is the key cut – a sliding undercut along the bottom pencil line that frees the chip, which usually leaps free with slight click as the wood is completely severed (**photo 10**).

With four triangles in every square, each triangle is defined by the X of wood that is left between it and neighbouring triangles. The pattern slowly emerged and the satisfaction I felt was very deep – the shadows and light played off each other, and the pattern almost vibrated with contained energy.

After the carving was complete, I went back to check that all was cut well. I used the tip of the knife to gently touch up any fuzzy cuts. I do not have good eyesight so in addition to my glasses I wear clip-on magnifiers that enlarge several times. They have been an inexpensive addition to my toolkit and are easily bought online (**photo 11**).

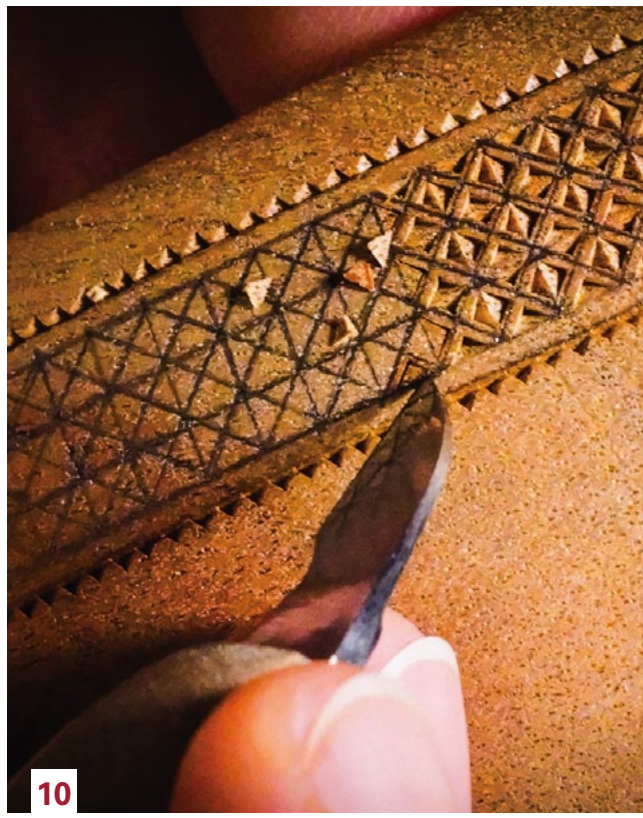
When the piece was finished I applied my usual oil finish, then sat back to admire the effect. The band of carving compliments the form of the bowl and the tiny patterns draw the eye. I love how it all works! This is just one simple example of how a carved pattern can enhance a turned vessel. Readers may be surprised to learn that I made 7,212 individual cuts to carve this pattern! A chip is a tiny thing, but creatively used it becomes much more.

Terry and I work so well together that we have embarked upon a series of collaborations that will define our work for years to come. We are having a show of our work at the Fuller Craft Museum in Boston in April 2017, and this piece will be proudly shown with our other work.

Photos: Zina Burloiu

For more information about Zina Burloiu and Terry Martin's exhibition see: www.fullercraft.org

Zina Burloiu lives and works in Brasov, Romania, where she is the most respected traditional woodcarver. She has made a name for herself as a teacher and demonstrator across the world, and in recent years has participated in many international events and exhibitions as a sculptor. Email zinaburloiu@hotmail.com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Sacred Geometry

Simon Parsons designs and makes contemporary furniture based on mathematical formulas and a love of wood. Story by Linda Nathan.

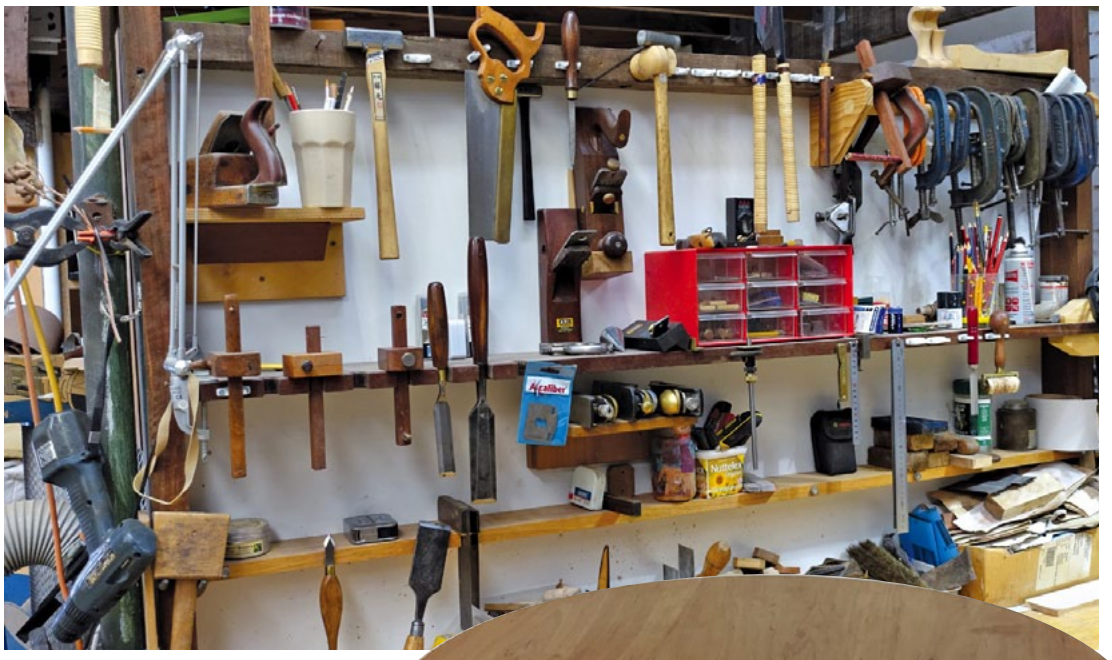
There are many who take up a woodworking career after having had another, but Simon Parsons, now 45 and originally from the UK, completed a degree in furniture design at Buckinghamshire College directly after leaving school. Even before that he learnt as a child from his grandfather, William Oakley, formerly head carpenter at Windsor Castle until the 1980s.

Simon came to Australia on a holiday, stayed on and married a local. In 1995 he worked for a shipwright at the Royal Perth Yacht club and later came to an arrangement where he could also use the workshop to make some of his own furniture designs. That's the short story of how he eventually got his own business started in Perth. Getting his work out there in a few local exhibitions and galleries brought orders in. Nowadays it's from word of mouth contacts and his website that architects and private clients find him.

The best thing about his work, Simon says, is designing and making one-off pieces for clients. Local woods such as tuart, sheoak and many others, salvaged if possible, are his preference. If a helping hand is present Simon will often mill his own wood, breaking down small logs on his bandsaw.

Left: Simon Parsons in his O'Connor, WA workshop, also shown below. *Photos: Linda Nathan.*

Below: *Stromata*, American rock maple and jarrah. Golden ratio maths were applied in the layout of the stack laminations. *Photo: Simon Parsons.*



Outside his spacious and well organised workshop are covered stacks of sawn and end-sealed boards that will air dry until needed.

Interestingly, Simon was first introduced to West Australian jarrah while still at college in the UK. There, its legendary strength, hardness and density was referred to, along with the fact that it had been imported in great quantities from colonial Australia to line roads and act as sleepers in the London Underground.

Australia has its own history of once using woods now regarded as precious for structural and joinery work. It wasn't until much later that their worth was appreciated, their dollar value went up, and end uses became much more specific. In keeping with his own ethic, most of the jarrah that Simon uses is recycled.

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1. *Hi-Phi Hall Table* in West Australian marri, 1370 x 850 x 450mm. 'Inspiration for me began with the open-ended form, and then sacred geometry provided the solution to the structure of the design. Small-sectioned marri lengths are laid in a pattern which best utilises its strength.'
2. *Stash Wine Cabinet* in West Australian sheoak, American rock maple and Australian marine ply, 930 x 700 x 350mm deep.

The SP Furniture workshop is a harmonious layout of machines and workstations. Saws, spindle moulder, planer, thicknesser, linisher and more are all there. Stairs to the side of a workbench and hand tool area lead up to a mezzanine storage area that contains a steam box and more. Simon is a man for all techniques and a master of means. He made friends with curves when he was boatbuilding and now it's basically designing and juggling jobs where the challenges lie for him now.

His experience with commercial work is wide, ranging from complete design and make, to working with numerous builders and architects. There have been restaurants, wineries, bottleshops, a chapel restoration, custom built cabinets, furniture, wall units, bartops and of course kitchens.

Doing commercial work and fitouts means not only working with solid wood, but also working with veneered boards, plywood and other materials. Environmentally sound products such as linoleum, made from linseed oil, is practical, has 'self-healing' properties, and may be used for desktop surfaces.

Alongside orders, Simon finds time to make exhibition pieces, and showed his *Hey-Ray* hall table in West Australian sheoak on the Forest Products Commission's display of West Australian hardwoods at the Australian Furniture Association's Furnitex + design exhibition in Brisbane in 2016. This piece and several others will form a solo of exhibition of Simon's work in August this year[1].

Simon is the thinking man's designer. 'Sacred geometry' fascinates him. When he designed the *Hi-Phi* table he drew a grid using phi or the golden mean ratio[2], measuring the corners and then connecting points to points. 'There's so much to explore with phi, it's one of my major influences at the moment', Simon said. 'We first touched on sacred geometry at uni. I could talk for hours about it but basically everything in nature has the ratio of phi in it. It can be on the micro-scale or the galactic scale, it's in everything.'

Another inspiration point for Simon are 'platonic solids', also known as the building blocks of life, shapes that fit within a sphere and have equal angles and sides. 'All the points touch the sphere: the cube, the tetrahedron, octahedron, dodecahedron… When you start drawing and playing all these shapes come out and you only need a compass to discover them.

