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86

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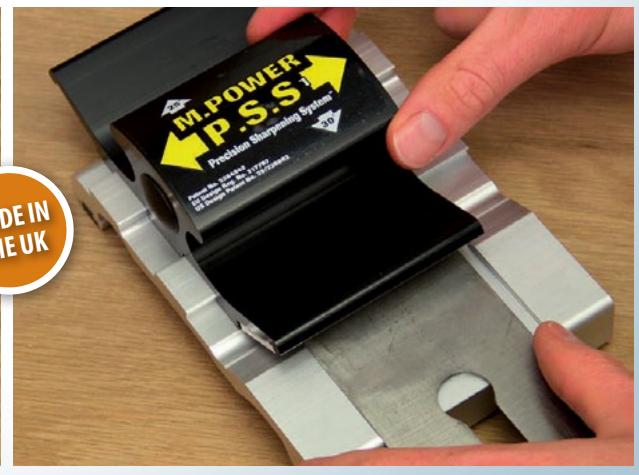

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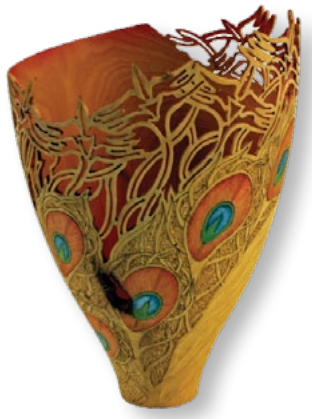

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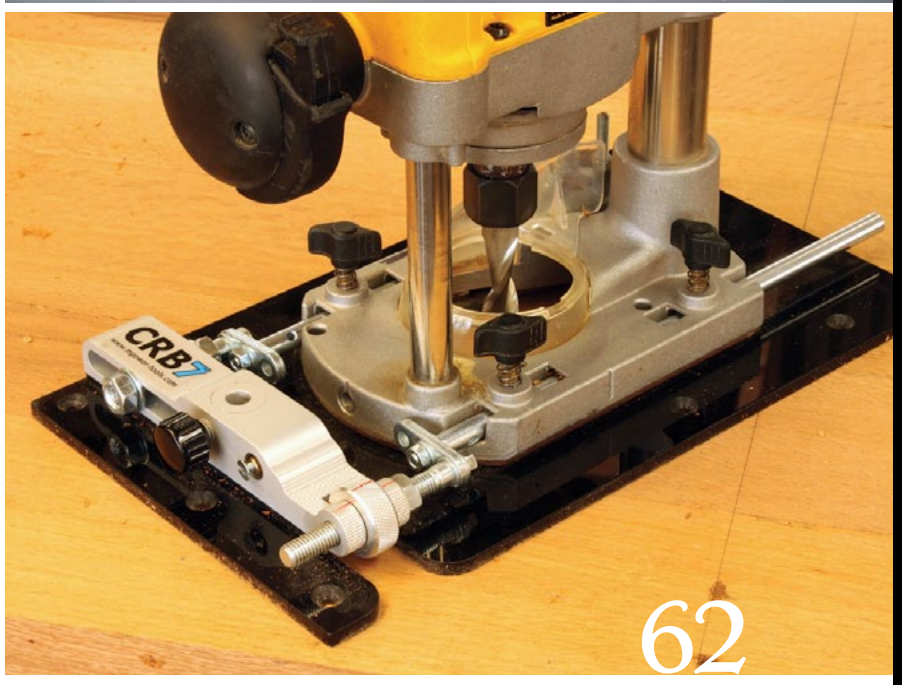

Editor's Letter

Towards the end of November I had a near-death experience – well what else would you expect at a deadline? But after a slow start entries for Wood Review's Student Awards came. Nearly one hundred in fact, and how enjoyable was it to view them as they arrived.

Yes, there are judgements and prizes and it is a competition, however the main aim is to provide a platform, national in this case, for secondary students to display their woodwork and design efforts so others can acknowledge and enjoy their achievements. In a country where there is an ongoing commentary about manufacturing industries and skills disappearing it seems like a good idea to cultivate these things even at a small-scale grass roots level.

The standard of work impressed, but to labour a point, the idea of these awards is to encourage the acquisition of skills and the perseverance to take a project through to completion. Everything can be a stepping stone. Nevertheless our judges were given the task of selecting award winners and to this end they arrived at decisions. You can skip to the results on p.40.

Popular Choice Award was just that. Entries were also loaded into an album on the Wood Review Facebook page and the whole world was literally free to vote. With entries displayed in full on www.woodreview.com.au and on Facebook, friends and family were free to view, comment, vote and enjoy the achievements of these younger people. Close on 50,000 people have already viewed the entries. If you haven't yet seen them they are still on the website and Facebook page.

Congratulations go to the teachers who went the extra mile for their students by encouraging and helping them to enter thus allowing us to see what they have made. A big thanks goes to our industry sponsors whose support makes competitions like this possible. Thanks also go to our judges for their careful considerations.

Student Awards are on again for 2015 and we hope to see as much work by younger woodworkers and designers as possible. Entry details will be posted on our website soon.

Highlighting gloss

Gloss, as a finish for wood, often gets a bad rap. It can mask the grain and tactile qualities of wood. When too thick it can look jammy and take away from what otherwise might be a good piece. Taking this baggage on-board Iain Green undertook our first-ever investigation of glass finishes and found that with due care there were many appropriate uses for what are also known as pour-on finishes.

Upgrading your workshop?

Even if you're not short of space Troy McDonald's workshop makeover provides lots of good ideas for making the most of what you do have. It's also a good prompt for re-evaluating what you do and don't need, and why you might tend to hang onto some things.

Collector Special

Next issue we'll take a look at collections. You are invited to send in a description and photos of the tools, timber, workshop or woodwork related items you have several of. See p.33 for details on what and where to send. Whether it's a matter of collecting, hoarding, saving, preserving or just plain old accumulating, we're hoping your collection will form part of our feature next issue.

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COVER:
Damion Fauser in his Darra, Qld workshop

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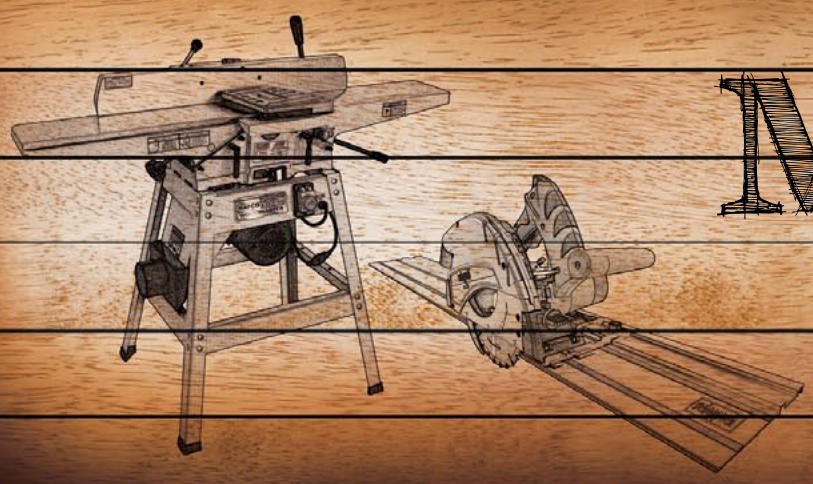

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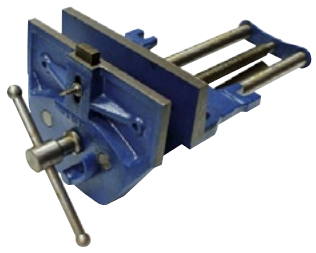

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WoodRiver Butt Chisels

Reviewed by Robert Howard

This Chinese-made chisel set is well presented in a finger jointed wooden box, with each tool having a plastic edge guard. The chisels look great with their solid bubinga wooden handles and machined, polished and tapered ferrules.

A small quibble is that the fit between the ferrule and the tapered end of the blade is not precise, and leaves a small, sharp shoulder. This might become annoying during an extended period of work, however the shoulder can be softened with a slipstone or some fine emery paper. The chisels are well balanced, with an excellent feel in the hand.

The blades are a high carbon steel, rather than the A2 or O1 of the more expensive brands. The set I have to evaluate is supposed to have been sharpened (an option that is supposedly available overseas), but I can see no evidence of it. The blades have been well ground to the usual 25° bevel angle, but not honed.

The backs of the chisels in this set are all admirably hollow, bearing on my stones at each end of the blade, and not touching anywhere in the middle. This might just be luck, but the fact that all four were the same would seem to suggest otherwise. It could be part of the preparation for the sharpening that was supposed to have happened. What concerned me more however, was that in preparing the back of each chisel, probably with a linisher, the manufacturer has dubbed over one long edge on each one of them. Fortunately, I found that by the time I had polished the back to an acceptable level across the back and just behind and up to the edge, the dubbing had been removed from that critical area. What remained did not affect the performance of the chisels.

I set up my usual chopping test for toughness of an edge. I cut a square end on a piece of 150 x 50mm Australian cedar, marked a knife line 1mm in from that end with my cutting gauge, and clamped a square section piece of hardwood across the board on the line. I was then able to chop down through the cedar with the chisel held square against the piece of hardwood. I did this with a number of chisels of different makes.

After 32 cuts all the chisels were still cutting cleanly, so I prepared a piece of 30mm thick spotted gum. Without resharpening, I put all the chisels once more to the test. No edge was intact after the first cut.

I was not surprised or dismayed by this. My conclusion was that if the chisel will cut through 50mm cedar at least 36 times, and keeps up with well known brands, it is good enough for me. Tests like this are extremely variable I have learned, and seem to depend very much on the particular piece of wood used. However, if the same wood is used for each chisel, it does give some basis for comparison.

As always with WoodRiver tools, the best news is the price. At less than $20 each, these chisels are amazingly good value. Remember though that they are butt chisels, so the blades are just over 60mm long – about the same as a Japanese chisel – and you need to be able to work with that.

Review tools supplied by Professional Woodwork Supplies: see www.woodworksupplies.com.au

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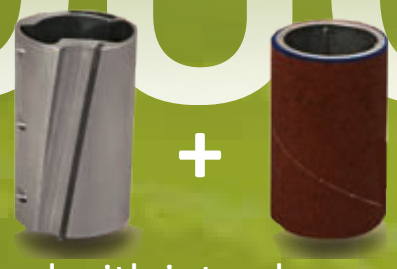

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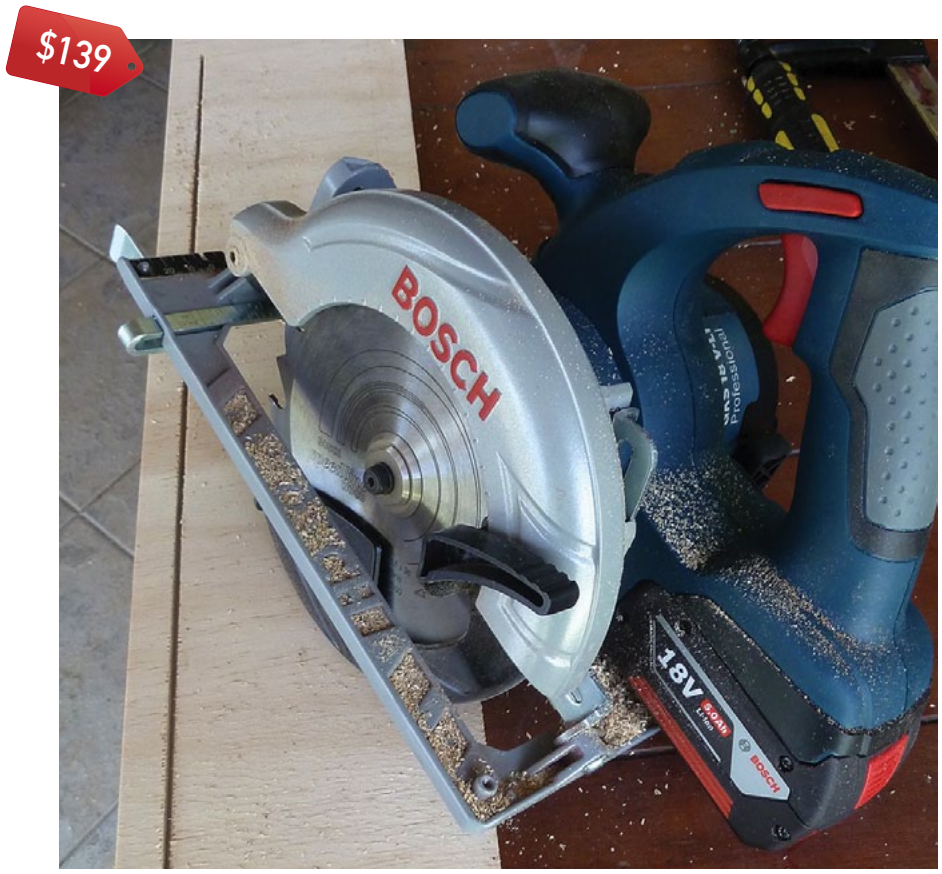
Bosch GKS 18V-LI Professional Circular Saw

Reviewed by Kerry Cameron



Above: The 5.0Ah battery had plenty of grunt for test cuts. Crosscutting (and ripping) 40mm thick hardwood was a breeze.

Supplied as a 'skin' the out of the box design and manufacture quality of this 165mm circular saw is impressive. It will accommodate any of the 18V-LI battery packs made by Bosch. The test saw came with the new CoolPack 18V-LI 5.0Ah ($129) and AL 1820 CV fan-cooled charger ($59), making it a perfect, well balanced combination for tough robust use. CoolPack batteries are claimed to offer 25% more run time than 4.0Ah and 67% more than 3.0Ah batteries without any increase in weight or size. CoolPack compatibility extends to the entire Bosch 18V range. Dust extraction accessories are also costed as extras.

When fitting the blade I found it awkward to slot under the guard but once in position it is easy to tighten with the on-board allen key by holding the spindle lock. Having to press in a sizeable button with your thumb before engaging the trigger makes start-up safer, while releasing the trigger activates an instant brake to stop blade rotation.

An easily accessible rear-clamping lever adjacent to a depth scale sets depth of cut. The calibration is reasonably accurate as is the angle adjustment of the base plate. Maximum depth of cut is specified as 51mm at 90°, and 40mm at 45°. The saw handled 50mm hardwood with ease and also 35mm pine at 45°, impressive capacity.

The 18V Li-ion 5.0 Ah battery really gave this saw some grunt and I put the battery to a test of endurance by firstly ripping through a length of 70 x 35 pine using the supplied parallel guide for 600mm then doing 50 crosscut sections. I followed up with a half dozen crosscuts of 150 x 40 hardwood landscape timber including two 500mm rip cuts. Next I found a length of very old weathered hardwood 70 x 35 recycled stud and proceeded to do in excess of sixty crosscuts in quick succession. The saw did not falter and the battery showed one-third charge remaining. A full recharge took exactly 45 minutes.

I feel the parallel guard should be made to a stronger design and the fence should be that bit longer to achieve a more accurate and consistent rip when in use. This seemed out of place with the whole quality package.

The 5.0Ah pack really proved its worth. The fan-cooled charger has automatic cut-off and LED indicators show when charge is complete, making the combination an economical and valuable addition to any workshop or tool kit giving the opportunity to extend your range of Bosch cordless tools.

Overall this is an excellent circular saw and I would definitely be happy to add it to my kit if I needed to replace my current corded saw. Coupled with the LI-ion battery of your choice it is great value. I recommend going for the 5.0Ah CoolPack.

Review tool supplied by Bosch, www.bosch-pt.com.au

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> "Accentuates the texture, knots and natural features in fine timbers"

The Feast Watson Glass Finish kit contains the resin and hardener components plus a Usage Guide booklet which you should read before you start your project. Available in two kit sizes which will coat coat surface areas of either 1.0 or 0.5 square metres. Your timber surface should first be sealed with Feast Watson Proofseal or a suitable sealer. The resin and hardener are mixed in the correct ratio then quickly poured over the surface. The surface needs to be flat and level. Flood the surface, spread the finish to the edges with a brush or spatula.

It will selflevel but will flow better when the air temperature is greater than 20 degrees Celsius.

Feast Watson Glass Finish will be touch dry after 12 hours, but leave for 24 hours before handling.

Practise the application on a spare timber panel before you undertake a larger project. Ensure you pop the bubbles following the instructions given in the Usage Guide or on the label.

Feast Watson Glass Finish may be applied to many

types of surfaces including metal, plastics and painted surfaces. Porous surfaces need to be sealed first and remember it's suitable for interior surfaces only.

For further information about Feast Watson Glass Finish or any other Feast Watson products and their application, visit www.feastwatson.com.au

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Wooden Nails

Reviewed by Raf Nathan

1. Large and small wooden 'nails' and matching drill bit.
2. Tapered holes are drilled, the nails glued and tapped in, then later sawn flush.
3. This sawn cross-section of nails shows tight and strong joins.

I often use dowels to join small items together and sometimes leave the heads exposed as an added detail. Obviously then I was keen to sample these Japanese sourced wooden 'nail' and drill bit sets. I trialled the 4.7mm diameter and the larger 6mm diameter nails. The beech nails, more correctly termed dowels, have a taper to them that matches corresponding drill bits which are separately supplied.

The process of using them is straightforward. Hold the two workpieces together, mark the position of the nail, drill the hole, tap in the nail, saw it flush, and you are then finished.

I found the fast action of the drill bits was quite aggressive and tended to twist the matching pieces of wood apart. Using a rebate or housing held the wood in place and helped to counteract the twisting action. Drilling at a slow speed also helped, as did clearing the swarf regularly whilst drilling. Clamping parts in place also worked well.

At around 65 cents each the large dowels may not suit volume users. However they are great for door and window joinery and exposed framing. For repair work they would be a boon. Loose wood framing, chairs and table joints can be re-doweled without pulling things apart. Once glued in they offer a strong hold.

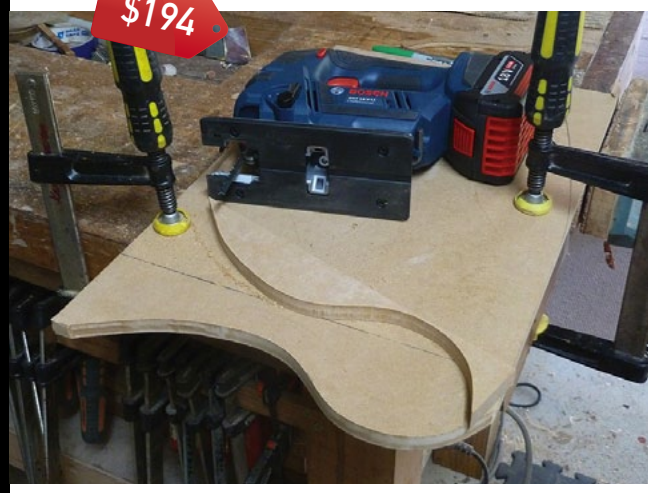
The small nails work out to around 20 cents each, so even using 20 or 40 is inexpensive and effective. For me the small size nails are perfect for jobs like fixing shelves in cabinet sides, pinning tenons or for corner work like mitres and butt joints.

The beech nails are fairly neutral in colour and blend easily with ash or pine, or they can contrast well with different coloured woods.

Small nails come in packs of 300 for $58.40 (matching tapered drill bit is $14.80). A pack of 90 large nails costs $58.40 (matching drill bit $19.80).

Available from www.japanesetools.com.au or phone 0412 011 160.

$194



Above: Curve cutting was smooth and no problem.

Bosch GST Professional 14,4V-LI/18V-LI Jigsaw

Reviewed by Kerry Cameron

Also supplied as a skin this jigsaw can be matched to any of the Bosch 14,4 and 18V LI-ion batteries. The test saw came with the new 5.0Ah and charger.

Well balanced design and quality manufacture gave a good first impression and this was confirmed as I assembled the battery and blade with the battery slotting neatly under the handle grip. With a push and a click the blade fits easily into the snap lock connector; twisting a lever ejects it.

The sole adjusts from 90 to 45° in both directions with the use of an on-board allen key that I found was a bit tight to get out of its holding location – at least it is at hand and not likely to fall out during operation.

The slotted calibrated angle settings are reasonably accurate but each angle change needs to be checked prior to cutting. Three quality blades are supplied, two for wood and one for metal. A supplied plastic splinter guard is inserted in the sole prior to fitting blades to prevent the frying of the surface when cutting wood; this can only be used at 90°.

An LED light and blower directly over the blade stroke rod proved very effective for easy line following when cutting. This, matched with the easy lever setting of the four stage orbital action, makes this tool stand out from the crowd.

I selected 6 and 12mm ply, 12mm MDF, pine and hardwood 40mm battens and an off-cut of 35mm laminated kitchen benchtop for test cutting. I cut the plywood and benchtop with and without the splinter guard and this showed how effective the insert is. The saw cut all the selected material with ease and did not hesitate when ripping 30mm hardwood. The middle orbital setting proved to be most effective for the thicker, denser material.

This tool is a pleasure to use, and really only needs guidance by applying variable speed with trigger pressure to ensure a nice even cut. Changing to the metal blade, the saw easily handled 4mm thick aluminum.

Following a good hour of test cutting the 18V 5.0Ah battery power indicator showed minimal loss of charge and took only 15 minutes to bring back to full charge.

This is truly a professional tool and has a place in all tradies' kits or for that matter any constant user of a jigsaw; a very impressive product. A dust extractor vacuum connector, parallel guide and circle cutter are available as optional extras.

Review tool supplied by Bosch, see www.bosch-pt.com.au

Makita MLT100 Tablesaw

Reviewed by Andrew Potocnik

1

$529

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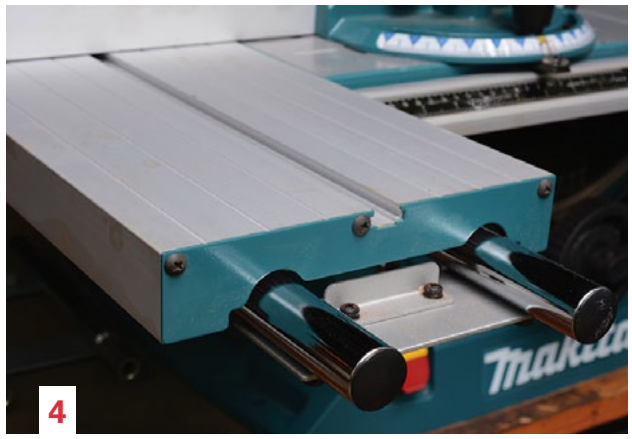


4

1. Makita's budget priced MLT100 tablesaw has a lot to offer.
2. See-through blade guard.
3. Rip fence close-up.
4. Sturdy sliding table.

This saw fell outside of the price range of benchtop saws I compared last issue. It arrived in quite a large 46kg box needing two people to manoeuvre it. The size of the box is due to the saw being fully assembled – only the guard and two optional supports need to be fitted before it's ready to use – wonderful! If you're wanting portability, a stand with built-in wheels which folds down with the saw still in place is available for an extra $279.

The table is cast aluminium fitted to a plastic base, as is the left hand sliding table. Back and right extensions are of pressed metal. The saw footprint is 660 wide x 500mm deep, and with the release of a few knobs, the 965 x 690mm table expands to 1310 x 840mm allowing for a maximum rip of 725mm. There is also a sliding support at the rear that extends a further 150mm. All of these extensions ensure there is ample space and support for cutting large sections of timber, well beyond what you'd expect of a machine of this size.

The mitre gauge with its large handle and broad fence can be locked onto the left sliding table for easy repetition of angled cuts, however I found there were points when the mitre gauge caught on the table. A bit of post-purchase maintenance may be in order.

The 1500kw motor with soft-start and brake powers a 255mm TCT blade with a 2.5mm kerf which cuts very cleanly and left minimal tear-out when ripping and crosscutting. The motor is enclosed in a plastic casing leading to a 50mm/2" hose port, which when attached to a vacuum cleaner drew away a large volume of dust.

Although not a complicated machine to operate, easy-to-understand instructions are provided. To rip narrow strips of timber you loosen two knobs, flip the fence over and slide it back onto a pair of bolts; a quick and simple procedure. You can also slide the fence to the left of the blade, but you'll be restricted to 180mm capacity. A mitre track on the right lets you use the mitre gauge for cutting angles that may not be safe on the conventional side.

The switch is one of the best I've found on a machine. Located to the left of the motor it is easy to reach – hook your finger under and lift to start the machine, press down for a quick stop, which, thanks to the brake, takes a couple of seconds.

When tilting the blade via the rack and pinion assembly I found the gauge indicating bevel angles was pretty accurate, however I still prefer to check angles with a square or sliding bevel.

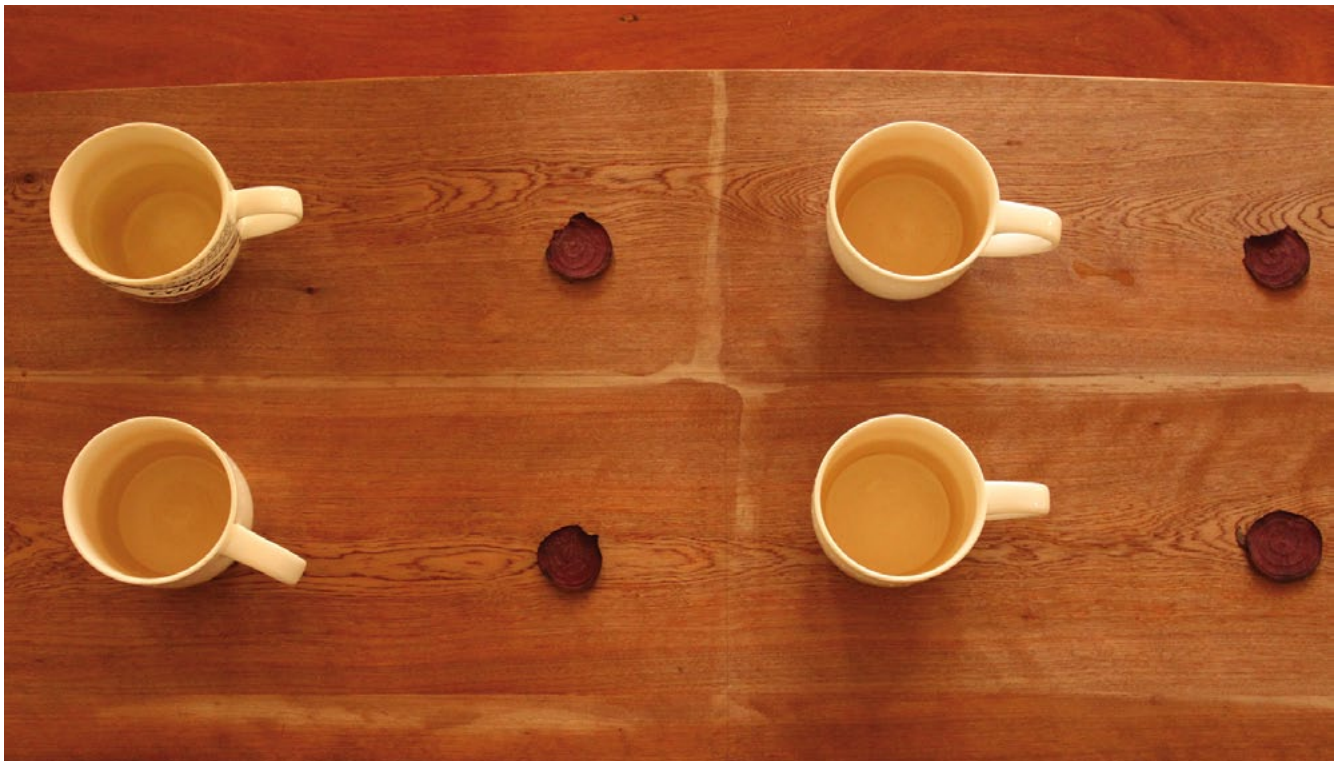
To test the saw I spent an extended period of time ripping 30–70mm thick redgum, mountain ash and blackwood, none of which fazed the machine. The 2.5mm saw kerf lends itself to cutting trenches for box lids and bases while reducing waste when ripping or crosscutting timber.

All in all, this is a well presented saw, ready to use straight out of the box with minimal extra set-up, and good power to price ratio. For the money it's well worth considering for the home workshop.

See www.makita.com.au for more information.

Whittle Hardwax Oils

Reviewed by Raf Nathan



A panel of coachwood was sanded back and each finish applied to sections that were left overnight with substances and objects likely to stain or mark.

For a wood finish we all want to use the safest materials without compromising on trying to get that perfect result. Hand rubbed finishes can seem to offer a natural solution.

We were sent four samples of 'hardwax oils' to test. These products are brought in from Germany by Whittle Waxes, one under their own brand, the other as Treatex. According to the tech sheets these finishes are made from renewable raw materials such as linseed, soya, rapeseed, safflower, sunflower, carnauba, candelilla, shellac, micro wax, isoaliphates and lead-free drying agents, water, and oil alkyd.

They are not grain fillers and therefore (within reason) the finish is only as good as the prepared surface. According to the tech sheet, as long as the surface is smooth you will have no problems.

For floors, sanding to 120 grit is recommended, however fine woodwork always needs more than that. These products are available in various sheen levels and colours, however the samples I tried were Treatex Lustre and Gloss Hardwax Oils, and Whittle Object Oil and Classic Hardwax Oil.

Treatex is claimed to be highly durable, water repellant and safe for use on children's toys. The Whittle branded waxes are apparently not quite as durable but claimed to be even safer, and from the discussion I had with a rep, are almost 100% 'green'.

As a trial, I prepared a large panel of coachwood and divided it into four sections. The wood panel was sanded up to 320 grit and clean individual rags were always used. For floors you can apply and wait 24 hours and then buff. However out of habit I applied the finishes and waited 20 minutes before buffing all of them. Another coat of each was applied 24 hours later, and again wiped and buffed.

Two more coats went on over a few more days. The Object Oil was of course the easiest to apply. It is promoted as a general purpose wood oil that does not seal the wood so it's not really suitable as a finish alone.

All waxes were easy to apply. For buffing, the gloss was the hardest to work. It became stiff and slightly thicker in some areas with elbow grease needed to get it smooth. The Lustre and Classic both demanded work to buff up, but no more than a traditional wax.

For another test, small pieces of beetroot, teaspoons of Southern Comfort and cups of boiling water were placed on each section and left overnight.

The next day the testers were removed and the sections wiped and buffed. There were small marks on all the sections with the object oil the least affected and the gloss the worst. All the finishes were still highly serviceable but there were discernable marks. The sections were re-oiled and waxed and set aside.

About four days later something happened, the finishes changed. They looked different and had become more lustrous. The Object oil was much the same but the hardwax oils were all looking slightly shiny with a soft glow. Buffing them now with a rag gave them all a good hand rubbed look. Pretty well all the marks disappeared after this final buff, the Gloss still showing a small area where part of the finish had been removed by the Southern Comfort. A week later the finishes looked even better.

Overall I found the Gloss was hardest to apply and least resistant to marking. The Treatex Lustre offered the best balance between ease of application and resulting finish quality. The Whittle Classic with its supposed enviro 100% clean bill was my next choice. Both will give most woodwork a protective hand finished look. The Object Oil seems a good alternative to similar oil finishes I have used.

