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> > - Craig Jackson, President and **Inventor**

# What our customers are saying:

"A very smooth running chuck,

Jerry Sambrook [accomplished turner and demonstrator]

"The SLT why did someone not do this 20 years ago i love it."

— Mike Geswein [new turner]

"Very user friendly with more features than any other ... Performance is what I expect from Easy Wood Tools
— Robin Costelle [world class turner and demonstrator]

"The more i use the easy chuck, the more i like it!!"

— Mike F.

"I just bought your easy chuck, but how the heck can you afford to sell it for that cheap?'

— Louis Scavani [Blind woodturner]

"No shaperneing...[sic] are you kidding me!?!?..I can now safely turn any project. I can change jaws with one hand in about 25 seconds... WOW!"

Bob Kennedy [Blind woodturner]

# What the pros are saying:

"The Easy Wood chuck is very good and the back side of the chuck is recessed, which puts the workpiece closer to the spindle. This has to help reduce vibrations or chatter. Changing jaws is as you say, a snap! Kudos.

> — Look for you down the road, Dick Sing, [Master Woodturner]

"Nobody beats their equipment up with hard and heavy green wood all day long, as I do. The chuck is a Damned good product!! You sure get my vote."

— Steven Grossfeld Vermont Bowl Mill [Master Turner]

"A QUANTUM leap in woodturning; makes everything else obsolete."

- Scott Phillips, The American Woodshop





# Pulling together



y leaders have sparked quite a few comments lately. Actually, they

usually do. Most people know that I am not averse to rattling the proverbial cage every once in a while. Some have wondered if I was listening in on their conversations as I wrote some of my leaders. The answer to that is a resounding 'no'. Rest assured I do not have the wherewithal or the time. I do, however, talk to many people on my travels and most subjects get discussed in one form or another we all know there is a lot of talk and discussion when people get together. So, it should come as no surprise that if it is being talked about in one place, then other areas are talking about the same.

In all walks of life, clubs and organisations are all variants of each other, but the core aspects remain the same. That also means the same problems, highs and lows will be experienced by all, in one form or another. There will be the usual 'how do we keep all the members happy?'; 'how to get members involved'; 'getting people to stand for the committees'; 'why are there so few people showing their work?'; 'how do we develop the club or organisation and will we get the support to do so?'; 'how do we develop and reach a wider audience?'; 'how do we encourage new people and youngsters?', and so on. You get where I am coming from. It is the same with turning. We all undergo a steep but similar fundamental learning curve in how we cut and shape the wood, but then we all start to do our own things to personalise it. The same subjects come up: how to use tools, how to sharpen them, how to cut the wood effectively, buying all the tools we can and then having lots of them gathering dust on the shelves - because we found later on that we didn't really need them after all how to make that, where to get ideas from. Does this sound familiar? We all work with similar shapes, subtle variants of the same tools, abrasives,



finishes and materials – primarily wood, but increasingly other materials too. And we should be having fun.

We are all linked in some way or other through people we know and by a love of woodturning, the desire to be creative and share, so it should come as no surprise that I comment on things already being discussed. But you know the key factor in all of this? Each and every one of us has a part to play in the continued success of woodturning. Not only for ourselves, but others, too. We learn in some way or other, from each other. I have yet to meet a turner who has not read books, magazines, articles or online content or seen DVDs, so has been affected in some way or other by the sharing process we possibly, at times, seem to take for granted or do not think about.

We have our own experiences that we can share with others as encouragement and learning. These

experiences get shared further still. We can help, when help is needed; we can be available when people need us. We can also help out with ideas for the development of our local clubs and organisations and help to make sure some things happen. Just some food for thought.

Turning one of the items for my '365 Turnings' project for 2014, many of which will go to charitable organisations

Have fun, Mark

M&Rahm



Woodworkers Institute website (www.woodworkersinstitute.com) is thriving. It would be great if you took a look and participated in the various discussions and competitions in our community.



Starting to turn - the first in a new series by Mark Baker. Cover image by GMC/ **Anthony Bailey** 

Editor Mark Baker Email: markb@thegmcgroup.com Deputy Editor Tegan Foley Email: teganf@thegmcgroup.com Editorial Assistant Karen Scott Tel: 01273 477374 Fax: 01273 487692 Email: karensc@thegmcgroup.com **Designer Claire Sanders** 

Studio Manager Oliver Prentice Illustrator Mark Carr

Chief Photographer

Anthony Bailey

Advertising Sales Executive

Russell Higgins

Tel: 01273 402899 Email: russellh@thegmcgroup.com

Advertisement Production

Production Controllers Clare Disano & Rebecca Braisby Tel: 01273 402807

Email: repro@thegmcgroup.com

Publisher Jonathan Grogan

Production Manager Jim Bulley

Circulation Tony Loveridge Tel: 01273 477374

Email: tonyl@thegmcgroup.com

Subscriptions Manager Helen Chrystie

Tel: 01273 402 873 Email: helenc@thegmcgroup.com

Marketing Anne Guillot

Tel: 01273 402871

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**Subscribers!** Turn to page 88 for subscription special offers and you could save 30%!

## NEWS, LATEST PRODUCTS, MAGAZINE UPLOADS & EVENTS

can all be found on www.woodworkersinstitute. com. These all appear on the magazine homepage and you can see a bigger selection by scrolling down the page and clicking on the individual stories. We also have an extensive online archive for you to browse

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



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# Round & about

We bring you the latest news from the world of woodturning as well as letters from the Woodworkers Institute forum and important dates for your diary from the woodturning community

# Jorvik Woodturning Group make bench in memory of club treasurer Richard Agar

orvik Woodturning Group recently made an oak (*Quercus robur*) bench in memory of the club treasurer, Richard Agar, who sadly passed away at the Wild About Wood event at Castle Howard last year.

Syd Godfrey made the bench and the 13 spindles were turned by different club members. The bench is now on display for people to see and enjoy at the Yorkshire Arboretum at Castle Howard.

The Jorvik group has around 55 members and meets on the first Friday

Syd Godfrey with the bench that he made in memory of Richard Agar of each month at Earswick Village Hall, North Yorkshire. They have held demonstrations by renowned turners including Simon Hope, Tracy Owen, Mark Baker, Jimmy Clewes and others, as well as their own group members. They also hold competitions where a cup is awarded annually. New members are always welcome. See below for further details.

### **DETAILS:**

**Contact:** Stephen Brankley **Email:** stephenbrankley@yahoo.co.uk



# Fence post lamp

ark,
I have just read Andy Cook's letter about men's attitude to women turners. Here in Australia we have many lady turners who are really well respected, welcomed and encouraged. There are nine clubs around Sydney and a few ladies in each. We formed a ladies' group, which meets monthly at one of the club workshops so that we can get to know each other and share our skills and ideas. There is some good talent among us!

I enjoyed reading about
Chris Grace's fencepost. I have
recently been given pieces of
100-year-old fencepost from a
farm, which I have made into
table lamps. They were simply
cleaned, sanded and oiled, and
little mushrooms, turned from
driftwood, were inserted into some
of the cracks. The lampholder was
an old fashioned bobbin, which was
inserted down the original crack
and the narrow end was jammed
into a turned wooden ring to keep
it stable.

June McKimmie

June's lamp, which was made from pieces of 100-year-old fencepost



# Woodturning classes with Ashley Harwood

A shley Harwood will be running a number of woodturning courses throughout 2014, all of which take place from her studio in Charleston, South Carolina, USA. All tools and equipment, safety equipment, materials and lunches are provided. Classes are limited to three to five students in order to maximise handson instruction. Please register your

interest as soon as possible due to spaces being limited.

There is a total of five courses, each of which has a different theme, such as bowl or spindle turning, and the class on 2–3 July is a special bowl turning class with Glenn Lucas, which gives you the opportunity to learn from one of the world's pre-eminent bowl turners.

For course dates and further details, see Ashley's website below.