Simon calls himself old school. He feels it could be a disadvantage that he doesn't present clients with CAD rendered proposals, but rather turns up with a hand drawn sketch, even though his faith in the wisdom of the ancients is complete. 'The Freemasons symbol is the compass dividers and right angle because they're the two tools you need to create any shape', he pointed out.

Up a very high flight of external stairs from the workshop is a gallery space which Simon has recently completed to showcase his work for clients. The first iteration of his *Span Console Table*, a piece that won a Wood Review award for Design Excellence in 2010 can be seen there.

A desire to make the most of every piece of wood is another of Simon's design influences. 'Actually it was the (AWR) Maximise[3] competition that got me thinking about using small sections of wood', he said. When he sees furniture built from large slabs he often thinks, 'I could do so much with that quantity of timber'.

Simon Parson's design influences are informed by his interests in the beauty of mathematics, the need to make the most of wood as a precious resource, and an appreciation of Australian native species.

Contact Simon via www.spfurniture.com.au

1. *'Since the 20th century, the golden ratio has been represented by the Greek letter π (phi, after Phidias, a sculptor who is said to have employed it).' – Wikipedia*

2. *Alongside income producing work, Simon is currently working on pieces for his first solo exhibition which will be held this year from August 10 to 27 at Gallows Gallery in Mosman Park, WA.*

3. *Maximise was an* Australian Wood Review *competition based on the idea of making the most of timber as a precious and special quality resource. The results were featured in AWR#69. In 2009 his piece 'Backlam' also won an award in Wood Review's ReMade competition.*

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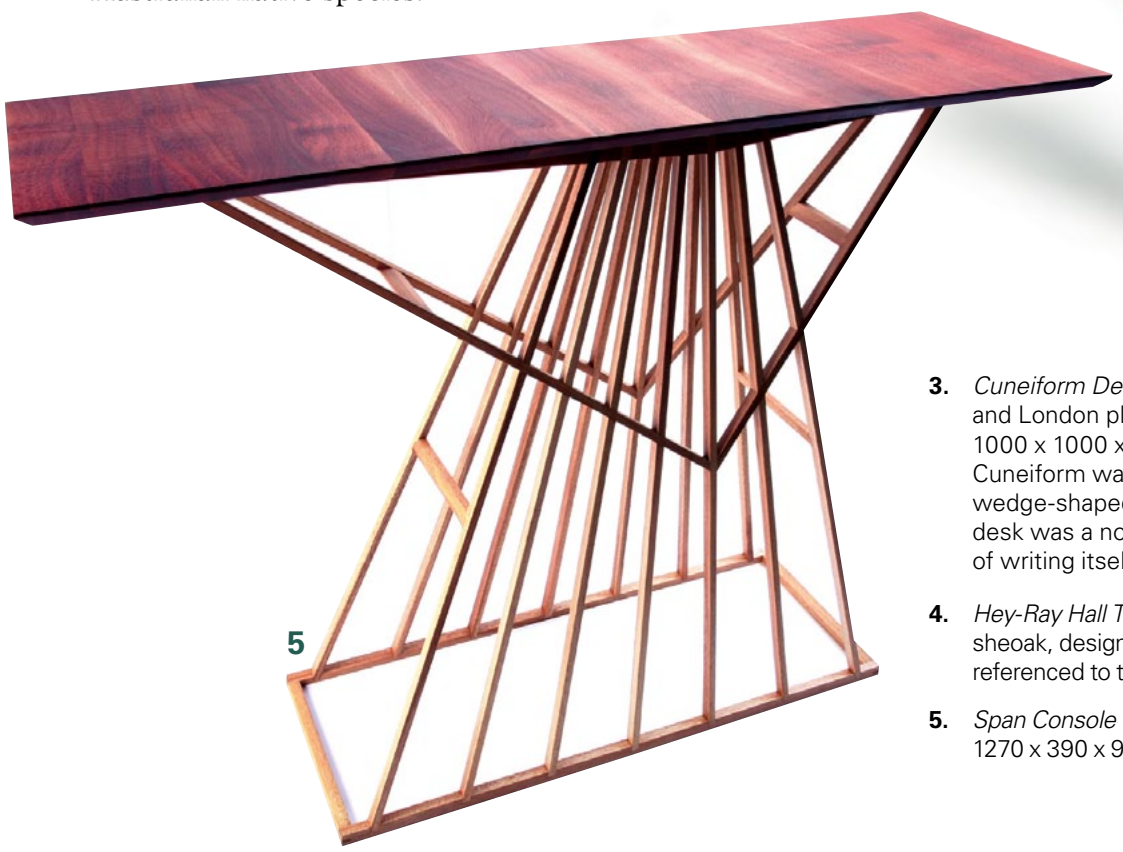

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3. *Cuneiform Desk*, WA sheoak and London plane (lacewood), 1000 x 1000 x 1000mm. Cuneiform was an ancient wedge-shaped script, so the desk was a nod to the origins of writing itself.

4. *Hey-Ray Hall Table* in WA sheoak, designed using a grid referenced to the golden mean.

5. *Span Console Table*, 2010, 1270 x 390 x 930mm, salvaged spotted gum frame, banksia top. This table won a $1000 award for Design Excellence in Maximise, an AWR competition whose results were featured in issue 69. The design was inspired by structural engineering as an asymmetric form. Using shorts of the often small and crooked banksia trees for the top featured their attractive endgrain.

Table For Two

Decorative inlays and a geometric base add style to this small kitchen table. Story by Charles Mak.


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Opposite: Made for a space. Charles Mak's table in sapele with detailing in contrasting American cherry.

Detail showing inlay. Avoid hand sanding the inlay as the darker sawdust can contaminate the lighter wood.

1. The tablesaw with its cutting sled handles long stock much better than my light-duty jointer.
2. For the top, break a large glue-up into smaller sub-assemblies first.
3. I knocked off the corners with a jigsaw and trimmed the panel to size in progressive cuts.
4. You can precisely dispense CA glue with an economical and reusable plastic dropper.

For the past several months, my wife and I have eaten our breakfast on a metal, vinyl-padded top folding table – hardly a good place to enjoy a hot cup of coffee and a good book in the morning. That was because our daughter took the old family 'nook' table with her when she moved out. After some typical woodworker type procrastination, the time had come to build a new kitchen table.

Our design criteria for the new table were both objective and subjective. On the objective side, it is standard height (765mm) and at 890mm in diameter fits the space in the room. We both wanted a round top with a pedestal base – to keep the obstruction under the table to a minimum. Lastly, I tried to add a distinct touch of craftsmanship by including an inlay border design.

As with many projects, the best part often comes down to choosing your favourite tools and techniques. I built this table using a variety of proven techniques and tools that I will soon illustrate in detail. Techniques aside, I will also share how I handled a few errors that crept into the process.

Joint the panel

Sapele, which I have used in some smaller projects, was my primary choice of timber. I started by ripping away the rough edges, using a cutting sled (**photo 1**). After planing the boards to thickness, I cut the mating edges by alternating the rip cuts on the tablesaw so any out-of-square cuts cancelled each other out in the glue-up. Here, I also used dominos, but more for alignment than for added strength (**photo 2**).

Saw the top

I prefer the tablesaw method for cutting circles*. Why the tablesaw? The top is fully supported on the saw table, giving you better control over the cutting, and you stay in one place as you make the cut, freeing yourself from dealing with the tangle-prone cord.

After installing a circle jig on the tablesaw, I trimmed the panel in passes until it was round (**photo 3**). However, upon examination, I discovered a tenon placement mistake: I had positioned a couple of dominos too close to the edge and they were exposed on the sawn edge. To fix that, I chiselled out a small cavity at each spot and filled it with sawdust (**photo 4**).

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5. Keep the curve guides tight to the edge and set each pass to cut no deeper than the bit diameter.
6. The hold-down works both as a retainer and a safety device.
7. Use a plane upside down to make controlled cuts by pulling the stock over a sharp blade.
8. When planing the inlay, skew the plane across the grain and push to slice.


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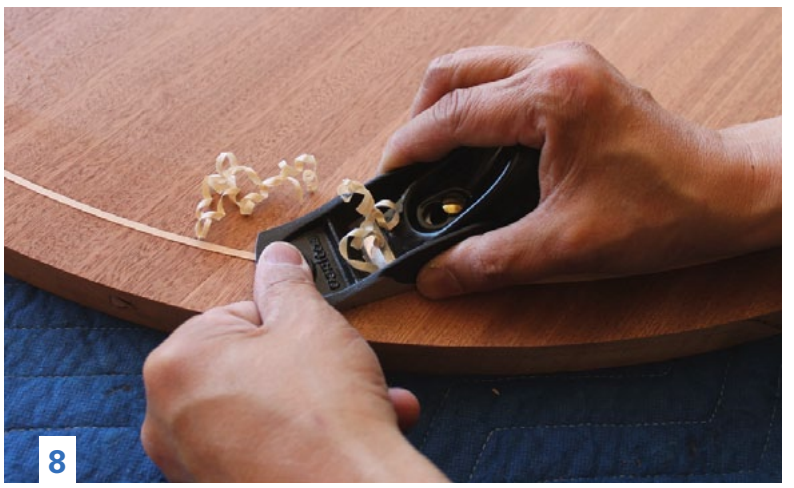
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Inlay the stringing

To cut grooves for the inset inlay border, I used an easier-to-control rotary tool fitted on a plunge base, instead of a palm router. For best results, I routed with the grain and made progressive passes (**photo 5**).

I also prefer to make my own inlay strips – 1/8" (3.17mm) square in this case – as the wood choices are limitless. One way to cut square inlay strips safely on the tablesaw is to set the fence and make four rips with the blank on edge. Then reset the fence and cut out the four strips so they fall on the waste side of the blade.

A more precise method, gleaned from American teacher Charles Bender, involves no resetting of the saw fence. His method uses a hold-down to keep a stock in place while the stock is pushed through the blade (**photo 6**).

When you rip inlay strips, leave them a hair wider, and slightly thicker. Then, finetune the width to match the grooves by drawing the strip against a keen edge (**photo 7**). This is how you get tight fits that make others wonder how you did it.