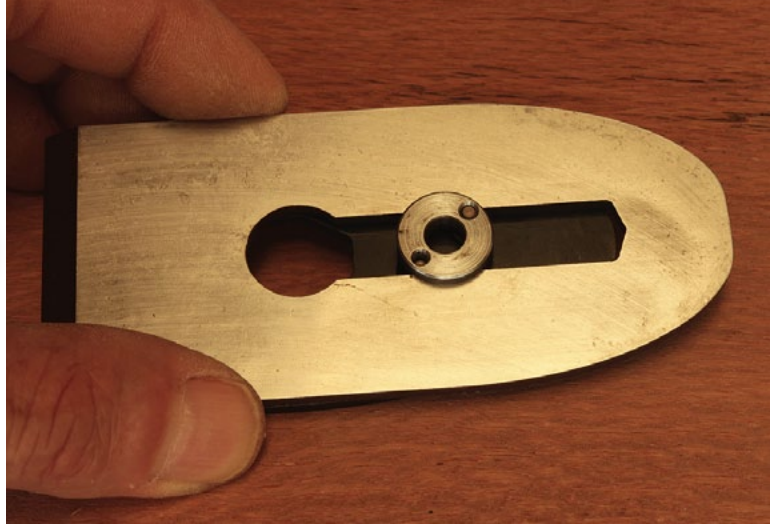
To give an idea of cost, the Whittle Hardwax Classic and Object Oil are around $60 for 750ml. Treatex Hardwax Oil is slightly more expensive.

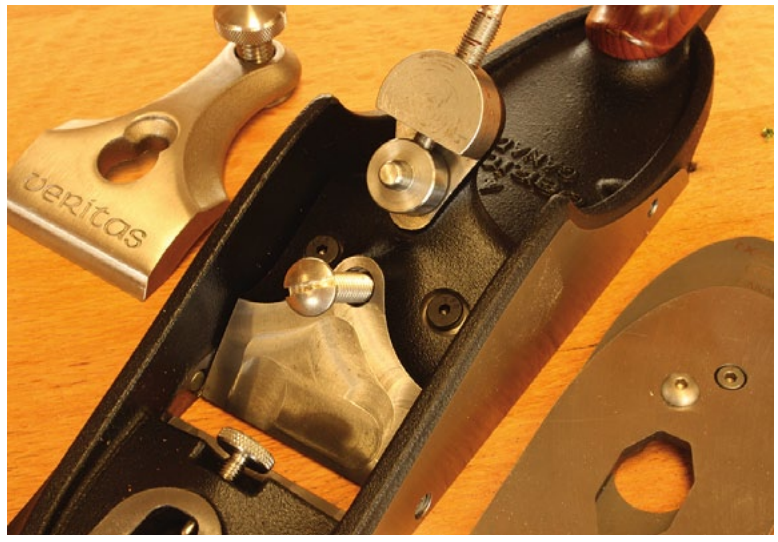
Note: Despite the enviro-friendly creds you must, as with most wood finishing oils, wash and dispose carefully of rags after use to avoid the risk of spontaneous combustion.

Products supplied by www.whittlewaxes.com.au, phone (03) 9873 8484.

Veritas Custom Bench Planes

Reviewed by Robert Howard





Clockwise from left: Adjustable front shoe opens and closes mouth.

Optioned No.4 Veritas smoother with large traditional tote, wide front knob, P-VII steel blade and 45° frog.

Remove cap iron with one allen screw. Supplied blade back was very flat.

Inspection of internal mechanism reveals quality machined components.

I have just spent some time with a new No.4 Veritas smoothing plane, one of the recently released new family of Veritas planes. The idea is you can choose how you want the plane configured: standard or traditional tote (small, medium or large), standard, tall or wide front knob, A2 or P-VII steel blade, and a frog of 40, 45, or 55°. For an extra US$10 you can have any frog angle between 45 and 65°, in 0.5° increments.

Each plane comes with an adjustable mouth, which in turn has an adjustable screw stop, and with the usual Veritas set screws that snug up to the edges of the blade just inside the mouth. Blade depth is controlled with the excellent Veritas Norris-style, differential thread depth adjuster, which as usual doubles as a lateral adjuster.

The differential thread system is set up with two righthand threads (so the net movement of the blade is the difference between the forward movement from the coarser thread, and backwards from the finer one). The practical effect of this is a mechanism where a large rotation of the knob results in a small movement of the blade, which allows easy fine adjustment of cutting depth. I love this system. It is one of the real strengths of all Veritas planes.

Another innovation is the 'blade carrier' for attaching the chipbreaker to the blade. This is like a thick washer, slightly wider than the slot in the blade, with two screws in it. One is a cap screw and locks the carrier to the blade. The other 'button head' screw locks the chipbreaker to the blade. The depth adjuster locates in the centre hole of the carrier. This complicated arrangement is necessary because the depth adjuster normally connects with the chipbreaker, but because the chipbreaker is not used with the higher frog angles, an alternate connection method is required here.

My one criticism of this system is that I fail to see why Veritas have used allen screws rather than slotted ones, because the small 3/32" allen key (which is supplied), will surely be lost in too many workshops. Alternately, Veritas could supply a small T-headed allen key which would be harder to lose, and the blade set screws could be changed with one key that fits both.

Balancing this, there is one advantage to the blade carrier system; once the carrier is locked in place on the blade, it allows the chipbreaker to be returned to its original position very quickly after sharpening.

I was heartened to find the shape of the tote fairly closely matched the one on my older Veritas smoother (the heavy one) after I had attacked it with a rasp because it had given me blisters. Different sized totes would further eliminate the need for such drastic action. I was also pleased to see the tote attaches to the plane body in the traditional way, rather than the more complex way used in the first family of Veritas bench planes, where the tote is attached to the frog.

Overall, it is impossible to not be impressed by the sophistication and general excellence of the production processes responsible for this plane. All parts are beautifully made, with fits calculated to very fine tolerances. Surfaces meant to be flat are very, very flat, especially the back of the blade, and the quality of all ground surfaces is excellent.

I hope Veritas has a suitably obsessional person to correctly assemble all the orders, because I think there are going to be a lot of them. These planes are winners.

Supplied by
www.leevalley.com

Left: Furniture makers have become the latest subjects for US reality TV shows.

Above: Neil Turner's sandalwood *Fire Sculpture*, transformed from the raw wood shown right.

Reality woodworking

Competitions based on gourmet cooking, home renovating, weight loss and more are nowadays common on television, but as of 2015, it seems furniture makers have become the new reality TV show black. January 6 saw the launch of US Spike TV's *Framework: New Furniture Design Show* where 13 'elite furniture builders' battle in themed challenges. Then, one month later, *Ellen's Design Challenge* appeared on another station.

Produced and presented by talk-show star Ellen DeGeneres, this show also pits designers against each other in various challenges. Both shows have judging panels and elimination scenarios. Both shows are putting up big $100,000 prizes, but the upshot of all this should hopefully be a welcome spotlight on furniture designer/makers.

Tradition on show

Lost Trades is a fair that focuses on traditional or rare hand skills and crafts. In March 2014 we reported on its launch in our online news, noting how on the first day it left even its organisers overwhelmed with the public response. Over 7000 people turned up to Kyneton, Victoria and apparently ran every café and store in the town out of food by 3pm on the first day. The *Lost Trade Fair* is the creation of Glen and Lisa Rundell and this year's event takes place March 7 to 8, details at www.rundellandrundell.com.au.

Coelesce

Coelesce, the title of wood artist Neil Turner's upcoming March 14–31 exhibition expresses its theme. 'It's about combining a mixture of influences over my lifetime and showcasing the skills I've learnt', Neil said. Seventeen pieces of furniture, turned and carved work will be displayed at Linton and Kay Galleries at The Old Perth Technical School in Perth. See www.lintonandkay.com.au.

Tools & Techniques

Perth Wood School will again present a diverse and popular program of demonstrations and displays at its annual *Tools & Techniques* day. Fine tool and timber merchants will also present specialist items for sale. The event takes place on March

Left: Gus Duncan, designer/maker of the wooden bikes shown. Gus is the winner of Gregory Machinery's *Laguna Nation Wood Cup* challenge.

28, from 9am–4pm. The school is located at 81 Abernethy Rd, Belmont, WA. Phone (08) 9277 5558 for information.

7000 reasons to recycle

Launched in 2003, *Create From A Crate* is a competition that demonstrates that wood packaging and pallets can be successfully recycled rather than just consigned to landfill. Entrants each receive two pallets to create a piece from. Four cash prizes totalling $7000 are also good reasons to enter. CFC is sponsored and organised by Waste Converters in Victoria and the Victorian Woodworkers Association. The exhibition of work created will take place in February, 2016. See www.vwa.org.au.

Head for the Hills

From May 2–3, the annual *Maleny Wood Expo* will see mobile mills fire up and sawdust fly in Qld's Sunshine Coast. The expo showcases local rainforest timbers and sustainable timber usage. There is a program of demonstrations and workshops, and there are fine tools, timbers and woodwork available for purchase. Also on show will be the exhibition of selected and prize-winning Wootha Prize entries.
See www.malenywoodexpo.org.au

Wood Cup Winner

Gus Duncan, designer and maker of stylish wood bikes is the winner of the *Laguna Nation Wood Cup* competition. Gus lives on Queensland's Gold Coast and designs and makes all-wood bikes that have attracted a lot of attention from local and overseas buyers. Gus is now the owner of a Laguna 14-Twelve bandsaw and related accessories which he will no doubt have a lot of use for. The Laguna range is distributed in Australia by competition organisers Gregory Machinery, see www.gregmach.com. Contact Gus via silkwoodcycles.com

Hammer bandsaw

Wood Review readers have we got a prize for you! If there's room in your workshop for a *Hammer N3800 bandsaw* worth over $2000 then consider subscribing for your chance to win this beautiful machine. Forget the lotto ticket, your chances are a whole lot better with this. Winner drawn May 30, and no rainchecks on this one. See p.25 for details.

Plane On All Sides ➤

How would you like to accurately machine wood in just a single operation instead of four or five? The Logosol range of machinery includes 2, 4, and 5-sided planer/moulders and combination planer/moulder/rip saws. Made in Sweden, Logosol's innovative and unique woodworking machines are cost effective to own and operate. New technology makes these machines smaller and lighter and suitable for both small and large workshops. Logosol offers a two year warranty and a two month satisfaction guarantee. Visit www.logosol.com.au, phone 1300 769 258, email support@logosol.com.au

Product news

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

◀ Read Right

Reading this, you are most likely right handed, yet using a left handed tape measure. This tape turns things around, meaning if you hold it in your left hand you can work off markings set right to left. Available from Professional Woodworkers Supplies, www.woodworksupplies.com.au, phone (03) 9776 1521.

All Eyes and Ears ➤

'Ahead' of their time, Reptiler's Eye Muffs are a new safety solution. A patented design allows the safety lenses to flip up and down in a quick and easy action without affecting ear muff performance. Adjustable Eye Muffs feature quick-release safety lenses that are medium impact-resistant, tested to AS/NZS 1337.1, SAI Global certified. Replacement lenses come in clear, amber and smoke tints and can be worn over prescription spectacles. Superior ear muffs are rated at Class 4 tested to AS/NZS 1270, certified by SAI Global. Designed in Australia and manufactured to the highest standards. Available in seven colours. See www.eyemuffs.com, phone 0418 696 691 or email: Jorge@eyemuffs.com

▲ Snakewood and Steel

This traditional Japanese-style Damascus folding pocket knife is made with a hardened stainless steel core laminated between multiple layers of rust resistant steel. The blade is hollow ground on both sides for easy sharpening. Beautifully made with a snakewood handle. Phone 0412 011 160 or visit japanesetools.com.au

Take the Plunge ➤

Launching in April, DEWALT's DWS520KT-XE heavy duty plunge saw is all about offering supremely accurate cutting. Parallel plunge, variable speed, full wave electronics and anti-kickback function are designed for smooth operation. The 48-tooth blade gives a fine finish with minimal breakout on laminates while a fully enclosed guard gives great dust extraction capacity. Depth of cut is 55mm. The included 1.5m rail combines with other tools in the DEWALT range and the whole kit comes in a tough carry case. See www.dewalt.com.au

◀ Aussie Oi, Oi, Oil

Sparingly rubbed onto raw wood this new product will give a hard, glossy finish in a short amount of time. Sand up to 800 grit and then apply with a clean, soft cloth. Rub with medium pressure in a circular motion for one to three minutes in as many coats needed for your desired level of gloss. See www.ubeaut.com.au for more info, or phone (03) 5248 3030.

Best Brushes ▲

It should come as no surprise that handmade tools can give the best results. And the same applies to natural fibre brushes made for applying glue, varnish, shellac or water finishes to woodwork. Rema Technibrosse brushes are hand made in France the traditional way, with double curved ends and long slender handles that feel balanced in use. See the range available at www. henryeckert.com

Features Plus ➤

Power, adjustability and fine-cutting accuracy are the boasts of Hammer's N3800 bandsaw. With a 2hp motor the N3800 has a machined and polished tiltable cast iron table, upper and lower ceramic blade guides with adjustable side and rear rollers as well as an easy-to-adjust aluminum fence that works either side of the sawblade. The mitre fence is continuously adjustable. An optional rolling carriage is available for maximum flexibility. Subscribe as per p.25 and you could win this. See www.hammer-australia.com or phone (02) 4735 1011.

Handy Workstands ▲

Magic Gripper Pro gravity clamps are supplied in pairs and hold the heaviest panels or doors rock solid while planing, chiseling and other work is carried out. Handy in the workshop and super-portable for onsite work and creating temporary workstations, these gravity clamps double as holders for screens or wall displays from 15mm to 55mm thick. Each Magic Gripper Pro holds up to 100kg vertically or horizontally and can be fitted with wheels or feet pads. More information from www.excaliburtools.com, or phone (02) 9624 7200.

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Damion Fauser in his workshop. Boxes and trays with mitred corner and key constructions are one of his batch production items.

PHOTOS: FRANK PRONESTI

Clockwise from above: Walnut and curly maple hinged boxes with sliding internal trays.

A 50mm square micro box made from workshop offcuts.

Lift-lid box in American oak and black walnut.

Better Boxmaking

Techniques for accurate machining and assembly will take your boxmaking to next level. Story by Damion Fauser.

I enjoy making small boxes for several reasons. Firstly, they represent an opportunity to utilise offcuts from larger projects, or smaller pieces of special wood. Secondly, they give me an outlet for creative expression and the trial and development of new detailing techniques. Finally, using simple production and assembly techniques it is possible to make these items in volume as a production run.

This process is for the production of trays and boxes with mitred corner joinery. The lid can be added later, either as a drop-in or hinged. Or, as shown here, you can build and assemble the lid and the main box as one integral assembly. With this option, you separate the lid from the base after the glue has cured and you are left with a lid that not only fits the box perfectly, but you have a lovely continuation of grain between the two.

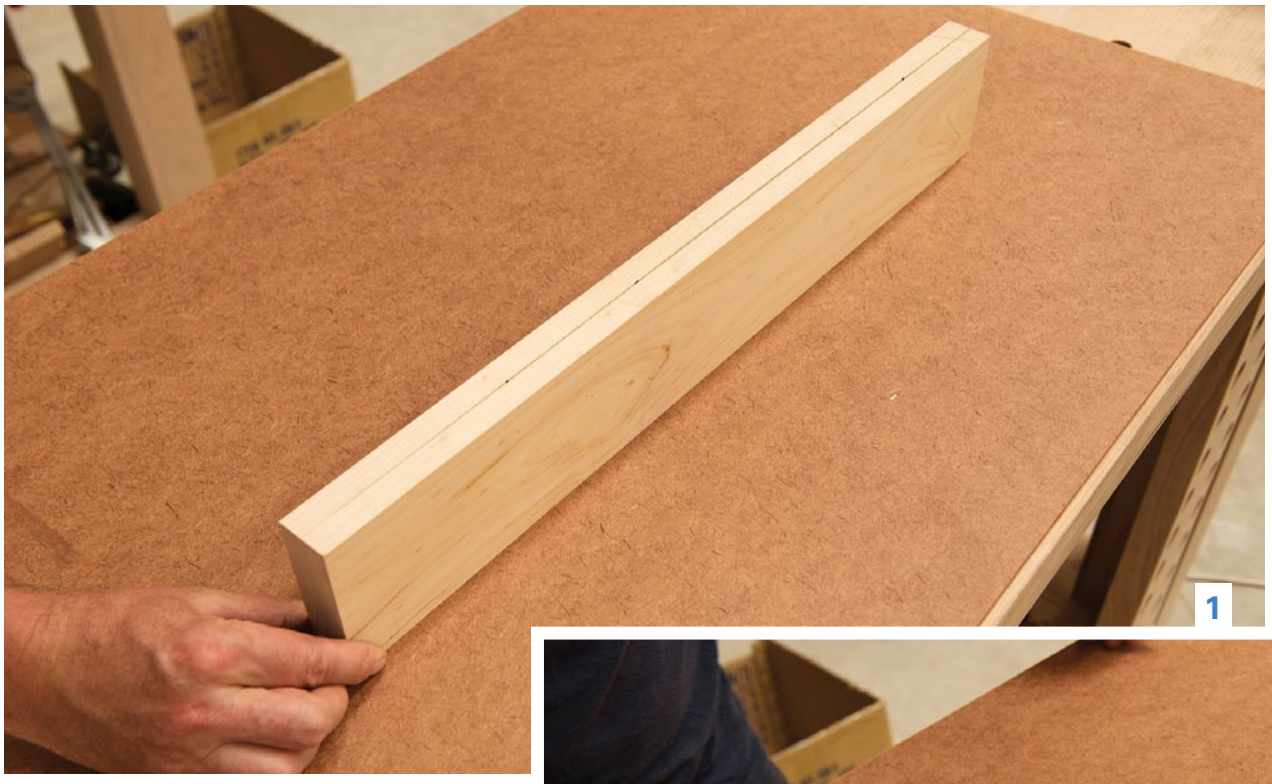
The fundamental principles of building a tray or a box are the same. I use this technique for smaller projects, no larger than 300mm in width or length. Any larger than that and you'll need a different assembly method to the one described here.

Stock preparation

For very small boxes, I like to keep the thickness of the sides in proportion to the overall size, around 6–10mm thick. Sometimes the hardware I'm using may also affect this thickness.

To minimise the risk of distortion of thin stock, I like to machine down in several stages, stacking and stickering the stock between sessions to allow even airflow.

Once at final thickness, rip to your desired width, noting that you will lose 3.2mm of this from the tablesaw kerf when you separate the lid after glue-up.



1

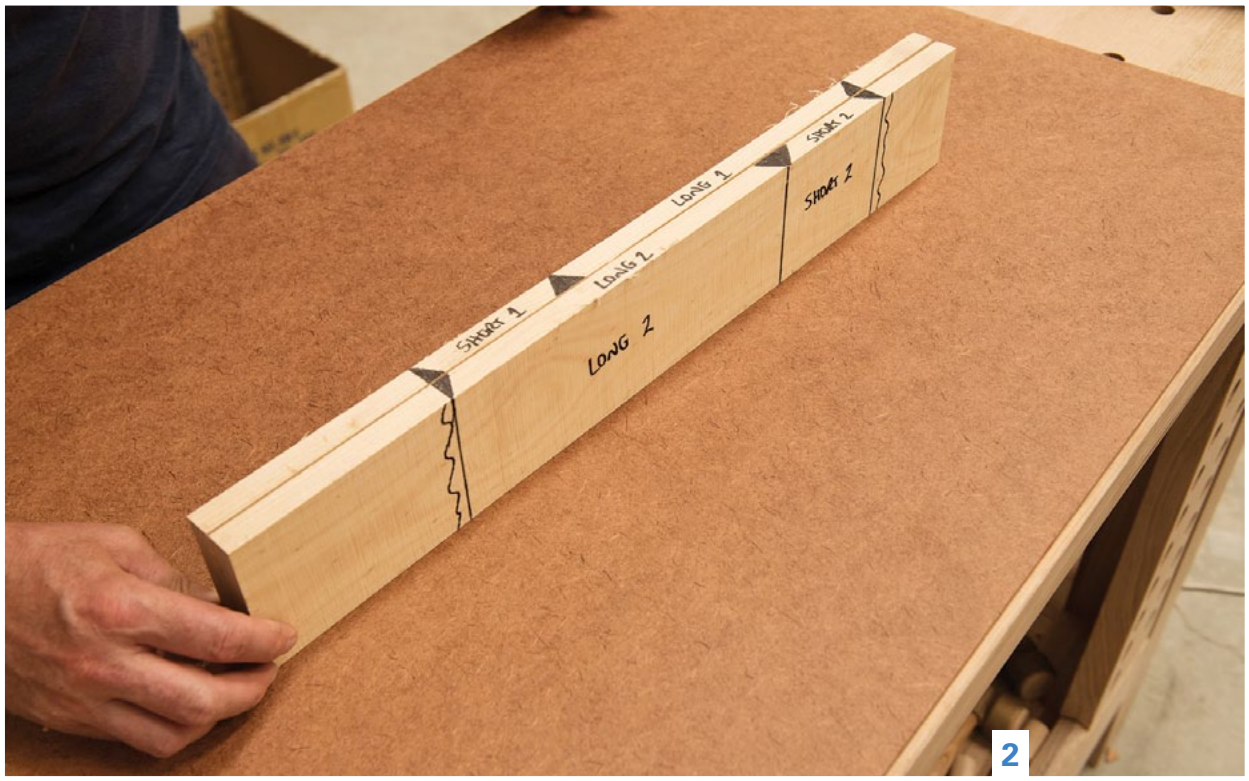
Wrapping the Grain

Once you've achieved accurate mitred corner joinery why not go the extra mile and add the visual appeal of wrap-around grain to the sides of your boxes and trays?

1. To achieve a four-corner match, start by resawing a thicker board in half right down the middle.

2. Fold the two halves back over on themselves inside out. Make a reference mark so you can re-orient the pieces in this fashion after machining the bandsaw marks out.

3. With the ends of your boards precisely aligned, mark one long and one short face on one half, and the opposite short and long face on the other half. Now cut your mitre joints so that what used to be the outside of the stock is now the inside face of each component. The grain will now wrap around all four corners.



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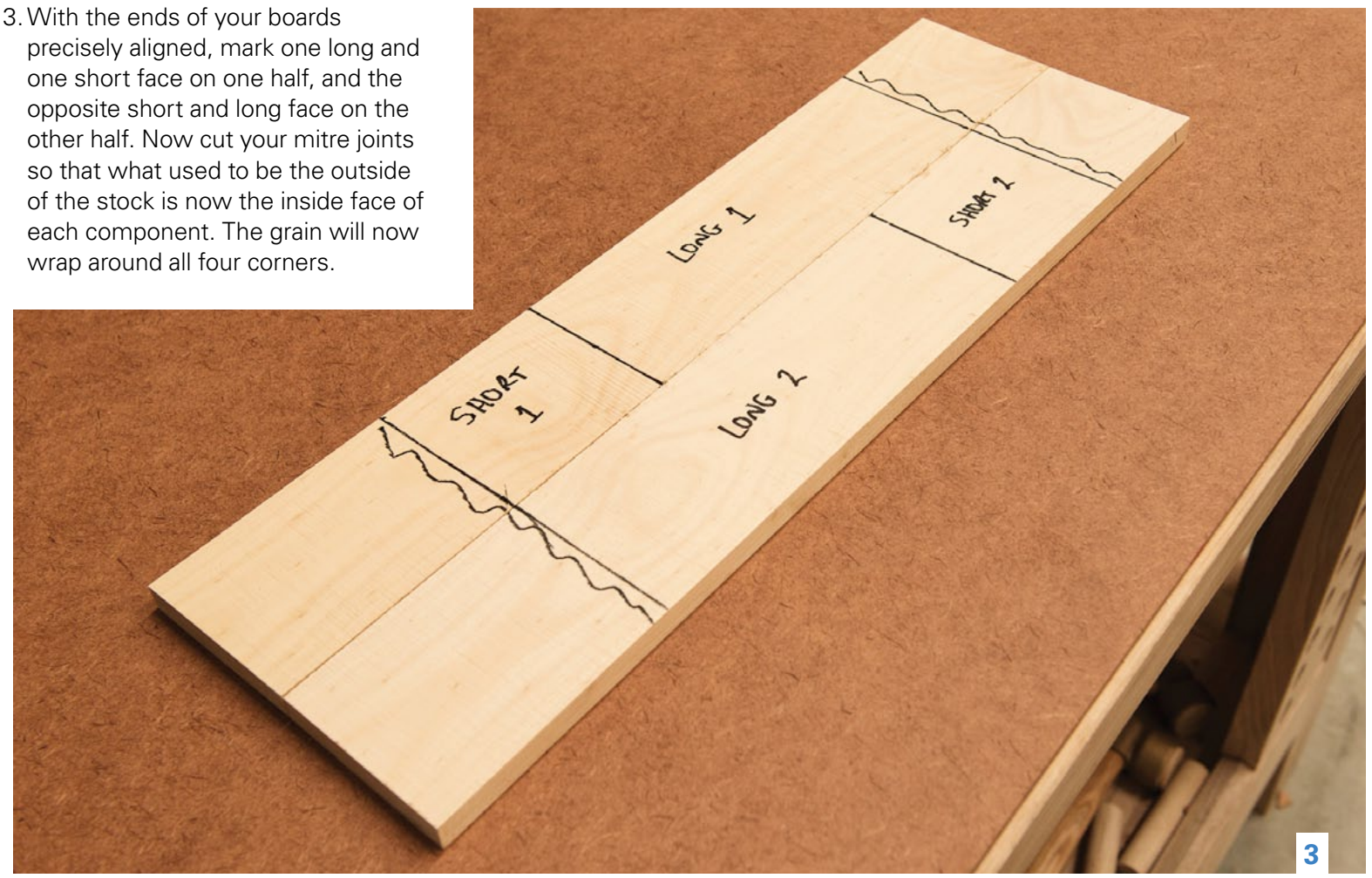

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1. 45° crosscut sled
2. Note the blade tilts away from the stop block.
3. Cutting shallow grooves for the base and lid components.


1

Cutting the mitre joinery

You can cut the stock to length and with the mitred end in the same operation. For me, the best way to be safe, fast and repeatedly accurate when cutting the mitred ends of small box sides is with a 45° crosscut sled on the tablesaw (**photo 1**).

With a sled that has been made to exacting tolerances, and a quality blade, one pass will yield a surface that is ready for gluing right off the tooth. If you are not happy with the resulting surfaces, you can shoot them clean with a 45° ramp on your shooting board, but this really shouldn't be necessary.

Cut one end of each piece and then clamp a stop block to the fence of the sled at the desired length. Just be aware that you should set the stop block on the side that the saw blade tilts away from. This gives you additional room for securing smaller pieces and also means you aren't trapping your workpiece between the stop block and the acute angle of the blade to the table (**photo 2**).

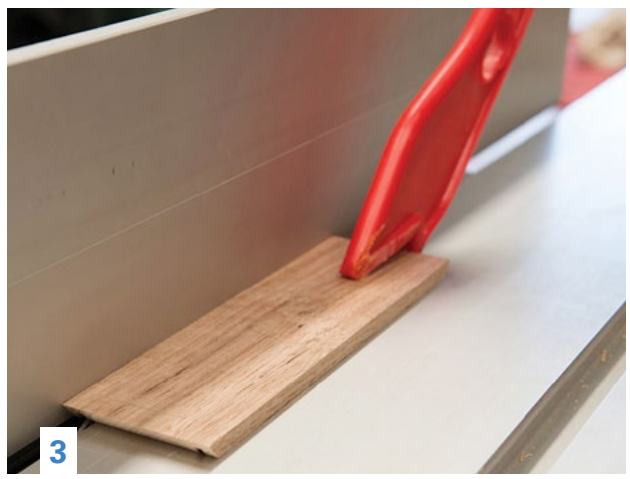

2

Now you can cut the opposite end of each piece. A quick check of accuracy is to place two opposite box sides or ends against each other with the internal faces towards the outside. The ends of each piece should both meet at a perfect knife edge across the width of the stock, meaning they are exactly the same length and the cuts are square across. Provided your blade was set at 45°, this means you'll now have seamless mitre joinery at all four corners of your box.

Internal joinery

You can now cut grooves to accept the base, lid or tray runners. If you desire a drop-in lid, you can now run a rebate around the inside top edge of each piece to create a shelf for the lid to sit on.

To cut a groove for the base I run one tablesaw kerf with a rip blade (**photo 3**) along the edges. Set the height of the blade to cut through no more than half of the thickness of the stock. This will give enough room to allow for wood movement, yet leave enough thickness in the base of the groove to not weaken the structural integrity of the piece.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Set the fence to cut the groove at the desired distance from the bottom edge. I usually make my base the same thickness as the sides and then rebate the outer bottom edge of the piece to create a lip that fits neatly into the saw kerf. This means that I position the groove far enough from the edge to leave some room for the extra thickness of the base stock.

4. Cutting the grooves in the lid to join to the sides.
5. Lid and side fit snugly together.
6. Applying masking tape as a glue release now is well worth the time.
7. Lay the box sides in sequential order on the packing tape.
8. Apply glue to the mitred faces only.
9. Position the lid and base components.
10. Roll the assembly together.
11. Put a lot of tension on the tape, this is what brings and holds it all together.


4


5


6

Base and lid

Now you have established a new reality with which you can make your base and lid components. Take a rule and measure the length of the base inside the groove.

You need to allow for wood movement in the width of the lid. As a rule of thumb I subtract 1mm per 100mm of width in winter, and half that in late summer.

Cut your base and lid components to size. For the base you can now cut a rebate or raise the field for a snug fit in the groove you've cut for it in the sides. Cut any desired edge profile for the lid now.

Lid to side joins

This joint secures the lid panel in position and also allows for seasonal wood movement. It can also be cut on both components with one machine set-up.

Having left the blade at the same height, adjust the fence so it is exactly the same distance from the blade as is the diameter of the saw kerf. Run some scrap stock through and use calipers to dial this set-up in precisely. By running the groove on the inside top edge of the sides and the edges of the lid piece (**photo 4**), they will slot together nicely (**photo 5**).

Make sure you do any cleaning up that involves stock removal prior to this step, such as removing saw marks from the edges of the box sides or smoothing the inside face of the lid component. Doing this after cutting these joins will result in a loose and therefore unacceptable fit.

Pre-finishing

Pre-finishing the inside faces of all components is much easier to do before assembly. Remove machine marks, smooth and apply your chosen finish. For small boxes I use shellac and wax for ease and speed of application, lack of odour and beautiful tactile end result.

Now take some blue tape and lay it across the inside face at the end of each box side, so the edge of the tape is precisely at the intersection of the inside face and the mitred face. This will act as a surface to capture any glue squeeze-out during assembly. Use a marking knife to remove the excess tape across the grooves (**photo 6**).