# **DETAILS:**

When: 2–3 July, 21–23 July, 8 September and 3–4 November, 2014

and 5–4 November, 2014

Where: Charleston, South Carolina, USA

Contact: Ashley Harwood Tel: (001) 412 716 3278 Web: www.ashleyharwood.net

# West Sussex Woodturners at kids' activity days

n December last year, various woodturners - around 15 in total plus wives and mothers - from West Sussex Woodturners visited Amberley Museum and Heritage Centre to help out with their 'Santa Days', which they have been taking part in for the last eight years.

In the course of the three weekends prior to Christmas, members helped somewhere in the region of 830 children of all ages to turn a wooden item. Most of these were Christmas tree decorations, although there was the odd item that wasn't festive. Popular items to turn included snowmen, Christmas trees, as well as baubles.

For the various other kids' activity days throughout the year, the members have about a dozen items the children can turn, although this number has got larger over the years.

Before starting any turning, the children receive some brief health and safety information and are kitted out with a full-face visor before they are given any tools. Turning can then begin, with full assistance as well as support from the parents. Once the turning is finished, the item can then be sanded and decorated.

As well as Christmas items, the club members have also produced other items for the children to make, including lighthouses, which now come in three different designs: a flat top to land the helicopter on, a pointed roof and a round roof. There is also a helicopter and a windmill.

In some cases, the members have apparently ignited an interest in turning: "One weekend a lad turned up and had a go and by the time he went home, he had actually turned six items!" says Martin Shepheard.

All this hard work is not in vain, as this is helping to promote interest



in woodturning and is also making turning accessible to youngsters who are ultimately the woodturners of the future. Any scheme which gets youngsters interested in woodturning has to be pursued.

The club has just completed the building of a new self-funded workshop facility based at Amberley Heritage Centre, which they hope will be of benefit to club members. They spent about 10 years raising funds for the building and over eight months building it. They are hoping to run training courses for all ages, so watch this space. If anybody would like to come along and see what they are trying to do, just see details on the Amberley Museum and Heritage Centre's website - www. amberleymuseum.co.uk - or, contact West Sussex Woodturners directly.

## **DETAILS:**

**Contact:** West Sussex Woodturners Web: www.westsussexwoodturners.co.uk Some of the children and their turned items





'Chinese Year of the Horse' hollow form with pyrographed detail, by colinjp



Bowl made from an old log, 230mm long × 50mm high, by SUSIE

Oak (Quercus robur) hollow form with boxwood (Buxus sempervirens) finial, 310mm high, inspired by the work of Stuart Mortimer and made by rocknrod





A screenshot from Alex's website, which stocks a host of pen supplies and clock inserts

# The Time and Pen Company

i Mark, It was nice to see you at the 'Harrogate' show, which I think was a tremendous event. As you know, I own the The Time and Pen Company and we sell pen kits and clock inserts. I started the company in late 2012 due to a shortage of suppliers in the area.

I decided to source products myself and visit woodturning clubs when they had meetings – just like a travelling shop covering the area from the North of Scotland to the North of England, and I was well received.

In April 2013, I rented space from

Brodies Timber, who are suppliers of wood to the woodturners and woodworkers at the Old Sawmill, Inver near Dunkeld. They have an extensive selection of timber and woodworking tools. Between us, we have a vast array of products for woodworkers.

We aim to provide woodworking products to craftsmen and women through the online shop and to people at woodworking club events and shows. For more information, see www.thetimeandpencompany.com.

Regards, Alex Stewart

### **Conversion chart**

2mm (5/64in)	35mm (1%in)
3mm (1/8in)	38mm (1½in)
4mm (5/32in)	40mm (15/sin)
6mm (1/4in)	45mm (13/4in)
7mm (%32in)	50mm (2in)
8mm (5/16in)	55mm (21/8-21/4in)
9mm (11/ <sub>32</sub> in)	60mm (23/sin)
10mm (3/sin)	63mm (2½in)
11mm (7/16in)	65mm (25%in)
12mm (½in)	70mm (2¾in)
13mm (½in)	75mm (3in)
14mm (%iin)	80mm (31/sin)
15mm (%16in)	85mm (31/4in)
16mm (5/8in)	90mm (3½in)
17mm (11/16in)	93mm (3 <sup>2</sup> / <sub>3</sub> in)
18mm ( <sup>23</sup> / <sub>32</sub> in)	95mm (3¾in)
19mm (¾in)	100mm (4in)
20mm (¾in)	105mm (41/8in)
21mm (13/16in)	110mm (43/sin)
22mm (%in)	115mm (4½in)
23mm (29/32in)	120mm (4¾in)
24mm (15/16in)	125mm (5in)
25mm (1in)	130mm (51/sin)
30mm (11/sin)	135mm (51/4in)
32mm (11/4in)	140mm (5 <sup>1</sup> / <sub>2</sub> in)

145mm (5¾in) 150mm (6in) 155mm (61/sin) 160mm (61/4in) 165mm (6½in) 170mm (6¾in) 178mm (6%in) 180mm (7in) 185mm (71/4in) 190mm (7½in) 195mm (73/4in) 200mm (8in) 305mm (12in) 405mm (16in) 510mm (20in) 610mm (24in) 710mm (28in) 815mm (32in) 915mm (36in) 1,015mm (40in) 1,120mm (44in) 1,220mm (48in) 1,320mm (52in) 1,420mm (56in)

# Norfolk Open Studios - Nick Arnull

N ick Arnull is known widely for his pioneering decorated work. He has also written 90 articles for *Woodturning* magazine as well as publishing his first book, *Contemporary Woodturning Techniques and Projects*. This year, he is taking part in the Norfolk Open Studios event. This is a great opportunity to visit artists and craftspeople in the Norfolk area, and gives you the chance to see where they work and live.

At Nick's workshop and gallery, you can see, handle and purchase finished items, discuss his motivations, or even talk about or book woodturning

courses. If you are interested in any aspect of woodturning, this is an event not to be missed.

Nick will be available at the weekends during the event: 24–26 May, 30–31 May and 7–8 June, between 10am-5pm. Other times are available by arrangement. To find out more, see details below.

### **DETAILS:**

**When:** 24–26 May, 30–31 May and 7–8 June, 2014 (10am-5pm)

**Where:** 'Latrigg', Church Street, Horsford, Norfolk NR10 3DB

**Contact:** Nick Arnull **Tel:** 01603 710 722 **Web:** www.nnopenstudios.org.uk





Deep burr elm (*Ulmus procera*) bowl, 195 × 90mm, by Mark Sutton



Fisherman's priest, made from scraps of beech (Fagus sylvatica), walnut (Juglans regia) and sapele (Entandrophragma cylindricum), by Dalboy

Boxwood box (*Buxus sempervirens*) with rosewood (*Dalbergia latifolia*) collar and lignum vitae (*Guaiacum officinale*) finial, 225mm tall × 68mm dia. by yewbox





# New Zealand International Woodturning Symposium 2014

The New Zealand woodturning symposium takes place from 2–5 October, 2014 and boasts a wonderful line-up of 14 demonstrators from around the world and, like most other symposia, you will have difficulty deciding which demonstrations to attend.

While the demonstrations are surely the prime attraction of any woodturning symposium, the trade hall will be full of tools and accessories as well as a great selection of New Zealand and Australian timbers. There will also be a 'silent auction' of selected special woods – some from New Zealand – and all from southern hemisphere locations.

There will also be a 'Name the Tool' competition run by the Vintage Tool Club. They will put old woodworking tools on display for people to correctly name or determine some other specific feature of, such as the date of manufacture.

In addition, there is expected to be a huge instant gallery. Every person is invited to bring three pieces of turned wood, and it is hoped that there will be a huge variety of pieces on show.

Keep checking the website – www.sawg.org. nz – for regular updates of the demonstrations, the symposium programme and the registration form.