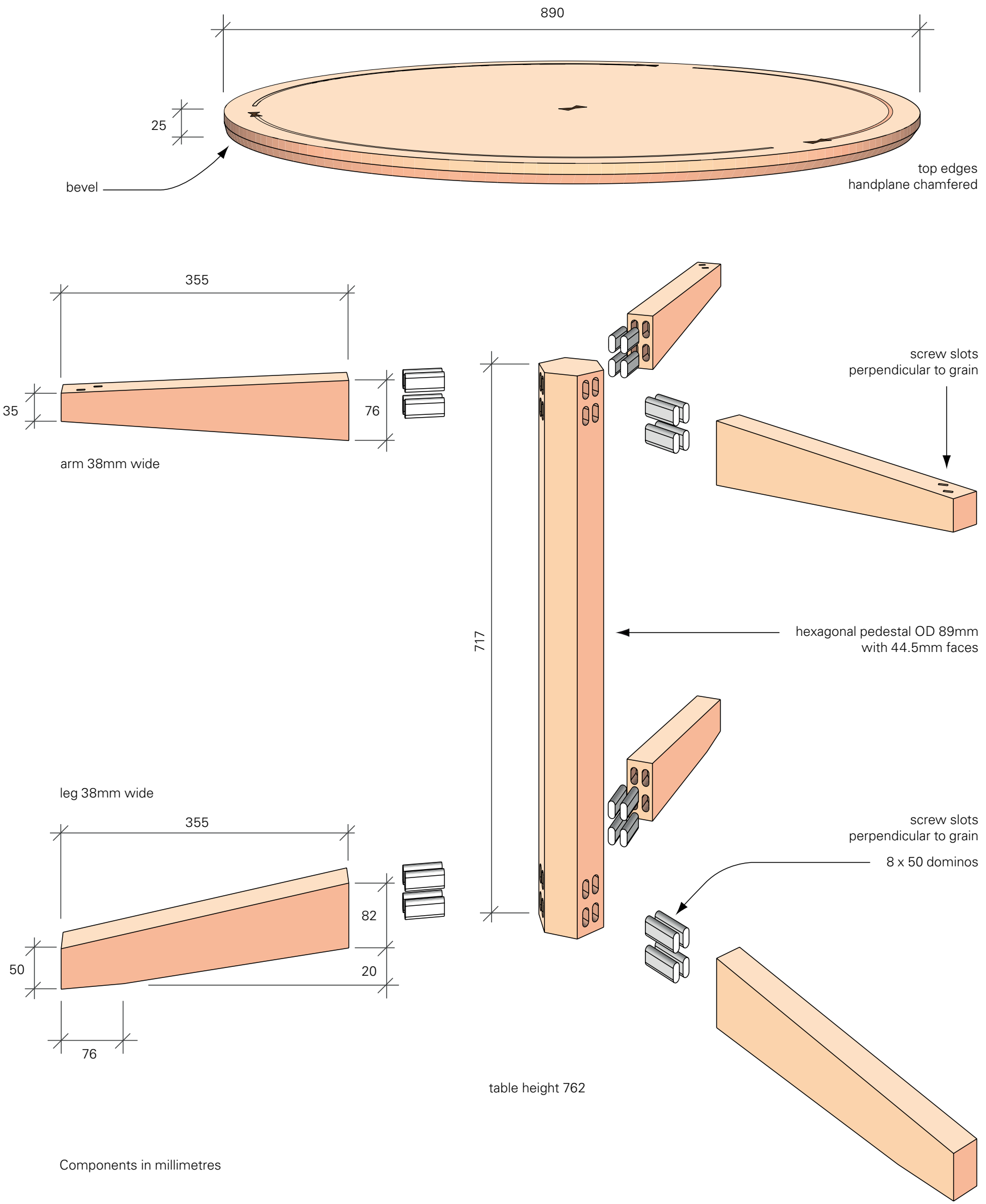
To install the inlay, slightly chamfer the bottom edges of the strip and apply glue with a brush or syringe to the groove (not the string as it may expand with moisture). After the glue is set, plane or scrape the inlay flush (**photo 8**).

CUTTING LIST (mm)

PART	LENGTH	WIDTH	THICKNESS	QTY
Top (diameter)		890	25	1
Hexagonal post	760	89	89	1
Pedestal arms	355	76	38	3
Pedestal feet	355	82	38	3

** Cut pedestal post, arms and feet 20mm overlength and trim to final length after dry-fitting and trial use.*

Fig. 1 **Table construction**



Components in millimetres

Cutting Perfect Hexagons

To figure out your tablesaw settings first determine the kerf thickness of your sawblade. Next, determine the desired width of the pedestal post faces. As an example, my blade kerf is 1/8" (3.17mm) and the desired face was 3-1/2" (89mm).

Step 1 Machine a square blank to the face width. In this case, start with a 3-1/2" x 3-1/2" (89 x 89mm) blank.

Step 2 Find out how much material is removed by the kerf in a 60° cut with this formula: 2 * k * 1/Tan 30, where k is the kerf thickness and Tan 30 is 0.577. So, my 1/8" kerf blade tilted at 60° will remove 0.443" or 7/16" (11mm) of material.

Step 3 Reduce the thickness of the square blank by the figure arrived at in Step 2. The modified blank is now rectangular, 3-1/16" by 3-1/2" (78mm x 89 mm) (**fig.2**).

Step 4 Find the waste to be cut off from the base (x) with this formula: Tan 30 * Half of the thickness of the blank, which is 0.577 * 3-1/16" / 2 = 0.88" or 7/8" (22mm) (**fig. 3**).

Step 5 Set the cut so the base of blade is 2-5/8" from the fence (3-1/2" – 7/8") and raise the blade to just a hair about the centre line of the blank.

Fig. 2

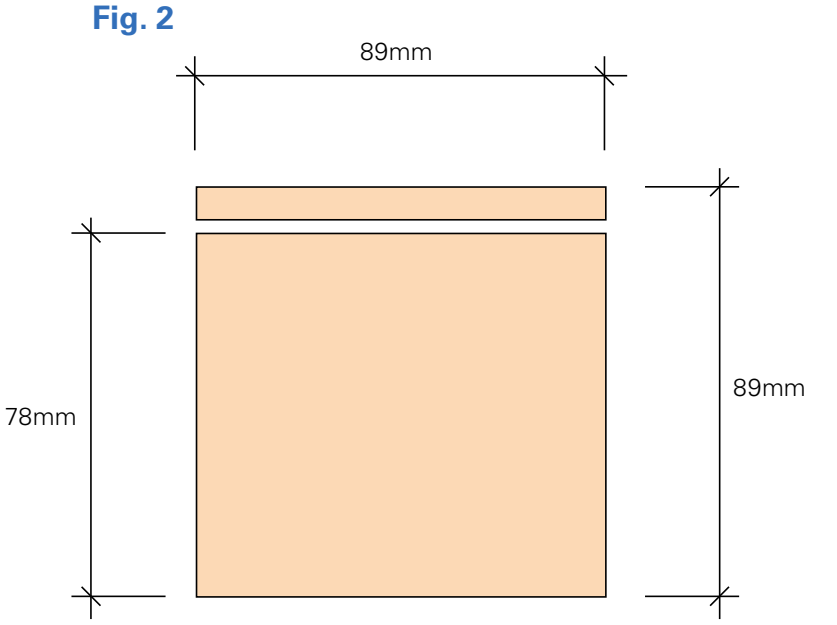
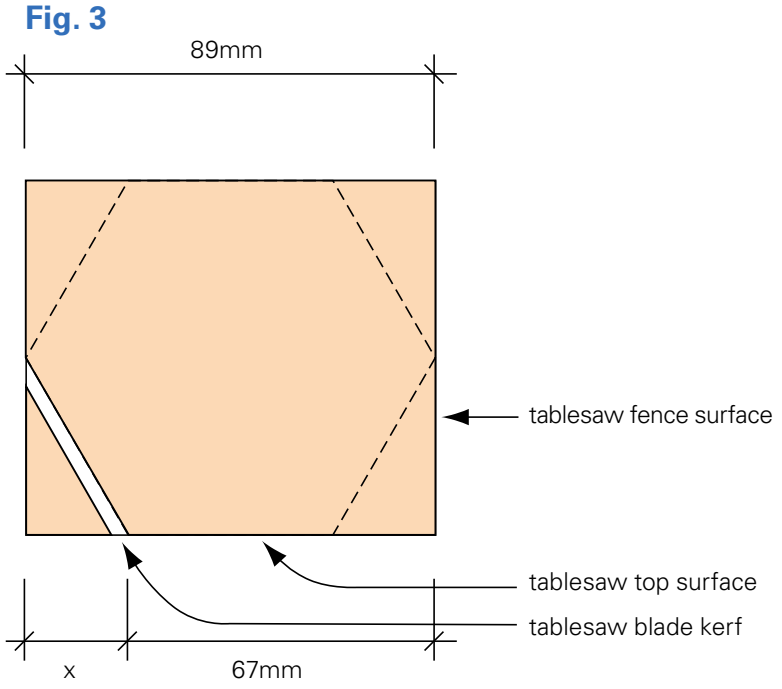
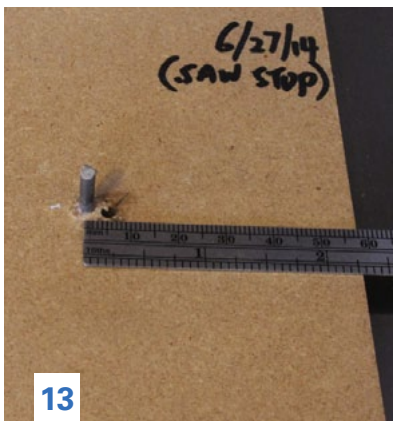


Fig. 3





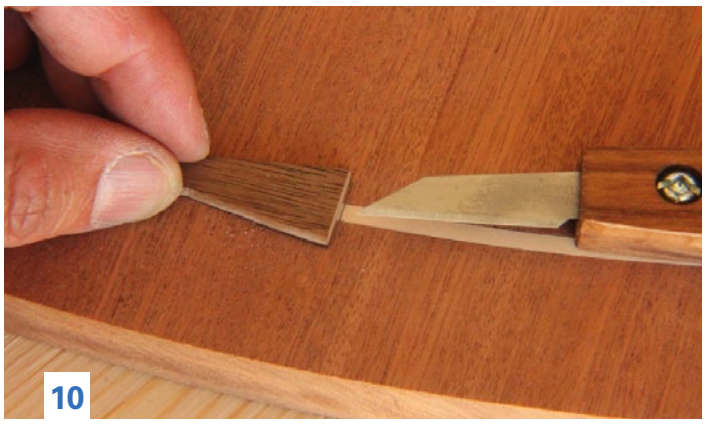
9. I used paper inlay mock-ups to visualise their decorative effects.