Assembly and glue-up

The beauty of this technique is that no clamps are required – just a roll of clear packing tape. Lay out long pieces of tape sticky side up on your bench. Then lay your box sides down on the tape ensuring the knife edges of the mitres meet perfectly (**photo 7**). Apply glue to the mitred faces (**photo 8**),


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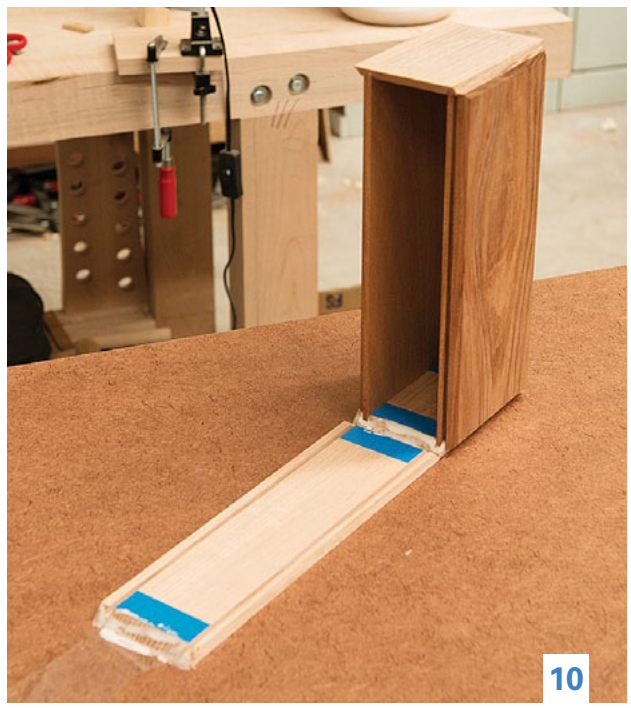
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ensuring you don't get any in the base or lid grooves, then slot the lid and base into their respective grooves (**photo 9**).

To fix the lid and base in position, you can apply a small drop of glue into the midpoint of the grooves on the ends of the box. The edges of the components then remain free to expand and contract, yet they will stay in place relative to the whole piece.

Now simply roll the assembly together (**photo 10**). When you get to pulling the final mitre joint home, pull hard on the tape to stretch it prior to wrapping around the corner and fixing it down (**photo 11**). The tension on the tape in this case is what pulls all four corners tightly together and holds your box in place while the glue cures.

Post-assembly

Once the glue has cured, remove the tape and clean up any squeeze-out around the corners. With tight joints and modern adhesives, your box will be sufficiently strong as is. If however you wish to reinforce the corner joinery, you can cut slots and insert long grain splines. By choosing a contrasting wood, this is also a decorative choice.

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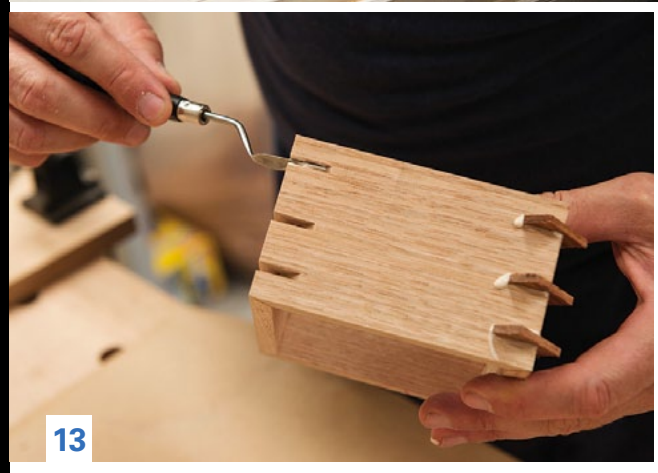

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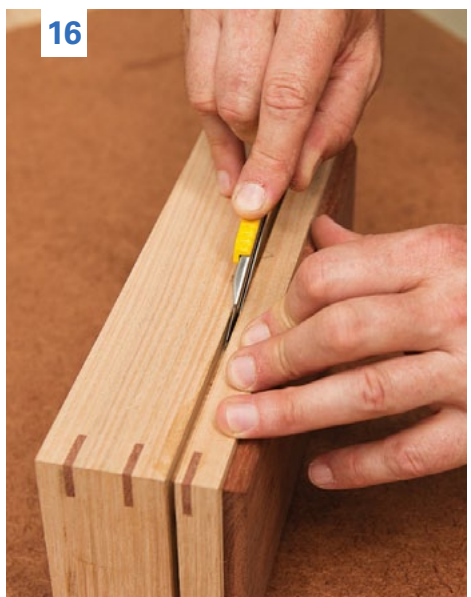

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12. Using the mitre key cutting sled.

13. Gluing in mitre splines – ensure they bottom out in the groove.

14. Using a flush-cut saw to remove mitre spline waste.

15. Sawing off the lid at the tablesaw.

16. Removing the lid with a fine knife.

To cut the slots I use the sled shown in **photo 12**. Set the fence from the blade so the slot is cut at the desired distance from the edges of the box, and the height so that it doesn't quite cut through the mitre joint. Use a rip blade with at least some teeth filed to a raking profile so that you end up with a flat-bottomed groove.

Machine some stock to fit snugly in the slots, cut small pieces and glue them in, ensuring they are bottomed out in the slots (**photo 13**). When the glue has dried remove the waste and flush down to the surface. I use a flush-cut saw and handplanes (**photo 14**), but you can also use a stationary belt sander.

Separate the lid

To separate the lid set a rip blade so it cuts almost through the thickness of your box sides except for a tiny amount, perhaps 0.1mm. Test cuts on scrap stock will assist with this. Set the fence from the blade at the required distance and run the box through on all four sides with the base registered against the fence (**photo 15**).

The lid will still remain firmly attached after the fourth and final pass. Then it is a simple matter of taking a knife and slicing through the remaining thickness to remove the lid (**photo 16**). The residual fibres can then be sliced away with a chisel or handplane.

The lid can now be hinged, or you can cut and install a secondary lining to the inside of the box that protrudes above the edges of the main box (see photo p.27). Because the lid and the main box are precisely the same, the lid can now be installed over the secondary lining with a piston fit.

Final finish

I like to use shellac and wax but you can use the finish you prefer. Small boxes will be picked up, inspected and held. The wonderful tactile feel of a hand rubbed shellac and wax finish is hard to beat in my opinion.

If you pay close attention to your initial machining set-ups and finishing processes you will achieve an accuracy of joinery that will allow you to produce very high quality boxes and trays. The photos on p.27 show just a few ways these simple and elegant constructions can be varied, but there is no end to the detailing you can introduce.

Photos: Donovan Knowles, unless noted.

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

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COLLECTOR SPECIAL

AWR 2015

You are invited to be part of a Wood Review feature. Send us 200 words and two or three photos (2–4mb jpegs) of your collection. Include a photo of yourself with your collection as well. Tell us what it is, how it came about and why you continue to hang onto it!

Our June issue will feature readers' collections and we hope yours will be one of them!

Do you collect some of the various tools, machines, devices, timbers or other materials you need for your woodwork? Small or large, everyday or unusual, we're interested to see your collection.

What do YOU collect?

Email your words and photos by April 5, 2015 to: collections@woodreview.com.au

Sandpaper Specifics

Abrasives for woodworking have specific properties. Knowledge of their make-up and types will guide your choice, giving you better results, explains Philip Ashley.

The first abrasives were made in 13th century China from crushed shells and sand bonded to parchment with a natural gum. These days, you won't be using shells, sharkskin, sand or glass to finish your woodwork, you'll be using modern materials designed to do a very specific job. So let's take a closer look at coated abrasives, more commonly referred to as sandpaper. Coated abrasives are supplied by all hardware stores in a wide range of different backings, abrasive grains and grit sizes. You just have to have an idea what you're looking for.

Coated abrasives come in sheets or rolls for hand sanding but are also available in many other forms. Whether you need a wide belt or a bobbin for a sanding machine, or sheets to fit your power tools or for hand sanding and finishing your work, the principles of coated abrasives remain the same. Remember too that there are at least half a dozen major manufacturers of coated abrasives and they all produce the same range of products. Some of it is coloured for sales reasons but the design and technology of the abrasive product is identical.

Backing

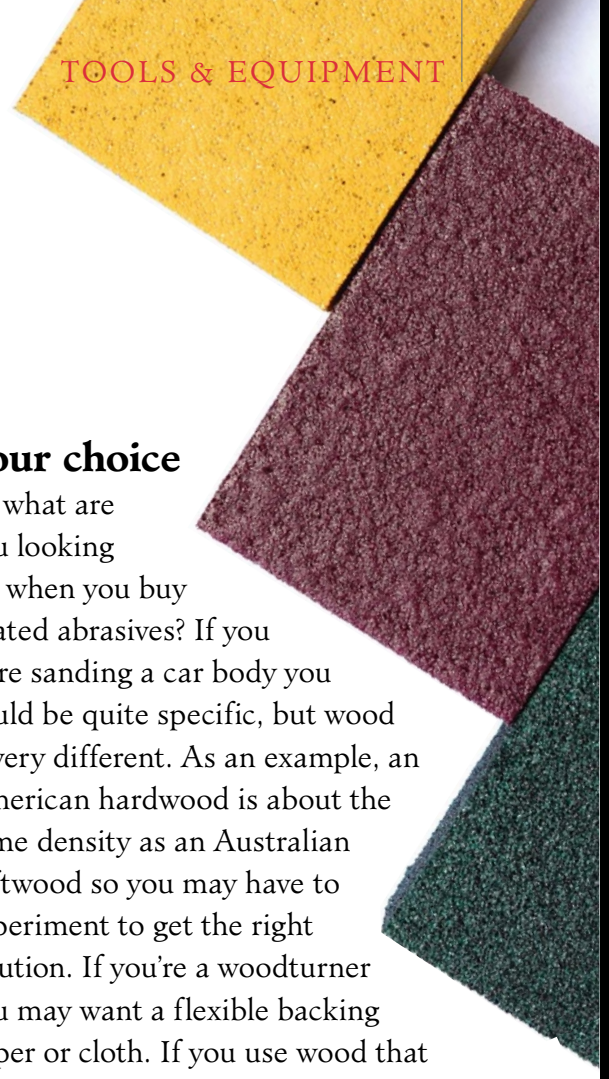
The two things about coated abrasives important to the woodworker are the backing material and type of abrasive. The backing material is usually paper or cloth but could be polyester or a cloth and polyester mix. The backing itself may contain a code with a letter indicating it's 'weight' or thickness. Starting from A to Y the weight of the backing goes from light paperweight to very heavy cloth. Lightweight backings have a high degree of flexibility and can be used for intricate sanding of curved parts. Heavy backings are more aggressive and less flexible but are stronger and more suitable for larger grits (40 to 80) when heavy removal of stock is required.

Abrasive types

The type of abrasive will vary according to the job it's meant for. For woodwork the most common abrasive grains are aluminium oxide and silicon carbide and these materials have been used for decades. For hardwoods, use aluminium oxide; it's hard wearing and tough and out-performs most other abrasive materials.

Softwood is more fibrous and for this, silicon carbide is the best abrasive. It's very sharp and cuts very fast with only light pressure. Silicon carbide is also better for smaller grits such as wet and dry paper because it leaves finer scratches. Garnet is a natural abrasive and is also suitable for softwood, especially pine.

You used to be able to tell the abrasive type by the colour but not anymore. Aluminium oxide can be white (98.5% pure), grey (97% pure), brown (95%



Left: Bought from Bunnings, a range of adhesives suitable for wood, left to right: 40 grit aluminium oxide open coat, 40 grit red garnet; 60 grit brown emery, 60 grit yellow aluminium oxide closed coat, 80 grit red garnet, 120 grit black silicon carbide, 120 grit white aluminium oxide and 240 grit black silicon carbide.

Right: Washable sponge abrasive blocks are reported to last five times longer than sheet abrasives of the same type and tend to resist clogging.

pure), green and yellow. Silicon carbide can be green (highest purity), white, but more commonly, black. Garnet is usually red or brown and if you come across flint sandpaper, it will be white.

Open and closed coat papers

The grains on your abrasive will be spaced as open coat or closed coat paper. With open coat paper, 50% to 75% of the paper or cloth will be covered by abrasive. This is to reduce the effect of loading or clogging of the paper when sanding resinous wood. Closed coat paper has the entire surface coated with abrasive. This is the more common type and gives high stock removal and long life.

Grit sequences

On the back of the abrasive sheet you may find information on the paper weight and type of abrasive but don't count on it. The only thing you can be certain of is that the grit size will be stated.

Before using any abrasive it's important to plan your sanding sequence. This will set the grit of the abrasives you need to use for the finish you need. For heavy stripping you'll need to start with 40 grit abrasive. For rough sanding, start with 60 grit. Light sanding needs 120 grit and fine finishing needs 180. The grits actually come in closer grades than right up to 2,500 though 800 is about the limit for fine finishing wood. As a general rule of thumb, you should never skip more than one grit size or you will not remove the scratches made by the coarser grit.

Why is this? When sandpaper is made grains of abrasive are first glued onto the backing with either an animal based or synthetic adhesive. This is called the 'make' coat. After the glue is set, a second coat of adhesive is applied. This is the 'size' coat and fills the gaps between the grains to a pre-determined level, providing a precise height of grains above the adhesive (see diagram). When this paper is used it produces scratches on the workpiece to the same depth as the grain height above the size coat. Only the next two (higher) grit sizes will remove those scratches and replace them with smaller ones. Do this enough times and you will get a surface with fine scratches that to the naked eye looks very smooth.

Storage

Like all your woodworking tools and equipment, your coated abrasives should be stored correctly. High humidity may cause the bond to soften and this may release the grits when sanding. The abrasive sheet will also tend to clog more easily. High or low humidity may also cause the backing to shrink or stretch more than the adhesive and the sheets may cup. Newer synthetic backed product is not affected as much by humidity but in low temperatures may achieve what is known as 'cold set' condition and should be allowed to come to room temperature before use.

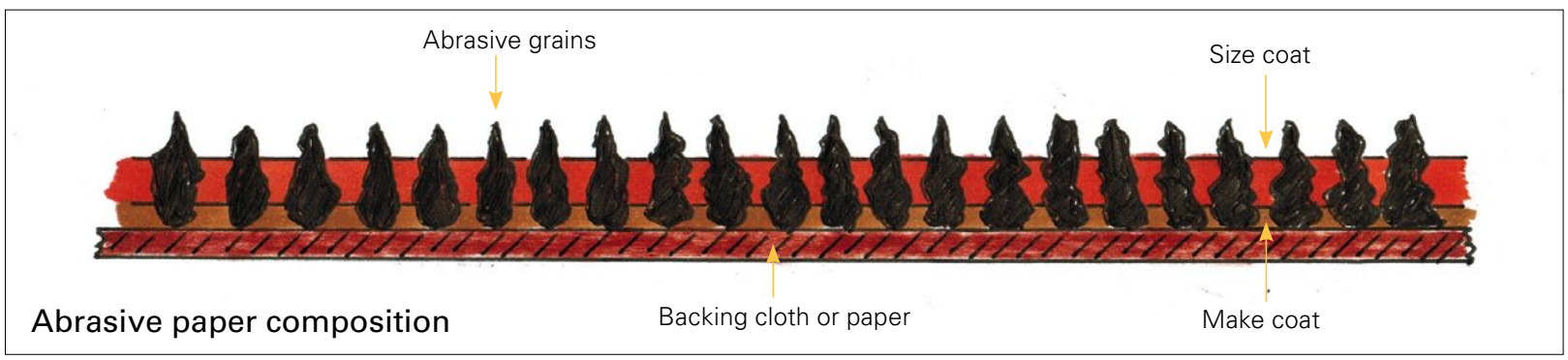
Your choice

So what are you looking for when you buy coated abrasives? If you were sanding a car body you could be quite specific, but wood is very different. As an example, an American hardwood is about the same density as an Australian softwood so you may have to experiment to get the right solution. If you're a woodturner you may want a flexible backing paper or cloth. If you use wood that clogs the abrasive, try an open coat paper. If you work with hardwood you need aluminium oxide, and if you work with softwood you need garnet or silicon carbide grains.

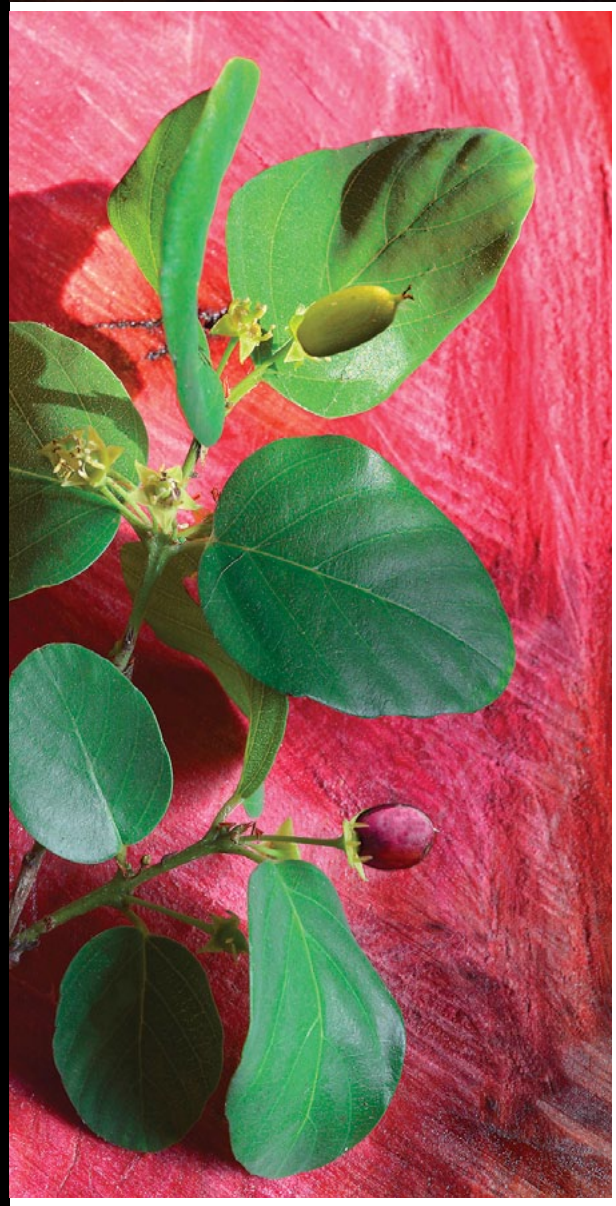
Lastly, you will need a range of grit sizes to ensure your work ends up as smooth as you hoped, remembering that you can only jump one grit size. It's a good idea to talk to your supplier about the abrasive you need, and if you're buying online, avoid cheap Chinese-made papers and ask questions if you can. Abrasives are tools and just like all your other workshop equipment, proper selection, care and use will produce satisfying results.

Photos: Philip Ashley

Philip Ashley is AWR Machinery Technology Editor. Email philipneilashley6@bigpond.com



Abrasive paper composition



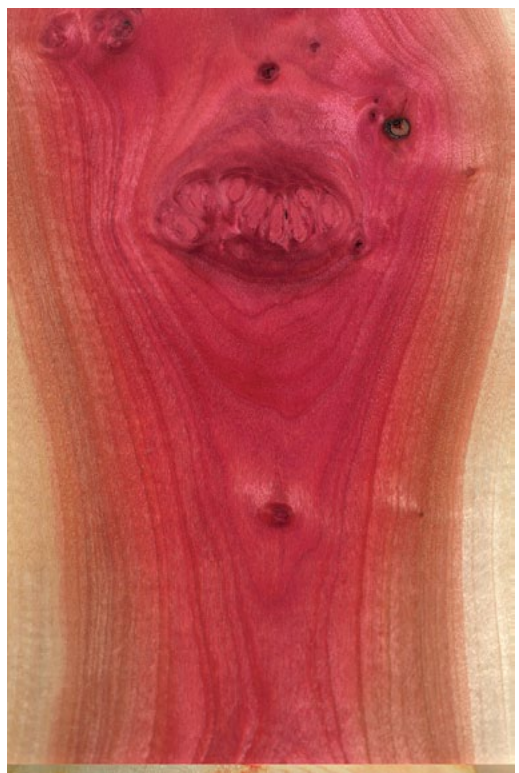
Pink Ivory

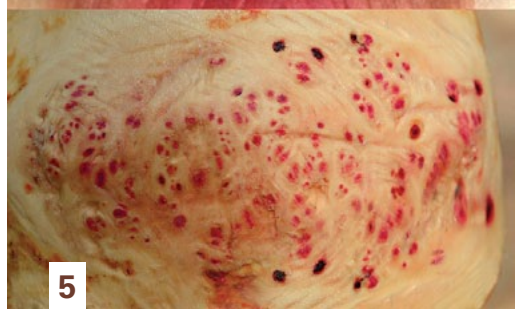
Pink ivorywood has long been considered one of the rarest and most valuable hardwoods. Vince Manna explains why.

I have always been drawn to the ethereal beauty of *Berchemia zeyheri*, more commonly called pink ivorywood. Even today, 25 years after I was commissioned to craft many pieces in this rare timber, I can vividly recall its beautiful textures and vivid colours. It has a translucency that I am at a loss for words to describe. I was also drawn to it because of the myth that surrounded it.

Pink ivorywood was once sacred to the Zulus and could only be possessed by tribal chiefs. When a chief's eldest son reached maturity, a pink ivorywood tree was felled and a spear fashioned for him to then kill a lion as proof of manhood. No one else was allowed to cut a tree or have any of this wood in their possession. The punishment for breaking this rule was death…

Although still available today, the beauty and scarcity of this wood have made it one of the most expensive in the world, usually selling by weight. The most valuable pieces are a vibrant pink. The tree grows throughout Mozambique, Zimbabwe and Southern Africa and is highly sought after by woodworkers from around the world. It is relatively common in some areas of South Africa however





large trees with straight trunks free of defects are scarce, thus restricting its commercial viability. It is a protected species in South Africa and limited felling can only occur with permits.

Last year, one of the main reasons I travelled to KwaZulu-Natal, a remote region about a five hour ride from Durban, was to photograph pink ivorywood trees. I lodged at a number of game reserves for well over a month amongst pink ivory habitat and Zulu communities, many of whom are employed to manage their land.

Staff members were aware of my interest, so I was given a well-equipped 'special' rustic cabin constructed from a variety of tree species found on the reserve. Blossoming pink ivory trees surrounded my cabin. I even found the leaves and fruit from an ivory tree sitting on a pink table awaiting my arrival, and the furniture in my room was all made from it, everything was pink!

1. 'Neon Pink' ivory tree with star-trail backdrop (3.5 hours exposure time, and note: no 'photoshopping' has been done). These blossoming pink ivory trees were near my cabin.
2. Pink ivory tree (*Berchemia zeyheri*) grows scattered throughout southern Africa.
3. Pink ivory bole, freshly cut.
4. Pink ivory with leaf specimens.
5. Samples of pink ivorywood, including extremely rare burl feature in the log I brought back.

Pink Ivorywood

In general, the wood is extremely hard, heavy, strong and resists deflection. It is difficult to work with hand tools but excellent for turning and carving. It has a fine texture. The grain is straight to irregular. It dries slowly.

Colour: Pale brownish-pink to bright neon pink to deep red. Colour fades and dulls after long exposure, becoming orange to orange-brown.

Sapwood: Cream to off-white with a gradual demarcation from heartwood.

Average air dried weight: 1,020 kg/m3 (my calculation from three old dried pieces).

Janka hardness: 2320lbf–2540lbf

Workability: Difficult to saw and machine, readily blunts cutting edges.

Finishes: Extremely well to a high polish.

Seasoning: Very slow, care needed to prevent checking.

Odour: Distinct scent when being worked.

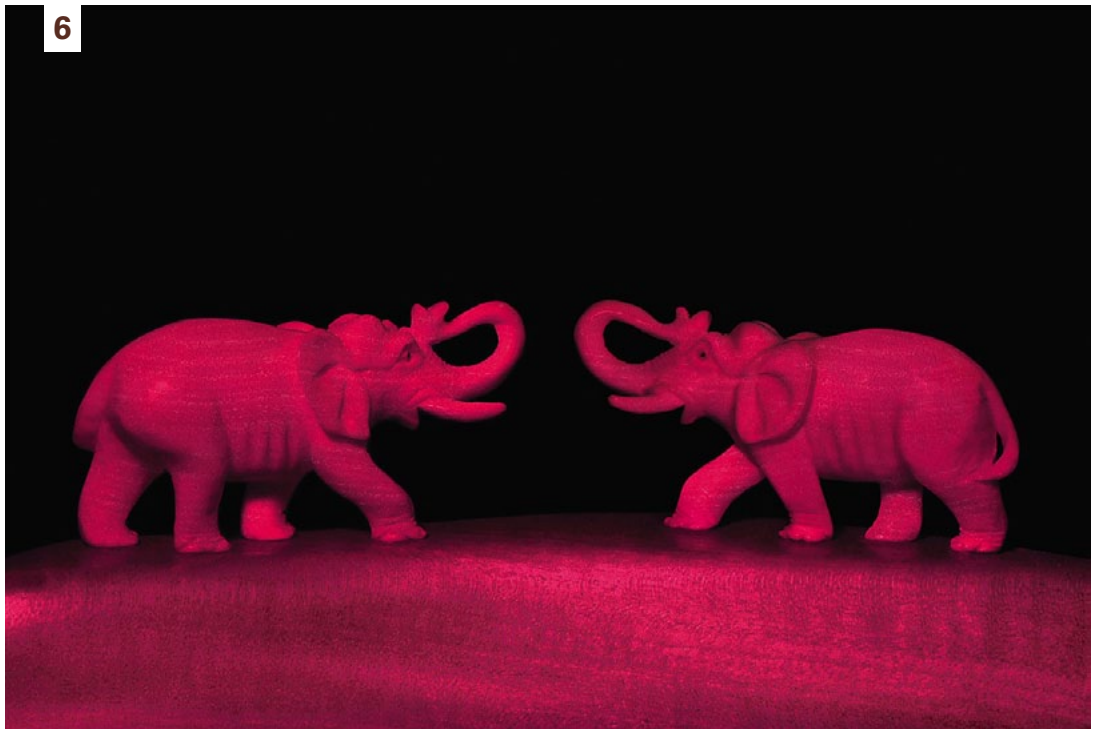
Tree: Deciduous with a spreading crown, reaching heights of 15–18metres. Grows in open woodland and rocky hillsides amongst other species. It is drought resistant and can stand light frost. The flowers are small and greenish-yellow in colour.

Boles: Rarely reach over 400mm in diameter

Bark: Scabrous (rough and scaly) grey-brown bark

Fruit: Small, purplish, edible and pleasant tasting drupe berries. Other parts of the tree have been used traditionally as medicine.

Uses: Ornamental turnery, carvings and jewellery, fine cabinetry and joinery, inlays, veneer, walking sticks, clocks, gun stocks, musical instruments, tool handles, billiard cues, chess pieces, stoppers, candlesticks, knife handles and more.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6. Some samples of pink ivorywood are extremely pink, as shown in these 35mm long *Pink Elephants* which were carved by the author. There is a real life connection: in parts of Southern Africa elephants feed on the ivory trees, grabbing leaves together with the fruit, but not de-barking the tree.

7. Pink ivory table and billet shown under a tree of that species.

8. An aerial view (taken by the author while flying above) showing the ash remains of a pink ivory tree, the result of a recent bushfire.

9. Knob-thorn tree (*Acacia nigrescens*)

Early morning game drives were a great way to photograph the many exotic tree species encountered, including knob-thorn tree (*Acacia nigrescens*) African blackwood (*Dalbergia melanoxylon*), and many other highly sought after species.

One sweltering day, boredom led me to drag the pink ivory furniture out from my cabin. It is not every day that one has the opportunity to photograph a completed tabletop under the trees from which it springs. At full moon Zulu chiefs posed for me dressed in traditional gear under their legendary tree with spears made of ivorywood. The humble people and their warmth overwhelmed me.

My entire time on the reserves was spent capturing images during the nights of trees amongst the Milky Way. Most nights I could see glittering eyes watching me at a distance, which was quite daunting, but being alone without unwelcome lights to ruin my work was what I was aiming for. The occasional distant bushfire cast its light, turning ivory trees into hues of reds and pinks with a backdrop of star trails. Many hectares of bushland and trees turned to ashes, pink ivory trees were not spared.

One enormous tree I had located days before burned down leaving behind a black and white rendering that marked its former existence. I assisted in clearing many of these fallen 'royal trees' from the dusty roadways. I was offered large boles of ivorywood but only took home what I could carry, one log with a rare burl feature. The cost of transporting the log back home on the same flight came at a premium, but it was a small price to pay for a species that was once considered to be 'rarer than diamonds'.

Photos: Vince Manna

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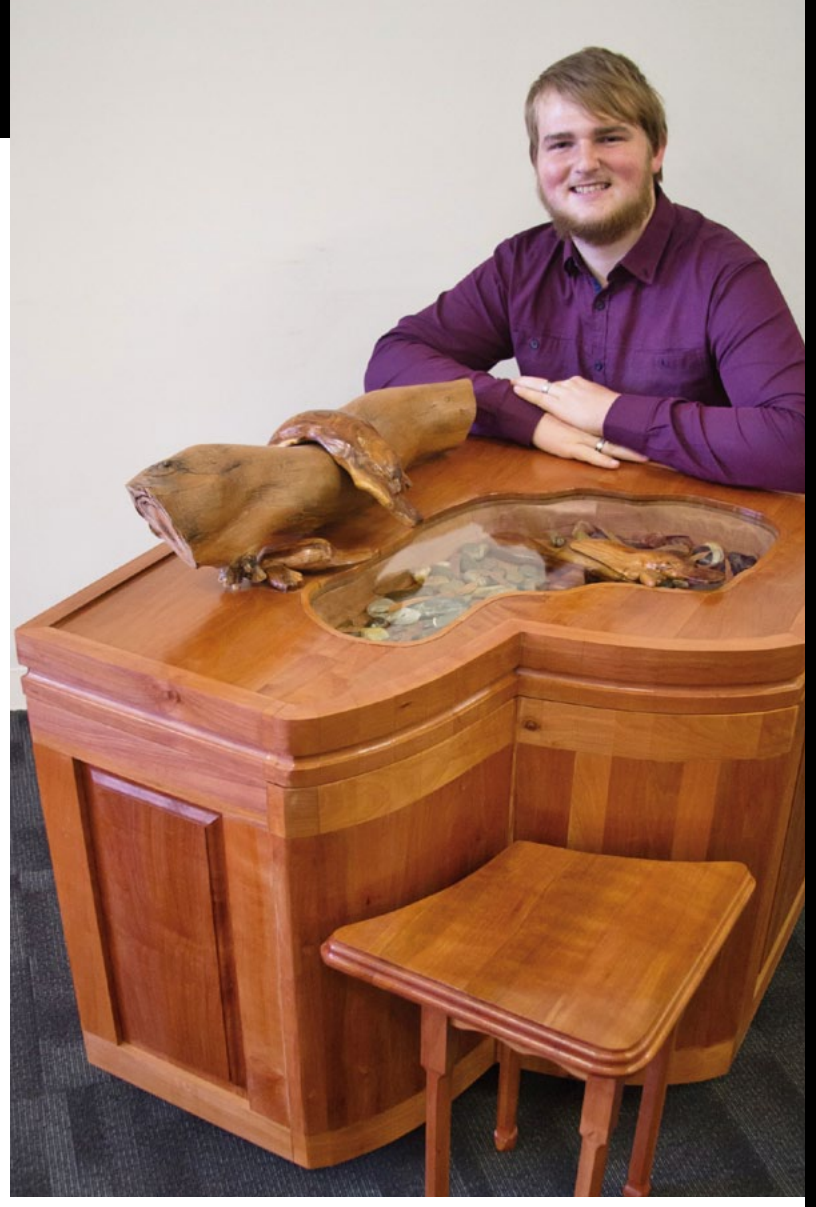
Left to right: Nelson Bruning, Charlie Dibley, Adam Moss, Ethan Wellings, Logan Conell.



Wood Review Student Awards 2014

A round-up of award winning and selected entries in Australia's national competition for secondary students by Linda Nathan.