# **DEMONSTRATORS**

Bruce Wood Neville Walker
Cindy Drozda Phil Irons
Cynthia Gibson Richard Raffan
David Nittmann Robbie Graham
Emma Walker Shane Hewitt
Joey Richardson
Ken Wraight Vaughn Richmond
Michael Gibson

### **DETAILS:**

Contact: 2–5 October, 2014
Where: Wesley College, 801 State Highway
22, Paerata, North Island, New Zealand
Contact: South Auckland Woodturners Guild
Email: dick.veitch@sawg.org.nz
Web: www.sawg.org.nz

# Dremel launches 2014 as 'Year of Versatility'

Dremel has designated 2014 as the 'Year of Versatility' launching it with a generous promotion to win a set of premium Dremel tools worth around £584 every month. Dremel kicked off with its Versatile Tool Pack promotion to demonstrate their versatility aimed at people who enjoy undertaking home and garden DIY, construction, repair and restoration work.

It's easy to enter: entrants simply finish the slogan 'Dremel is Versatile because...' online via www.dremeleurope.com/vts. Alternatively in-store, people can use their smart phones to scan a QR code found on Dremel's packaging and leaflets. This will then direct them to the promotion's website where they can complete the slogan. The promotion runs until 31 July, 2014. See below for details.



**DETAILS: CONTACT:** Dremel

WEB: www.dremeleurope.com/vts

# Record Power at Yandles show

Record Power will be appearing at the Yandles Spring Woodworking Show, where they will be on hand to answer your questions and demonstrate products from their extensive range. In addition, exclusive show deals will be available on the day, making this an event not to be missed!

### **DETAILS**

WHEN: 11–12 April, 2014 (10am-4pm)
WHERE: Yandle & Sons Ltd, Hurst
Works, Martock, Somerset TA12 6JU
CONTACT: Record Power

**TEL:** 01246 571 020

WEB: www.recordpower.co.uk

# **INDUSTRY NEWS**

This month, **D&M Tools** share their latest news and products with us, including the new Tormek TS-740 sharpening station

# News from **D&M Tools**

# **FESTOOL**

# Festool KA 65 CONTURO edge bander

The new CONTURO edge bander from Festool allows the simple attachment of edging on anything from rectangular components to complex free shapes such as curves, radii, convex and concave shapes. These require a minimum outer radius of 25-30mm – depending on the edging material and thickness.

Versatile and easy to operate, the CONTURO represents a genuine solution for manufacturing individual shaped parts, as well as affixing edging to workpieces or furniture components produced in small batches. Packed in a SYSTAINER,

the CONTURO is also suitable for mobile use as well as manufacturing edging in situ with a perfect quality finish. See the website to watch a demo video, plus a full range of packages and accessories.





BELOW: The Tormek TS-740 sharpening system is compatible with both the T-7 and T-3 benchtop whetstone grinders



# **Tormek TS-740 sharpening station**

ormek have designed a new sharpening station that is compatible with both the T-7 and T-3 benchtop whetstone grinders. The purpose-built drawers are designed to fit with the Tormek accessory kits. These offer convenient storage for all the jigs and accessories needed for sharpening all kinds of edge tools. This model is fitted with height adjustable legs, rubber feet and complete with a moisture-proof composite worktop. Spare stones can be stored on the side of the station. Height: 750-830mm; width: 578mm and depth: 390mm.

Most benches are too tall to give you the correct control of your sharpening. When your shoulders are relaxed and your arms extended about waist high you're in a more comfortable position. You can apply the right amount of pressure and get the best results. Based on this all-important observation, Tormek

designed the TS-740 sharpening station where you will always have the perfect working position, adjustable to your height. For the full range of Tormek machines, see details below.

Contact: D&M Tools Tel: 020 8892 3813 Web: www.dm-tools.co.uk









In the first of a new series on starting turning, **Mark Baker** discusses the subject of timber

hen I started turning, I quickly got the bug for it and as with any new undertaking - think painting, fishing, photography, cycling, etc. - wanted to know as much as I could as quickly as possible and also have the right kit so I could start as soon as possible. Invariably this eagerness to start coupled with my lack of knowledge resulted in a lot of mistakes, both purchase and technique wise, on my part. I had a lot of information stored but it was jumbled, and I didn't know how to process and properly use it to make truly informed decisions. This experience is echoed by many people who start turning.

I was fortunate that a while after starting turning, people offered to help me and share their experiences in turning and those friendships grew and grew. While each person's experience is slightly different – as, at times, is their way of doing things – there are core elements in turning that are universal to all people who turn.

Support in some form from people is vital to all of us in one way or another. The trouble is that when starting turning, you may not know if there are other turners near to you, whether there are clubs around your locality, or if there are any national or international organisations that may be able to help you, too. I have, in this article, included a panel with contact details of organisations that you might find helpful in your journey that is woodturning.

In this series, I will break down the core elements of what you need to know about learning to turn. I will concentrate on showing, explaining and using a basic

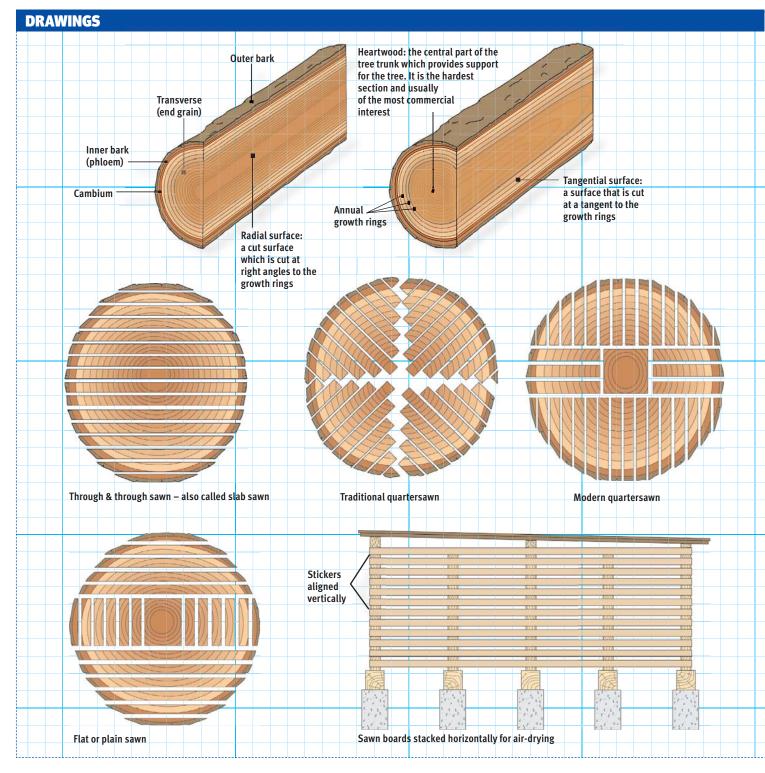
setup of kit and equipment in easy-to-follow sections. My aim is to provide you with the knowledge to be better informed and armed to make better decisions to get you turning safely, and hopefully having a lot of fun along the way. Just to spice things up a bit, I also will be calling on other turners to comment with sage advice and hints and tips as we go along, too. It might sound strange but I am not going to start with looking at lathes, tools, other equipment and techniques to use them – we will get to those later on in the series – but instead, start by looking at the material most of us will use when starting turning: wood.

# **WOOD/TIMBER**

Trees grow all around us and wood is a much treasured material to work with and, as turners, we are fortunate in being able to use many varieties that would otherwise be discarded or burnt. We can choose wood according to its colour, figuring, strengths and working abilities. As your experience develops, you will find out what woods you like working with and also which ones are best for what job. But following are a few things that will help you in your tentative first steps.



# Terminology for sections of a tree trunk and typical ways of sawing them into boards



# Types of wood

Wood species are usually classified as either softwoods or hardwoods.