10. Butt the key against the mortise wall and trace along the other edge of the key.

11. To ease the installation, chamfer the key's bottom edges slightly.

12. Soak the dent with a drop of water and iron the spot with a wet cloth.

13. I moved the pin towards the sawblade and cut the bevel in multiple passes.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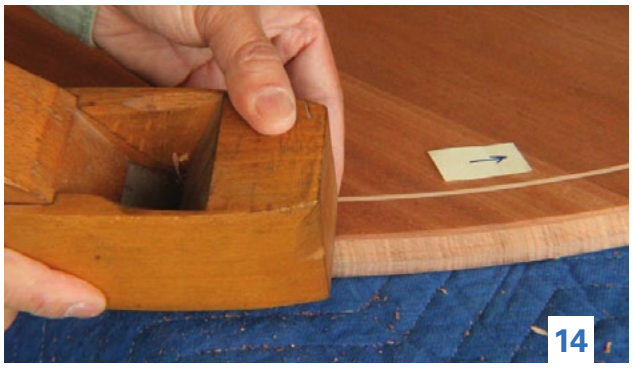
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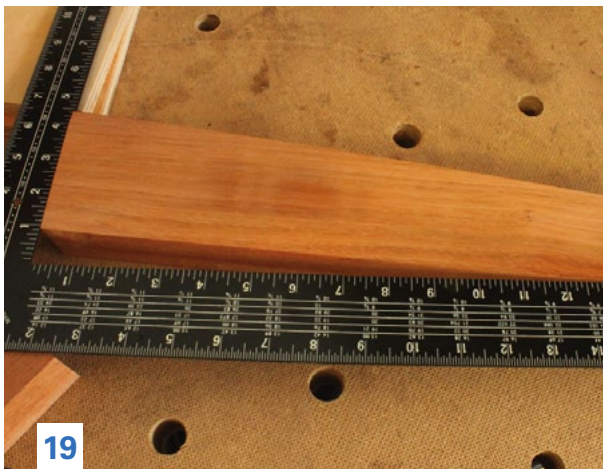
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14. Steady the plane with fingers under the bottom and change the angle slightly after each pass to round over the edge.

15. Using the same bottom to cut the first sides reduces cutting errors and inaccuracy.

16. Hand planing gave the post a surface ready for finishing without sanding.

17. The ends of the feet should be about 65mm inside the footprint of the top.

18. The table is easy to move around with the angled feet design as only the front bottoms touch the floor.

19. Lay out the bottom of each foot perpendicular to the joint end.

Inlay the butterfly keys

Here is another blunder confession: The butterfly inlay was not part of the original design and was added to cover my second slip-up! I overshot at one end as I routed, resulting in an erratic groove. For the fix, I used my wife's suggestion and extended the borders with attractive butterfly inlay accents.

First, I used paper butterfly keys to try out various design ideas before cutting out the walnut keys (**photo 9**). I chopped the mortises by hand using a chisel and a router plane. Number the butterfly keys and corresponding mortises as they may vary slightly in size or shape.

Trace the keys on the workpiece and remove the waste on only half of the mortise, starting the first cuts slightly away from the outline. Place the key in the partially cut mortise and retrace the outline on the uncut side (**photo 10**). Finally, finish the mortise to the last traced line (**photo 11**).

As I was about to plane the keys flush, I spotted one last glitch: a dent near one of the keys from a careless hammer tap. The fix was simple and quick, though: Set an iron on medium hot setting and iron a wet cloth over the dent to raise the compressed fibre (**photo 12**). Plane or sand the area smooth.

Shape the edge

I tilted the blade to 50°, repositioned the centre pin on the circle jig and added a slight bevel to the underside of the top (**photo 13**). But for the rims, I used a wooden plane to get that authentic handcrafted look and feel (**photo 14**).

Make the pedestal

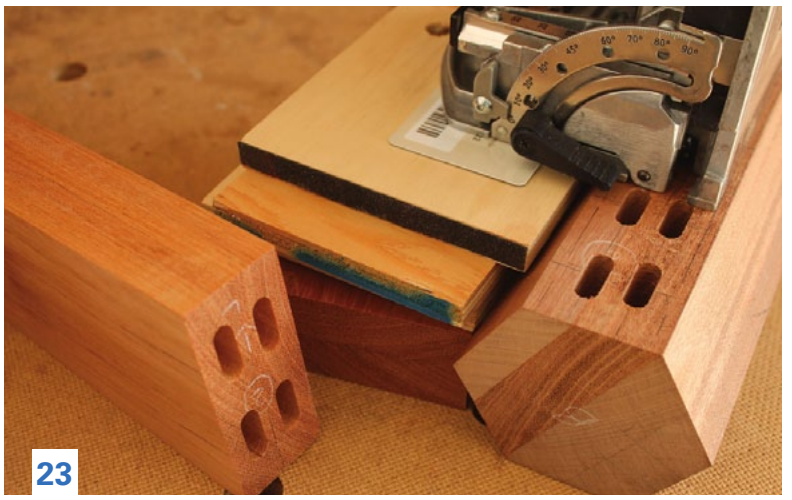
One practical but less accurate way of cutting a hexagonal post is to layout a hexagon of the desired size on the end of a square blank and use it as a guide to set the saw fence for the 60° angled cuts.

However if you prefer, you can also use formulas to find the tablesaw settings as I did – thanks to a refresher received from knowledgeable woodworker Robert Lee, see opposite.

After setting the saw, I made the first 60° cut on the post. Instead of rotating the post around for my second cut, I rotated it end to end to rip the second hexagonal side (**photo 15**). I made the last two cuts in the same manner to complete the post (**photo 16**).

Cut the arms and feet

The span of feet for a table is usually 75% of the top's diameter. I used that guideline to work out the length of the feet (**photo 17**). I then tried out a few different angles for the feet to be attached to the post (**photo 18**). Finally, I scribed a line on the front bottoms of the feet and planed them flat (**photo 19**).



20. Secure the stock down on the jig and cut the taper in two progressive cuts.

21. Chamfer the edges by hand, leaving a handmade look on the piece.

22. I studied the domino size and spacing to determine the strongest joint set-up.

23. I used a spacer stack to increase the registration surface on the post.

24. Dominos are easier to work with if you microwave them before a dry-fit.

Charles Mak enjoys writing articles, authoring tricks of the trade, teaching workshops, and woodworking in his shop. Email: thecanadianwoodworker@gmail.com

I tapered the arms and feet on the tablesaw with a tapering jig (**photo 20**). Another option is to taper the parts on the bandsaw and then sand or plane them to the line. Lastly, I cut out the screw slots and broke all the sharp corners and edges (**photo 21**).

Join the arms and feet to the post

If the top is not too large and heavy, the arms and feet can be joined to the post with dowels. I have a domino joiner so floating tenons were used. I used double dominos in two rows for each joint (**photo 22**). Before I cut the mortises, I labelled all the mating parts properly and double-checked the mortise placement (**photo 23**).

I recommend clamping one joint, or one after another on the same side, at a time. After an hour or so, you can clamp the second pair and so on. Of course, dry-fitting must not be skipped (**photo 24**).

Finish to protect

I sanded the top to 220 grit and the edge to 400 grit to make it look closer to the face grain. After five coats of polyurethane, I predrilled and screwed the top in place. Finally, the most satisfying moment came when I set the seal on the piece, signing my name underneath with a pen.

They say heirlooms are elegant, exhibit fine craftsmanship, and stand the test of time. I'm pretty sure that my small table fits the bill after I overheard my daughter saying that the nice-looking new table would look even better at her place!

Photos: Charles Mak

Diagrams: Graham Sands

** See AWR#83, 6 Workshop Machine Tips, Charles Mak, now also reprinted on our website.*

The MacGyver Bench

A simple fold-up workbench that also stores handtools is a testament to one man's practicality and skills. Story by Kerryn Carter.

The author with the 'MacGyver Bench' designed and made by her father as a handy all-in-one foldaway workstation and tool storage.

I arrived at my brother's house, went straight to the one corner of the garage that wasn't filled with golf clubs and baby gear to see my father, John Dixon, hunched over in work mode position. He was busy installing what looked to be his version of the much loved fold-down workbench. I asked him what it was. He said 'It's the MacGyver bench'.

He gave me a wink and I took the bait, 'Okay, what's that?'. 'It's so when I come to Sydney and visit your brother I have somewhere to fix just about anything. And the whole thing folds up to nothing.' And with that he happily resumed his installation.

My father was always a man of action who loved his workshop. He entered into working life via the BHP blast furnaces in Newcastle as a boilermaker. He was solid and muscular, not from hours at the gym, but from years of industry. At the very core of his soul was a desire to make and when he wasn't making he was helping others make.

After years at BHP he left to join the ranks of other unsung heroes who teach wood and metalwork in our schools. He never graced the pages of this magazine with his work although almost certainly some of his students have. While his output and standards were remarkably high he would humbly never have believed his work to be good enough. He spent his life making the lives of his family (including me) and friends better by fixing things or making them things they needed or could not otherwise acquire.