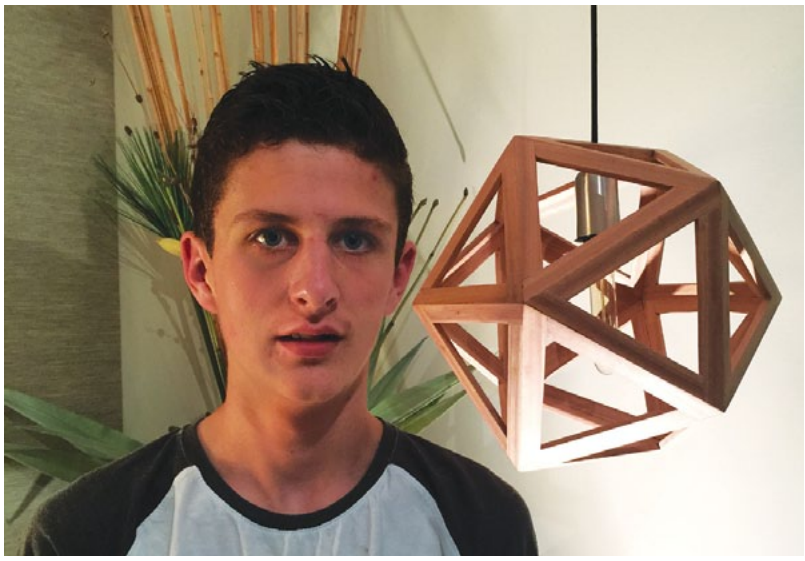
Take a visual walk through the entries presented for this year's *Student Awards* you will see not just an amazing array of things made, but also a lot of justifiably proud makers.

Secondary students in Years 11 and 12 were invited to send photographic submissions of one or two pieces made in the course of their studies. Ninety-seven entries were received from all around Australia, ranging from tables, cabinets, desks, storage units, bowls and hall stands through to a bar made from a wine barrel, a horse-drawn sulky and an Irish bodhran. Many of the pieces entered are highly imaginative and many involve advanced skills.

But it was beds, large curved ones, that literally rocked in this year's competition. Two young women, both from NSW, but not from the same school, took it into their heads to take on the challenge of making large formers and laminations using wood, ply, glue and oodles of clamps and straps to create contemporary wow factor type work.

Julia Laman, MLC School, NSW won **Overall Best** for her achievement. Her *Rocking Queen Bed*, made from radiata pine and hoop ply, presented her and her design and technology teacher Tim Sutherland with more than a few challenges to overcome to create those large elliptical rockers and curved head and base supports. This was definitely not for the faint-hearted.

Bethany Dennes, Christadelphian Heritage College, NSW won **Popular Choice Award** for her *Rocking Bed and Bedside Table*, as judged by Facebook likes. Being inspired by a design seen online was one thing, but once again, nutting out the mechanics of creating the necessary former, shaping the veneered ply and then doing the rest of the woodwork was definitely a commendable achievement. And when the likes were counted at 12 noon on January 18, 310 people out of a total 4,087 that 'voted' agreed.



School Awards

1. MLC School, NSW

$1000 Tool Pack from Lazarides Timber

Triton Workcentre, Precision Saw, Precision Router value $1380

2. St Ives High School, NSW

$1000 Tool Pack from Lazarides Timber

3. The Kings School, NSW

Sand Flee SF-0935 flat bed jointer and accessories from RDG International $1000

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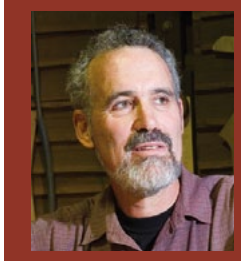
The Judges



Leon Sadubin is a professional furniture designer/maker, sculptor and curator with some 40 years industry experience. Leon was a founding member of the Woodworkers Association of NSW, and much more recently a founding member of Studio Woodworkers Australia. His work can be seen in Parliament House, Canberra as well as in numerous public and private commissions. He has taught at Sturt School For Wood, NSW and currently runs a workshop in Gerringong, NSW. Leon was profiled in AWR#53.

'The range of work submitted by the gifted young people showcases the future talent that is entering our craft. And the support of the skilled and hardworking teachers is certainly recognised and appreciated.

'Given that high school students created these works, I was not critical of items that may have been copies of existing designs. After all we all have to start somewhere and these are not commercial pieces. However when one's work is strongly influenced by an established design it is appropriate to indicate this influence.

'As for the quality of construction, finish and function, we could only be guided by the images and the knowledge that progress was supervised by design and technology teaching professionals.'

David Howlett is a furniture designer/maker in Perth, WA. He graduated from Curtin University as a design and technology teacher and taught woodwork and furniture making at public and private schools for 13 years before establishing the Perth Wood School in Belmont, WA.

'It was wonderful to see the standard and variety of work entered into the student competition. As a professional furniture maker it was exciting to see students successfully attempt some rather challenging designs. Julia Laman's entry stood out immediately with a certain wow factor as well as a project that required a significant degree of technical aptitude in the workshop. Julia's project leads me to wonder if she may go on to study furniture design?

'With such a spread of great projects it took several days and a fair bit of deliberation to agree on the best pieces for each category. Inevitably some entries came very close and definitely deserve the special commendations made here.'

Clockwise from top left: Craig Cornelisson, Mitchell Hodgman, Djalga Crawford.

Best Hand Skills was won by **Carl Ooi, St Ives High School, NSW**. Carl's *Lotus Flower Coffee Table* was a clever composite of thematically linked details that entailed an impressive array of techniques. The top featured bookmatched veneers framing intarsia lotus 'petals' around a central relief carved character, all bordered with veneer edgebanding. The base was also carefully considered with its ellipitically shaped legs with contrasting inlay. I for one am hoping Carl continues his woodwork studies into Year 12 so we can see what he makes this year!

Best Use of Native Timbers went to **Braxton Jones, The Kings School, NSW** for his *Display Cabinet* which shows skillful selection and combining of species and grain matching, not to mention a great display of fine woodworking skills. The cabinet is a contemporary collectors cabinet, custom designed for the colourful displays within, and complemented by a delicate marquetry 'painting' and bowl on top.

Sol Dasika, Haileybury College, Vic, entered his *Checkered Container*, and was winner of **Best display of Turning Technique**. Sol's piece was equally an example of considered design as it explored its theme of square and round geometry and negative/positive space by contrasting wood species as well as curved and flat surfaces that married up cleverly in the form of a lidded container.

As winner of **Best Display of Carving Technique**, **Jayden Maring, John Calvin Christian College, WA**, built on a very high level of woodturning competency with well designed and executed carved details. His vase was ornamented with relief carving and burnt patterning, while the bowl featured sculpted fluted edges.

There are many entries that deserve special mention, here are just some.

Reece Gladys, Newcastle High School, NSW. Reece's *Writing Desk* was a fearless exploration of curved joinery with remarkable technical success in realising his design concept.

Joel Rodriguez, Churchlands Senior High School, WA. With his *Mosaic Cutting Board* Joel took a traditional design concept and created a stunning 3D effect by means of extreme accuracy and meticulous grain arrangement. (*See how Joel did it on p.98.*)

Miles Hunt, Gundagai High School, NSW. *Horse-Drawn Vehicle – Sulky* is a testament to preserving traditional wood and metalworking skills. Building a structure with high strength demands such as this was certainly a hit out of the ball park.

Jesse Cohen, Aitken College, Vic. This desk is a visual statement of a young designer's potential. With its considered layout, Jesse's *Designer's Dream* balanced the equation of form and function.

One award that is conspicuously missing in all this is for all the teachers and parents who no doubt went the extra mile to support students' efforts.

A huge thank you goes to those who sponsored our awards. The companies who did so were registering their desire to encourage younger woodworkers and their support is much appreciated. A total prize pool of $7226 was shared over five student and three school winners.

Viewing this work there is certainly good cause for feeling confident there is a generation coming on that is thinking about design, tradition and technology. Details of 2015 Student Awards will be announced next issue. Award winning and selected entries are presented here, however all the entries can viewed at www.woodreview.com.au

Overall Best

$500 cash from Lazarides Timber

Tuition at Richard Crosland School of Fine Woodwork, value $450

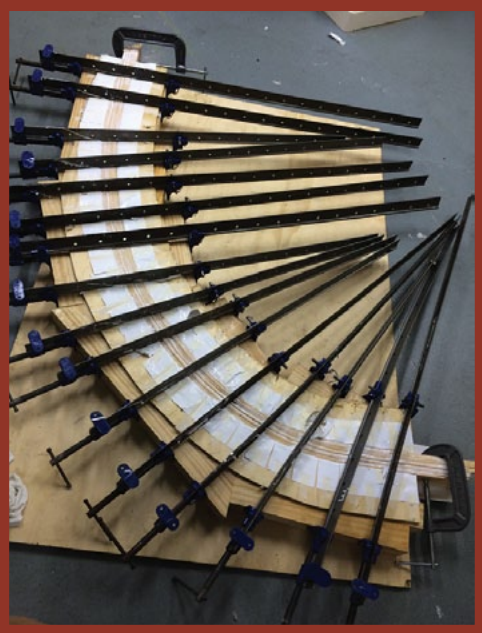
Julia Laman, Year 12, MLC School, NSW

Teacher: Tim Sutherland, TAS Dept/ Design & Technology

Rocking Queen Bed, 1500 x 1570 x 2100mm, radiata pine, hoop pine plywood

'There were many design problems to overcome. How to make the circular legs? How to make the bedheads? How to make it so it could be dismantled and reassembled for transport? The circular ellipse legs had many prototypes before a full size mould was made in quarters, each with laminated layers of radiata pine and PVA glue. The bedhead moulds were made from shaped blue modelling foam. A vacuum bag was used to bend and laminate four layers of 4mm plywood using cross-linking PVA for the bedheads.'

Photos: Julia Laman, Tim Sutherland



Best Hand Skills

$500 cash from Lazarides Timber

Carl Ooi, Year 11, St Ives High School, NSW

Teacher: Andrew Foster, TAS/ Industrial Technology

Lotus Flower Coffee Table, 650 dia x 480mm high rock maple, Tas myrtle, jarrah, jelutong, beech, pine, plywood and MDF

'The tabletop features a flower inspired intarsia inlay. A relief carved Mandarin character *Ji* (luck) is carved in jelutong in the centre. Three legs match the six petals and have an elliptical cross section with a rock maple curve inlay that has a changing outline from different viewpoints. The table has a hidden dovetailed drawer with two compartments.'

Photos: Carl Ooi

Best Use of Native Timbers

Colen Clenton 6" Adjustable Square and Cutting Gauge, value $528

Braxton Jones, Year 12, The Kings School, NSW

Teacher: Brian Davey, Industrial Technology, Timber Products and Furniture

Display Cabinet, 650 x 500 x 1300mm high, redgum, Huon pine, NSW scented rosewood, red mallee burl and various veneers used in marquetry.

'The cabinet stand and carcase are held together by wooden blocks attached underneath. The top three drawers are on telescopic sliders with pins that detach them. The stand has a hidden drawer and ebonised redgum beading on the bottom along with Huon pine veneer. The drawer fronts and door panels are Huon pine. To complement this display cabinet I made some burl platters and a marquetry picture of gum leaves.'

Photos: Braxton Jones

Best Display of Turning Technique

Tuition at Melbourne Guild Fine Woodworking, value $265

Sol Dasika, Haileybury College, Year 11, Vic

Teacher: Stephen Hughes, Head of Design and Technology

Checkered Container, 200 x 200 x 80mm, jarrah, Tas oak

'The design process involved research, concept sketching, creating detailed computer aided drawings, then full size working drawings. Jarrah and Tas oak blocks (22 x 22 x 85mm) were laminated into a checker pattern then cut into two parts for a lid and base. Each part was glued with scrap wood all round so the outer rims could be turned easily and safely. Once finished on the lathe the waste was bandsawn off and the edges smoothed and polished.'

Photos: Stephen Hughes

Best Display of Carving Technique

HNT Gordon Gidgee Block Plane and ¾" Shoulder Plane, value $345

Jayden Maring, Year 12, John Calvin Christian College, WA

Teacher: Marius Vanderlecq, Materials Design Technology

Vase, 190 x 120mm diameter, blackbutt, Bowl, 245mm dia x 50mm high, sheoak

After hollow turning the vase, a Dremel tool with a very coarse sanding disc was used to create a recess on the exterior over which an irregular contrasting pattern was burnt in with a very small Dremel tip. Fitted with a small sanding disc and then a small sanding drum, the Dremel tool was also used to make the wavy edge on the bowl.

Photos: Jack DeVos

Popular Choice Award

Interwood Shop tools, Wilkie Marking Gauge kit, T-Rule kit, Dovetail Master, iGaging Marking Gauge, value $258

Bethany Dennes, Christadelphian Heritage College, NSW

Teacher: TJ Reding, Wood Technology

Rocking Bed and Bedside Table, plywood, jarrah, Tas oak jarrah veneered MDF

This bed was constructed by laminating thin ply and MDF around a rib-like structure. By using ratchet straps I was able to form the headboard whilst also applying pressure along the whole length of the curve all at once. Altogether the curved section is 30mm thick. There are two curved bottomed drawers within the centre of the bed that have a push-to-open drawer runner in them. The bed is held in a fixed position by three wooden chocks.

Photos: Bethany Dennes, TJ Reding

Highly Commended

Miles Hunt, Year 12, Gundagai High School, NSW.

Teacher: Julian Bower, TAS/Industrial Technology

Horse-Drawn Vehicle – Sulky, spotted gum, English elm, recycled hardwood, recycled pine, plywood

'The vehicle I made is similar to the original 'Sydney Sulky'. I started with some original steel parts, springs, an axle and wheel centre boxes, and built it up from that. Lost skills involved wheelwrighting, blacksmithing and coach building. Steam bending was used for shafts and mudguards.'

Photos: John Hunt

Highly Commended

Reece Gladys, Year 12, Newcastle High School

Teacher: Stephen Prior, Industrial Arts

Writing Desk, Australian red cedar, yellow box burl, 6mm Fijian cedar plywood, 5mm flex ply

'I constructed a writing desk for my Year 12 Industrial Technology Timber and Furnishing class in 2014. The writing desk was designed to be the masterpiece of the computer room and a point of appeal which displayed curved drawers and the bending shelf on the top of the table. Various construction methods were used, included domino and biscuit jointing, routing, ½" blind dovetailing and finger jointing, bending and laminating, sanding, thicknessing and jointing, lathe turning (pen making), and French polishing.'

Highly Commended

Jesse Cohen, Year 12, Aitken College, Vic

Teacher: Mark Grech, Head of Product Design & Technology

The Designer's Dream, radiata pine, plywood

'The Designers Dream incorporates compartments specifically for folios, textbooks, stationary and other miscellaneous objects. Split level design allows for comfort and ease when switching between computer use and illustration work while keeping ergonomics in mind. The upper section has a roll-out keyboard drawer as well as locations that assist in cable management.'

Photos: Ramona Wardan

Sarah Talaj, Year 12, Assumption College Kilmore

Teacher: Ms Robin Panousieris, Product Design and Technology

Dressing Table, Vic ash, pine, ply, Perspex, mirror

' I designed the table for Adele, a full time student in fashion design. It had to be designed to function as a well organised space to store her fashion accessories and cosmetics.'

Photos: Robin Panousieris, Sarah Talaj

Brendan Shakespeare, Year 12, Colo High School, NSW

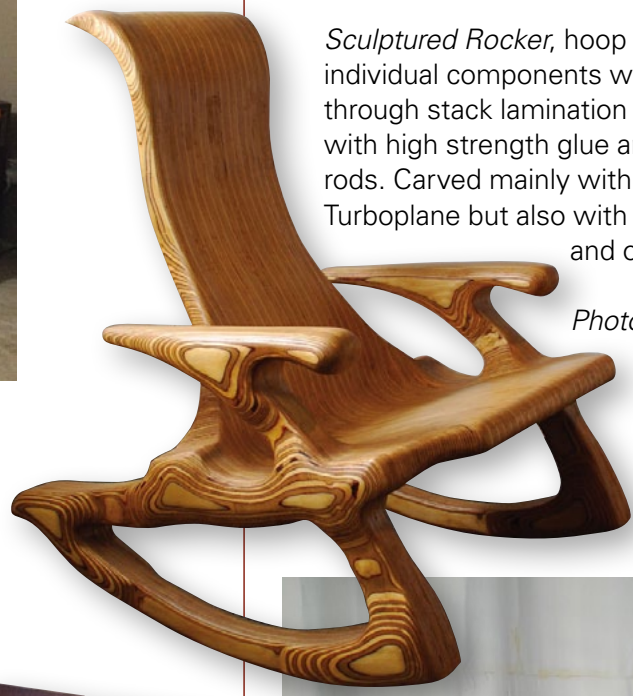
Teacher: Julie Stokes, Industrial Techology

Low-lying Entertainment Unit, jarrah, Tas oak

'My major work was based upon the idea of a modern style with a twist of 50s and 60s elements. I wanted contrast in the timbers to highlight how each species is unique.

Along with simplicity I aimed for complexity to portray a sophisticated array of furniture techniques that would help me gain marks.'

Photos: Nigel Shakespeare

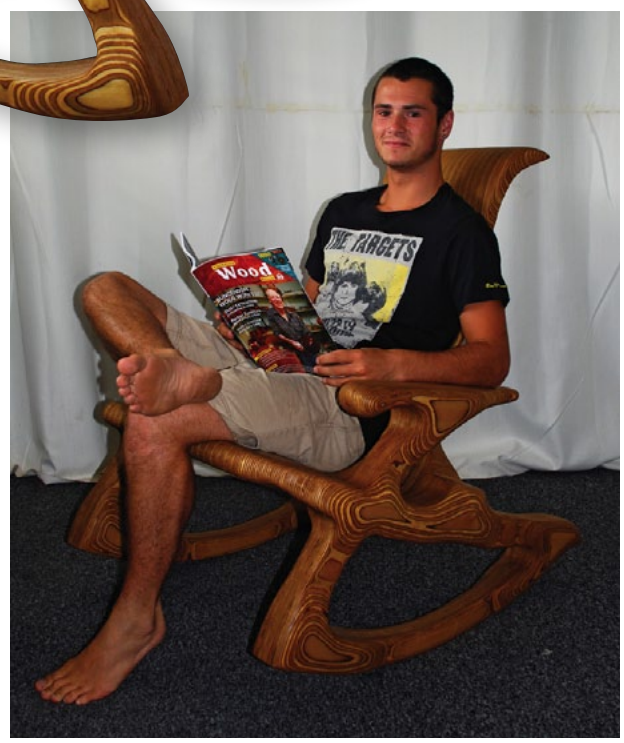


Darby McGeachie, Year 12, Engadine High School, NSW

Teacher: Kaye Denham, Head Teacher Technology & Applied Studies

Sculptured Rocker, hoop pine ply. 'Fifty-two individual components were held together through stack lamination and fixed in place with high strength glue and two dowelled rods. Carved mainly with an Arbortech Turboplane but also with a variety of hand and other power tools.'

Photos: Shani McGeachie



The Good Gloss

Iain Green investigates the uses of super high gloss finishes.

For larger pours like this you may have to mix and pour more than one batch of finish.

Pour-on finishes use two pack epoxy which is mixed and poured onto a wooden surface to give a thick, tough and glossy finish in just one application. In *AWR#84*, I wrote about a rubbed-out polyurethane finish that can be used to create a similar finish through multiple thin coats. Pour-on finishes have the potential to produce a similar though tougher, high gloss finish in just one application.

Both finishes result in a 'plastic-like' coating and stand in sharp contrast to many traditional finishes. I certainly understand the preference many people have for the look and feel of older, proven finishes. However, I think there is a role for finishes that are really tough and can highlight features of timber grain. So recently I did some tests to see where pour-on finishes can be used to advantage.

In *AWR#48* Robert Howard outlined his 'philosophy' of woodwork. One of his key principles was that woodworkers should always try to 'creep up' on their target. With finishes, this usually means applying a number of coats, rubbing down the surface between coats and correcting imperfections as you go. The single-coat approach of pour-on finishes can be a great advantage but doesn't match the creep-up principle and has the downside that imperfections can be difficult to remove.

Pour-on products

I chose the three products shown in **photo 1** for the test: Glass Coat from Craftsmart, Glass Finish from Feast Watson and Pour On Gloss from Boatcraft Pacific.

Packaging varied a little, with timber sealer and measure included with Glass Coat, and gloves and measure with Pour On Gloss. The Feast Watson instructions were better presented than others whereas the Pour On Gloss instructions were more comprehensive.

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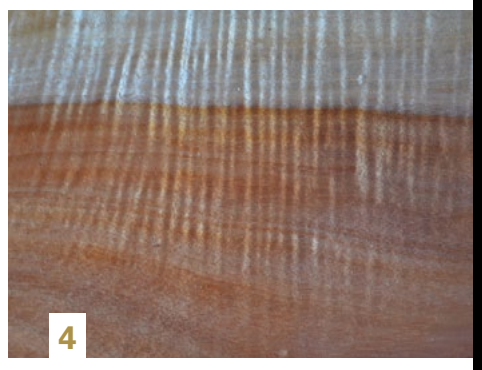
1. Left to right: Pour On Gloss (Boatcraft Pacific), Glass Coat (Craft Smart), Feast Watson Glass Finish.
2. Filling a void created by white ant damage in rosewood.
3. 'Floating' a butane burner above the surface can remove bubbles..
4. The original timber colour has been maintained in this Qld maple sample.



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Safety issues

It appears the main risks with pour-on finishes are irritation to eyes and skin and possibly allergic reactions. There are appropriate warnings against breathing vapours and avoiding skin and eye contact with each of the instructions, and there is good encouragement to wear gloves at all times. All of the bottles carried emergency instructions.

Measuring and mixing

Glass Goat and Pour On Gloss both require equal parts of resin and hardener whereas Glass Finish requires a 5:3 ratio of resin to hardener. For small batches, I found the equal mixes were simpler to measure though this wasn't a problem with larger mixes. Limit mixes to 500ml as larger amounts can get hot and go off too quickly. This means it is a good idea to have a second person mixing when more than one batch is required.

Pour-on finishes depend on self-levelling of the mixture to obtain a good finish. This won't happen if the mixture is spread too thinly or if it is too cold. I planned on a 1mm spread and I think this was a little too thin in places – Feast Watson recommend 1.2mm. Pour On Gloss recommend a temperature range of 20–30°C.

Each of these finishes is quite transparent, so it is difficult to see when they are mixed. One recommendation was to use a broad flat stirrer to ensure good mixing and another was to mix for one minute in one container and then transfer the mix to a second tub. I think this is a good idea for larger mixes in particular. Bubbles can be an issue with pour-on finishes, so don't stir too vigorously.

Filling voids

As pour-on finishes cure through the reaction of resin and hardener, they can be used to fill voids and in the process, can improve the strength of a piece. **Photo 2** shows a board cut from a rosewood stump that had been attacked by white ants. The shape of the void was a feature of the board, so I decided to fill it.

I put tape over holes in the bottom and on the ends, to prevent leakage. It's preferable to fill large voids in several steps so that bubbles captured by the pour have a chance to escape. There is a surprising amount of shrinkage as the finish cures, so voids need to be over-filled. Bubbles tend to escape from imperfections like cracks and bark enclosures, so these should be sealed before pouring the finish.

Flat surfaces

In some circumstances, you will want the finish to flow over the edge and down the sides. Where you want the finish to be flat up to an edge, you will need to make a 'dam' by running some stretchy electrical tape around the edge. If you fix the tape so the top edge is just below the thickness you are aiming for, you can get the meniscus to curve down to the tape which is quite neat.

For smaller pours, dribble it on until there is full coverage and keep pouring until the surface rises to an appropriate thickness. For a larger pour like the one shown in the main photo, calculate the amount you need for say, a 1.2mm cover, mix and pour (in more than one batch if necessary).

It's a good idea to pour around the edges first and then fill in the middle. You only have something like 10 minutes to spread the mix. I used a notched spreader to get a reasonable coverage

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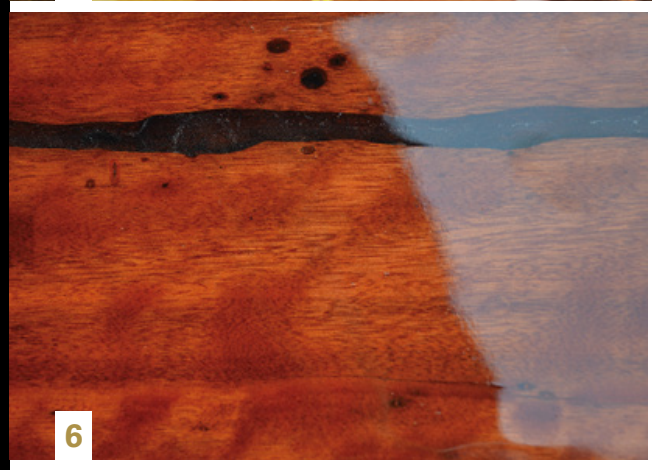

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and then used a 100mm foam roller to get an even finish. It's preferable to avoid working the surface a lot and if it is reasonably spread, it will even itself out and flow to a great finish.

Make sure that you have good ventilation for larger pours. I didn't find the fumes from these surfaces were particularly noticeable, however the warnings should not be ignored.

Removing bubbles

Bubbles can be created when mixing the finish and can rise to the surface from cracks or voids. They can be removed by pricking then with a needle or by blowing at them through a straw.

A really effective way of removing bubbles is to float a butane burner a couple of centimetres above the surface (**photo 3**). I think the bubbles burst through localised heating and from turbulence from the flame itself. You need to be really careful of course as you can easily heat the surface so much that the finish boils and catches fire. You may need to do this several times as bubbles seeping out of a crack can keep coming.

As soon as you are satisfied with the surface, you need to put a cover or tent over it to prevent airborne particles settling. The surface will be touch dry in 12 hours, reasonably hard in three days and fully cured in seven days.

Test results

Pour-on finishes certainly live up to the promise of quickly achieving a high gloss finish that is perhaps 50 times the thickness of a polyurethane coat. On small surfaces, it is relatively straightforward to achieve a flawless finish. On larger surfaces, it takes some practice.

I do like the clarity of these finishes. The Qld maple sample (**photo 4**) has maintained the original timber colour and the rosewood sample in **photo 6** is only marginally darker.

Inevitably though, there will be blemishes from stray bubbles or dust particles and on larger surfaces, variations in the finish. I've found that after these finishes have cured (seven days at least), they can be rubbed out in the way I described in *AWR#84*.

Depending on the blemish, it may only be necessary to use 1200 and 1500 grit paper to remove the gloss and blemishes and then buff the surface with a cutting polish. You end up with a great finish that I prefer over the normal very glossy finish.

Curved surfaces

Recently, I made some platters like the one in **photo 7** where I planed all of the surfaces (*see AWR #85*), and I felt that a pour-on finish could be a good all-purpose option. My first attempt was a disaster as I spread a 1mm thick cover and then it all flowed into the middle. This is my second attempt where I brushed three thinner coats and then rubbed out the finish – it worked really well. Brushing doesn't give as good a finish as the normal pour-on approach and on a curved surface it is hard to avoid small runs.

Hammer handle rejuvenation

A common application of pour-on finishes is to paint it on (or pour


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it over) a surface where excess can run off. I have an old hammer with a leather handle that was very weathered (**photo 8**). I sanded it back and painted on two coats of a pour-on finish and suspended the hammer by the head as it dried. There was minimal run off as it happens and the finish was beyond expectation (**photo 9**).

Burl with bark inclusions

Pour-on finishes are a good option for the convoluted grain patterns and the rough surface of burl.
I found the bark inclusions across the top of this sample soaked up a lot of finish and gave off a lot of bubbles. So I put seal coat on first (**photo 10**). When this was dry, I brushed finish into the knobbly sides, put a tape barrier across the back and poured a reasonably thick finish on top (**photo 11**). I still got a few bubbles that I had to remove.

Embedding things

Pour-on finishes are often used as a robust finish over things like photos or coins (**photo 12**). The instructions suggest you should glue your items onto the surface and then apply the finish over them. In this sample, I just wet the back of the coins so there would be no air to escape and then applied the finish. I used one of the coins as a height gauge when I set the tape around the edge and then I poured the finish until I had an even cover over the coins and a curved meniscus down to the tape around the edges.

As with any other finish, it is unrealistic to expect a perfect result, first time. Trial runs and experimentation are important to build up confidence. Rubbing them out also gives you the ability to 'creep up' on the result you want.

Photos: Iain Green

Pour-On Gloss Suppliers:
Feast Watson Glass Finish,
www.feastwatson.com.au
Tel: 1800 252 502

Pour On Gloss
www.boatcraft.com.au
Tel: (07) 3806 1944,

Glass Coat Premium Timber Finish
craftsmart.com.au
Tel: (03) 9895 4333

Iain Green lives in the Sunshine Coast, Qld. Email him at: iainbgreen@gmail.com about his Japanese-style plane tuning and using workshops.

5. Spreading the finish after the initial pour.

6. Rosewood after pour-on finishing is a bit darker but still retains colour well.

7. Three thinned coats and rubbing out worked well on a curved surface.

8. An old hammer handle, pitted and worn.

9. The same handle after the pour-on treatment.

10. Sealing coat on burl and bark feature.

11. Super gloss finish after the final pour.

12. Embedding objects and memorabilia is a popular use for this type of finish.

Lessons Learnt

- Mix it well – even a small section that doesn't cure well will probably mean the whole surface has to come off.
- Prepare well, as you only have 10 minutes to mix and spread.
- Seal cracks and other voids as they give off bubbles.
- A larger surface probably needs a second person to mix while you pour and spread.
- Plan a tent or some other cover to exclude dust while the surface dries.
- Consider rubbing out the final finish. as it will minimise the effect of blemishes and give you control over the level of gloss.

An Easy Kitchen Set

Useful and low cost projects for honing basic wood skills.
Story by Steve Hay.

These are simple projects but many may overlook the learning curve they offer in terms of the hand tool skills that can be honed while making them. I have used pine as the main resource, because it is cheap and readily available. Other materials will work equally well, if not better, from a durability standpoint. Adding stylish pinstripes of veneer creates a nice contrast between the laminations.

Making the chopping board

Firstly work out how long you want your chopping board to be, then work out the width. Divide the width of the board by the thickness of the timber to be used. My board will be 380 x 250mm made from 42mm wide x 19mm thick pine.

I divided 250 by 19 to give 13; multiplying this by my desired length of 380mm told me I needed 4.94 metres of timber, or two lengths of 2.4m plus one 0.9m short of 42mm x 19mm. For the stripes I used some offcuts of jarrah veneer. If possible your veneer should be longer than the length of the board.