# **Softwoods**

Softwoods come from a group of trees called gymnosperms, which includes conifers. Softwood trees typically do not shed their leaves during winter. Spruce (*Picea abies*), pine (*Pinus spp.*), cedar (*Callitropsis nootakatensis*) and larch (*Larix decidua*)

are just some examples that come to mind. Softwoods are often used in the construction industry and columns, spindles and balusters are just a few of the turned items typically found made from them. They are generally cheaper – usually much more so – than hardwoods and can be great to practise cutting wood on. Softwood is not very forgiving of mistakes, but shows beautifully well-made cuts with sharp tools and correct technique.

# **Hardwoods**

The other wood group is called hardwoods. These trees are from what is called the angiosperm group. Hardwoods are typically trees that shed their leaves in winter. Woods such as oak (*Quercus robur*), ash (*Fraxinus excelsior*), maple (*Acer campestre*), walnut (*Juglans regia*), apple (*Malus sylvestris*) and sweet gum (*Liquidambar styraciflua*) are all woods from the angiosperm or hardwood family. This type of wood is usually slower

# **TECHNICAL** Starting turning

# **■ WOOD/TIMBER (CONT.)**

growing and usually harder and denser than softwood. That said, as with many things, there are always exceptions to the rule. Yew (*Taxus baccata*) is a very hard closegrained dense wood but is actually from the softwood family. Balsa (*Ochroma pyramidae*) is actually a very soft, lightweight hardwood.

Hardwoods can generally be used for a wider variety of turning projects than softwoods. Examples include spindles, bowls, platters, goblets, vases, hollow forms and much more. So hardwoods are typically used for both spindle and faceplate-turned items. Good woods to learn to turn with are close-grained hardwoods such as sycamore (*Acer pseudoplatanus*), maples (*Acer spp.*) and fruitwoods. They hold detail well, you can see very clearly what is happening when you cut them and they finish well off a properly sharpened and presented tool.

There are many companies who supply wood to turners who will be able to advise you as far as the type of timber and how it is cut for the projects you wish to make. I have mentioned spindle and faceplate turning and here are fuller descriptions of these two types of turned work.



Scots pine (*Pinus* sylvestris), a typical and well-known softwood



A sycamore (Acer pseudoplatanus) tree in the Bergpark Wilhelmshöhe, Kassel, Germany

# **TYPES OF TURNING**

here are two types of turning, which are defined by having the grain orientated in a certain way for each type: namely spindle turning and faceplate turning.

# Spindle turning

Balusters, columns, chair legs, spindles, goblets, single-piece candlesticks, drawer knobs, some hollow forms, boxes and vases are, to name but a few, 'spindle-turned' projects. They all have one thing in common: the grain of the wood runs along the length of the piece of wood. When the wood is

mounted on the lathe, the grain runs parallel to the bed bars.

Often such projects are quite long and narrow in relation to the length. If the grain ran across the narrow width they could easily break, so the grain is aligned in such a way as to provide strength.

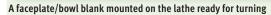




Grandwechon

Spindle blank mounted on the lathe – between centres – ready for turning. Arrows denote grain direction







Finished faceplate-turned projects and a selection of blanks

### **FACEPLATE TURNING**

Bowls and platters, bases for two-part candlesticks, as well as a few styles of boxes and hollow forms are some examples that fall into the category of faceplate turning. This type of work has the

grain running across its width. So when the wood is mounted on the lathe, it has the grain running at 90° to the bed bars. As with spindle turning, we will look at holding and cutting/shaping this type of work in future issues, but between the two types of turning, there are plenty of options to explore: utilitarian/functional items, sculptural, architectural as well as beautiful pieces whose sole function is to be admired.

# **Seasoning**

The object of seasoning timber is to remove most, but not all of the water/moisture from the wood and to do so gradually in a controlled manner, with as little degradation to the wood as possible.

If a tree is felled and left whole, then the cut ends will show splitting and cracks after a short period of time. This is due to the differential moisture loss. The cut end of the timber will lose moisture very quickly but the inner solid section will have a slower drying rate and as the drier wood shrinks at a faster rate, it creates stresses and tension and thus splitting occurs.

Newly felled trees and the timber cut quickly from it is known as wet, green or fresh-felled timber. Trees are typically cut into sections – usually various thicknesses of planks/boards. There are various ways of cutting boards to maximise yield, grain figuring and, depending on its intended use, more dimensional stability. Once cut, the boards are usually dried in one of two ways:

# Air-dried/part seasoned

For air-drying the boards are typically stored – either horizontally or vertically – in a building sheltered from the elements but stored in such a way as to allow airflow through the boards. A rough rule of thumb is that it takes one year per 25mm of board thickness to season/dry the wood to a level where it does not lose any more moisture. How much moisture the wood retains depends upon factors such as where and how it is stored, temperature and relative humidity. This is typically called equilibrium moisture content (EMC). In the UK, this would mean the wood has an EMC of about 15-20%.

This does not mean that there will be no further movement due to moisture loss and shrinkage of the wood when the wood is moved to a drier environment, but it will be much reduced. Movement also occurs due to tension release. Once the boards are cut to the sizes required, they effectively relax to a new position.

# Kiln-dried

This is where boards are placed in a chamber/ room, which is sealed and equipped with means by which the heat and rates of air movement may be controlled in order to dry/season the wood. Drying in a heated chamber is very effective, but the subject is quite complex. This process is able to reduce the moisture content consistently over a considerably shorter period than the air-dried method – typically weeks rather than years. It is a very good process but it can cause the wood to dry out too quickly, thus resulting in severe degradation within and of the timber. The moisture content can be reduced to about 10%, which is about right for a centrally heated house. If the wood is not stored in such a location after drying, it will pick up moisture over time from the environment, which could mean the moisture content goes back up to about 15-20% if in the UK; this is known as 'moisture pick up'. Dimensioning kiln-dried wood further may result in some tension release.



A felled tree ready to be cut into sections



Stacked boards air drying

### **BUYING TREES AND LOGS**

uying logs is the cheapest way of purchasing timber and gives the buyer freedom to cut the wood in whatever way suits their needs. That said, the conversion of them - and having the knowledge of how to get the most from them for your purposes and the subsequent transportation, equipment required and storage, coupled with knowing how to dry and season them and the issues associated with shrinkage, warping and movement - can be problematic.

It is certainly something to consider as you progress, but it is not something I would recommend for those just starting out. I do, however, think that using smallish branches of timber can work well for some projects, and I will look at the implications of using such sections later in the series.

Turning such green wood from start to finish can be great fun. There will be movement due to moisture loss and shrinkage and to prevent splitting and cracking requires the turned item to be uniformly even in wall thickness, which minimises uneven shrinkage rates. Usually these projects are turned very thin and the resulting change in shape adds another dimension to your turning with some surprising results.

There is another process called rough turning, by which a piece of wood is turned and left at a uniform wall thickness, typically 10% of the overall diameter, but maybe a bit thicker. Once rough turned the work is set aside for a period of time. How long it should be left for depends upon whether the wood was green or air-dried. The piece is then remounted on the lathe and turned to the final thickness. This ensures minimal movement later on, whether due to further moisture loss, stresses or tension release. Boxes are ideal to be rough turned first, or you can encounter problems with the fit of the lid later on. We will come back to this subject.



A tree being sawn



Rough-turned bowl



Rough-turned bowl that has changed shape

Wet-turned vase

# **PLANKS & BOARDS**

lanks and boards of wood can be bought in various widths and thicknesses, cuts and dryness and this is the next most cost effective way of buying timber after the whole trees. Again, there is a need for some equipment to cut such items - mid-sized bandsaws being an ideal option. You simply buy the thickness and type of cut of the board you want and then it is up to you how you cut it to get what size and type of project you want from it. Again, I would recommend holding off on buying this type of timber until you have a bit more knowledge. This can be bought as air-dried/part seasoned or kiln-dried.