I'd classify his taste as Shaker minus the spindle back chair. He certainly liked clean lines and let the beauty of the wood speak for itself. He had a passion for Tasmanian oak, so our house became a shrine to the species so-named. It was an endless procession of hall tables, entertainment cabinets, coffee tables and side tables and because he was a metalworker, there were wrought iron artworks, security doors and steam engines to name a few. Being able to work both wood and metal is empowering and patent to every visitor to our house.

My father died within months of installing his 'MacGyver' bench in my brother's house. I was paralysed by grief at his passing. He left us and many other people with his beautiful furniture and of course a workshop packed full of machines, jigs and tools but I often came back to his MacGyver bench. This represented something important to me because I saw it as his first lesson for me in what is a good basic workbench and tool assortment. There are certainly many iterations of this kind of foldaway workbench but I still like this one because it's small and simple.

The MacGyver Bench is essentially two almost identical hinged frames. The top frame attaches directly to the wall and the workbench frame is supported by hinged legs. The beauty of this design is obviously that your tools are stored in your bench, which is itself foldaway.

Photos: Kerryn Carter

Kerry Carter teaches woodwork classes for kids in Sydney. Last issue she wrote about attending Roy Underhill's coffin making class.
Email: kerryn@toolschool.com.au

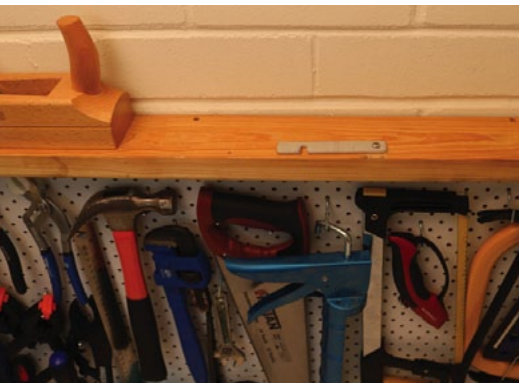
Left: The author demonstrates how the bench is essentially two hinged frames that provide both a work surface and tool storage.

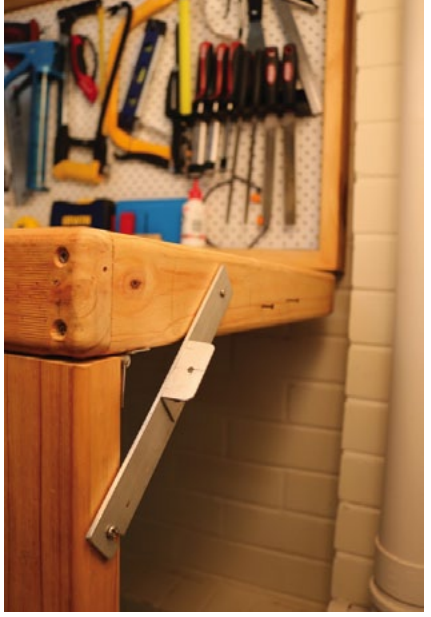
Opposite, clockwise from top: A latch secures the closed-up bench frame.

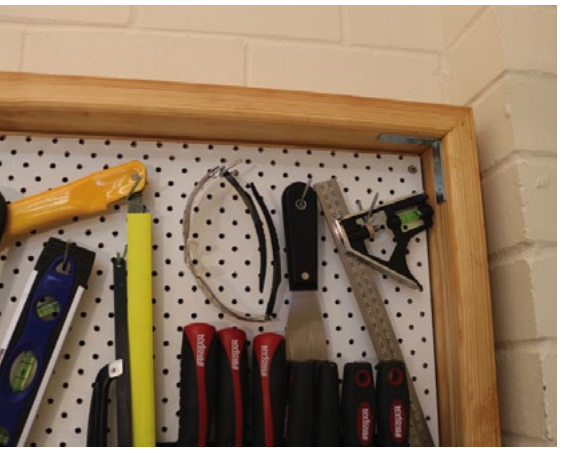
Shopmade aluminium side leg locking brace.

Showing the vice and lower frame construction.

The top frame has simple reinforced mitres and pegboard that is screwed in.







CUTTING LIST (mm)				
	QTY	LENGTH	WIDTH	THICKNESS
Top frame assembly				
Rails	2	1260	89	35
Stiles	2	645	89	35
Panel (melamine or plywood)	1	1214	599	16
Pegboard batten stiles	2	569	30	10
Pegboard batten rails	2	1184	30	10
Pegboard panel	1	1184	569	4.8
Workbench frame				
Rails	2	1260	70	35
Stiles	2	599	70	35
Cross rails	2	599	54	35
Panel (melamine)	1	1214	599	16
Legs	2	842	70	35
Leg rail	1	1228	41	41

1. Top frame

The top frame that houses the pegboard and tools is a simple mitred frame (reinforced with screws and angle brackets) with a rebated rear that holds a 16mm thick melamine panel (can be plywood). The melamine panel is held in by screws and attaches directly to the wall with four long lag screws on washers.

The pegboard rests on battens which are screwed onto the melamine panel. The top frame is also supported underneath via a rail which is independently dynabolted into the wall. In order to accommodate tool storage, the top frame is made of 89mm pine which is thicker than the workbench frame which is just 70mm pine.

2. Workbench frame

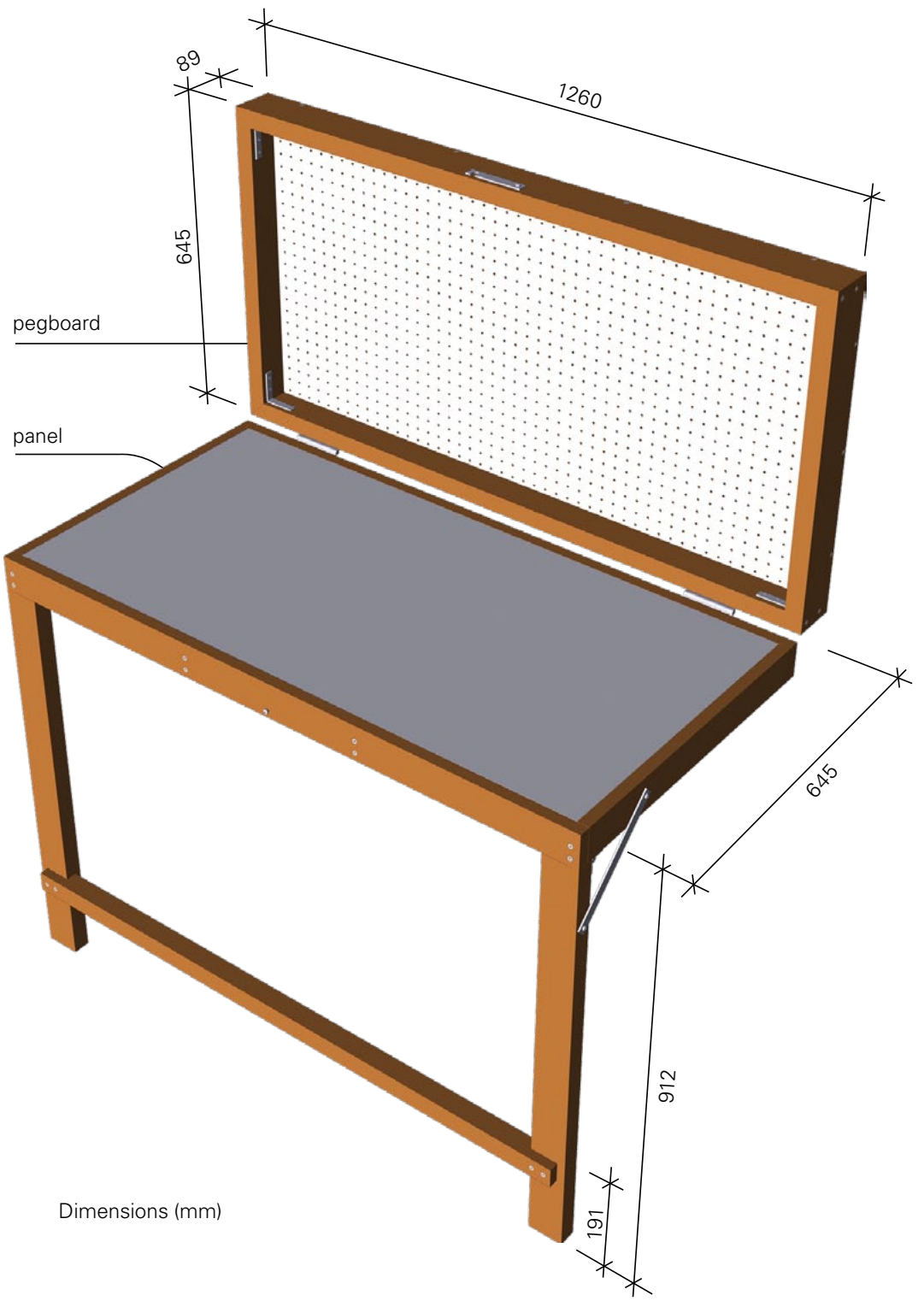
The 70mm thick workbench is a lap-jointed frame (reinforced with screws) which is rebated to hold another 16mm melamine panel. The melamine panel is also supported underneath by two cross rails which are screwed both into the workbench frame from the side and from underneath up through the melamine panel.

3. Leg construction

The pine legs are 70mm wide and are braced with a lap jointed support rail.

4. Side brace and top latch

My father made his own side leg locking brace out of aluminium and a rivet. You can buy side braces from most hardware stores if you don't want to make your own. The top latch is easily manufactured using a drill and aluminium sheet and some screws.



Dimensions (mm)

Hollow Turning: The Cheat's Way

Adding a shaped insert allows Andrew Potocnik to make a small lidded vessel in an open-ended way.