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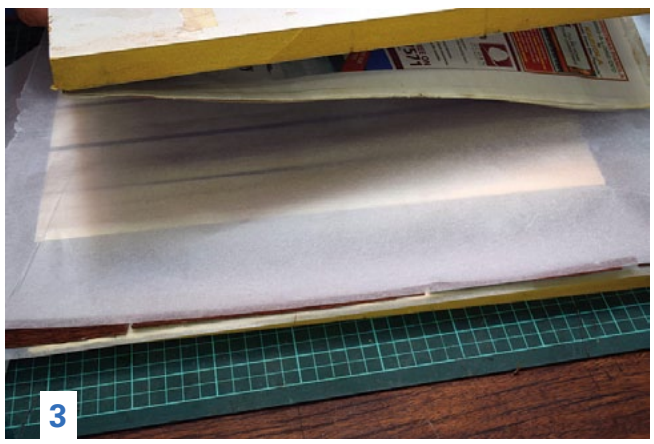
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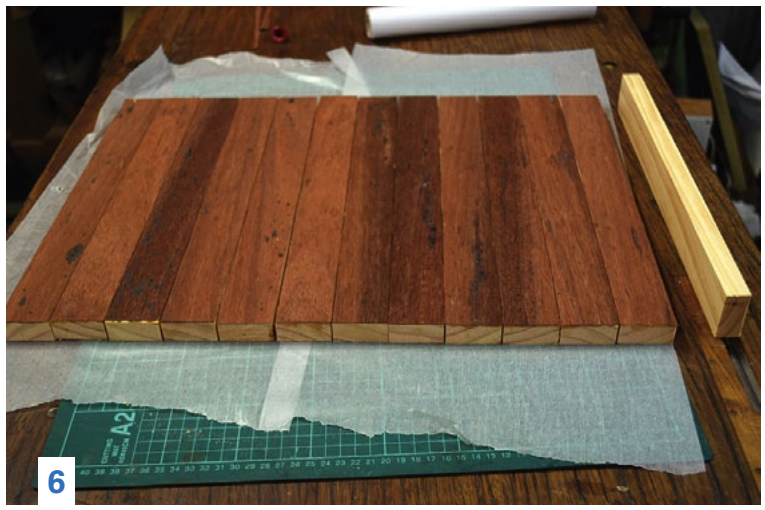
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1 Cut desired number of pieces to the chosen length. Lay out all the pieces, except for one, on the veneer (**photo 1**).

2 Bunch them all together and apply waterproof glue (**photo 2**).

3 Turn glued surfaces over and clamp between two cauls (**photo 3**).

4 Once the glue has dried, remove from cauls and separate into individual pieces. Clean up overhanging veneer on both edges with a sharp knife (**photo 4**).

5 Lay pieces out with grain direction facing the same way (**photo 5**).

6 Turn all pieces over the same way with the un-veneered piece placed to one side (**photo 6**).

7 Apply waterproof glue to all exposed surfaces (**photo 7**).

8 Using the extra piece that wasn't veneered as a base, stack all pieces on top of each other, applying more glue to the bare sides (**photo 8**). Do not put glue on the two outside edges!

9 Lay the assembly down flat and push as much of the board as you can into the final position before clamping. Use scrap blocks to protect the edges of the board (**photo 9**). Once clamped, wipe all excess glue from both sides using a wet rag. Allow to dry.

10 You may find you have some uneven pieces or there is a lot of dried glue. You can plane the uneven surface using a hogging plane. Mine is an old converted Footprint No.4 which has a convex shape ground into the blade. It's not as savage as a full scrub plane but has more bite than a normal No.4 smoother.

11 At this stage you could put the board through a thicknesser or a wide belt or drum sander. However, if you want to keep this as a hand tool exercise and it doesn't require a hogging plane sharpen up a good smoother and start smoothing (**photo 10**). If you haven't already done so it's good practice to just round over the corners of your smoother's blade to prevent tracking or unsightly tramlines scarring your finished surface.

12 If required, finish off with a sander or a sanding block with 180 grit.

13 Dock the ends with a mitre or bench saw or keep going with the hand tool skill exercise as this is a fantastic opportunity to get some block plane practice in. Mark out the cut-off line you want to work to (**photo 11**).

14 Double check the blade is sharp and if you have an adjustable mouth model, have only a small mouth opening. Planing from both ends into the centre will eliminate grain tear-out on the corners (**photo 12**).

15 Profile the edges, this can be done with a plane (**photo 13**) or a round-over router bit. Turn the board over and sand off all sharp edges on the base and around the sides and corners. **Photo 14** shows the finished board with the maker's mark I burnt in with a pyrography unit.


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Making the knife block

1 Select the knives and or implements you wish to store in the knife block (**photo 15**). Measure the length of the longest, and the width and thickness of each blade. You'll need to add one or two millimetres clearance all around.

2 Organise how you want them to be arranged and draw a rough sketch denoting positions of each implement. This also lets you know how many pieces of timber you will require. The example here required six pieces.

3 The length of the longest implement will dictate the overall height of the knife block. At 300mm the sharpening steel was longest so I added a little extra for insurance and set my docking length to 310mm (**photo 16**). If you make the block from the one piece of timber you'll get a good grain pattern; it's not essential but looks good. If you're going to use odd scraps for this project, disregard the last comment it will still look great.

4 Here I'm using a single length of 1800 x 110 x 19mm utility grade pine. Mark out and number six sections so you know the order they will go together.

5 Select your veneer and lay the pine out on top (**photo 17**). Glue the veneer to the pine as for the chopping board. Clean up the edges the same way as well by trimming back the veneer with a knife.

6 Set your marking gauge and mark 10mm in from the edge (**photo 18**). Square up the pieces (**photo 19**).

7 Set aside the two pieces pieces that will go at the rear and cut 45° mitres on the tops of the other four (**photo 20**). Make sure the veneered face is uppermost.

8 Hold the pieces together and outline the compartments where you want them to go (**photo 21**). The best way to make the wide grooves shown in **photo 22** is on the router table but a handheld router set to the required depth and width is also okay. A rebate block plane can also do the job.


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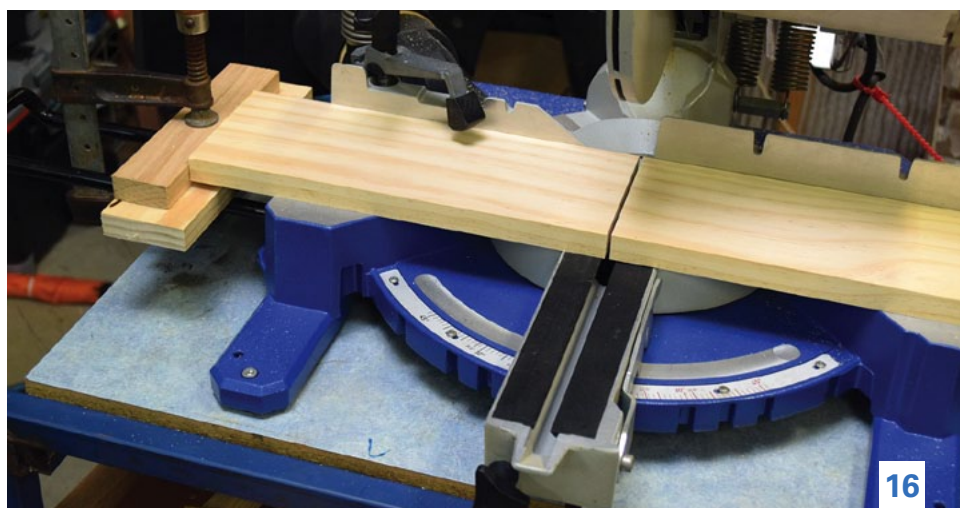
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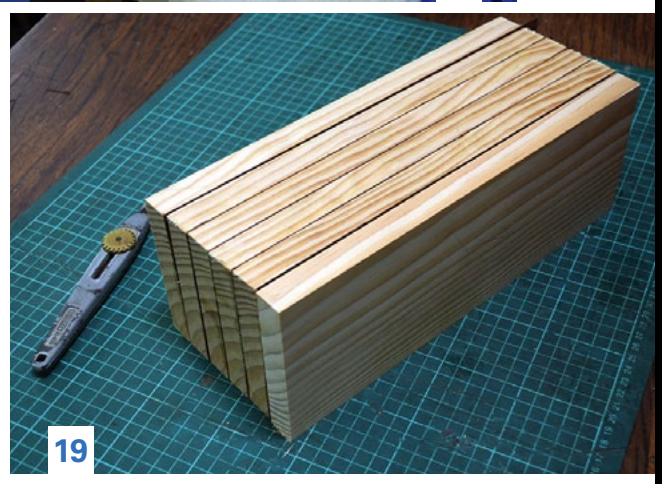
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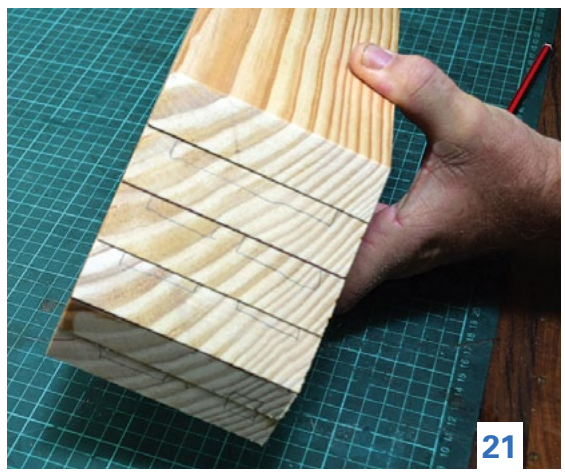
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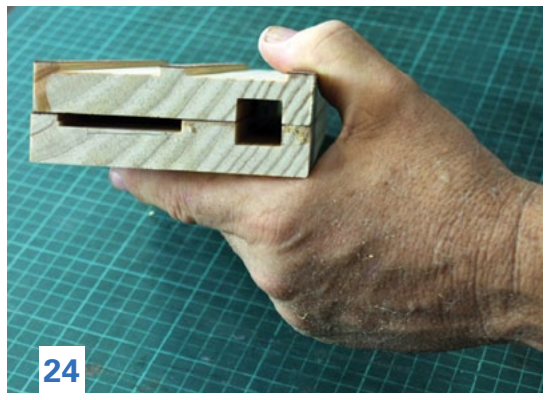
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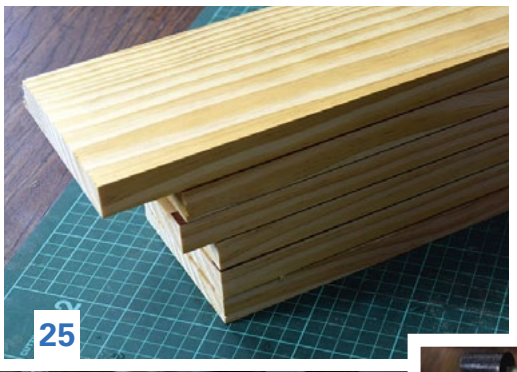
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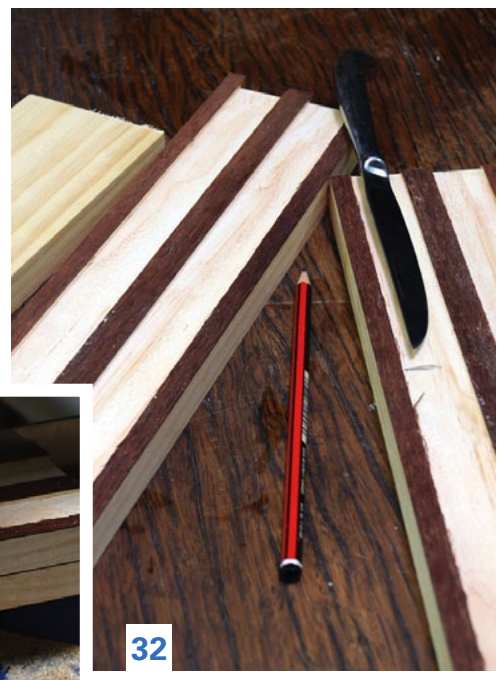
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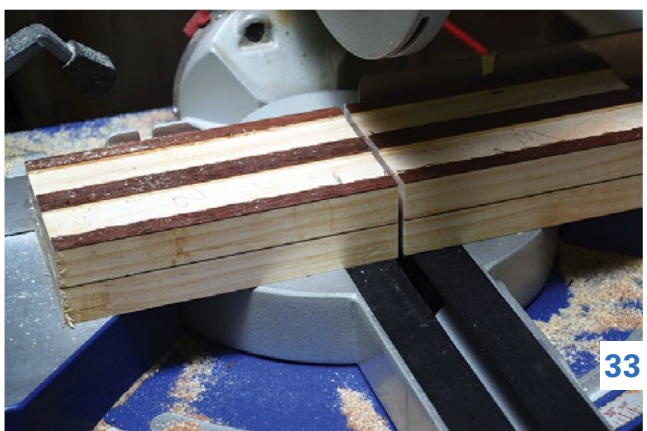
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9 Notice in **photo 23** how the compartment for the steel is done in two halves, one in the front of piece No.6 and the other in the rear of piece No.5. When joined it makes the recess shown on the right in **photo 24**.

10 Dry assemble all pieces (**photo 25**). Mark and cut to length the overhanging pieces (**photos 26, 27**).

11 Double check all is okay before gluing up (**photo 28**). Leave to dry for 24 hours.

12 Hand plane the side flat (**photo 29**) or use a linisher or belt sander. Use a block plane on the sloping endgrain surface (**photo 30**) or use a linisher. Check for square as you go (**photo 31**).

13 Round over the edges as for the chopping board.

14 But wait there's more…**photo 32** shows the raw components for the steak knife block. It's made the same way as the larger block using up scrap (**photo 33**). The slope was cut off after assembly. To finish off, all items were rubbed with a food safe rated oil.

These simple projects can be varied to construct handy storage units around the workshop as well as the kitchen. You could think about making a block to hold chisels, saws, card scrapers and so on. My advice is: do the kitchen projects first, you'll be amazed how much shed time you'll be granted if you look after the inside of the house first!

Photos: Steve Hay

Steve Hay presents Woodworking Masterclass on 31 Digital TV and also on his YouTube channel. Contact Steve via www.woodworkingmasterclass.com.au

8 Essential Router Cutters

Start your bit collection with the basics, add according to need, and use and maintain with care, advises Damion Fauser.

Few woodworking tools offer the versatility of the router. Not only can they be used either handheld or secured under the table, but there are also different sizes to choose from, and then you need to pick between plunge and fixed bases. Add to this the sheer variety of bits available and the situation can start to become intimidating for the average woodworker.

Your needs will depend on what you make and this applies particularly when facing the white noise that is router bit selection. I design and make contemporary furniture in solid timber and veneers and work equally between hand held and table-mounted routers. I operate one large, one mid-size and one trim router. I have two router tables, one with a large router and one for a trim router. The router bits shown here are some of the ones I most often reach for. They are shown alongside the profiles they cut, but used in combination the variations are limitless.

My advice is to acquire individual bits as you need them for specific projects, rather than buying sets that may have bits you'll never use. For cabinetmaking you may need a selection of raised panel bits and matching rail-and-stile bits for profiled doors, and perhaps also edgebanding bits for applying solid edging to veneered sheet goods. Someone doing period reproductions or restorations may have a large selection of moulding profiles. Similarly builders may have large diameter mortising bits for cutting out hinge gains and framing checkouts. Signwriters will have core box bits and diamond-point bits for lettering. The type of woodworking you do will inform your router bit buying choices.

Other buying considerations

Once you've decided which router bits you're likely to need, there are some other considerations which require addressing prior to purchasing.

Left: The shallow wall-mounted cabinet shown left is another storage solution that also gives easy access.

Below left: Don't fully seat bit shafts right down to the bottom of the collet.

Bottom left: A few careful honing passes on the back edge of the cutting surfaces can extend edge life.

Shank size. Larger routers tend to have ½" collets whereas palm routers have ¼" collets. Many styles of bits are available in both shank sizes, but only up to a certain point, as the smaller routers do not have the power to drive the largest bits. When using larger bits, I prefer to use ½" shanks as I find they are less prone to vibration.

Carbide quality. Most router bits have cutting edges made from tungsten carbide, but not all TC is equal. TC quality and grading is a subject all unto itself, but look for thicker carbide sections that have been brazed to the steel body along the full length of the cutter.

Anti-kickback design. Most modern bits have an anti-kickback feature built into their design, which prevents the workpiece being fed into the bit too fast and therefore potentially causing kickback. Not all do however, particularly some USA brands.

Bearing or no bearing? Where possible, I tend to buy bits with bearings. I find these bits give me additional flexibility as I can use them handheld without a guide or in the router table.

Care and maintenance

Router bits do an enormous amount of work for their size so it is important to invest time in looking after them.

Keep them clean. Bits accumulate pitch and resin very quickly, which can reduce performance due to increased friction and vibration. Use a proprietary cleaner or other solvent to remove pitch from the cutting edges. Keeping the shanks of your bits and the inside facets of your router collets clean and free of dust and debris will mean you are less likely to gall, or scar the shank, which will lead to a reduction in performance due to vibration. Bearing guided bits in particular are only as good as the bearings, so keep them clean and lubricated.

Sharpening. Cutting edges will dull after prolonged use. Bits can be sent away for professional sharpening, but this may cost more than a replacement bit. A few careful honing passes on the back edge of the cutting surfaces with a fine diamond file can extend edge life. Be careful to maintain the balance of your bit by taking the same number of passes on each cutting edge and don't work on the front edge of the cutter or you'll risk changing the cutting profile. Be aware that by filing you will be removing material from the cutter, so this may result in your bearing-guided cutters not being perfectly matched to the bearing.

Storage. Store your cutters so they are protected from dust and moisture and so the edges are protected from being knocked and chipped. The best way to store cutters is in their individual factory containers. When your collection grows however this may prove difficult. I have a couple of small pieces of MDF into which I've drilled a network of ½" and ¼" holes to secure my bits. I keep these in sealed plastic containers in my router table cabinet.

Choose and maintain your router bit collection with care and you'll enjoy the capabilities and quality which routing tools can give to your work.

Photos pp.57, 58: Raf Nathan
Photos pp.59–61: Donovan Knowles

Quality router bit samples featured here supplied by:
Professional Woodworkers Supplies (Whiteside)
Tel (03) 9776 1521
www.woodworksupplies.com.au

Carb-I-Tool
Tel (03) 9555 2966
www.carbitool.com.au

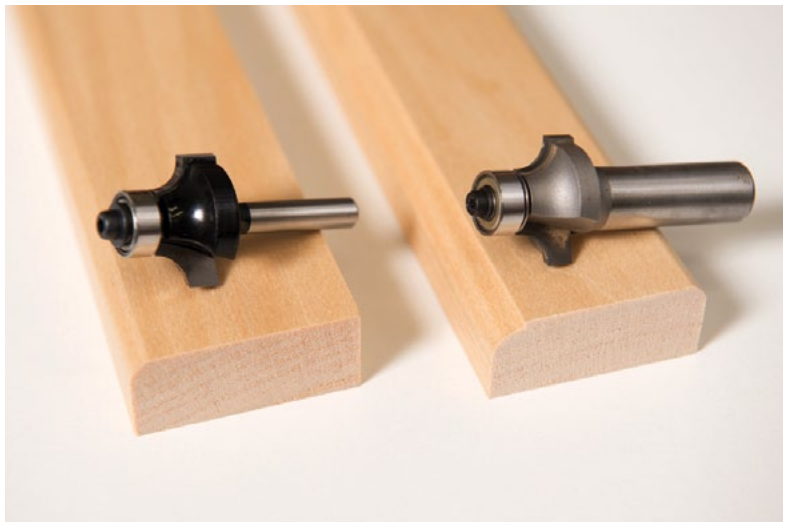
1 Straight Bits

These are the workhorses and have surprising versatility. They can be used for grooving, rebating, edge-trimming, templating, mortising, inlay work and more. Commonly available in sizes ranging from 1.5mm to 25.4mm. Recently spiral bits have become more readily available. With their shear-cutting action, they are far superior to the straight-fluted bits as they run cooler, cut cleaner and remove debris more efficiently. Where possible, I will reach for a spiral bit over a straight-fluted bit every time.

Bear in mind there are up-cut bits, which are great for fast debris removal, such as when cutting deep mortises for mortise and tenon joints. Others are down-cut, very useful for protecting the edges of the cut area from being torn out, such as when template-cutting veneered panels or cutting hinge mortises. Finally, you can get compression bits which have flutes in opposing spirals for both up and down cuts. Needless to say these are the most costly of the bunch but they yield superior results as they bring the best of both – chip removal and edge protection, to the operation.

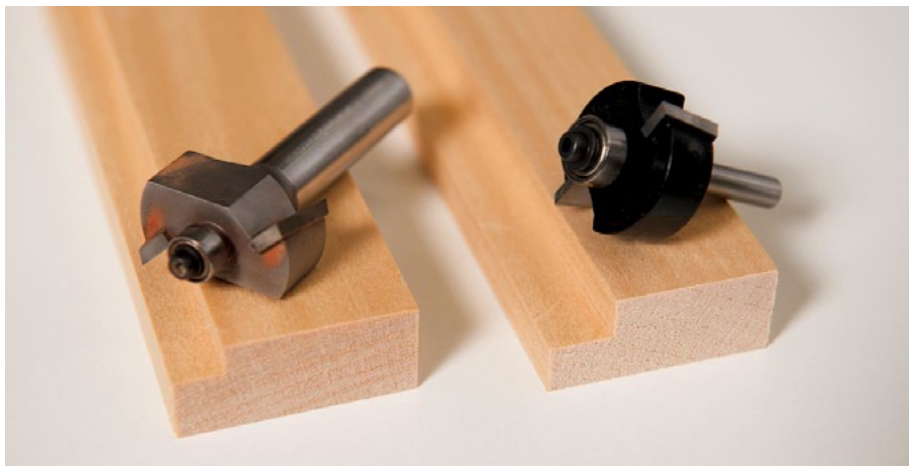
2 Roundover Bits

These are ideal for profiling and softening hard edges and are commonly available in radii from 2mm up to 25.4mm. I tend to use the smaller ones for the subtle softening of edges.



3 Chamfering Bits

When I want an alternative to a radial profile for softening an edge, I will sometimes reach for a chamfering bit, which leaves a 45° profile on the finished edge. Can also be used to form mitres for box and carcase joints.



4 Rebating Bits

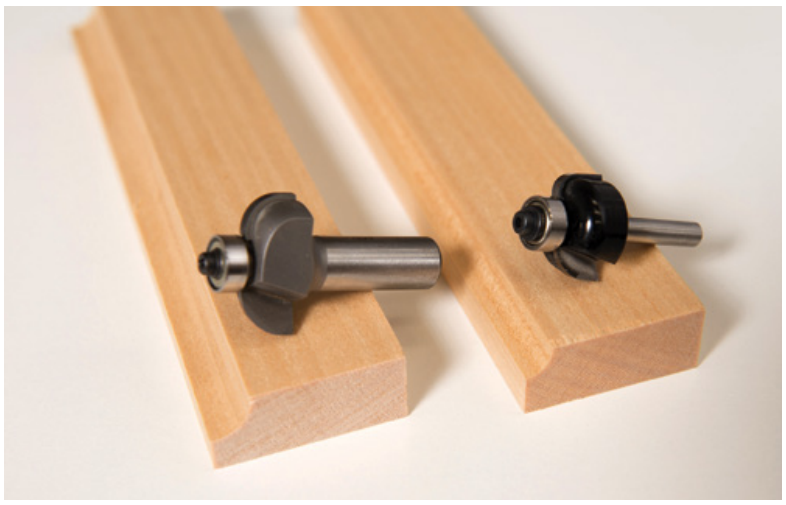
Used for cutting a rectangular cross-section profile from the edge of a board or sheet, these bits have enormous utility in many applications, from small boxes to large-scale kitchen cabinet production. To maximise the versatility of the one cutter, I have a set of bearings of different radii. This allows me to either cut rebates of different sizes or, when I need to cut a big rebate, I can start with a large bearing to take a small bite and then shift down through progressively smaller bearings to take subsequent bites until I reach my final dimension.

5 Templating Bits

I work outside of straight lines on many of my projects. When I need to repeat a curve, or match a one-off profile perfectly, then a bearing-guided bit is essential. Flush-trim bits have the bearing on the end and were designed for flushing edging applied to panels. Pattern-following bits have the bearing between the shank and the cutting flutes and were designed for following non-rectilinear patterns and templates. Flush-trim bits can be used for both edge-trimming and templating, but pattern-following bits cannot be used for edge-trimming, so if you are working to a budget, a flush-trim bit gives more flexibility.

Basically these are straight bits with a bearing attached, and are also available with either straight or spiral flutes (up/down or compression). In some templating situations you may be faced with reversing grain direction. Here it pays to have flush-trim and pattern-following bits in your arsenal so you can rout with the best grain direction, and therefore avoid having to switch the template between opposing faces of the workpiece, thereby risking inaccuracies.

An alternative is a double-bearing bit, which has bearings in both locations. This bit allows you to leave the template fixed in place and just flip the whole workpiece over to manage changes in grain direction. Now on the market are also bearing-guided compression bits which leave a remarkable finish in almost any situation.



6 Cove Bits

Used to cut a concave circular profile from the edge of a board, these bits are useful for creating stand-alone edge profiles. When combined with roundovers, chamfers and straight bits, any number of combination mouldings can be achieved. As with roundovers, these are commonly available in various sizes.

7 Dovetail Bits

Used for cutting sliding dovetail profiles, dovetail bits are available in different sizes and with different angles, with the most common being 14°. Visually more appealing, the sliding dovetail is also more structurally sound than a straight dado joint as the tail is less prone to rotating in the socket when under load, for example when a shelf is heavily laden and sags. One weakness of these bits is the narrow neck and therefore it is advisable to remove as much waste as possible from the socket with a straight bit prior to cutting the dovetail profile.

8 Slot Cutters

Slot cutters are another versatile family of bits. Whilst the same result can be achieved with a straight bit, the advantage of using a slot cutter is that the significantly larger radius of a slot cutter and the raking cutting action means debris removal is more effective and therefore the bit runs far cooler. Because these bits are generally operated at a slower speed, they are less prone to vibration and therefore give a cleaner cut. A more cost effective option to buying individually sized bits is to buy one primary shaft/arbor and then invest in cutters of different cutting thicknesses, and bearings of different diameter. Slot cutters are also useful for creating tongue and groove profiles.

Ultimate Router Bit

After testing, I have to say the title of Whiteside USA's recently released compression bit is a worthy one.

Made from a solid high-grade tungsten carbide cylinder brazed onto a steel ½" shank, these bits are CNC machined to a double-spiral, compression-cutting profile and are available in three different bearing-guided configurations (flush-trim, pattern-bearing and double-bearing) to afford maximum flexibility.

The manufacturing quality is evident, the edges are super-sharp and there is zero play in the bearing. Cutting length is 1-1/8" and diameter is 7/8". I particularly appreciate this additional diameter as it ensures the cutting edge is presented to the wood at a higher velocity and a better angle than with a narrower bit.

As a test I rough cut three pieces at the bandsaw to run in a curved templating jig at the router table, aiming to leave 1mm of material for the bit to remove. The test pieces were solid figured New Guinea rosewood, spotted gum and jarrah veneer boards.

Even against the grain on the NGR, the result was flawless. On the veneered pieces, the compression-cutting action ensured the veneer edges were left perfectly intact.

These bits are available from Professional Woodworkers Supplies for $223 for the pattern and double bearing bits and $208 for the flush trim. If you are after a premium result, even in difficult stock, these are the bits for you.

See www.woodworksupplies.com.au

Router Rules

DO

✔ **Use the correct speed.** Most routers have a speed adjustment and many quality bit manufacturers have a suggested speed guide on the packaging. I have one of these blown up in size, laminated and stuck on the front door of my router table cabinet for ease of reference. Larger diameter bits require operation at a slower speed, for both safety and quality of cut reasons. You can achieve a cleaner cut using a larger bit at a slower speed. This is because the increased radius of the bit means the cutting edge is being presented to the work at the same velocity as a smaller bit at high speed. The reduction in RPM can often mean a reduction in vibration and therefore a cleaner cut.

✔ **Cut in a direction advantageous to the grain.** It works for chisels and handplanes, so apply it to your routing for cleaner results.

✔ **Crosscut first.** When wrapping a profile around a workpiece, rout the endgrain first. The subsequent long grain passes will clean up any tearout from cutting across the grain.

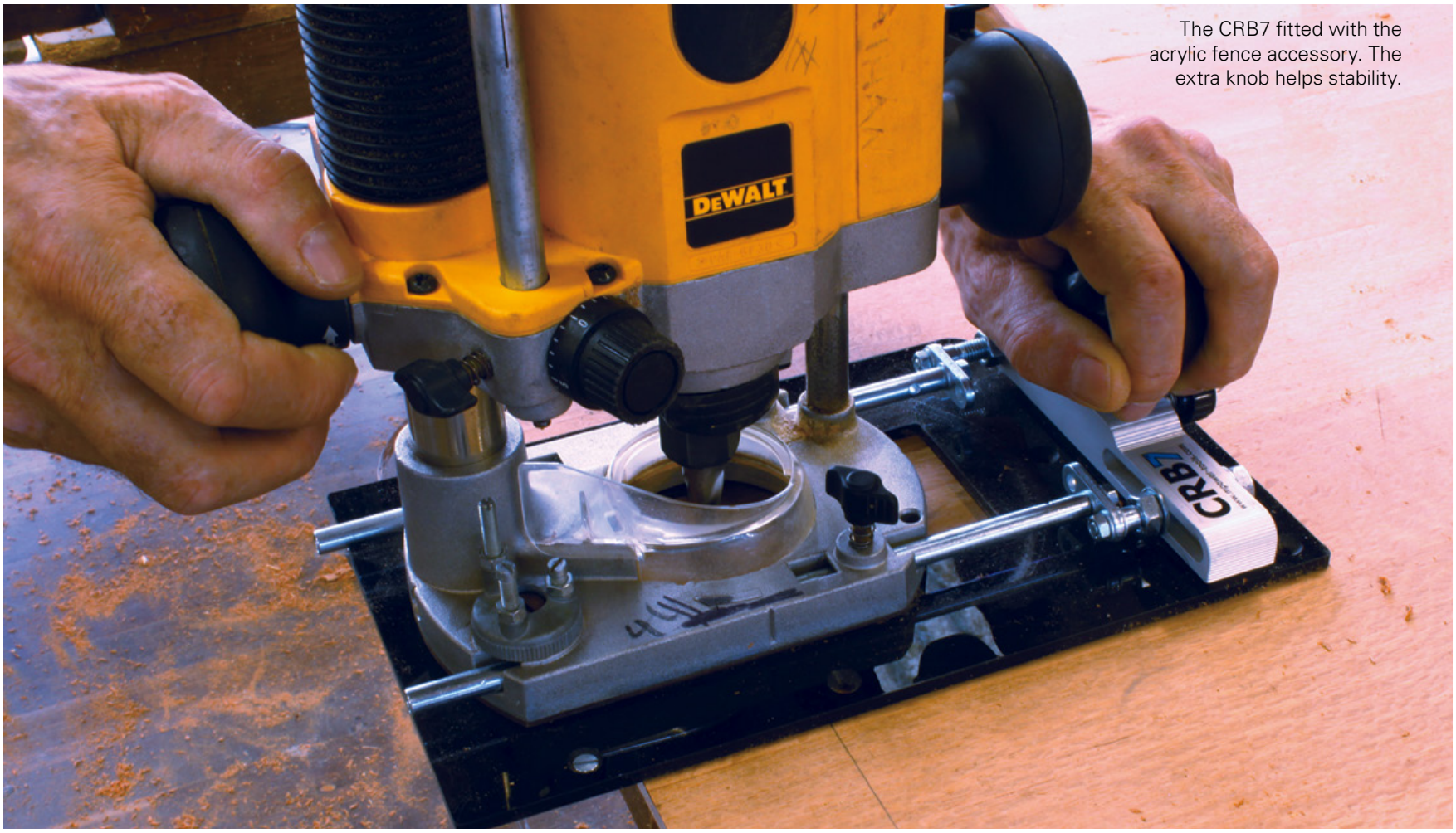
DON'T

✘ **Climb cut.** Always know which direction your cutter is turning in relation to the wood to which it is being presented. This will allow you to work against the rotation and maintain more control.