A range of planks and boards

# **PRE-DIMENSIONED TIMBER**

o start with, it is easiest and the most convenient to buy pre-dimensioned timber which is cut specifically for turners – blanks. These are available in various shapes and sizes and can be round or square, occasionally in lengths of branches and small diameter logs – depending on requirements – and to suit different types of turning project. Although this is a more costly route, it saves a lot of hassle for someone starting out turning and, as mentioned previously, when you progress and are more confident, you may, if space and equipment allow, look at buying planks or logs and cutting wood to the size you require.

Often these sections are waxed or sealed, which means that they will not take on or lose moisture content too much when in storage. The pre-cut sections also allow you to clearly see what you are buying as well as the grain and figuring of the wood being clearly visible along with any faults. These can be wet, part-



seasoned or kiln-dried, so ask for assistance in identifying this if they are not clearly labelled.

There is one other category of timber that is loosely called found wood, free wood, 'you burnt it, but we turn it' type bits and pieces, but in truth, these can be anything and of varying states of shape, size, water content, etc. As we get given or find many different bits of wood, many of us really will want to try and use them, if we can. There are many different things that can be made from such pieces,

and I will deal with the oddments and issues that we face in using them in future projects.

As you can see, there are many issues involved in converting, seasoning and drying wood and how the wood moves and behaves during this process. I recommend some books, details of which can be found below, that discuss wood and in some cases its conversion, cutting and seasoning in detail. They are well worth reading and will provide you with more in-depth knowledge about the subject.

# **WOOD SAFETY**

Wood is a wonderful resource, but as with many things, there are potential problems when working with it. Some woods can act as sensitisers due to extractives such as resins, tannins, sap and other chemical compounds or organisms growing on the tree. This may be either by direct contact with the wood itself or through exposure to its dust. Yew (*Taxus baccata*) is one such example where some people have developed an allergic reaction to the wood either respiratory or skin contactwise. There are also other woods that fall into this category.

Exposure to wood dust is also potentially hazardous to health. Respiratory, skin and other problems have been recorded and in extreme cases rare forms of cancer are associated with exposure to wood dust. Government bodies have created lists of problematic timbers, but do not assume that these lists are exhaustive.

Here are a few websites that I would urge you to look at. These will allow you to explore more fully the issues of wood and potential problems when exposed to or working with it.

www.hse.gov.uk/pubns/wis30.pdf

www.osha.gov/SLTC/wooddust

www.hse.gov.uk/woodworking/wooddust.htm

I would caution you to treat all wood dust as potentially hazardous and do everything you can to minimise exposure to it, at all times while in the workshop. We will be looking at Personal Protective Equipment (PPE) and extraction for the workshop in a later issue and will revisit this further then.

### **WOODTURNING ORGANISATIONS**

# Association of Woodturners of Great Britain (AWGR)

Web: www.woodturners.co.uk

# American Association of Woodturners (AAW)

Web: www.woodturner.org

# Irish Woodturners' Guild (IWG)

Web: www.irishwoodturnersguild.com

# New Zealand Association of Woodworkers (NAW)

Web: www.naw.org.nz

# The French Association for Artistic Woodturning (AFTAB)

Web: www.aftab-asso.com

# **Woodturners Society of Queensland Inc.**

Web: wsqueensland0.tripod.com/ woodturnerssocietyofqld

# The Peninsula Woodturners Guild

Web: www.pwguild.org.au

### **Israeli Association of Woodturners**

Web: www.israelwood.org

### RECOMMENDED FURTHER READING

*Understanding Wood*, R. Bruce Hoadley, ISBN: 9781561583584

Turning Green Wood, Michael O'Donnell, ISBN: 9781861080899

How to Season and Dry Wood, Alan Holtham, ISBN: 9781861086419

*Wood Identification & Use*, Terry Porter, ISBN: 9781861088550

# **Future articles**

This first article in the series concerning wood only touches the surface regarding timber terminology, as this is such an extensive topic. Since wood is the primary material we work with as woodturners, we need to look at the other terms that apply to it in much greater detail. To that end there will be a mini series – a glossary of terms –

exploring wood-related terms like grain, figure and botanical nomenclature more fully. In part two of the Starting Turning series I wil be looking at lathes and their key components, what you need to know about the various types and options available as well as giving pointers on how to make the right choice for your needs and workshop space.



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# Magnetic chess bowl

David Ritchie shows you how to turn this functional and fun project – a bowl complete with turned magnetic chess pieces

he materials used in the chess bowl were relatively easy to control; the buffalo horn does not move and the boxwood (Buxus sempervirens) I used was very old and very dry. Keeping their inclusion down to 4mm also helped, allowing room beneath the discs and around the magnets and having a good tight fit in the horizontal plane of the discs is a must for final presentation.

This is a multi-task project, involving a number of disciplines, including a little bit of carving when making the 'knights.' In my view, the chessmen can and should be of your own design and from any material you choose. You can also reduce the cost by using magnets and mild steel washers, but you must put the magnets in the bowl to avoid the horizontal magnetic field, which will result in all the chessmen collecting in a huddle on the board.

I hope you enjoy making your bowl and chess set, and no matter what happens, you are sure to be a better chess player than me!

# **DAVID RITCHIE**



About the author: David is a hobbyist turner who enjoys turning a variety of pieces in different materials. He is the events secretary

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for Waveney & District Woodturners, newcomers to turning and seek advice Email: d.ritchie785@btinternet.com

# **CHESS BOWL DIMENSIONS**



Chess Men Pawns 36mm ( $1^{3}/_{8}$ in) x 19mm ( $3^{3}/_{4}$ in) 8 of each colour Knight 50mm (2in) x 19mm ( $3^{3}/_{4}$ in) 2 of each colour Bishop 52mm ( $2^{2}/_{16}$ in) x 19mm ( $3^{3}/_{4}$ in) 2 of each colour Castle 54mm ( $2^{2}/_{16}$ in) x 19mm ( $3^{3}/_{4}$ in) 2 of each colour Queen 59mm ( $2^{5}/_{16}$ in) x 19mm ( $3^{3}/_{4}$ in) 1 of each colour King 70mm ( $2^{2}/_{4}$ in) x 19mm ( $3^{3}/_{4}$ in) 1 of each colour

**POINTS TO CONSIDER** 

Relative sizes: there are 64 'squares' or in

this case 'rounds', alternating light and dark

must accommodate all 64, and they, in turn,

must be big enough to allow the chessman

need to hold a magnet big enough to 'hold'

when the bowl is turned upside down

to stand without touching its neighbour. Both

colours. Therefore, the flat bottom of the bowl

# **INFORMATION**

TIME TAKEN & COST
Time taken: 9 hours
Cost: £73 (approximately)

# **TOOLS REQUIRED**

· 25mm spindle roughing gouge

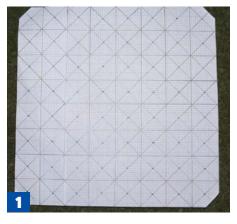
Spigot 70mm (2³/₄in) (or sized to suit chuck)

Removed on completion

- 12mm bowl gouge
- 6mm bowl gouge
- Selection of spindle gouges/fingernail profile
- 25mm square scraper
- 20mm skew chisel
- 6mm beading/parting tool
- 1.5mm parting tool

# **ADDITIONAL TOOLS**

- 20mm Forstner bit
- 9mm drill bit
- Abrasives from 120-600 grit
- · Large hand drill or pedestal, if available
- Graph paper
- Pencil
- Masking tape
- Sharp bradawl
- PPE: facemask, respirator/dust mask and extraction







1 Before you start, decide on the base size of your bowl and, using graph paper, draw a base layout. Create a 200mm square divided into 64 squares and draw cross-sections so that the centre of each square is marked

Mount the blank between centres using a large steb centre and tailstock. Then using a spindle roughing gouge and bowl gouge, true up and turn a spigot on what will be the top of the bowl to the optimum size for your chuck