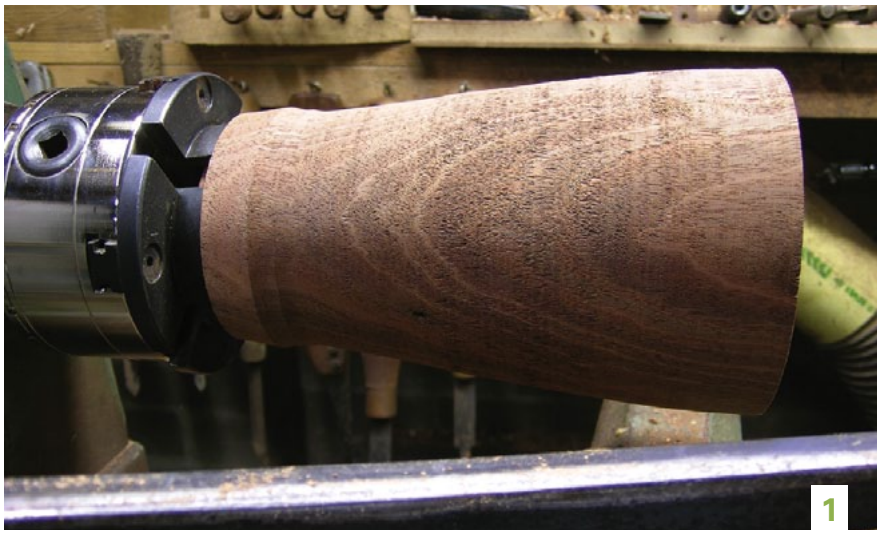
The eye has an uncanny ability to equate visual and physical weight. Have you ever seen a beautiful form that looked as though it would be quite heavy, but been surprised at how light it turns out to be? Or, less happily, the reverse.

In woodturning a light 'enclosed' form is achieved via a technique known as hollow turning. Here tools are fed, most often through a small opening, into the interior of a spinning piece of wood to turn or 'carve' away material. Shavings are removed through the same opening and the turner works 'blind' until a suitable result is achieved.

Turning a lightweight hollow form of even wall thickness is a badge of honour and all credit to those who excel here. There is a whole industry devoted to making this process all too easy, as long as you can master quirks of the tool, but here is how I took a cheat's approach.

Instead of hollowing through a small opening, clearing shavings constantly and working blind, I opted to simplify things. I often state that I'm not precious about the work I make, but am precious about the wood I use, and this project is one where I highlighted some of my treasured timber in the finished piece.

I began with what I consider my default timber – redgum. *Eucalyptus camaldulensis* is used well short of its true potential and freely found seasoned as fence posts or house stumps. These are commonly regarded as potential firewood, but I like to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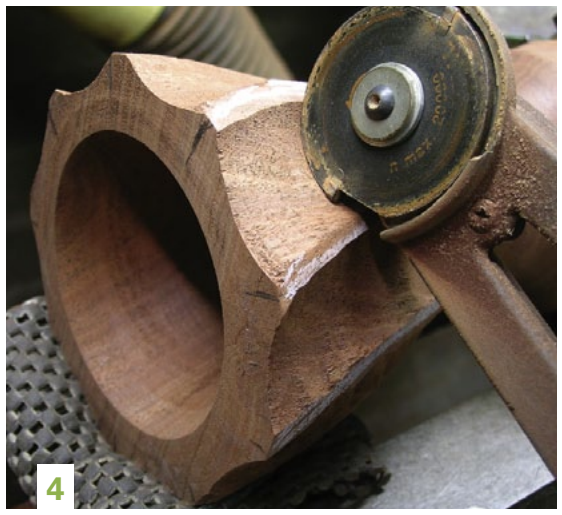
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‘burn’ redgum to create texture, rather than warmth in a fireplace.

My chosen piece of house stump was mounted between centres and rough turned to a cylinder with a tenon at one end that was fitted to a scroll chuck (**photo 1**). I then rough turned a portion of the exterior form and rough hollowed the interior.

Apart from texture, I wanted to feature an outer spiral flute which would be ‘carved’ freehand. I measured the circumference of the top, divided it equally into what I thought was a suitable number of flutes, calculated the distance between peaks of each flute, set the distance on a set of vernier calipers and transferred the spacing onto the top of the form (**photo 2**).

After transferring markings to the top outer edge of the form, it and the scroll chuck were removed from the lathe and flipped end to end, allowing me to draw tapering spiral lines in chalk toward the base of the form (**photo 3**).

The only reason I rotated the form is that as a natural right-hander, I find it easier to draw curves that swing top left to bottom right due to rotation of my torso. This may sound strange, but it is a motion I also find works well when using the Arbortech mini carver to create the shallow flutes I desired (**photo 4**). Initial rough carving was followed by lighter cuts to streamline flutes, working toward intersecting edges, and ensuring each tapers as it approaches lower parts of the form.

The complete assembly was then returned to the lathe spindle for the interior to be trimmed to final shape and size, then sanded through to 320 grit (**photo 5**). A step or rebate was cut with a ‘granny tooth’ scraper (**photo 6**) – this would accept an insert of some of my treasured jarrah burl.

It was time to mount the jarrah burl to a carrier with hot melt glue and trimmed to size (**photo 7**), then hollowed slightly before fitting it back to the redgum form so the upper profile could be shaped


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(**photo 8**). Being a very porous piece of wood with numerous voids and potential weak spots I added cyanoacrylate glue to spots that might break later in the turning process (**photo 9**).

Once sanded, an opening was established with support from the tailstock. Even though the jarrah insert fitted snugly into the bowl, I secured it with plastic tape so the opening could be refined and a bead turned to add definition (**photo 10**).

The form was then mounted on a scroll chuck used in expansion mode with jaws gripping the inner part of the step that was cut for the jarrah insert (**photo 11**). In this way I could finish shaping the conical form and complete the flutes (**photo 12**).

The flutes were burnt and wire brushed to expose the grain, add texture, contrasting colour, and also eliminate the need for hours of sanding. You can interpret this in two ways: either I love texture, or I can't stand sanding (**photo 13**).

The base was made from an offcut of jarrah burl held in a scroll chuck with the underside shaped and sanded before two neatly cut V-grooves were incised with a diamond pointed scraper (**photo 14**). These lines create a visual band where I later add my name and timber information. This was then fitted onto a carrier into which I cut a shallow recess that matched the perimeter of the jarrah, and added several small dobs of very hot, heat sensitive glue (**photo 15**). Here's a hint: if the glue isn't really hot it won't allow surfaces to press together correctly before it hardens and prevents components from running truly.

Allowing a few minutes for the glue to cool and set, I completed the domed form (**photo 16**) before drilling a 2mm diameter hole with a Jacobs chuck held in the tailstock (**photo 17**). The same was done in the bottom of the redgum form (**photo 18**) so a matching sized pin could be inserted and the two parts glued together (**photo 19**). To ensure the base was correctly aligned I removed the chuck from the


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tailstock and used its flat surface to apply pressure to both components as they bonded. The lower portion of the jarrah base was undercut so the form would 'sit up'.

All components were pre-finished prior to assembly with a wipe on, wipe off polyurethane finish because I prefer wood grain and texture to dominate rather than a too-shiny finish.

With base and vessel forms bonded, the jarrah insert was glued in place and I could move onto the lid. A segment of redgum was fitted into a scroll chuck and the underside shaped (**photo 20**). A tenon matching the interior of the jarrah opening was turned with measurements checked with digital calipers to ensure the lid would lift off easily but the fit was without slop. It was then reversed and fitted into a jam-fit carrier so the top could be shaped and six segments marked using the indexing guide on the lathe pulley (**photo 21**).

Six shallow flutes were carved into the lid (**photo 22**) before it too was burnt and wired-brushed (**photo 23**) to blend with the body of the vessel. A small hole was drilled into its centre to accept a finial that was turned from redgum held in a scroll chuck (**photo 24**) before these too were pre-finished with polyurethane and assembled.

Although I was pleased with the piece, I had one more test to perform. I remember hearing from a highly respected turner many years ago that no matter how spectacular the grain and colour of your wood is today, eventually all light coloured timbers will end up a yellowing, and darker species will go a deep brown. The form will; however, stay the same.

Poor form will not improve with age, and good form will not deteriorate, so to test my piece I took some shots with strong back lighting to allow only a silhouette to remain. I think this one passed the test.

Photos: Andrew Potocnik

Andrew Potocnik is a wood artist and woodwork teacher who lives in Melbourne. Email andrewpotocnik@telstra.com

Wood Diary

For more events and news sign up to AWR fortnightly newsletters at:
www.woodreview.com.au

Diary listings are free. **Mail to:** Wood Diary, PO Box 3893, Loganholme DC, Qld 4129 **Email to:** linda@woodreview.com.au

Note: Listings are correct at time of publication but may be subject to change. It is advisable to check details with the organiser before visiting.