✘ **Fully seat the bit in the collet.** When installing a bit into your router, don't seat the shaft right down to the bottom of the collet. This may cause issues when trying to remove the bit after operation.

✘ **Take too much material at once.** Take small bites. A router bit is like a radial chisel with a number of cutting edges. Turning at potentially 23,000rpm, you are asking a two-fluted bit to make 46,000 cuts per minute. As with using a handheld chisel, you achieve more control and a cleaner final result when you take a small cut, so utilise the same approach with your routing. More shallower passes are better than one rough hog.

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



The CRB7 fitted with the acrylic fence accessory. The extra knob helps stability.

Router Base Revolution

Raf Nathan puts an aftermarket router base and related accessories to the test.

For the router aficionado this is a must. For the rest of us it is a great aftermarket router base offering a variety of functions. Because it is so innovative it is worth knowing that the original router compass concept was invented by Alan Hezzlewood and then further developed by UK company MPower's development team, led by Tobias Cardew.

A large 4.8mm thick plastic plate holds an aluminium bridge to which attach twin 8 or 10mm diameter steel guides. Most routers will slide straight on using either of the guides that suit it. The position of the arms can be adjusted to different widths. Your router slides onto the arms through its standard fence holes and uses the existing thumbscrews to lock it in place. My DeWalt 621 slid on without any fuss.

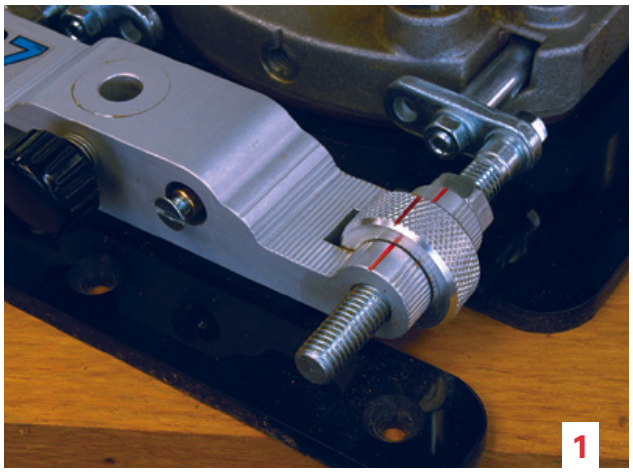
Moving the router along the guides gives you approximate positioning, whilst at the bridge fine adjustment is easy with the micro-adjust thumbwheel. This has an index mark and locks with a 13mm nut (you need a spanner to do this). One turn of the thumbwheel equals 1.25mm. A stick-on rule can be attached to the router's original base to enhance the micro-adjust. Unfortunately there was no rule in my box.

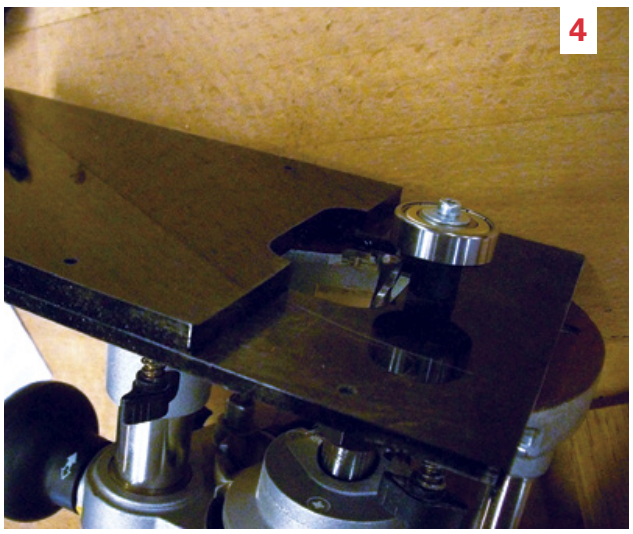
There are many functions that can be performed in conjunction with the CRB, some of which of course you can already do with a standard router base and fence. The base has many pre-drilled holes so it is easy to attach a shopmade wood fence to it for jobs like repetition grooving and trenching. Squaring up a tabletop was definitely easier with the plastic base, as opposed to the original base, running against a straightedge.

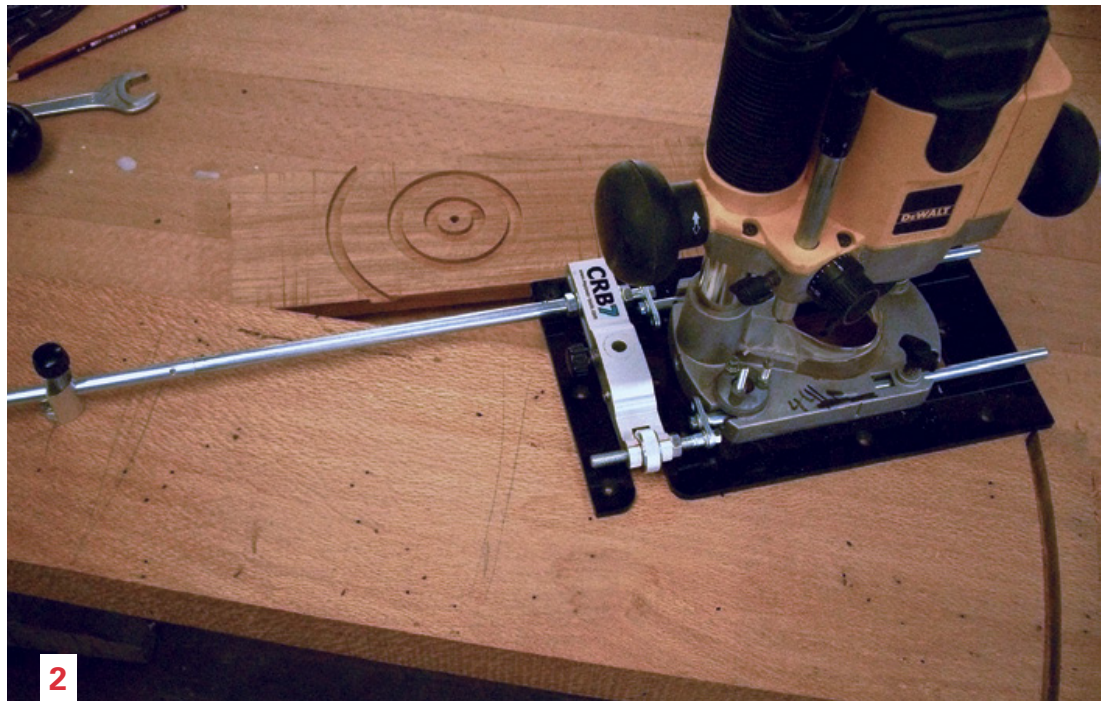
The supplied large knob can be quickly secured to offer an alternative holding position. This gives a lower centre of gravity for holding and helps in jobs like edging as well as routing on large panels. The knob does however foul with the router handle in certain positions so you can't always use it.

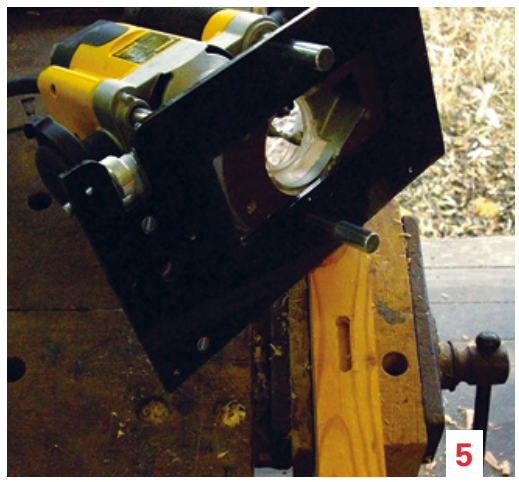
Mortising is possible by screwing the two supplied mortise pillars into the base. Rest the assembly on the wood and the pillars will centre the router cutter automatically, with the micro-adjust used for fine-tuning the position of the mortise. There are three optional places to fit these mortise pillars allowing material from 50mm to 219mm to be mortised. In fact I mortised wood 40mm thick so I assume the recommendations in the detailed instruction booklet are prudently understated.

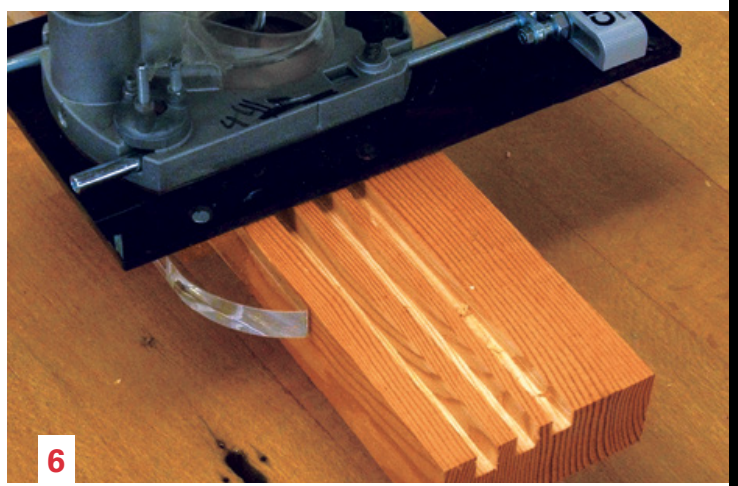
An anti-tilt support leg fits to the underside and offers extended support if you are routing along an edge of a board. The rubber foot on the leg however is not smooth sliding so in use I found it not that effective.











1. Close-up shows the micro-adjust thumbwheel. The router sits on the steel bars at the top right. Note the neat hole for the steel and brass pivot pin in the centre.
2. With the hub and steel arms a compass is formed to cut large circles.
3. Drill a hole and drop in the brass pin. The screw fixes to the pin through the base and the assembly pivots around this for circle cutting.
4. Edge trim base pushes onto main base and includes a bearing to run along the edge of work to be trimmed.
5. Screwing the mortise pillars to the base allows you to plunge mortises. The pillars limit twist and align the cutter at centre. Recommended wood thickness is 50mm but 40mm thick wood was tested on.
6. Cutting grooves was straightforward with the acrylic fence.

Circle cutting is a breath of fresh air. Drill a 6mm hole in the wood and fit the brass and steel pivot pin to the underside of the CRB. This pivot pin can be fitted in either of two positions offering circle radii from 19mm to 224mm. The router is then spun around the pivot pin and of course the micro-adjust can first tune in the circle diameter. The pivot pin is small and easily lost but when not in use it sits in a magnetic hole in the bridge. Nice.

Positioning an aluminium 'hub' on the centrepoint makes large circles up to 1270mm. The hub has a hole and lock screw to accept a 10mm diameter steel guide acting as a compass. This guide screws securely into a hole at the bridge. You can adjust the desired circle diameter by sliding the guide through the hub and use, yes here it comes, the micro-adjust for tuning again.

An Edging Trim Kit is available for $55. This is an extra base plate that pushes onto the CRB. A ball bearing guide runs on the edge of the panel and the router sits on the face. This is an alternative way for flush trimming of edgebanding.

Worth getting is the 15mm thick acrylic Parallel Side Fence for $41. This can be screwed onto the CRB in either of three positions giving parallel routing up to 190mm from the fence. You can screw on shopmade sub-fences to the acrylic fence using the pre-drilled and tapped holes. Alternately you can simply screw on a piece of wood to act as a fence.

The CRB7 is an intelligent router accessory. Compared to using a router with its standard base and fence the CRB7 offers much greater ease of use. Now that it is on my router it is staying there.

Review tool from MPower Tools, www.m-powertools.com. Now stocked in Australia by Professional Woodworkers Supplies (03) 9776 1521, www.woodworksupplies.com.au

The Last Stand

An exhibition of graduate work by TAFE SA students truly marked the end of an era. Sam Nitschke reports.

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The Last Stand showcased the work of the six most recent graduate students of Tafe SA's Diploma of Furniture Design and Technology course. The exhibition was held at the Adelaide Central School of Art in November, 2014. It was so-named because this group of students will be the last to go through as the course is being cut, meaning any future aspiring designer/makers will literally have to take the long road to pursue training for a career in the industry.

The course was introduced in 1997. Over the 18 years it ran the philosophy was to encourage minimalist design while pushing boundaries and retaining structural integrity. The making principles that the course taught were based on efficiency; regardless of whether traditional or computerised methods were used it was all about the best way to achieve the desired outcome.

Last year, as was generally the case, students came from diverse backgrounds, and we worked collaboratively together over the two years, bouncing around ideas and concepts. This was all done under the watch and guidance of lecturers Ken Pfitzner and Joe Maurici. Throughout the course, design briefs were taught by means of industry-based assignments. For individual pieces no real design brief or restrictions were given, however they had to be at a level that challenged individual skill sets. A strong use of reclaimed timber could be seen throughout the pieces in the exhibition, underpinning an awareness of sustainable material selection.

Photos: Alex Kwong

Email Sam Nitschke:
samnitschke11@gmail.com

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1. *Stacked*, 760 x 1040 x 600mm, made by Sam Nitschke, is a bedside cabinet or a stand-alone chest of drawers inspired by studying the random placement of a pile of offcuts. Mitred edges give crisp lines throughout the piece, as do concealed finger pulls under the olive wood drawer fronts. Damar minyak was used for the boxes.

2. *Cypress Pine Hallway Table*, 715 x 700 x 380mm, is Russell Pietch's variation of an earlier class project. Russell put his own spin on what was a very straight lined table by adding curves. The drawer box is made from Australian oak.

3. Left to right: Russell Pietsch, Manny Smith, Samantha Gold, Ken Pfitzner (lecturer), Jake Clark, Nathan Schick, Sam Nitschke.

4. Sam Nitschke, *Foliage*, 400 x 1400 x 590mm, solid Tasmanian blackwood. The 'stem' of the sculpted leaf locks the glass top in place. A challenging construction process incorporated many different joining and gluing techniques.

5. Russell Pietch, *Bear Burl*, 470 x 1220 x 920mm. The shape and colour of the river redgum burl top resembles a bear. Redgum and reclaimed jarrah base members are held together with powder coated steel brackets and hex bolts.

6. Samantha Gold's *Redgum Bench*, 700 x 1300 x 520mm featured a natural edge slab seat with tapered legs and supports.

7. Samantha Gold, *Drafting Table*, 950 x 1370 x 600mm, Baltic and hoop pine, oregon, utile drawer pulls. Made to store materials and act as a work surface.

8. Russell Pietch, *Dolphin Coffee Table*, 460 x 500 x 440mm, river redgum. The dolphin details were CNC routed into the top, blackened and then filled with a glass epoxy resin before being sanded flush. The dolphin legs are brass powder coated and completed with a glass shelf.

9. The glass top of Sam Nitschke's *Splay table*, 850 x 1500 x 520mm, exposes its delicate American black walnut frame and joinery.

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10. Manny Smith, *Twisted Logic*, 460 x 2100 x 420mm. This sculptural piece was the challenging solution to creating an illusion of intersecting boxes. The two end boxes are made from reclaimed jarrah while the central boxes are from Tasmanian myrtle; all feature fine finger joints.

11. Samantha Gold, *Oak Tables 1 and 2*, 400 h x 400mm dia. Billets of English oak for the top were split centrally along a crack line, then fixed with stainless steel pins over steel legs.

12. Made from utile, Manny Smith's *Hills Jewellery Box*, 230 x 380 x 250mm, features a mitred carcase. The faceted drawer fronts show grain patterns that wouldn't be evident on a flat section.

13. Curved chest of drawers, 820 x 950 x 460mm, made by Nathan Schick, is a modern take on traditional square construction. Surian cedar and American rock maple made for an eye catching contrast.

14. The base of Manny Smith's *DandA*, 400 x 1000 x 800mm, is made from stacked hoop pine laminations that transform as you walk around the coffee table. The two base halves are locked with stainless steel pins. The curved laminations were 'burnt' after the finish was applied to give an aged appearance.

14

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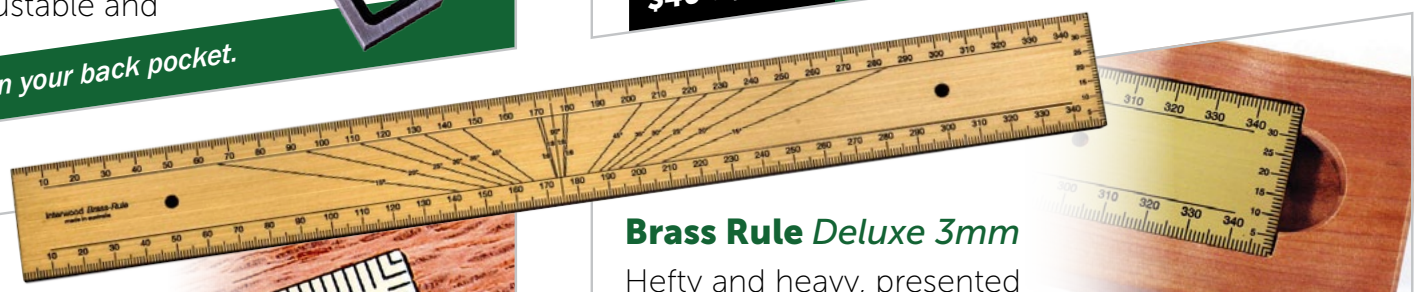

Brass Rule *Original 1.6mm*

Measure, set equipment, check sharpening angles and set dovetail angles.

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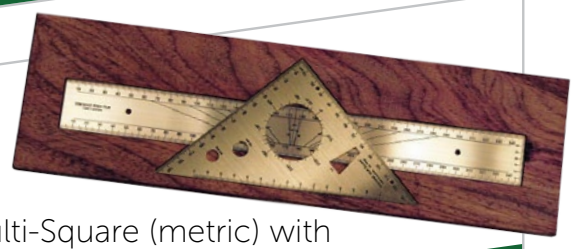
Dovetail marking tool supplied in kit form with assembly instructions.

$38 + $7 p&p *Make your own dovetailing tool.*

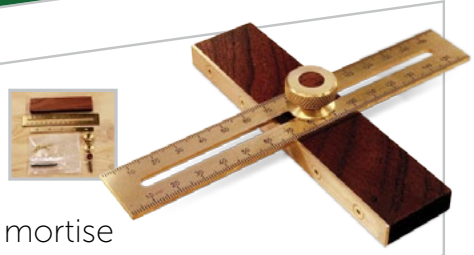
Precision Measuring KIt



The legendary Multi-Square (metric) with the 1.6mm thick Brass Rule *Original*.

$149 + $15 p&p *Includes a New Guinea rosewood box.*

T-Rule Tool Kit



Superb to use with a Domino for setting out mortise positions. Ideal for laying out joints and dovetails.

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iGAGING Digital Wheel Marking Gauge

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Simplifying Spindles

Turning long and thin items in sections can make the process easier. Story by Justin McCarthy.

1

I have to confess I approached turning the spillikans shown in **photo 1** with apprehension as I had never turned anything so long and thin before. Turning them in sections and then joining them made the process much more manageable.

A combination of African blackwood and moose bone was used, and later on a few in birdseye maple were added. The segments were joined with 2mm brass rod or tenons.

Before drilling the holes for the rod or tenon with 30mm or so of material protruding from the pin jaws, ends were squared off at 90° using a skew on its side as a scraper. This was particularly important for flush joins.

Guide holes make drilling the holes easier. A twist drill bit secured in a Jacobs chuck can tend to wander and end up making a hole off centre, so with the lathe running I brought the tailstock up so the live centre made an indentation to act as a guide for the drill bit. Only enough of the drill bit to make the required hole protruded from the chuck.

To drill a hole at the other end, the live centre was engaged and the workpiece rounded so it had a consistent diameter back to the jaws. This end was then located in the pin jaws and the above steps repeated. Holes were drilled into bone the same way, except if both ends were to be joined a tenon was turned at one end (**photo 2**).

Blackwood segments with holes at both ends were drilled with around 10mm of wood left in the jaws before turning them to final shape. A jam chuck was then used to hold these segments when turning their ends (**photo 3**).

The longer the spindle the more risk there was of it all going pear shaped. To minimise the risk I sometimes turned part of the workpiece and then advanced some more material from the pin jaws to turn the rest (**photos 4, 5**).

Where there was to be a flush join between wood and bone sections these were first joined and then turned as one.

When turning beads the main issue was knowing when to stop before inadvertently parting it off the end. This was relatively easy with the bone as it becomes translucent and a darkish line appears as it thins, so I soon became adept at judging just how far I could go (**photo 6**).

After sanding, the workpiece was parted off with a point tool while holding a small diameter brass rod in the workpiece hole to ensure it didn't end up in the swarf on the floor.


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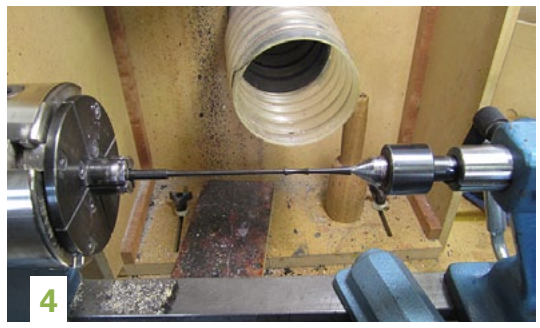
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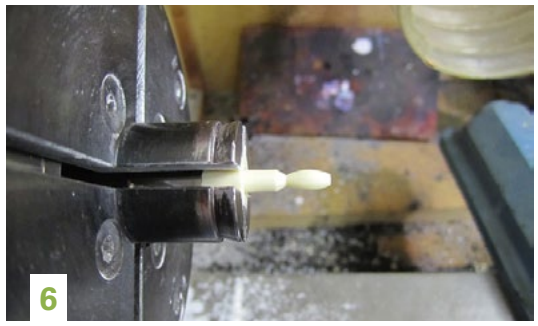
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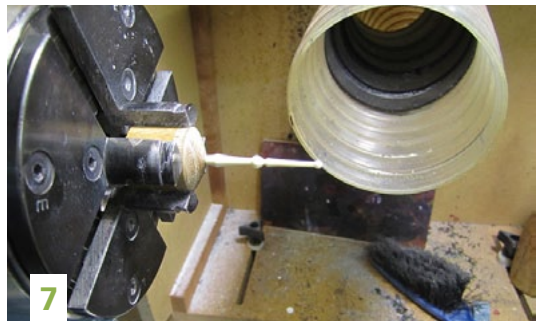
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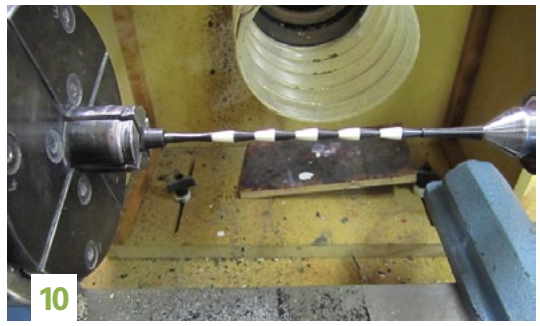
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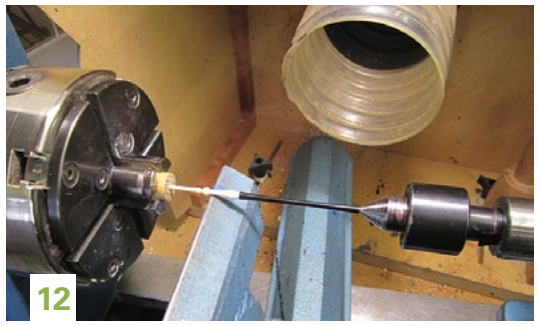
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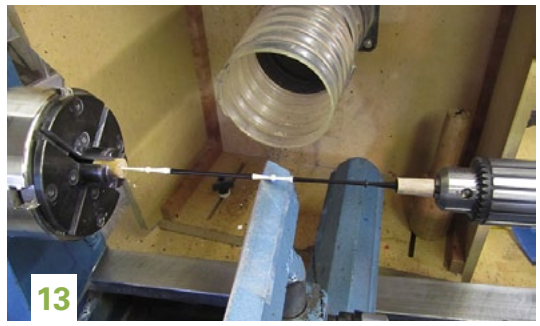
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Rounded ends were held in a jam chuck and tidied up with sandpaper (**photo 7**), sometimes after most or all of the spillikin had been glued up. If that was not possible the spillikin was located from the rear of a hole in a piece of dowel in the pin jaws and secured with tape to hold it in place (**photo 8**).

For my 'Art Deco' spillikin, sections of bone and blackwood were threaded and glued one by one together onto 2mm brass rod which was glued to a blackwood carrier held in the jaws and located in a Jacobs chuck at the other end (**photo 9**). The brass rod was then cut, a final blackwood section added, and the spillikin turned in one piece (**photo 10**).

Many of the handles were decorated with mother of pearl dots. A 5–6mm hole was drilled using a brad point bit. With the workpiece still in pin jaws, the chuck was removed from the lathe spindle and placed upright. Thin cyanoacrylate was then applied and the mother of pearl dot lightly tapped in. Accelerator sped up the curing process, but I also applied pressure as the accelerator had a tendency to cause the dot to 'pop' out of the hole (**photo 11**).

Most glue ups took place on the lathe (**photos 12, 13**). With the bone finial located in a small hole in a piece of dowel in the pin jaws and the right hand end of the blackwood element to which it was to be glued located in the live centre, the toolrest was placed under the bone finial to fix the lathe axis. The blue tape on the toolrest helped to check for lateral movement.

Medium cyanoacrylate was used because of its slightly longer open time and gap filling qualities. As the elements had been sanded, no accelerator was used. **Photo 13** shows the final stage in the gluing sequence where the handle is held in a 'cup' in a Jacobs chuck.

When I took up turning a few years ago I soon came to appreciate that feeling of almost instant gratification. Compared with the weeks and sometimes months it took to complete a jewellery box or a piece of furniture, even a complicated turning project only took a few days. This project proved to be very much the exception. Each spillikin took on average a day to complete and the whole project took me the best part of two months.

With thanks to Richard Raffan, for not only providing the inspiration, but also comments and suggestions as this project progressed.

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Small Workshop Solutions

Troy McDonald's workshop overhaul was all about making best use of limited space.

It's possibly best I start with something of a confession. I'm not one to mess with my workshop. That is to say, in the 15 years or so that I've been working wood, I have actively tried to practise the art of contentment and avoid making continual modifications to my shop.

I have only had two workshops in that time. The first had my workbench in our garage parallel to the family car. It was a space so cramped that my backside was firmly planted on the car door when I positioned myself for sawing at the bench. That all ended when a house renovation presented an opportunity to commit the floor space that equated to a single car garage to a dedicated workshop. Given how I'd managed previously, a workshop this large seemed almost indulgent.

Six years on, having thoroughly enjoyed working in this space, an innocent desire to improve the dust extraction resulted in an unavoidable complete workshop rebuild. With the genie out of the bottle, it seemed I had no choice but to make the most of a rare opportunity that forced me to dedicate some time to making improvements. What's noted here are some of the guiding principles and lessons learnt that I employed in an effort to ensure the next rebuild will remain a long way down the road.

Power and lighting: safety first

In planning a workshop it's best to think at the outset about safety. Some considerations are obvious. Electrical safety should be paramount. Power outlets should be protected by earth leakage circuit breakers and outlet sizes should be adequate for the job. Think about installing a sub panel within the workshop as this can make it easier down the track for a professional electrician to add additional circuits. Decisions at this stage will also be required as to whether power will be supplied via single or three phase outlets.

I made a decision to commit to three phase power when my workshop was first established and have never regretted it. Three phase power opens up a greater range of quality machinery and a significant secondhand market. All of my machinery has been purchased secondhand with little competition from hobbyist woodworkers who are typically restricted to single phase equipment.

Electrical planning should also extend to the thoughtful location of power outlets and adequate lighting. Outlets should be located to avoid a tangle of extension cables and,

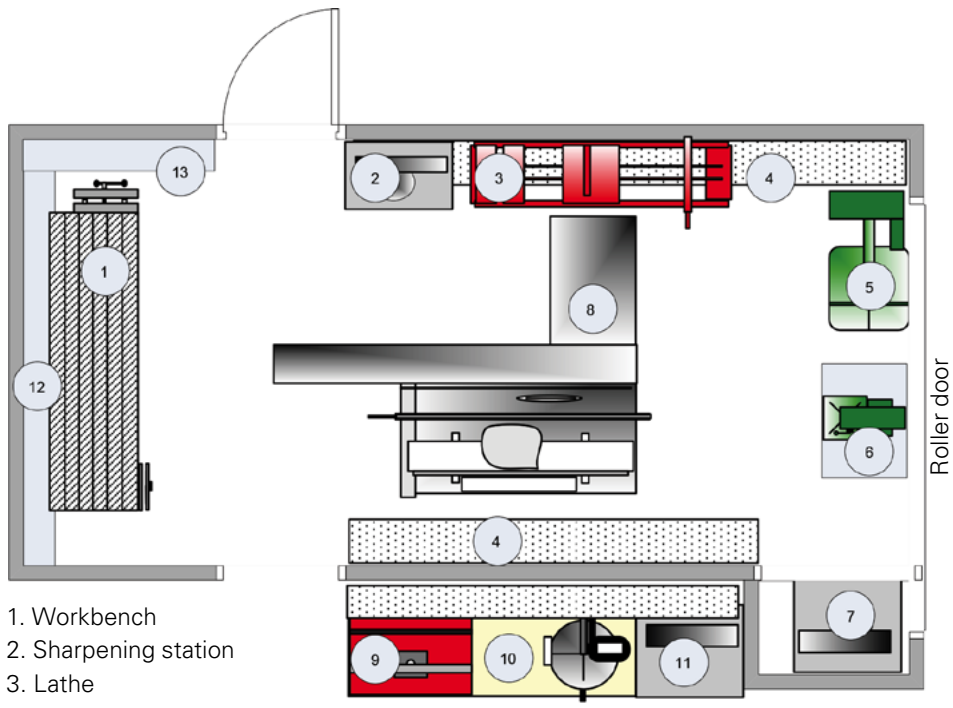
Opposite: The tablesaw shares its working area with the lathe. Bandsaw on castors turns 90° to allow full stroke on the sliding table.

Above: Zones 1 and 2: workbench, tool and clamp storage at one end, and a central machining area. Power tools stored on shelf top left, with veneer on top of that. The overhead air scrubber is part of the dust control plan.

Below: Homemade on-board tool storage. Having tools such as pushsticks within easy reach promotes safe machining practices.

Left: Mitre saw bench in adjacent garage has sub-benches, all on castors. Melamine edged with solid timber made them quick to construct, easy to keep clean and improves the level of brightness within the workshop. Cover sheets from your local hardware can often be sourced cheaply.

Below: Router table fence stores on the side of the router cabinet that slides under the mitre saw bench. Timber lengths store behind, sheet goods stand against the end wall.



1. Workbench
2. Sharpening station
3. Lathe
4. Overhead shelves
5. Bandsaw
6. Drill press
7. Drum sander
8. Combination machine
9. Router table
10. Mitre saw bench
11. Linisher
12. Tool cabinet
13. Clamp rack

just as with clamps, you can never have too many power outlets in a workshop. Where possible mount wall outlets 1250mm or so above the floor so they clear the height of workbenches and mobile equipment.

My plan was for uniform lighting via a number of equally spaced overhead fluorescent lights. The spacing should be approximately 1.5 times the distance between the ceiling and work surfaces. In addition, most machines and the main workbench have adjustable lamps.