Having completed the spigot, now reverse the bowl and turn the base. Create a spigot and a 'foot' measuring 200mm diameter with a beaded edge that measures 5mm high, which is sufficient to remount on Cole jaws later. Using a 12mm bowl gouge, turn the outside curve and raise the bead on the edge of the foot. I use a 6mm beading/parting tool to cut the definition, but finish using a small spindle gouge with a long fingernail profile to clean up the edges of the bead and the underside of the lip. If the edge is not clean enough, then use a very sharp skew chisel. Sand through the grits to a finish. I prefer to keep the contours of the bowl as simple and continuous as possible: this enables me to follow the same curve easily when turning the inside, and it also reduces the grain stress to a minimum

Reverse the bowl and turn the inside.
In the design shown, a 25mm lip was turned before following the shape of the base. Turn from the edge to the centre - leaving the centre mass until last will minimise the centrifugal force moving the rim to a minimum. Turning and finishing with a 12mm bowl gouge in 30mm sections also helps to achieve a constant thickness throughout this section. This is necessary to limit distortion later; approximately 10mm is ideal, this then gives 14mm total base thickness to accommodate drilling and finishing. Try to complete this section using light delicate cuts with the gouge. Avoid using a scraper as the sides of the bowl will flex at this stage and a 'dig in' is something you do not want

**5** The choice of design is up to you, but you must have sufficient flat base to take the 200mm graph paper. I like to turn a raised bead, approximately 10mm outside the 200mm base; this frames the 'chessboard' and needs to be high enough to allow remounting on Cole jaws at a later stage to remove the base spigot. This also provides an area for the chessmen that are 'taken' during the game

6 The internal base must be as flat as possible when complete, so work through the grits of sandpaper up to 400. Having cut your graph paper to a 200mm square, position it in the centre of the bowl and secure with masking tape. Using a fine point bradawl, push through the centre of each square, which will have the effect of leaving a mark on the bowl base. Before drilling, seal the inside of the bowl with sanding sealer - I use a mixture of oil and beeswax. This fills the end grain and restricts any dust from contaminating dark to light colours

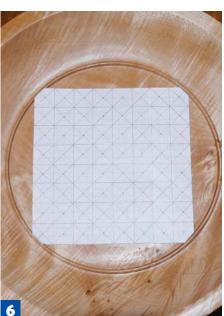
Using the 20mm Forstner bit, cut out 7 Using the Zummin ordina. all 64 holes to a depth of 4mm, taking extreme care to keep to the marks made with the bradawl, ensuring all the edges are clean. I use masking tape and a marker pen on the Forstner bit to aid accuracy when drilling outside the pedestal drill range, i.e. when you are drilling freehand. Note: do not use a sawtooth bit for this task as this will leave a ragged edge, which may be difficult to get rid of

8 The next step is to turn the buffalo horn and boxwood to 20mm cylinder, making sure it is no longer than 150mm - this will help to avoid flexing. You can then sand the piece to 400 grit. Finish at 20mm, which will give a tight fit to the holes. Using a bandsaw, cut the 32 discs of each colour so they are 5mm in thickness























2 Carefully drill 9mm holes, 2mm deep in all 64 discs. These will be different sizes depending on the size of earth magnets used

10 Lay out the magnets on a flat surface and mark the polarity. Note that earth magnets are not marked at all. Turn a dummy 'chessman' with a recess of 2mm in one end to hold a magnet, then position the magnet in the centre and seal with tape. Holding a disc under the tape, hold a magnet over the flat surface so it is close enough for it to jump up and adhere by magnetic force to the disc. This means that the opposite polarity has been found

11 Apply PVA glue to the holes – two or three in advance – and slide the discs into place. Slide the dummy chessman away to leave the discs, which will be approximately 1 mm high in all 64 positions with all magnets the right way up and in alternating colours. Should you wish to play from any particular side of the bowl, remember to have a light disc on the right-hand corner. Leave the glue to set for 24 hours. When the glue is cured, remount the bowl using the base spigot and remove the raised pieces of disc in the board. This requires light and delicate cuts

12 Your board should look something like this. Now to make the chess pieces

13 Chessmen should be of your own design. I kept it as simple as possible, using beads to help control the lengths and design replication – the most difficult being the 16 'pawns'. Turn four at a time from 19mm × 200mm cylinders. I find it's easier to define the lengths of each piece by a cut or bead. Using a spindle gouge, finish the first and use it as a template for the remainder. If you use a bead as a cut-off point, it's useful to repeat this on all chessmen so that their base design is continuous. Having completed one you can now do a succession of stage cuts on all pieces until they agree with your template. Before parting off, sand to 600 grit and seal. As these will be handled frequently, finish with two coats of melamine spray. Turn in fours or twos, i.e. two bishops of each colour, etc. until you get to the king/queen. These are the largest of the pieces and I find it better to turn these after each other so that you can copy while it is fresh in the mind

14 You can now remount the bowl using the internal bead round the chessboard on Cole jaws. Remove the base spigot carefully using a 6mm bowl gouge and create a slight concave finish. Remember that you only have 5-6mm thickness left when allowing for the drilled holes and the load point in the drill centre. Seal with at least four coats of finishing oil, or any finish of your choice, cutting back with 600 grit abrasive and allow to dry between coats

5 Returning now to your chessmen, drill a 9mm x 2mm deep recess – make sure it is no deeper – in the base of each piece. When using 1.5mm thick magnets, a 2mm hole allows for burrs and glue. Cover the chessboard with clean paper to ensure it's unmarked and lay out the magnets for the chessmen - 32. The magnets will turn themselves the right way round so that they are pulled to the board

Now mark all magnets with a marker pen; this will be the face that goes into the chessmen first

Cut squares of veneer of a like colour, then using double-sided tape to hold the square to a former, turn and separate a round disc a little smaller than the chessman base - say 18mm. I find a sharp 1.5mm parting tool useful for this. Cut through the veneer, stop the lathe and pare off

18 Finally, using CA adhesive, position the magnet in the cavity at the base of the chess piece. Glue the veneer disc over the hole. ensuring that the marked surface of the magnet goes in first. Seal and polish using a buffing mop in the chuck or drill stand

19 Invert all pieces until dry, then stand on a metal surface – I used a couple of large clean spanners - and spray with two coats of melamine, or a finish of your choice. Remember that they will be handled frequently - we hope - therefore they will need to stand up to considerable wear and tear

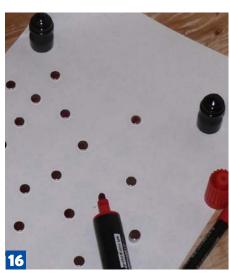
The finished chess bowl, complete with turned chess pieces, should look something like this •

# **Handy hints**

- **1.** As mentioned in the article, preparation is the key to success, including planning, size and shapes. Where inserts are used, ensure they are of the same moisture content or if inert, i.e. materials such as horn or plastics, then lock them in as tight as possible 2. When incorporating magnets, ensure to use as strong a magnet as the design allows. Do not forget that there is a
- horizontal magnetic field as well as north and south, so mark their polarity clearly before use
- 3. Turning large platters creates a wobble on the outer edge, so it is advisable, and safer, to work from the edge inwards. Don't be tempted to remove the central mass until the edge is finished. Fighting any centrifugal force is a battle you cannot win











# MY CHOICE OF SHARPENER.

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"Sharpening tools has to be one of the most challenging aspects of woodturning. It has taken me many years as a professional turner to perfect the skills of freehand sharpening. But with a little guidance on the Tormek, I can teach students to achieve a superb cutting edge in 10 seconds. The tools last longer with no overheating. I would let anyone sharpen my tools on a Tormek.

Check out my tips for using the Tormek SVD-185 Gouge Jig at www.tormek.com!"