18–19 FEBRUARY
Tools & Techniques Festival
Sturt School For Wood
Mittagong, NSW
www.sturt.new.edu.au

19 FEBRUARY–2 APRIL
Alumni Exhibition:
Selected Graduates 1985–2005
Sturt School For Wood
Mittagong, NSW
www.sturt.new.edu.au

26 FEBRUARY
2017 Sydney Tool Sale
The Brickpit Sports Stadium
1A Dartford Rd, Thornleigh, NSW

3–5 MARCH
Bowna Turnabout
Albury-Wodonga Woodcrafters Inc
Bowna, Hume Weir, NSW
www.awwinc.com.au
www.tttg.org.au

8–11 MARCH
Malaysian International Furniture Fair
Putra World Trade Centre
www.2017.miff.com.my

11–12 MARCH
Lost Trades Fair
Kyneton Racecourse, Victoria
www.rundellandrundell.com.au

11–12 MARCH
27th Annual Shepparton Woodwork Show
Woodturners of the Goulburn Valley
Eastbank Centre,
Welsford St, Shepparton, Vic
Len Taylor 0458 777 901
www.woodturnersgv.com

18–19 MARCH
Hand Tool Event
Melbourne Guild of Fine Woodworking
14 Cottage St, Blackburn, Vic
www.mgfw.com.au

19 MARCH
Hand Tool Preservation Association of Australia Tool Sale
St Anthony's Hall, cnr Grange & Neerim Rds,
Glen Huntly, Vic
www.htpaa.org.au

28–31 MARCH
CIFM/Interzum Guangzhou
Guangzhou, China
www.interzum-guangzhou.com

30 MARCH–2 APRIL
Timber & Working With Wood Show
Newcastle Exhibition Centre
www.timbershows.com.au

8 APRIL
Tools, Timber and Techniques
Perth School of Wood
81 Abernethy Rd,
Belmont WA 6104

29 APRIL–1 MAY
Maleny Wood Expo
includes Wootha Prize exhibition
Maleny, Showgrounds, Qld
www.malenywoodexpo.com

12–13 MAY
Cooroora Wood and Craft Show
Cooroora Woodworkers Club
8 Lowermill Road, Cooroy Qld
Email: cwclubinc@hotmail.com
www.cooroorawoodworkersclub.com

19–20 MAY
HandWorks: Woodworking Tools & Traditions
Amana, Iowa, USA
www.handworks.co

19–28 MAY
Splinters Woodwork Exhibition
in conjunction with Eurobodalla River of Art
Mechanics Institute Hall,
Page St, Moruya, NSW
Eric Simes: esimes@bigpond.com

22–26 MAY
LIGNA 2017
Hannover, Germany
www.ligna.de

24–28 MAY
Wood Turning Magic 2017
Peninsula Woodturners Guild
Peninsula Community Theatre
Cnr Wilson's Rd & Nepean Hwy,
Mornington, Vic
www.pwguild.org.au

26–28 MAY
Timber & Working With Wood Show
RNA Showgrounds
Bowen Hills, Brisbane, Qld
www.timbershows.com.au

2–3 JUNE
Boonah Show
Includes woodwork display
Boonah, Qld
Ross / Sandy Gilbert: r.sgilbert@bigpond.com
www.boonahshowsociety.org.au

8–10 JUNE
Den Fair
Melbourne Convention and Exhibition Centre
www.denfair.com.au

23–25 JUNE
Timber & Working With Wood Show
Sydney Olympic Park, NSW
www.timbershows.com.au

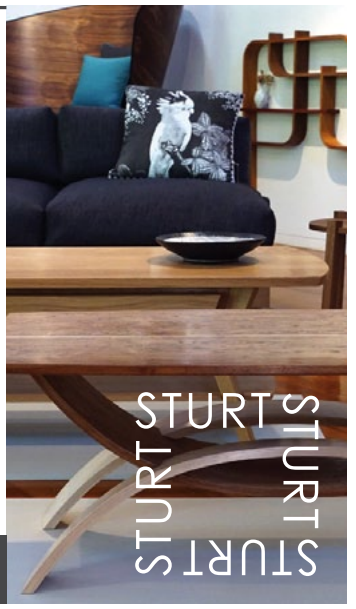
4–6 AUGUST
WA Wood Show
Claremont Showgrounds, WA
www.wawoodshow.com.au

10–27 AUGUST
Work by Simon Parsons
Gallows Gallery
53 Glyde St, Mosman Park, WA
www.spfurniture.com.au

9–11 SEPTEMBER
Timber & Working With Wood Show
Caulfield Racecourse, Vic
www.timbershows.com.au

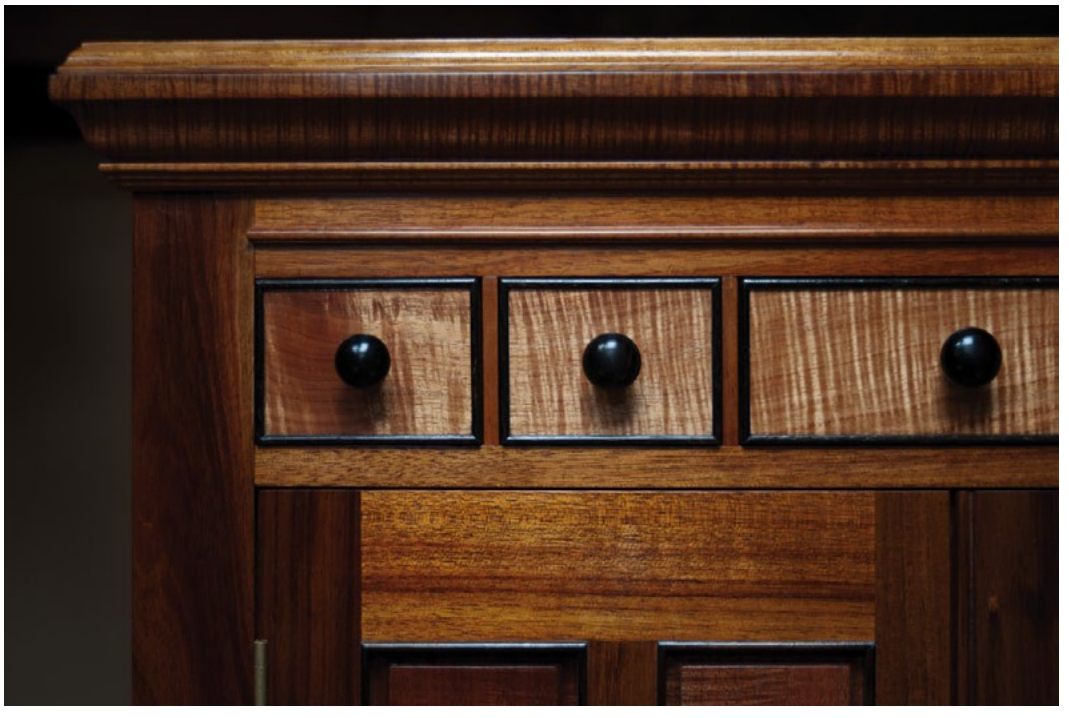
18 OCTOBER–11 NOVEMBER
Double Take in Wood, featuring Create From a Crate and Fine Woodworking
Victorian Woodworkers Association
Manningham Gallery, Vic
www.vwa17.org.au

18 NOVEMBER–3 DECEMBER
Graduating Exhibition
Sturt School for Wood
Mittagong, NSW
www.sturt.new.edu.au



Keeping Chests

Arthur Grant made a cabinet for storing memories for each of his grandchildren.



Many years ago I saw a chest containing many drawers in a magazine and said to myself 'I should make one of those'. But like many good ideas the time was never set aside to realise the dream.

About that time our two sons were married and four grandchildren came along, all needing beds and chests of drawers to store clothes as well as other little toys, and clocks to tell the time when they had their sixth birthdays.

After years of teaching woodwork, woodturning and technical drawing to carpentry and joinery apprentices, the time came to retire and do something else. Antique furniture repairs taught me what was right and wrong with many pieces and why they broke down. Many were glued and nailed together across the grain and didn't allow for the wood to move during the seasons. Softwood glue blocks don't stay put forever and inferior secondary woods in unseen places are ice cream for borers, and a nightmare to replace without destroying the integrity and value of the piece.

All of a sudden grandchildren were growing up and my brain reactivated with that old idea to make a chest to keep those special bits and bobs that most people collect as they travel through life. A keeping chest – but there are four kids, now young adults to be catered for, well here goes…

Out with a large sheet of paper taped to a sheet of chipboard to make a full sized drawing and sort out not only sizes and shapes but also problems that may arise during construction.

The choice of wood was answered by my friend Murray, who supplies blackwood to Maton Guitars and who brought me some thick bandsawn veneer of fiddleback satin box and also some exquisite fiddleback blackwood, as can be seen on the matching grain of the drawers. Another friend had given me some fragrant rosewood salvaged from a farm in NSW, and yet another some small logs of Californian redwood grown in the Otway plantations as a trial. After a great deal of sawing and sorting, all this free material was ideal for drawer sides and backs.

After the lightweight framework was assembled I fitted the drawers while the whole innards were still visible and accessible. The outside frame and panel construction of the ends, backs and doors was straightforward using routed mortises on the stiles and rail ends, and gluing up with home made slip tenons.

With spiral router bits and my own clamping jig I can be very adaptable with mortise sizes ranging from 3/16" up to 1/2" at any length to fit the job. Here I used 1/4" and 5/16" bits as the material in most instances was only 15–18mm thick. One chest has ebonised cock-beading and one has pencil rounded drawer fronts. This changed the look without altering any of the proportions necessary for mass machining and construction, if you can call four sets mass production. I machined all the parts at once, then set two sets aside because I didn't have the space to do them all together.

The drawers and also the knobs from top to bottom are graduated in size and each chest has secret compartments. With the secretaire lifted out onto a desk, the space behind the doors can then be taken up with the two adjustable shelves. Below the doors a small pull-out desktop neatly separates the doors from the lower drawers. As a final touch, each chest was named for the recipient along with the date of completion and my name.

Like all such complicated and lengthy projects little things go wrong and have to be rectified, but that's all part of the process. After spending nearly a thousand hours of concentrated effort I guess that I'll have to turn my endeavours to something new. I may have to clean up the scraps, sharpen the tools and clear some space first and maybe think about the blanket box that number one son has been talking about.

Photos: Arthur Grant

Arthur Grant with two of the four keeping chests he made for his grandchildren, showing how the secretaire can be lifted out and placed on a desk or even on top of the cabinet.

Opposite: Detail of one of the chests.

Each cabinet was fitted with the maker's mark and inscription.

Arthur Grant is a retiree who started life as a joiner before re-training to become a trade instructor and secondary school teacher in the old Victorian technical school system. He wrote about making the winning entry in our dovetail competition that appeared in Australian Wood Review issue 80, Sept 2013.

Smartphone Speakers

Turn up the volume with these simple to make, low tech phone speakers. Story by Raf Nathan.

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1. A drill press fitted with a 40mm diameter carbide toothed forstner style bit was perfect for the job. This gave a smooth and clean hole which required minimal clean-up.
2. Three pieces of wood are prepared and ready to glue up.
3. The three pieces all glued up.
4. Design three has the same 40mm diameter main speaker hole. A 9.5mm (3/8") forstner bit was used for the cradle drilling. Using the same settings on the drill press, a smaller 6mm (1/4") drill bit created the sound slot.