For the lathe, I found a simple design on the internet for a bracket that fits to a wall mounted cleat. The lamp can be positioned anywhere along the cleat that runs the full length of the wall between the sharpening bench and lathe.

Shortcomings in electrical planning are difficult and expensive to correct later, and for this reason up front planning is very important to deliver both safe and efficient work outcomes.

Machinery selection and layout

My redesigned shop can really be broken into three zones. There is a traditional workbench area that allows ready access to hand tools and a zone for machinery to prepare stock. These two zones are within the floor space of a

Above: The sharpening station is definitely a must-have. Having gear stowed in the drawer below is very convenient.

Right: Lesser used machines like the bobbin sander are tucked away in cabinets that also serve as work stands.

single car garage, while the third zone is located in an adjoining garage. Here sits a dedicated compound mitre saw bench that has been designed as a number of compact modules, including a router table, small linishing machine and utility bench with dry grinder and metal vice.

The rear of the bench has built-in timber storage and wall-mounted timber racks above. Sheet goods can be stored standing against the wall at the far end. I have found this to be an incredibly efficient use of what equates to only 2.7m x 0.8m at the very end of what continues to function as an everyday car garage.

When considering machines for the main workshop, I researched the advantages of individual versus combination machines. In the end, an opportunity to purchase a near-new used machine made the decision an easy one and a combination machine became the heart of the shop. After six years I firmly believe combinations offer the most efficient solution where space is limited.

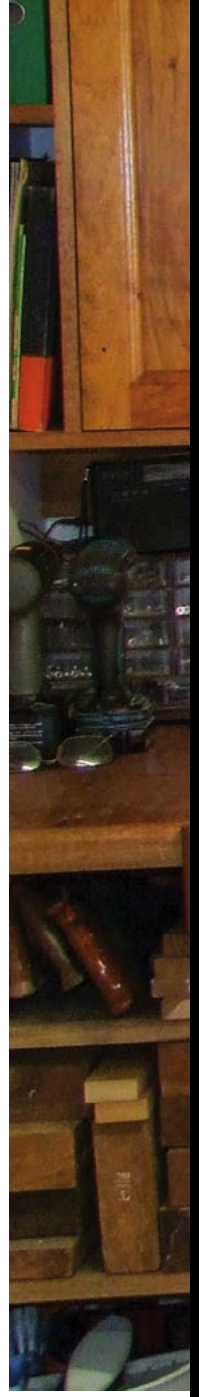
It is true that changing modes can be frustrating, however it does force you to become more disciplined about preparing material. Located centrally, this machine serves extra duty as an assembly, clamping and glue up bench. Although I do very little work with sheet goods, the outrigger stays on the sliding table as it is very difficult to give up once you have become used to it. Adding simple brackets for storing tools, pushsticks and featherboards on the machine saves space and increases the likelihood of using them.

Adequate room for safe movement around the machine in addition to infeed and outfeed zones for material is needed. Raising the roller door at one end of the workshop increases the floor area by 50% when the need arises to work longer lengths of timber. The drill press is located so the lower cabinet and upper table height do not impede either the outrigger of the sawbench or feed zones of the planer/thicknesser of the combination machine.

One of my new must-haves was to include a dedicated sharpening station. This is in the form of a cabinet of

Below: Handy lamp bracket slides along an angled wall cleat.

Below right: Lathe tool storage panels are mounted on cleats for easy removal.



drawers with a wetstone sharpener on top. This is a great addition to the workshop and one that I would now find difficult to live without.

As mentioned, the catalyst for reconfiguring the workshop was the need for upgraded dust extraction. To gain access to the improved extraction, the lathe was relocated into the main area and positioned to share the working space around the sliding table of the combination machine.

The downside of this is that it limits the crosscutting capacity of the saw bench to 1450mm however I have not found this to be a significant limitation. Long stock is now cut to length on the mitre saw as opposed to the combination machine. When the lathe is not in use a simple melamine worktop sits on the bed attached to the wall-mounted cleat and provides extra benchspace.

A bandsaw capable of resawing solid timber veneers was the other must-have machine for my workshop. With wheels of 600mm, it may seem overly large for this space but opening the roller door provides enough outfeed space.

Keeping everything mobile

Mobility is the best way of increasing efficient use of space in a small workshop. Despite weighing over 500kg, the combination machine can be moved with relative ease with a mobility kit installed. All my other equipment and machinery, with the exception of the workbench and lathe, is mounted on castors. The router table, for example, can be moved into the main workshop when necessary for connection into ducted dust extraction.

A mini vacuum located in the cabinet beneath the mitre saw takes care of dust extraction for both the mitre saw and linisher with the vacuum hose simply being moved from one machine to the other. If need be the linisher can be moved to the main workshop for connection to ducted extraction for larger jobs.

Despite its mass, the bandsaw is also mounted on castors. This allows it to be positioned to utilise the outfeed area of the roller door or turned 90° to allow the full stroke of the sliding table and outrigger of the saw bench.

Smaller less regularly used machines, such as the bobbin sander, are kept in specially designed cabinets that can be wheeled into place to serve as workstations.

Dust extraction

The continual accumulation of fine dust on all surfaces from a single bag extractor finally forced my hand as the main workshop is very close to the living areas of the house. Putting the extractor outside seemed the obvious

Tool storage cabinets and drawers are located above and below the workbench.

answer. Apart from removing a source of fine dust this also freed up valuable floor space. I later moved to a permanent externally mounted cyclone system due to its smaller footprint.

Tool and timber storage

In my case, the only sensible location for a tool storage cabinet was directly behind the workbench. This consumes some vertical height above and over the top of the bench so sliding doors with deeper, single hinged door cupboards on each end were installed. The right-most cupboard keeps hand planes close to where they're needed whilst the central sliding door cupboards store all the necessary hand tools. Hardware and fasteners are at the left end.

These cabinets were really only rebuilt to improve the shoddy job I initially did. This time round I included some small drawers above the bench for frequently used tools such as those used for marking and layout. Power tools are generally stored within cupboards or drawers but bulkier or frequently used power tools are kept on a wall-mounted shelf. The clamp rack was designed to take up minimal floor space.

Turning tools are traditionally wall-mounted behind the lathe. As most of my turning is between centres for furniture components this doesn't restrict tool movement, however an increasing interest in decorative turning caused me to consider how I could make better use of space behind the lathe. To maximise clearance from the wall for hollowing work, I decided to mount the tools on removable panels hung off wall-mounted cleats.

Recently I have been questioning the economics of storing quantities of timber. As a timber hoarder I have learnt from experience that cheap purchases rarely make economic sense unless there is a certain need for use within the following year. I am now trying to limit myself to the storage of species that are either difficult to find or highly figured.

Was it worth it?

So there you have it. I find discussions on workshop layout share a lot in common with parental advice in that everyone seems to have an opinion. In the end, as I have also found with parenting, I have learnt that it's wise to listen to and consider sage advice, but then blaze your own path to determine what works best for you. I hope my experience may kindle a few thoughts for any of you that have been putting off the inevitable workshop overhaul.

Photos: Troy McDonald

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Sassafras TV Stand

Big screen viewing requires low and wide support cabinetry.
Story by Raf Nathan.

Reversing the doors gives the panels a different bookmatched look.

Television screens keep getting bigger and bigger. I wrote a project many years ago for a TV stand that held an old style analogue TV and it was tiny in comparison.

Design plan

There was a reasonable amount of planning needed in building this piece. The design is really 'no design'. Google images of TV stands and you'll see there are hundreds of designs that use, like this piece, a box construction with two sliding doors.

However to improve the design the door panels, as in the bookmatched ones shown here, can be the main feature. So our first job was to sort through the Tasmanian blackheart sassafras that we planned to use. Selecting and sawing these ahead of time allowed the wood to settle and stabilise.

Bookmatch feature

The sassafras we used was from 50mm (2") thick boards that varied from 180–200mm wide. Our rough measurements of the design told us there was going to be enough wood for the panels at a desired 8mm final thickness and that four panels could be sawn from each board.

Photos 1 shows a thick blackheart sassafras board being broken down into thinner panels before being stickered out to stabilise. As these boards were sawn on the bandsaw they were marked on the ends in the order they were sawn so that we could easily see which boards went with which for bookmatching.

Bookmatching means that each face of the two boards joined together for the panel will be as identical as possible. As you go deeper through a board the grain pattern will change. Quartersawn boards can yield a better match whilst backsawn boards can have better pattern, however the pattern changes much quicker the deeper you go into the board.

Veneer sawn on a veneer slicer yields near identical grain patterns because the knife used to slice is very thin

and there is little material wasted. When sawing the panels on a bandsaw or tablesaw you need to take into account the kerf of your sawblade (2.5–3mm), plus around 1–2mm of wood that will need to be planed off to smooth the board. Adding that up you can see how much deeper into the wood the face will be. That's why it's important to set up the bandsaw well so as to get as smooth as possible a face off the saw; the less planing or sanding needed after sawing, the better the bookmatch match will be.

Photo 2 shows an initial try-out for some boards, playing around with the bookmatched panel options.

The wood used for the carcase and doorframes in this piece is Tasmanian celery top pine. This slow growing wood is strong and easy to machine, although some wood will have wild grain and knots. It can be prone to splitting on backsawn faces.

For this project three of us developed the design and final sizes. As two of our team were novice woodworkers we had to

CUTTING LIST (mm)				
PART	QTY	LENGTH	WIDTH	THICKNESS
CARCASE				
Top	1	1800	33	22
Base	1	1800	33	22
Sides	2	436	330	22
Front caps	2	436	50	22
Dividers	2	436	280	22
DOORS				
Frames	4	930	60	16
	4	326	60	16
Panels	2	822	338	8
Rear brace	1	1756	110	19
Feet	6	60	60	20

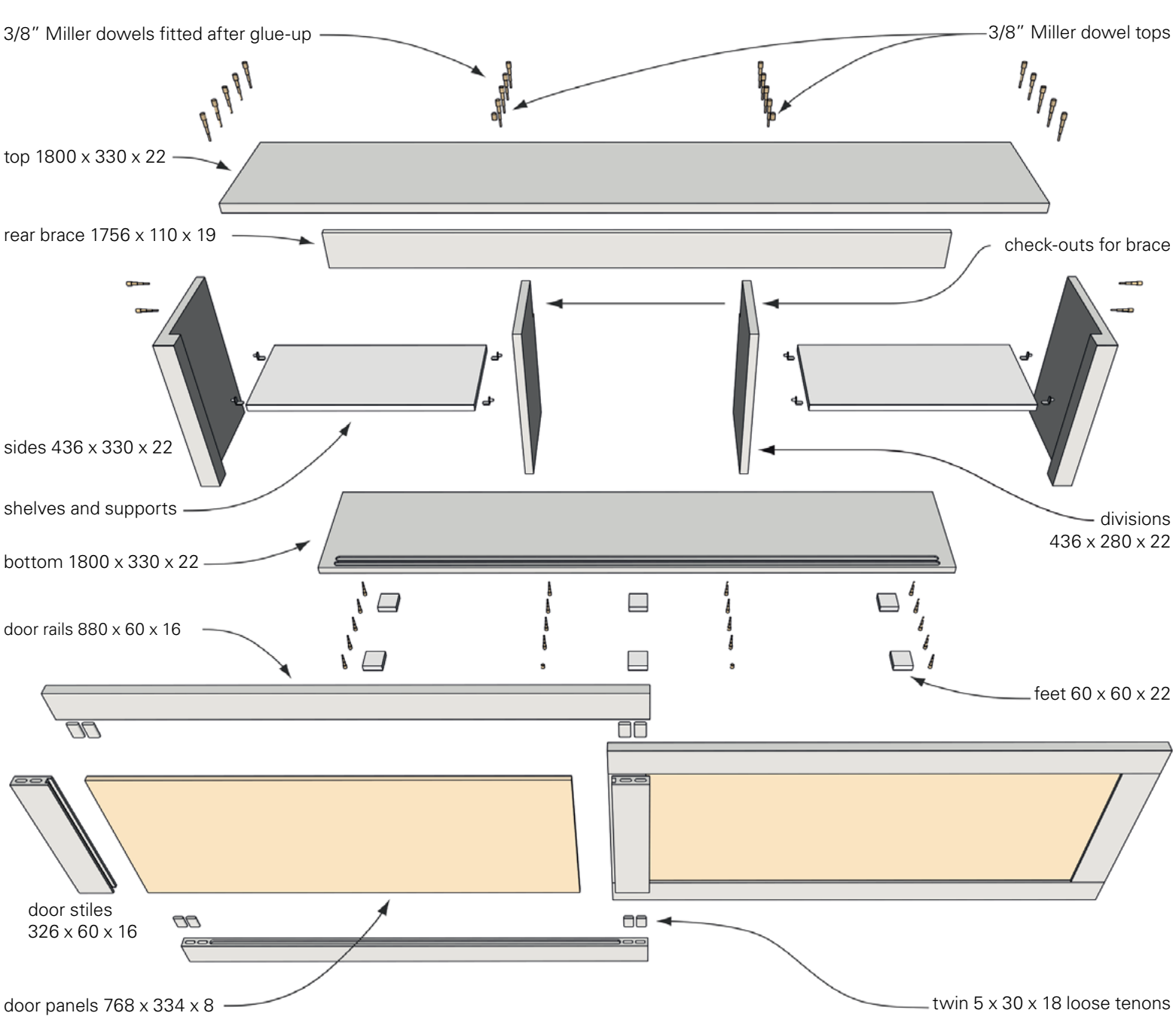

DIAGRAM: GRAHAM SANDS

use a construction method that was both sound and relatively easy to implement. The cabinet uses butt joints held together with dowels. However I suggested Miller dowels for this as they are easy to apply without the need for jigs and are in my opinion a superior dowel to traditional ones. The panels would be joined with glue and clamps and the dowels fitted after assembly. Of course nails are an option, but then we are woodworkers aspiring to more than basic constructions.

Making the carcase

With all the celery top pine selected and sawn to rough length the wood was machined square.

The panels for the top and base were glued up first followed by the four vertical panels, these being the sides and two inner vertical dividers. Panels were checked to be flat and without twist in the clamps and left to dry overnight. It's important to align the long edges of the boards as flush as possible. Mis-aligned boards, that is where one is higher than the others, will mean more time needed later to level them up with a plane and sander.

Even though I had a stack of celery top pine much of the wood was quite knotty. We chose the clearest boards for the sides, top and doors, rails and stiles. Knotty boards were used for the base and shelves and internals. We machined all the wood allowing for the desired final width of the panels, in this case 330mm for the top, base and sides – for example three boards were machined to be 110mm wide. The two internal dividers are not the same width. They need to be set back 50mm so the sliding doors can move past them in use.

To beef up the design the two sides appear thicker than the other material. These had their 50mm square cap pieces glued up with the two outside panels in the one process.

Gluing up panels

Before applying any glue the individual boards were carefully jointed, trying to achieve a slightly sprung fit between the boards. Once we were happy with the fit of the boards everything was glued up.


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As much glue excess was removed as possible while the panels were drying. This saves time later on. We used a dry cloth and chisel for this.

When the glue had dried, the clamps were removed and it was time to flatten and smooth the boards (**photo 3**).

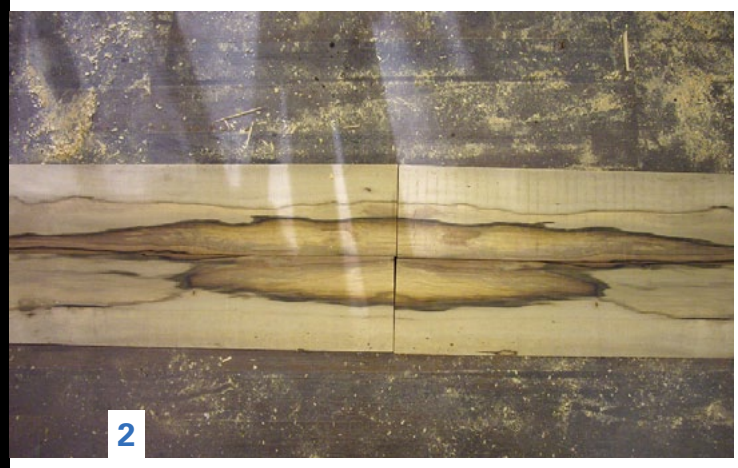
A handplane removed some of the high points, although the celery top pine had a changeable grain direction so care was needed not to tear out any areas. Next a belt sander was used starting at 100 grit and going to 120. More sanding will come later.

As the panels were already at the correct width the next step was sawing to length. The sides and two internal dividers are all the same length. A tablesaw was used although a sliding mitre saw with enough cutting capacity would be suitable. If you don't have larger machines then you could use a portable circular saw and guide for these cuts or a handsaw and plane.

A random orbit sander completed the sanding of the inside faces of the panels. The grooves that the sliding doors run in need to be made now, before the glue-up. Do your maths regarding the groove depth, width and placement. We have a 4mm gap between the grooves and the front groove is set back 10mm from the edge. The lower groove can be 5mm deep but the top groove must be deeper, say 11mm, so the door can be removed. The door is lifted up to the top of the groove so that it clears the lower groove and swings forward and out. The grooves were made with a hand-held router and fence running a spiral cutter. These grooves are 16mm wide to accept the doors.

Final glue-up

Now the components are all glued together. Light pencil marks were accurately made on the inside of the top and base to define the position of the dividers. With all hands on deck the sides and dividers were positioned and the top and base brought together. Clamps with cauls were positioned and then before the glue set everything was squared up. Sight along the cabinet for any twist, packing up any panels or adjusting clamps if needed.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Excess glue was also removed now. The assembly was left to set for a few days (**photo 4**).

Fitting dowels

The dowels were now fitted. Centre lines and equally spaced marks were drawn on the wood where the dowels were to be located. An awl defined these points further. As everything is still only held together with glue be careful not to jar the assembly. In fact we left as many clamps on as possible whilst fiting the dowels.

The dowel holes were drilled with a cordless drill, care taken to drill as straight and plumb as possible. The secret here is to do some practice hole drilling in a scrap first. Once confidence is gained proceed to the actual piece. The dowels were then glued and driven into place. Any knotholes in the wood were also


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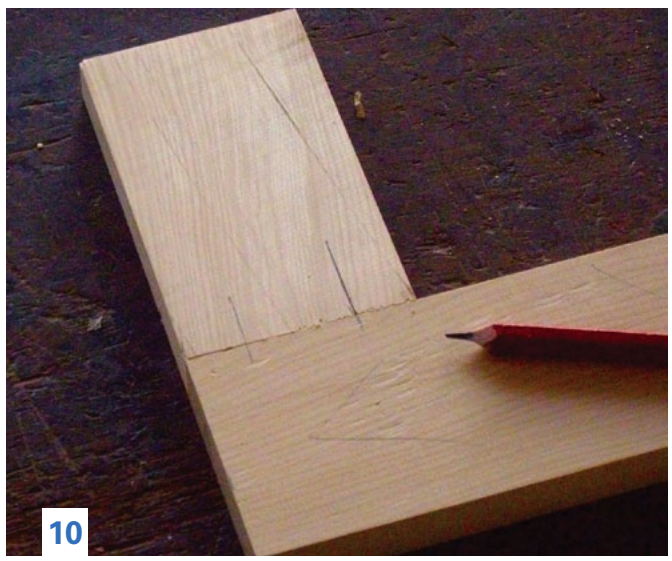
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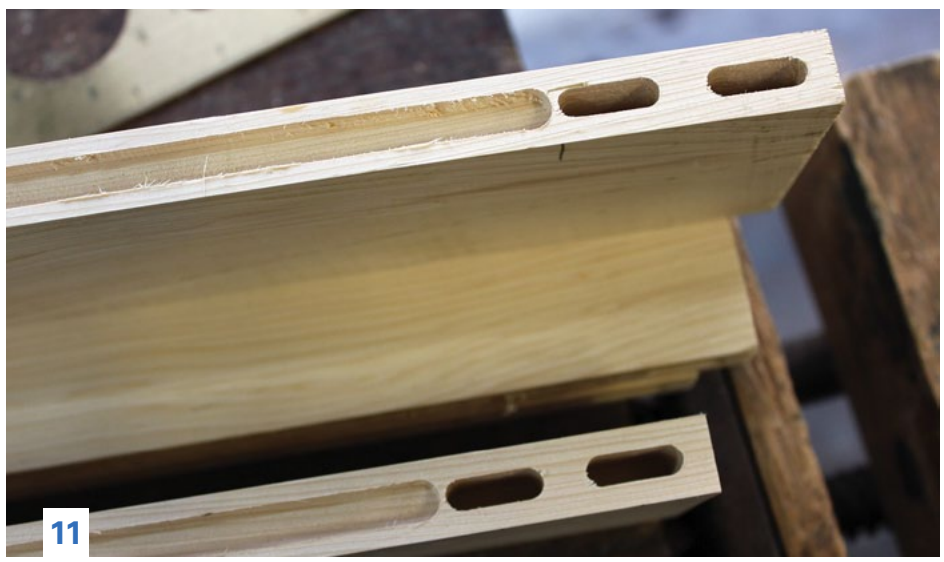
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plugged and filled at this stage. There were a few holes that required custom made plugs to be fitted.

The dowel heads protrude above the surface and, when the glue had dried, were trimmed flush later with a handsaw (**photo 5**).

At this stage there is no diagonal bracing on the cabinet. A rear rail 110 x 19mm was glued and screwed in place. This sits in a notch in the two dividers. At the outsides it is dowelled in place.

Now the outside of the cabinet can be sanded. We used belt and random orbit for this (**photo 6**).

Preventing cracks

The weather at this stage was very dry, drought in fact. I heard a few funny sounds and realised that some of the endgrain was cracking. The cabinet was then fine sanded inside and out and all edges relieved. Wiping a damp cloth over the endgrain closed up almost all the new cracks which was a relief. A coat of water-based polyurethane was applied to seal all the wood and prevent any more wood cracking (**photo 7**).

The doors

With the main cabinet sealed, attention was directed towards the doors. These slide in the pre-machined grooves so their final measurements needed to allow for this. The celery top pine for all the doors was sawn out from 50mm thick stock. This meant the door rails were also able to be bookmatched, not essential but an added fine detail. To plan the grain layout the wood was laid out to get an idea of how it would look. This also gave us an approximate idea of what the final size of the door panels would be (**photo 8**).

The wood for the door panels was then sorted and the best grain arrangement was chosen. This took quite a bit of time as there were many options of arranging the boards. The wood was only lightly planed so the bookmatch pattern was retained – plane off too much and the grain markings won't meet.

With the panels made slightly oversize for trimming later they were fine sanded and polished. They are polished now because they need to be able to 'float' in the grooves in the doorframes so that wood movement can be accommodated. Polishing them when already fitted


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to the frame would be problematic, as the polish would tend to glue the panels to the frames restricting wood movement and courting disaster (**photo 9**).

The door joints use 'floating' mortise and tenons although you could dowel them. The doorframes are 16mm thick and 60mm wide. I made up a test joint from scraps to check the layout positions of the mortises (**photo 10**).

The doorframe joints were then made. We used twin mortise and tenon, but at a pinch you could use large dowels. The groove for the panels was made on a router table using an 8mm spiral router cutter (**photo 11**).

The panels were checked and wax was applied with fine steel wool and rubbed in, working with the grain before buffing. We did a test fit to ensure the doorframes and panels would assemble cleanly. Glue was applied to the frame joints only (the panel is not glued in) and the assembly was clamped. The parallel clamps we used are fantastic, they have plastic heads that don't mar the work; they close up parallel as their name suggests and are fast to use (**photos 12, 13**).

With the glue dry, the ends of the doorframes were planed level and the faces sanded flat. Even though the panels were waxed, don't get polish on them, especially where they sit in the grooves. The panels were masked off prior to beginning the polishing. Water-based polyurethane was used, brushed on and cut back between coats (**photo 14**).

Finishing off

Inside, the cabinet has adjustable shelves using brass pins for support. The brass pins sit in holes drilled in the vertical panels. To align the holes easily at even spacings we used a jig (**photo 15**).

Lastly, six square 'feet' were screwed to the cabinet. Four final coats of polish were applied now to both the cabinet and shelves before rubbing them back with wax and steel wool.

Wood supplied by Island Specialty Timbers, Tasmania, www.islandspecialtytimbers.com.au

Raf Nathan is a furniture maker in Brisbane.
Email: raf@interwoodshop.com.au

Collaboration WA, 2014

Every two years, a group of local and invited overseas wood artists gather in Bunbury to exchange skills and learn from each other. Rob Jones reports.

Tuesday September 23, 2014, finds me at Perth airport, awaiting the arrival of one of the world's most talented wood artists. Binh Pho was born in Vietnam in the 1950s. After the Vietnam war he spent time in a communist 're-education' camp before escaping by boat, firstly to Malaysia, and then on to America. He is now well known for his finely turned, thin walled vessels, which are then pierced and airbrushed with colour.

Jacques Vesery, our second guest from America, was another outstanding talent. His work couldn't be more different from Binh's, as he often works with solid sections that he turns, carves and textures using mainly rotary carving tools. Surfaces are further refined with a high powered burner which is similar to, but not to be confused with a pyrography machine.

1. Binh Pho (left) discusses a fine point with Rob Jones during a masterclass. Photo Nancy Launer.

2. *Dragonfly Box*, Binh Pho, Giulio Marcolongo, Stephanie Ryan.

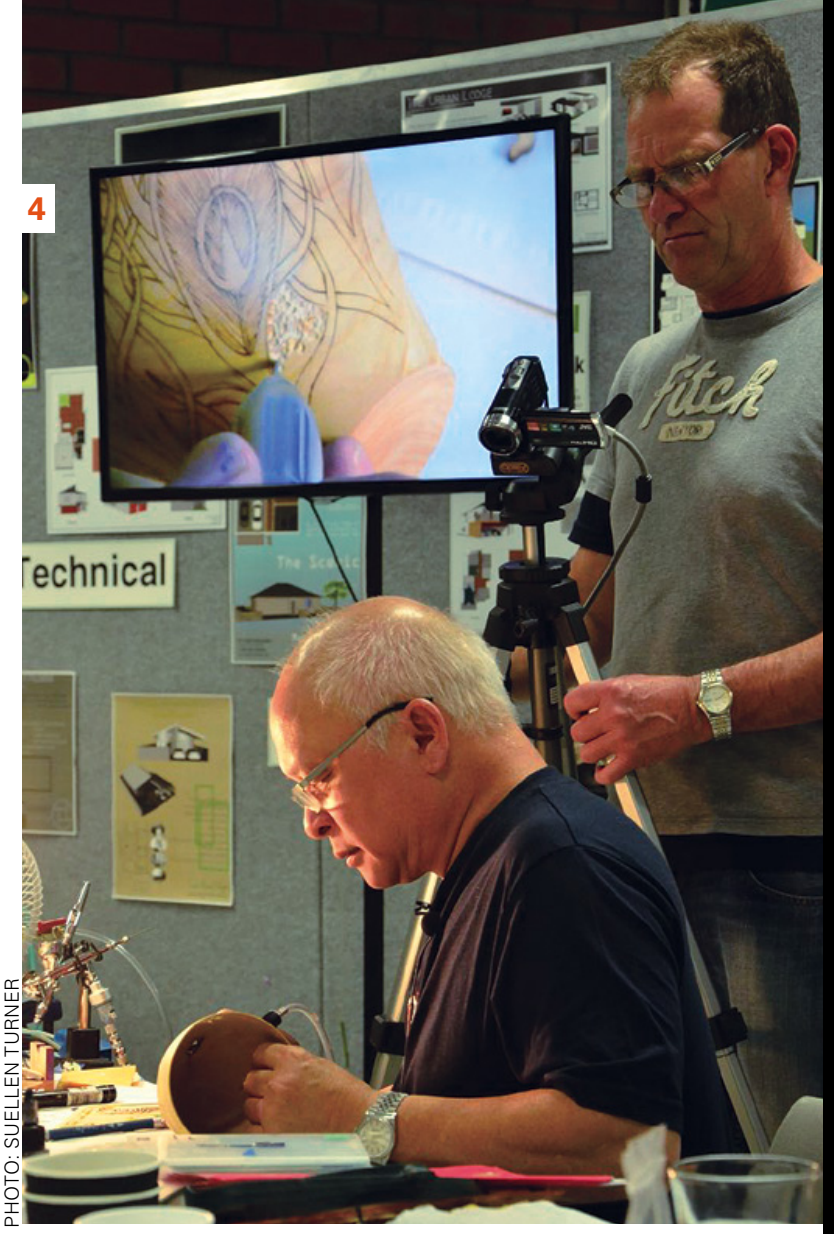


PHOTO: SUELLEN TURNER

He then applies up to 70 coats of liquid matte acrylics, starting with black, gradually lightening shades of colour until he gets the effect he is looking for.

Binh and Jacques came primarily to attend our collaboration, but also conducted some masterclasses and public demonstrations. We were also lucky enough to have seven very talented artists arrive from interstate and from New Zealand.

We arrived at Bunbury Cathedral Grammar School on September 30 with only a few registration preliminaries. With 30 woodies keen to get started, it was just a matter of laying claim to your workspace and making a start. Quite a few of the attendees were woodturners, so lathes were at a premium. Participants were asked to bring pre-turned items as well as timber blanks, so Jacques, Binh and others could work their magic from day one.

Needless to say outstanding works were produced over the five days. With the likes of Binh, Jacques, Neil Turner, Jack deVos, Guilio Marcolongo and Douglas Bell amongst many others, who would expect anything else?

Highlights for me were Jacques's impromptu demonstration of his painting technique. Bringing Binh, Greg Lawrence and Annette Barlow together resulted in the creation

3. *Kimono Jewellery Box*, Greg Lawrence, Binh Pho, Annette Barlow.

4. Neil Turner videoing Binh Pho's demo.

5. *I'm falling for you*, Binh Pho, Annette Barlow, Stephanie Ryan, Ken Gall, Greg Lawrence, Neil Turner.

6. Vase, Jack deVos, Binh Pho, Stephanie Ryan.

7. *Genie Lantern*, Jacques Vesery, Giulio Marcolongo, Binh Pho.