Glenn Jucas

**Professional Woodturner** 

County Carlow, Ireland

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- **✓** FASTEST SHARPENING
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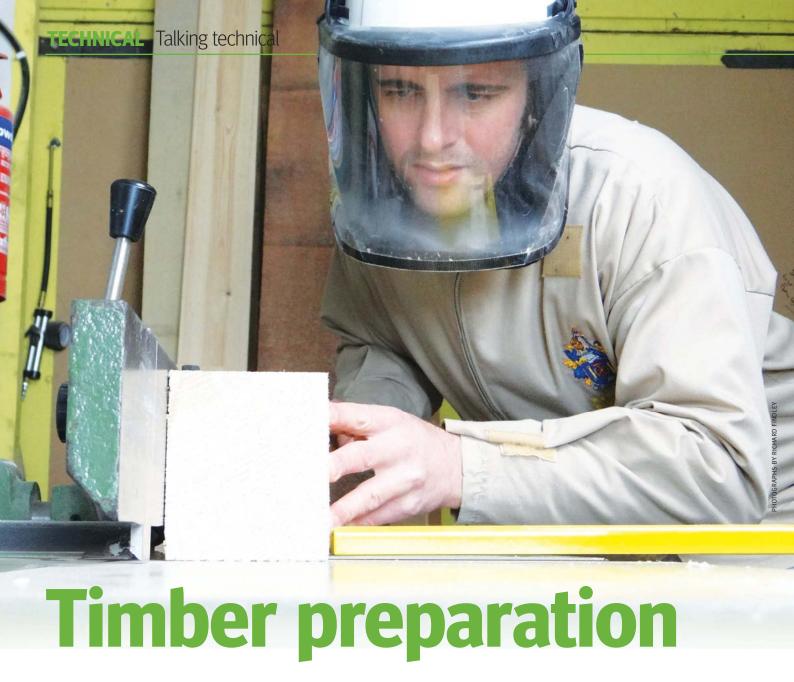


Visit <u>www.tormek.com</u> and see the video from Glenn's workshop!





**Sharpening Innovation** 



**Richard Findley** addresses the topic of timber preparation and the various pieces of health and safety information that must be considered before even turning on a machine

o matter what sort of turning you do, there is likely to be some sort of timber preparation required before you actually mount it on the lathe. My aim with this article is to look at various methods of doing just that: correctly preparing timber for turning.

We all know that you can buy pre-cut blanks – I'm sure we have all done it – and for that special bit of wood, I'm sure most of us still do, but at the same time we should be aware that it is the most expensive way to buy timber. The general rule is: the more someone has done to the timber before you get it, the more it will cost. Because of the type of work I do, I use almost exclusively kiln-dried timber, which I buy in sawn boards. Converting these boards into usable blanks safely and efficiently is what I will look at here.

The most efficient way to do this is by using one or several woodworking machines. When I set up my workshop, my main business was always going to be woodturning, but I decided I needed to be largely self-sufficient and have the ability to store, prepare and turn the timber myself. I also wanted to be able to turn my hand to other areas of woodwork as and when the moment or opportunity was right. I know of several professional woodturners that get by very successfully with just their lathe and a bandsaw, but I also have a saw bench - sometimes known as a tablesaw - and a planer/thicknesser. I couldn't be without any of them, as they all have their place in my workshop.

I am lucky in that I have a reasonable sized workshop – certainly not big by any standards – but larger than many enthusiast's shed or single garage. Here I aim to explain how to safely use these machines to achieve the results that you want.

# **RICHARD FINDLEY**



About the author: Richard
Findley is a registered UK
professional woodturner living
and working in Leicestershire.
He discovered woodturning while
working for his father as a joiner.
Richard makes all kinds of work to

commission, from replacement antique components, walking canes and stair spindles, to decorative bowls. It is the variety of work that he loves. He also offers demonstrations, tuition and a range of woodturning supplies.

**Email:** richard@turnersworkshop.co.uk **Web:** www.turnersworkshop.co.uk

### **SAFETY FIRST!**

hen I started working for my Dad in the '90s, I was a fresh out of school 16-year-old. It was made clear right from the start that there were certain machines I could use, after instruction, but others I couldn't use until I reached the grand old age of 18, when I would be insured and could be properly trained to use them. I studied joinery at college for three years and, although it wasn't a machinist course, this was a large and important module.

Several years later, when I started turning as a hobby, it amazed me that all of these potentially dangerous machines were freely available on mail order and no training was required in order to operate them.

There was a time when a wood machinist could be easily identified by counting his fingers, but things have changed, and there are now safety rules and guidance in place to try and prevent these kinds of accidents. In industry, it is compulsory to follow this, but as a one-man operation, whether professional or hobbyist, there is no enforcement of these rules. However, I would suggest that if these rules are in place for trained professionals to use, they have been put there for a good reason. Having done it myself, picking someone else's fingers off a machine bed is an unpleasant experience that I am in no great hurry to repeat!

Health and safety has had a lot of bad press

over the last few years, mostly due to some people's heavy-handed approach and those that try to add bits in or misinterpret the guidance just to be awkward. Mostly health and safety is just common sense and it is fact that, in most accidents, the operative has felt uncomfortable doing the job before the accident happened. So slow down, take a look at what you are doing and listen to that little voice that says 'that doesn't feel right' and find another way to complete the task.

The advice in this article is all sound, but I would recommend having an experienced person show you how to safely operate machinery before turning it on for the first time.

# **BANDSAW**

fter a lathe, the bandsaw is one of the safest and most useful woodworking machines to the woodturner. They come in all shapes and sizes, but even quite large machines take up a relatively small amount of valuable floor space.

# **Uses:**

- Ripping along the length of timber
- Crosscutting to length
- Cutting shapes and curves, such as bowl blanks

When choosing a bandsaw, I would go for the biggest and most powerful that you can get for your money and situation. Sod's law says that no matter what size machine you buy, it will be too small for the next job, so shop around and try to get the best value you can.

Bandsaws come with a rip fence and a crosscutting fence. These should be easily positioned and sturdy to help get the most out of the machine.

Operating a bandsaw is pretty straightforward and safe. The main advantage of this machine is that it can't throw the wood out or pull it in toward the blade – unlike some other machines – as the blade is always running straight down. This means that you can safely work closer to the blade on a bandsaw than you can on any other machine, and although there is no guidance as to exactly how close you should or shouldn't get to the blade, it should be measured in inches rather than millimetres! A pushstick should be kept close at hand at all times.

In industry, only 4% of all woodworking machinery accidents happen on a bandsaw. In my experience, there are two main ways the injuries happen:

 The wood binds on the blade so the operative pushes a bit harder, the wood

- suddenly moves again and the hand/ fingers pushing with the additional force suffer
- 2. A round or irregular shape is being cut unsupported, and as the wood touches the blade, the unsupported part is pulled down to the table much as a turning tool is in a catch and often traps fingers

Both of these can easily be avoided. The first by making a point of never pushing or having fingers in line with the blade. If the wood binds, then either pull the timber back or stop the machine to investigate – don't just push harder!

The second example is easily avoided by using a 'V' shaped cradle, as shown in the photo below. These are simple to make and make cutting turned items or branches easy and safe.

Modern bandsaws are almost totally enclosed, the only area to guard is the blade between the top wheel housing and the table. This is covered by the adjustable guard which should always be kept as close to the wood being cut as possible, to minimise the chance of fingers touching the blade.



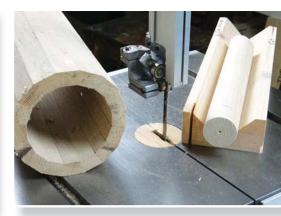
 $\dots$  and cutting discs



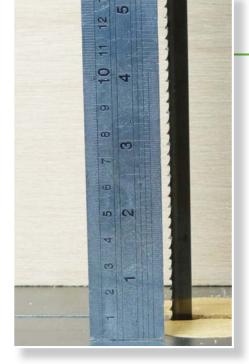
Bandsaws have a variety of uses, such as ripping...