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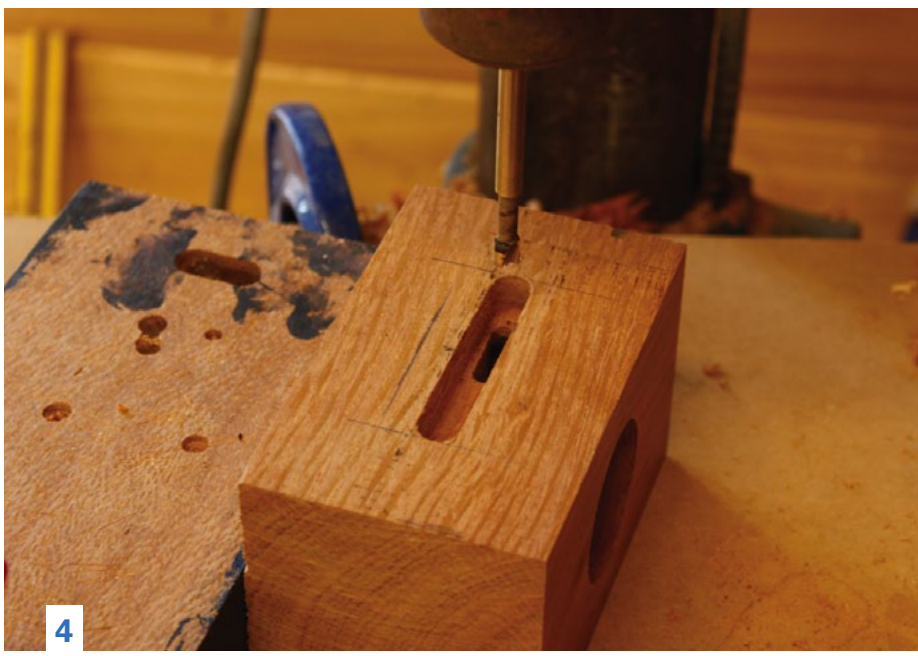

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Smartphone speakers are a great small project for the woodworker. Basically a simple sound box amplifies your phone and becomes a desktop speaker, without batteries or wires. You can expect a surprising boost to volume and sound quality.

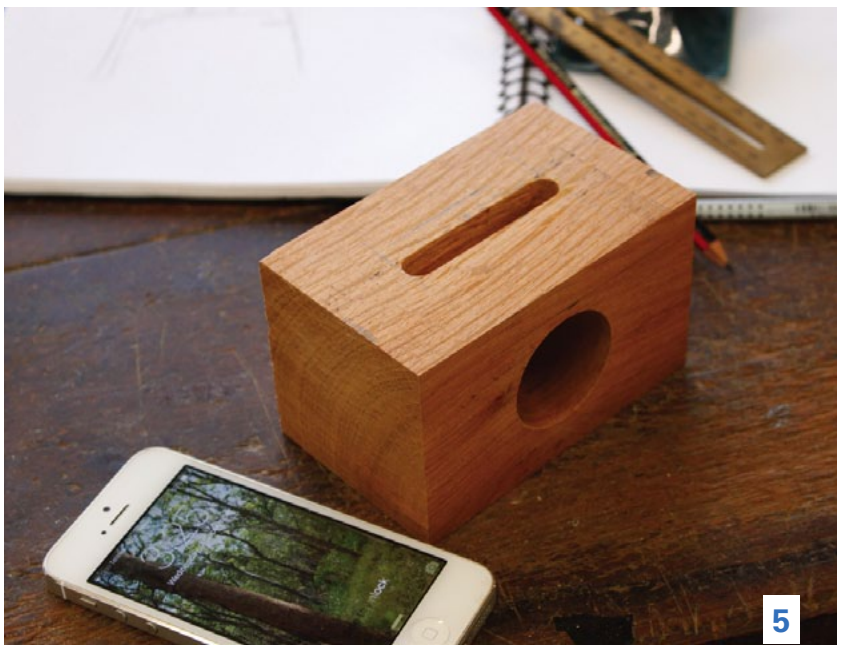
There are a number of designs that pop up on the internet as it is not a new concept. I made four design variations for this project.

The phone needs a relieved section or cradle to drop into which is about 20mm deep. You will have to measure according to the phone model you have. At the bottom of the cradle is a slot to carry the sound into a larger hole which is the 'speaker'.

The first two designs I made were a glued up box that interestingly were not as good at amplifying as the third design which uses a drilled out solid square section of wood.

Designs one and two use three pieces of wood: the backing board, a centre board with a cradle to house the phone, and a front soundboard.

5. Design three, almost finished.
6. A bevel was added using a laminate trimmer and a 45° cutter.
7. After finalising the design I made a small batch of speakers from sheoak and leatherwood. For efficiency and safety I left the wood long when machining and cut the individual boxes to final size last. A 5° angle was sawn into the front and the main speaker holes were then drilled, also at 5° to the face. The phone cradle was routed out with a plunge trimmer. With all machining completed, the speakers were then sawn off.
8. The resulting batch of phone speakers in the variations described here.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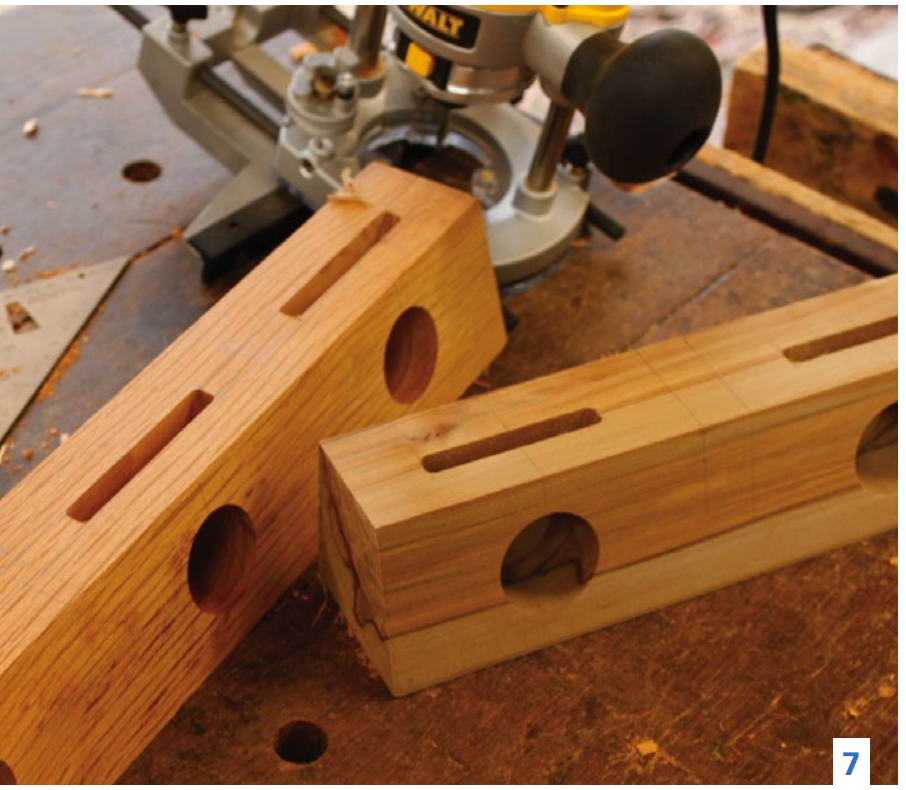
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The first design made from oregon worked quite well and then, for the second design made of King Billy pine, I used a thin soundboard, like on a guitar, for the front. In theory this should have given an improved sound quality but actually to my ears it made little difference.

The third design turned out to be the best and was made from a solid piece of West Australian sheoak with a drilled out cradle and a 40mm diameter speaker opening. This worked well as the hardwood seemed to add more clarity to the emitted sound and the beautiful sheoak grain makes it a desirable object. To improve the design from a lump of square wood I beveled the outside edges and the front of the speaker opening.

I also added a 5° angle to the front face of the third design which does no more than make it a more complex looking object. The speaker hole was drilled at an angle of 5° as well, so the hole remained perfectly round. Anyone can cut off a chunk of wood and drill a few holes but if we are fine woodworkers then surely we can add in some details.

You can have some fun experimenting with shapes and different wood species. These speakers are a great gift item and they do work well.

Photos: Raf Nathan

Raf Nathan is a woodworker and furniture designer/maker who lives in Brisbane. Last issue he wrote about 8" jointers and 15" thicknessers.
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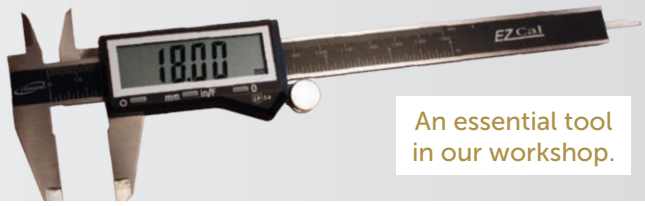

An essential tool in our workshop.

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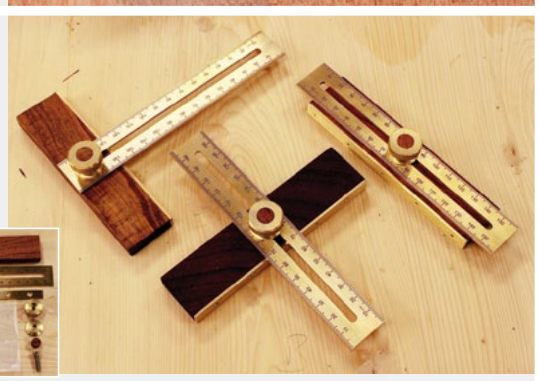

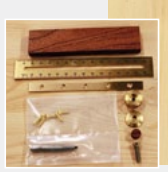

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