8. Vessel, Binh Pho, Neil Turner and Ken Gall. Photo Robert Wilson.

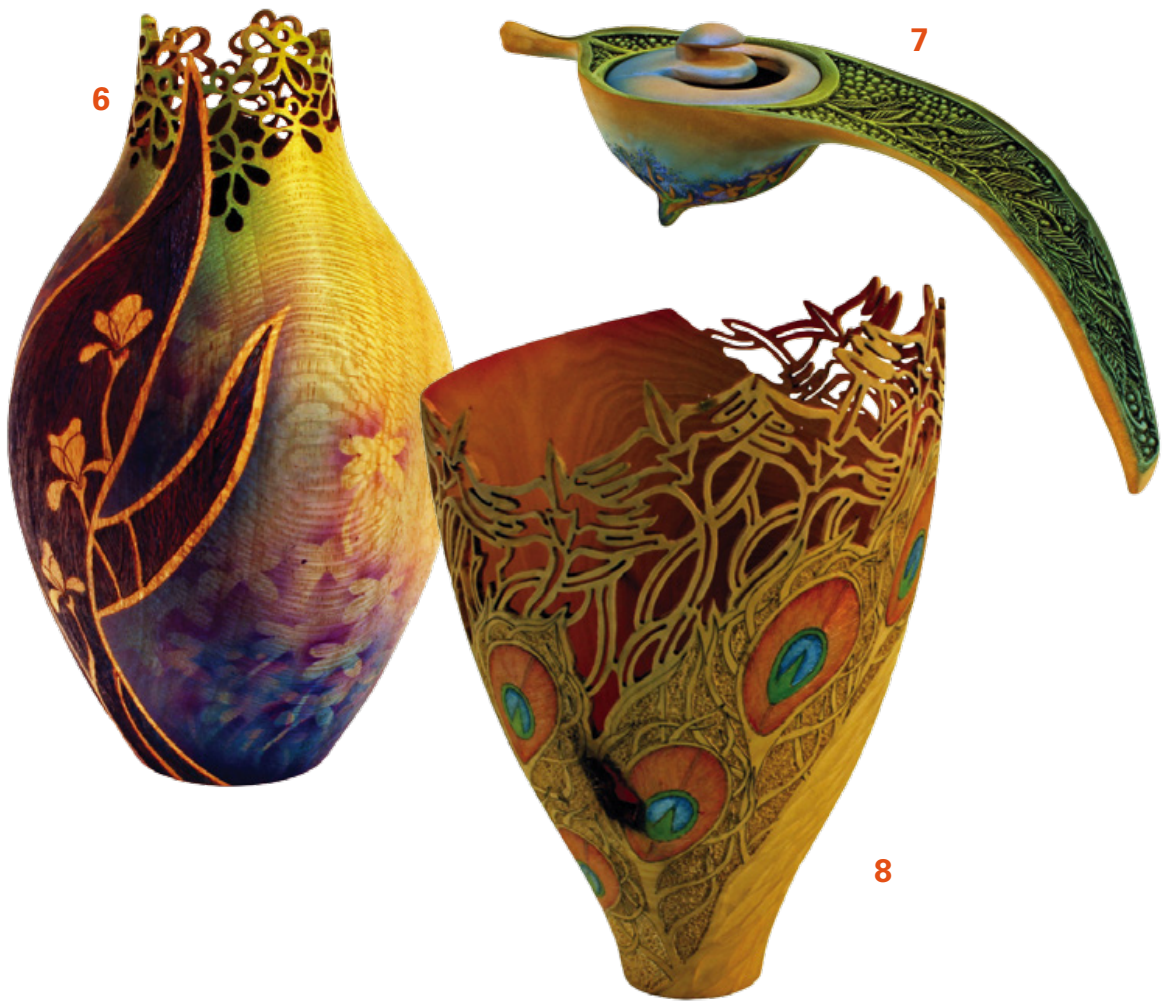
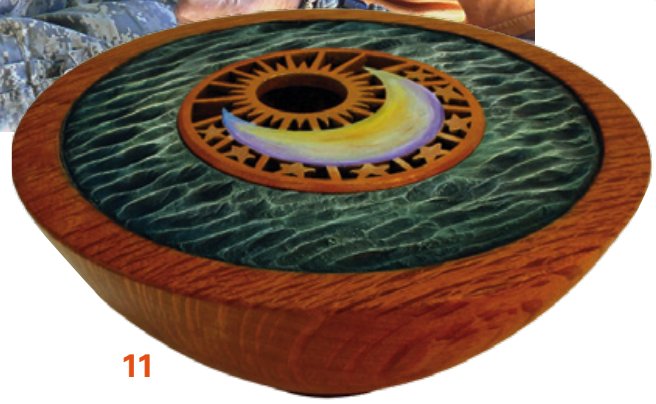


PHOTO NANCY LAUNER



9. Jacques Vesery's masterclass in progress (Jacques was getting hungry).

10. *Untitled*, Jack deVos, Jacques Vesery.

11. *Hollow Vessel*, Jacques Vesery, Robert Jones, Frank Evans. Insert designed by Stephen Hughes.

12. *The Skinny Sheila*, Greg Lawrence, Annette Barlow.

of a superb jewellery box. Binh was so impressed with the quality of the work that he offered to send images of some pieces to collectors in the US who may have made silent bids at our auction. This offer was declined, as the committee felt it was more important these items stayed in Australia, and that attendees had at least a reasonable chance in purchasing these outstanding works. As Binh said, 'money isn't everything'.

It wasn't all work and no play with various activities organised for the evenings, although some of the guys ended up back in the workshop and would work late into the night, while the rest of us took time out to relax.

On the Saturday everyone worked frantically to finish things off. With the workshop cleaned, photos taken and catalogue completed, finished works were taken to the classroom to set up ready for the auction.

Auctioneer Frank Evans is well known for being able to get blood out of a stone, and spirited bidding followed for the 142 items. The auction broke our previous records with *I'm falling for you* selling for $1,810, and with total sales of $17,972. All of the money raised will go towards the cost of running future events, and will enable us to bring together some of the more talented wood artists together from around Australia and the globe.

It only remains for me, (on behalf of everyone that attended) to thank our organising committee for all their hard work: Chris Smith, Neil Turner, Nancy Launer, Alison Smith, Kevin Luff, and Bob Filby.

Photos: Jack deVos, unless noted.

Collaboration WA Inc was formed in 2007 by a small group of enthusiastic West Australian woodworkers, after returning from a similar event which was held in Bowral, NSW. Robert Jones is President and Treasurer of Collaboration WA Inc. See www.collaborationwa.org.au for more information.

STUDIO WOODWORKERS AUSTRALIA

Featured member:

WilderCoyle furniture

WilderCoyle furniture and design is a collaborative partnership between Nicholas Coyle Furniture Maker and Sunny Wilder Architect. We are a multidisciplinary design practice where together we design and construct anything from furniture items to whole houses. All our furniture pieces are crafted in our own studio workshop and centre around the use of native Australian timbers. We are committed and passionate about creating high quality yet affordable solid timber furniture in a contemporary, refined and minimalist style. We believe that furniture should last many lifetimes. Our inspiration comes from the spacial nature of the furniture object, timber as a raw material and the notion of true craft. For the 2014 Home with Wood exhibition we concentrated on the brief – to design and make pieces that are affordable for the home.

We looked at the idea of the armchair and how this needed to evolve with modern life – the flat side panel is there for resting laptops and other electronic communication devices that didn't exist in our lives 25 years ago. The structure of all three pieces we submitted are based on a 3-way mitre join, using a seven-shaped leg. We started developing this format last year for a round table and now have a whole range that uses this system – a rectangular table, a round dining table, round occasional tables, a hat stand, a couch and an armchair.

▶ Visit www.wildercoyle.com.au

Find out more at: **www.studiowoodworkers.org.au**

JOIN US – For information on membership visit our website.

This Studio Woodworkers Australia (SWA) website provides a portal where prospective clients can find professional designer/makers and artists whose work in wood is characterised by a high level of individuality and quality.

Tonewoods

Jugo Ilic gives the scientific reasons as to why some timbers are more suitable for musical instrument making than others.

The material properties of wood have a profound impact on the acoustic response, mechanical resistance, physical stability, visual appearance, and tactile properties of the musical instruments that can be created from it.

The influence of wood's vibrational properties tends to go hand in hand with the family the instrument belongs to. With idiophones, such as xylophones, wood constitutes the primary vibrating body. In string instruments, the importance of wood is for soundboards, which serve to transmit and radiate the vibration of a string, and act as a moderator that provides colour to the tone. In wind instruments, dimensional or moisture stability plays an important role.

Traditionally used

Many instruments share common origins but have evolved according to different cultural directions linked with their local flora and musical artistry.

Traditionally, common types of wood for European musical instruments include maple (*Acer*), spruce (*Picea alba*), rosewood (*Dalbergia*), mahogany (*Swietenia*) and basswood (*Tilia*).

Species of maple with softer wood are prized for their ability to bend, making curved surfaces easier to form for the bodies of guitars, dulcimers and violins. Other denser species of maple are frequently used as necks where rigidity is important. Spruce is used in guitar tops (soundboards) and in orchestral stringed instruments because of its unique tonal characteristics.

Spruce is a low density (soft) conifer-softwood with high stiffness. When used for musical instruments spruce is usually derived from centuries-old trees in which the growth rings are narrow with uniform distribution. This duality makes it traditionally the most desirable for use in soundboards. However, there is also a need for a protective finish on surfaces which in itself adds a profound effect to tonal quality.

On the other hand, electric guitar makers tend to prefer denser harder woods like mahogany and similar species for solid body guitars because the sound produced and its tonal character depends on the electronic response of the amplifier and little on the wood acoustics. Though beautiful in its own right, unpainted mahogany is seldom used in acoustic instruments, except maybe for fretboards where a denser, more durable (harder) wood is preferred.

Many species have potential here and range in colour and density; ebony (*Diospyros*) and blackbean (*Castanospermum*) are popular. Rosewoods are popular for use with fingerboards as well as backs and sides of guitars and allied string instruments. Like mahogany they have a different effect on the tone and tend to be used for the back and sides of acoustic instruments mainly for their strikingly beautiful visual appearance.

Australian species on trial

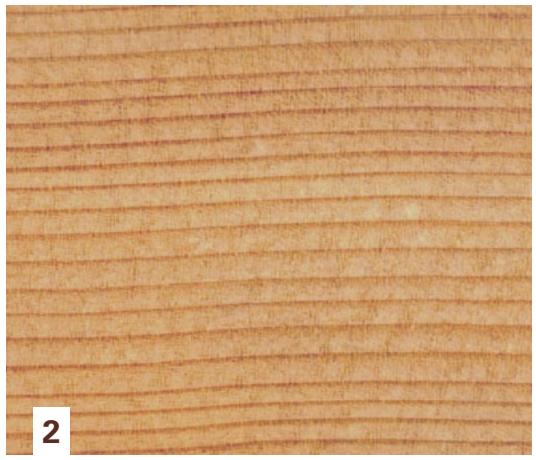
Over the years several Australian species have been trialled and found to be acceptable and in some cases preferred. These include blackwood (*Acacia melanoxylon*) for its beautiful figure, bunya pine (*Araucaria bidwillii*), King William pine (*Athrotaxis*) for soundboards, and other timbers including satinwood (*Phebalium squameum*) for their unique acoustical properties. To this end, acceptance of alternative species has, in part, been affected by deficiencies in selection quality and as with timbers for striking tools, high selection quality is a characteristic which has entrenched the preferred species even though other alternatives are equally as good or better.

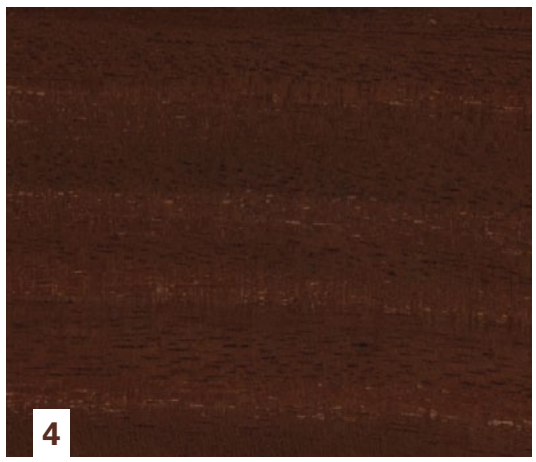
Interestingly, the similarity of bunya pine to spruce came about through unrelated research to enable the separation of hoop and bunya pine (*Ilic 1995*). The physical and mechanical characteristics of spruce and bunya pine were found to be so similar it was suggested that bunya pine would form a suitable replacement for quality spruce as it becomes more difficult to get good quality spruce. Interestingly, this substantiates what has been confirmed independently from empirical evidence and trialling by keen Australian luthiers.

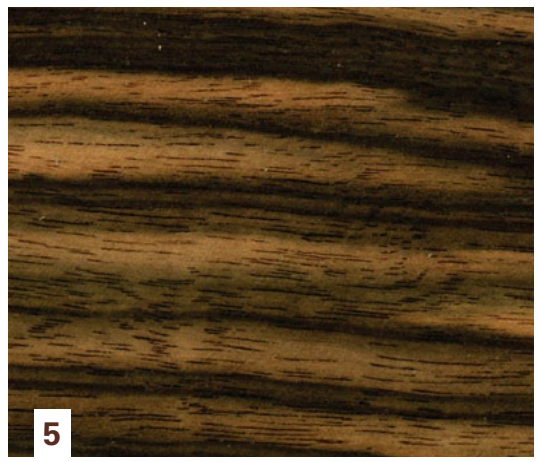
Why acoustic properties vary

Cells are at a very small scale the building blocks of wood and their arrangement in three dimensions is important for determining bulk physical and acoustic properties of woods used in musical instruments.

Wood is a mix of differently oriented elongated and short cells – fibres are aligned approximately in the direction of the tree trunk axis.







1. Maple (*Acer*)
2. Spruce (*Picea alba*)
3. Rosewood (*Dalbergia nigra*)
4. Mahogany (*Swietenia*)
5. Ebony (*Diospyros*)

They are long slender cells. Fibres are hollow tubes which comprise the bulk of the wood and are bound together with lignin, a non-crystalline compound. The cell walls are composed primarily of cellulose with crystalline structure which acts as a reinforcing material in a matrix of non-oriented polymers made of different types of carbohydrates. It is the aligned nature of the reinforcing cellulose within the cells that facilitates the propagation sound energy (along the grain).

As a result of the cellular components being oriented in the different structural directions in the three planes of symmetry that wood exhibits, different properties along these directions make the material anisotropic. This is unlike some manmade materials (such as plastics), which are usually structurally homogenous in all directions. Consequently, the elastic properties which include the stiffness and other corresponding acoustic properties are also distinct along each plane of symmetry: axially – along the grain, and radially and tangentially across the grain. In addition to the above anisotropy, characteristic properties vary along the different directions which give rise to additional variability between different species.

Species suitability indicators

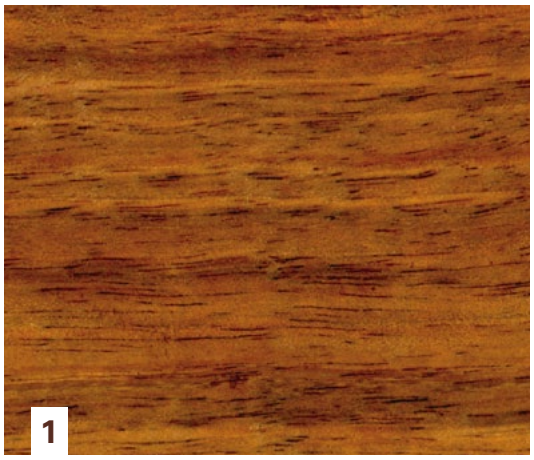
The acoustic/elastic properties in these planes of symmetry can provide information about the suitability for use in musical instruments of different woods and their characteristics. Generally, amongst woods of equal density, woods with a higher acoustic wave velocity along the grain will also have a higher stiffness or modulus of elasticity (MOE). A similar argument can be advanced for the acoustic velocity across the grain in the two directions (radial and tangential).

Another important acoustic characteristic of wood is sound energy absorption which occurs in the course of vibration; this is often referred to as the damping capacity. Damping is the ability of a system to absorb energy from mechanical vibrations; this can be likened to a bell being struck, the duration of the ring-tone dying out can be long or short, clear or dull.

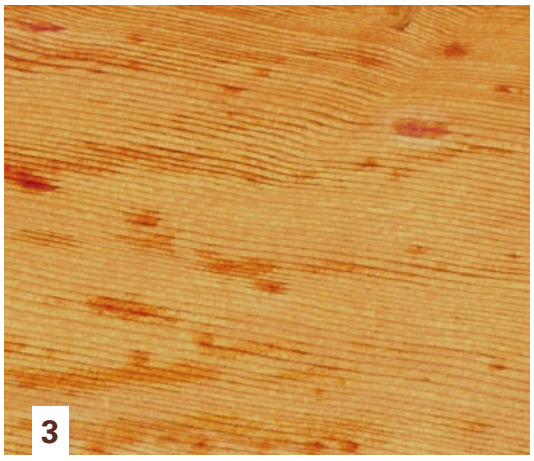
Measures of damping of mechanical/sound vibrations are well known in engineering and have been given many different names. The simplest one is known as the 'damping capacity' and for low degrees of damping, 'logarithmic decrement' can be determined from sound/vibration decay patterns; most simply it provides a measure of how quickly sound dies out.

Testing for tonewoods

The determination of the speed of sound, and the corresponding damping, can be made most simply by using representative slender wood beams cut in each structural direction. The simplest way is to set the beams into vibration by suddenly releasing one end of a displaced of a beam with the other end fixed firmly. The rate at which the vibrations propagate provides a measure of the wood stiffness and the rate at which the vibrations die out provides a measure of the damping. Alternatively the wave velocity can be measured directly by timing the passage of a propagating disturbance. While the magnitudes



1. Blackwood *(Acacia melanoxylon)*
2. Bunya pine *(Araucaria bidwillii)*
3. King William pine *(Athrotaxis)*
4. Satinwood *(Phebalium squameum)*
5. Celery top pine *(Phyllocladus aspleniifolius)*



of the numeric values obtained from the two different measurements approaches are not identical, they are always very closely related.

Measures of damping derived via the logarithmic decrement are often determined from the same experimental data obtained from resonance/vibration measurements. However, interpretation can be difficult as other losses not associated with the material properties can sneak in during testing, and some of these can lead to errors often arising from poor fixing of the test specimens and even air resistance to motion if the slender beams are very thin. Sometimes these factors can overwhelm the measurements and a lot of experience is required for correct interpretation.

Important wood properties include density (D), dynamic Young's modulus (E) and their ratio (E/D), known as the specific modulus, which is proportional to the square of sound propagation of a slender wood beam of given geometry.

Finally, while basic tests from specimens cut from each structural direction are relatively straightforward they are only the first step in providing information to help with the selection of different species with desirable tonal characteristics.

Other systems for the evaluation of acoustic characteristics of wood, involve more detailed assessments of the harmonics of the vibrations. Even more complex systems include vibration analysis of plates (two dimensional). These are thought to offer conditions nearer to the use of the material in the musical instrument, but they are more difficult to perform and interpret.

Stability

For woodwind instruments, flutes, bagpipes etc, stability to changing moisture conditions is important. In this case the instrument undergoes both temperature and humidity changes during its use and suitable woods are required with low movement and structural strength. Preferred species are ebony, but there are other species with low dimensional movement which can exhibit similar characteristics.

J. Ilic, *Distinguishing the Woods of Araucaria-Cunninghamii (Hoop Pine) and Araucaria-Bidwilli (Bunya Pine)*, IAWA journal, 16 (3), 1995.

Suppliers of tonewoods:

www.GuitarWoods.com.au
Tel: (02) 9316 7467

Britton Timbers
www.brittontimbers.com.au

Distinctive Timbers Tasmania
www.distinctivetimbers.com.au

Anagote Timbers
www.anagote.com

The Timber Bloke
www.thetimberbloke.com.au

Djarilmari Timber Products
www.djarilmari.com

Australian Guitar Timbers
www.guitartimbers.com

Tas Salvaged Resurrection Timbers
www.tasmaniantonewoods.com

Cedarworks
www.cedarworks.com.au

Otto & Co Pty Ltd
www.ottotimber.com.au

Dr Jugo Ilic worked as a wood scientist at CSIRO for 36 years. As part of his research activities he authored the CSIRO Atlas of Hardwoods and curated the online Australian Wood Collection.

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 4336, 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.

23 FEBRUARY –4 MARCH
Workshops with Christopher Schwarz
Melbourne Guild of Fine Woodworking
14 Cottage St, Blackburn, Vic
www.mgfw.com.au

28 FEBRUARY –1 MARCH
Hand Tool Event
Melbourne Guild of Fine Woodworking
14 Cottage St, Blackburn, Vic
www.mgfw.com.au

7–8 MARCH
Lost Trades Fair
Kyneton Racecourse, Victoria
info@rundellandrundell.com.au
www.rundellandrundell.com.au

7–8 MARCH
Woodturners of the Goulburn Valley
25th Annual Woodturning and
Woodworking Craft Show
Eastbank Centre, Welsford St,
Shepparton, Vic
Len Taylor: 03 5823 2430 or 0458 777 901
Chris Harvey: 03 5821 6064

14–31 MARCH
Coalesce: Work by Neil Turner
Linton and Kay Galleries
The Old Perth Technical School
Level 1–137 St Georges Tce, Perth
www.neilturnerartisan.com.au

20–22 MARCH
Turnfest
Woodturning symposium and demonstrations
Seaworld Resort, Gold Coast, Qld
www.turnfest.com.au

21 MARCH
World Wood Day 2015
Odunpazarı, Eskişehir, Turkey
worldwoodday.org

28 MARCH
Tools, Timbers & Techniques
Displays and demos
Perth Wood School, Belmont, WA
www.perthwoodschool.com.au
08 9277 5558

3–4 MAY
Maleny Wood Expo
including Wootha Prize exhibition
Maleny Showgrounds, Qld
www.malenywoodexpo.com

8–9 MAY
Cooroora Wood & Craft Show &
Interclub Competition
Cooroy Memorial Hall, Maple St, Cooroy, Qld
Jim Pound or David Mearns 07 5442 6995
Email: cwclubinc@hotmail.com

11–15 MAY
Ligna 2015
World Fair for the Forestry and
Wood Industries
Hannover, Germany
www.ligna.de

15–17 MAY
Brisbane Timber & Working
With Wood Show
RNA Showgrounds, Bowen Hills, Qld
info@iexh.com.au
impressiveexhibitions.com.au

19–24 MAY
Wood Turning Magic
2015 exhibition
Peninsula Woodturners Guild
Cnr Wilson's Rd & Nepean Hwy,
Mornington, Vic
pwgshowdir@gmail.com
www.pwguild.org.au

5–7 JUNE
The Australian Woodturning
Exhibition
Waratah Room, Whitehorse Centre
397 Whitehorse Road, Nunawading
www.theaustralianwoodturningexhibition.net

6–7 JUNE
South Coast Regional Exhibition of
Woodwork (SCREW)
20th anniversary exhibition, demos, sales
Central Tilba, NSW
Eric Simes: 02 4473 9696
Brian Petrich 02 4473 5991

12–14 JUNE
Sydney Timber & Working
With Wood Show
Hall 6, Sydney Showground
Sydney Olympic Park, NSW
info@iexh.com.au
impressiveexhibitions.com.au

7–9 AUGUST
WA Wood Show
& Out of the Woods exhibition
Claremont Showgrounds
wawoodshow.com.au

9–12 JULY
Furnitex Connect
Australian Furniture Association
Royal Exhibition Buildings, Carlton Gardens,
Melbourne
www.australianfurniture.org.au/furnitex

4–6 SEPTEMBER
Canberra Timber & Working
With Wood Show
Exhibition Park, Canberra, ACT
info@iexh.com.au
impressiveexhibitions.com.au

15–26 SEPTEMBER
Creations in Wood
Woodworkers Association NSW
Lane Cove Gallery
www.woodworkersnsw.org.au

23–25 OCTOBER
Melbourne Timber & Working
With Wood Show
Melbourne Convention & Exhibition Centre
info@iexh.com.au
impressiveexhibitions.com.au

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Teaching Tradition

Andrew Potocnik visits the North Bennet Street School in Boston.

A visit to Boston's historic North End will lead you to The Freedom Trail, which in turn, leads to the Italian Quarter and what was once the North Church, a place associated with Paul Revere's historic warning of the advancing of British troops on Lexington and Concord. The building no longer functions as a church but is part of a complex that comprises the North Bennet Street School, founded way back in 1885.

Pauline Agassiz Shaw, the school's founder, was a visionary educator and proponent of the Swedish system of manual training known as 'sloyd', which means 'craft' or 'hand skills.' The sloyd method focused on the development of character and intellectual capacity as well as technical skills. Students were encouraged to systematically develop hand skills along with an understanding of tools, materials, processes and a sense of care and commitment to excellence. Shaw saw the school's mission as teaching the 'whole person' both how to make a living and how to live a fuller life.'

These days the North Bennet Street School (NBSS) is a not-for-profit trade training institution that has grown from its initial intention of training migrants in traditional trades, into something of a contemporary enigma. Although it is never short of carefully selected students, even the current president Miguel Gómez-Ibáñez asks himself why a school that teaches 19th century skills continues to attract students in the 21st century.

To enter the workshops of the NBSS is a journey into a world long gone in contemporary teaching institutions. No grand entry, signage or modern buildings, instead it's an unassuming old place tucked in a narrow side street, where a wooden archway with etched windows gives a clue as to what lies beyond.

Passing beyond the dimly lit reception desk I was led along a labyrinth of passages to various nooks and crannies that house workshops devoted to diverse trade-based programmes such

Clockwise from opposite: Musical instrument building workshop. Learning traditional furniture making skills. Turned component samples. Handwork area at NBSS. Arched entryway into the school.

as bookbinding, cabinet and furniture making, carpentry, jewellery making and repair, locksmithing, piano technology, preservation carpentry, and violin making and repair. It rapidly becomes clear that this is not your typical post-high school institution. NBBS is a select entry institution that caters for people searching for a second career and focuses its efforts on training students with manual skills that are now becoming redundant within our profit-driven communities. It aims to perpetuate skills that are being lost, due to our drive toward mechanisation and cost reduction, maybe this is a romantic notion that attracts students willing to keep in touch with the old whilst moving forward with the new in the world we live in.

To return to the President's question I contacted Alastair Boell, a relatively recent graduate of the NBSS program to see why several years ago he moved to Boston to undertake the school's course. His key requirement was for a skill-based rather than design-based course, which led him to NBSS, where he felt his needs would best be fulfilled. Reflecting on his time there, he feels the highly intensive tutoring equipped him with skills that allowed his self confidence to 'blossom' so that he could ultimately take on any task as a furniture maker. Alastair went on to set up his own school in Melbourne* passing on the skills he developed in Boston.

Operating outside the contemporary educational system, the North Bennet Street School perpetuates the educational belief of its founder in an age where hand skills were cherished and CNC machinery simply did not exist, a world where non-tech savvy and non-academic craftspeople were appreciated for their skills and refined products. Although NBSS is upholding its original principles, no doubt contemporary technology is helping perpetuate these skills and philosophy and draw in a new generation of makers keen to enjoy the opportunities this unique school offers.

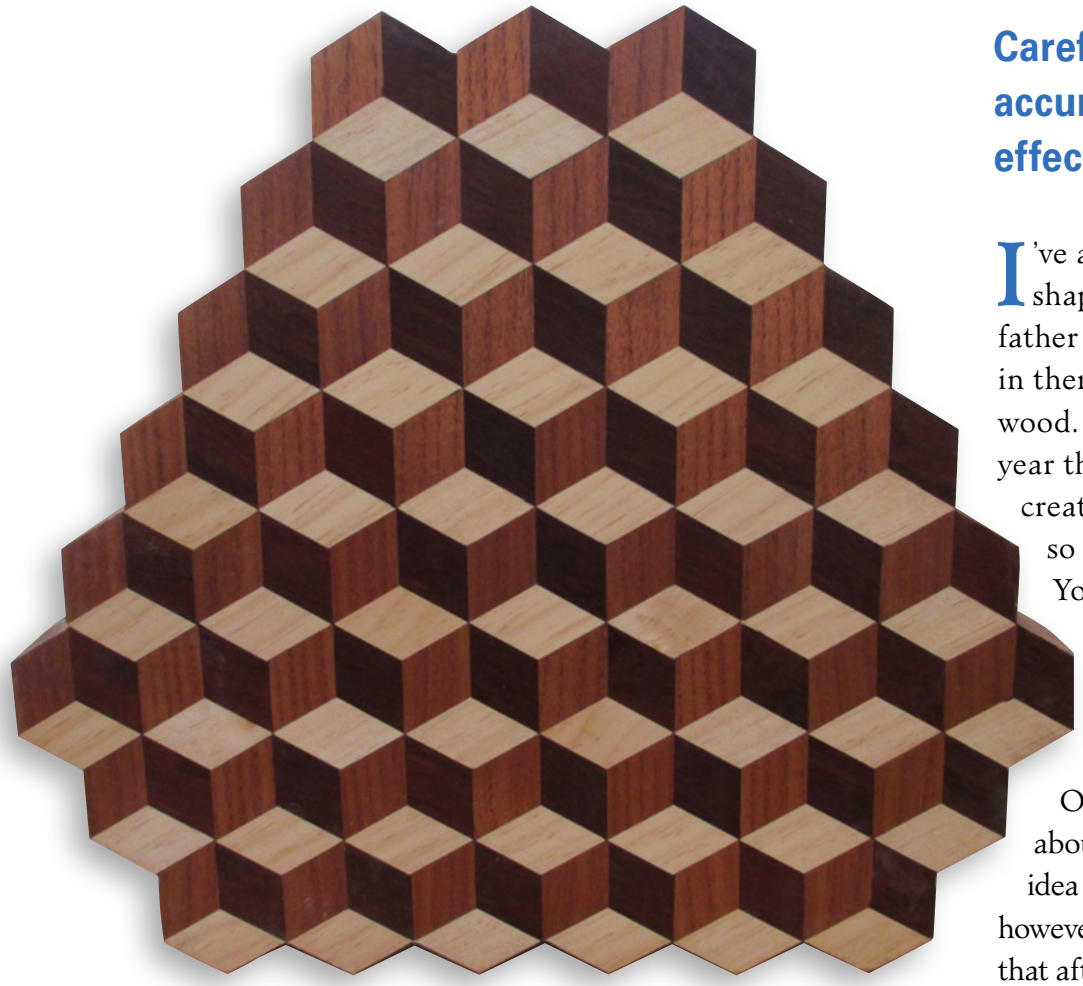
Photos: Andrew Potocnik

For more information about the North Bennet Street School, see www.nbss.edu

Alistair Boell is Director of the Melbourne Guild of Fine Woodworking, www.mgfw.com.au

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

3D Grain Match



Careful grain matching and extreme accuracy can achieve stunning visual effects. Joel Rodriguez shows how.

I've always been interested in creating interesting shapes out of wood. Both my grandfather and father have a shed where they work and I often go in there and mess around with tools and bits of wood. I saw a picture in a magazine earlier this year that showed how wood grain could be used to create 3D effects and I was very impressed, so I started to explore this area. I found YouTube very helpful in getting started. This was the genesis and before long I had a drawing and an idea ready to discuss with Mr Peter Jones, my wood teacher.

Once I decided what I wanted to do I thought about what I could use it for and struck upon the idea of a cutting board. It did not take me long however to decide there was no way I would use it for that after the hours I had to commit to creating it.

Clockwise from above:
The finished piece.

The final clamp was challenging.

Showing how the grain ran in individual pieces.

A piece of wood machined square was used as a sanding block.

For the timber I decided on pine, jarrah and cedar. Mr Jones machined the timber to 40 x 25mm and then we set the saw angle to 30° and cut each section lengthwise. I found the angles not quite perfect so I carefully sanded the sides to ensure a close fit. I used Titebond glue and heavy duty rubber bands to squeeze together three blocks at a time to form hexagons. Clamping the hexagons together to form the final board was somewhat of a challenge.

Prior to oiling I used a belt sander to flatten the surface before hitting it with an orbital using different grades. A final hand sanding removed the rings left by the orbital.

I spent around 50 hours on this project and it took me about one and a half terms as I spent a day a week at TAFE. At the end of the year my school had a technology display and I received offers but I don't think I will sell it as I put so much sweat and hard work into it. It's certainly the best thing I've ever made and I am really looking forward to getting back into wood this year as a Year 12.

Joel Rodriguez attends Churchland Senior High School in Western Australia.

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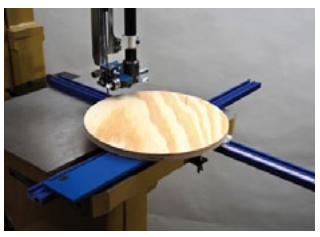

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