... crosscutting...



The 'V' shaped cradle I use for supporting round objects





FAR LEFT: My preferred bandsaw blade, 10mm × 6tpi skip-tooth

FAR RIGHT: Setting up the guides using a bank note

## **■ BLADES AND SETTING**

hoosing the correct blade for the job in hand will help you to get the most out of your bandsaw. Technically, certain blades should be used for different jobs, but, but in reality, most people find a blade style that they like and works for them, and stick to it.

For ripping and making straight cuts, a wider blade is best – 12mm is a popular size for this. For cutting curves, you will need a narrower blade: the tighter the curve, the narrower the blade. As with all types of saw, the more teeth you have per inch – tpi – the better the finish you can achieve from the cut, but this is offset by the fact it clears away the waste less efficiently and also cuts slower as a result. As most bandsawing operations are rough cuts, low numbers like 4 or 6tpi are most popular. The best tooth configuration for woodworking is known a 'skip-tooth', this is because it appears that a tooth is missing in the space between teeth. My

personal preference is for a 10mm wide blade, 6tpi skip-tooth. I find this size helps me to achieve the results I'm looking for.

Setting up the blade is the most fiddly part. There is a guide block below the table and above the wood, fitted to the adjustable guard. Both of these should be set up in the same way to properly support the blade in action. The guides are bearings on my machine, but can be plastic, wooden or ceramic, or a combination of these things. The side guides should sit just behind the gullet – the gullet being the gap between the teeth. At college I was taught to use a banknote to set the guides, as you can see in the photo above. The guides touch the note, and when it is removed they should be in just the right position to support the blade but not be in permanent contact.

You should never have to push the wood particularly hard to get the machine to cut, if you find yourself doing this then change

the blade. As with all tools, hand or machine, they are safer and give better results with a sharp blade. Although the standard HSS blades that I use can be re-sharpened, I really don't have the time for it, plus my blades are only around £25 each, so I just change them as I need to. You can also buy blades in other metals, much like turning tools, which have better wear resistance and should last even longer, even on the toughest materials.

# **ADDITIONAL INFORMATION**

Recommended blade widths for diameter of curve:

Blade width	Minimum dia. of wood
12mm	126mm
10mm	54mm
6mm	38mm
3mm	20mm

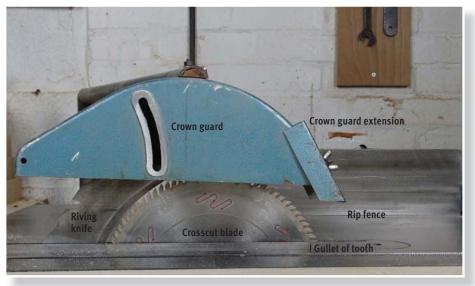
### **CIRCULAR SAW BENCH**

saw bench, or tablesaw, is a very useful machine but takes up considerably more floor space than a bandsaw. Also, it can only make straight cuts. This means that if you are a bowl turner, a saw bench would be of little use to you. As a spindle turner, my saw bench is used probably more than any of my other machines – except for my lathe of course!

### **Uses:**

- Ripping along the length of timber
- Crosscutting to length

I have my saw positioned at the end of my main work bench, which means that my work bench doubles up as the outfeed table for the saw and the saw occasionally doubles as an



Parts of a saw

# **CIRCULAR SAW BENCH (CONT.)**

extension to my bench. My work bench is 3m long, allowing for the largest sheet material that I could possibly handle if needed, but it need not be this big if the longest length you might want to rip is the maximum length your lathe can take between centres.

Circular saws come in lots of different sizes, ranging from small site saws, to massive panel saws with sliding tables. As with bandsaws, choose the one with the best capacity and power for your budget and size of workshop. When using machinery, there is nothing more frustrating than the blade constantly slowing or stopping as you feed the timber, so get the most powerful machine you can.

Quoting directly from the Health and Safety Executive – HSE – document that supports saw benches: "Circular saw benches are the machines that cause the most woodworking accidents... most were caused by inadequate or missing guards... or lack of training for the operator... Kickback of the workpiece has caused serious and even fatal accidents." So these machines need treating with respect, and you should have a good understanding of how to use them before pressing 'start'.

The best place to start is by identifying the important parts of the machine, see the photo at the bottom of page 28.

# Parts of a saw

- Blade: there are two types of blade that I use on my saw. A rip blade with 36 teeth and a crosscut or combination blade with 96 teeth. As a basic rule: the more teeth, the better the finish you will achieve, but with a slower cut. Less teeth have more space between them to clear out the shavings as it cuts, so cuts faster, but leaves a worse finish
- Riving knife: this sits just behind the blade, a maximum of 8mm from the blade. The main aim of the riving knife is to prevent wood closing up on the

- saw blade. This causes kickback and can potentially be very dangerous
- Crown guard: the crown guard prevents you from touching the blade accidentally, as well as minimising dust being thrown up at you as you work. In the event of kickback, it should be sturdy enough to prevent the wood from hitting you. This should be positioned as close to the timber being cut as possible
- **Crown guard extension:** this gives a little extra protection at the front of the crown guard if required
- Fence: old machines like mine have short rip fences, which are perfect for solid wood. Longer fences are only suitable for sheet materials. If a long fence is used when ripping, timber can get caught between the blade and the fence and thrown back. Correct positioning is very important. The front of the fence should be only as far forward as the gullet of the blade at table level

Operating a saw bench is pretty straightforward: you rest the timber against the fence and the table, and push. Always ensure you are standing slightly to the side and never directly behind the timber, in case of kickback. Hand feed the timber through, past the blade, using a pushstick for the last 300mm or so, which keeps your hands a safe distance from the blade. As with all machines, listen to the sound it makes as it cuts. If it squeals or whines, then you are probably pushing too hard, so ease back. You need to find the best feed rate to get the best from the machine.

For crosscutting, a mitre fence is used. Simply rest the timber against the fence and the table and slide it past the blade, keeping your hands on the fence and the wood at all times. If you are cutting to length, you can use the rip fence as a stop. To do this, clamp an offcut at the front of the fence ahead of the blade; this will ensure that the wood does not become trapped.

# ADDITIONAL READING – HSE INFORMATION SHEETS

**Bandsaw:** www.hse.gov.uk/pubns/wis31. pdf

**Circular saw bench:** www.hse.gov.uk/ pubns/wis16.pdf

**Planer/thicknesser:** www.hse.gov.uk/ woodworking/thicknesser.htm

**More in-depth reading:** www.hse.gov.uk/woodworking



Blades from my bandsaw and saw bench



Comparing a bandsaw cut and a circular saw cut on end grain



Ripping on the saw bench



Crosscutting on the saw bench

# **⋖ KICKBACK**

have mentioned kickback a number of times, and it is the biggest danger when using a saw bench. The main reason it happens when ripping timber is that, as you cut, tension is released in the wood. Most boards will be fine and cut without a problem, whereas others have an amazing amount of tension. Sometimes, as the cut progresses, the tension is released and the wood bows away from the blade. This is no problem. If, however, the wood closes around the back of the blade – which is spinning towards you – then it can be thrown back up towards you. The riving knife will prevent this from happening in most cases. As the wood tightens, it grips the riving knife rather than the blade, and just jams. In this case, you need to stop the machine and withdraw the timber, often by lowering the blade, and make the cut again. The second cut usually sorts the problem, but if it still wants to pinch then wedges can be hammered into the cut, as it comes off of the riving knife, to keep the kerf

in the timber open, and allow the cut to progress.

The worst case of kickback, when the riving knife won't help, is when the timber closes before it even reaches the riving knife. In these cases, the upwards force of the back of the blade lifts the timber up suddenly towards you. With a properly positioned crown guard in place, it will hit this and be held while you press 'stop'. Without the crown guard, serious injury will almost certainly follow. My sturdy metal crown guard has saved me on a number of occasions.

Once you understand kickback, why it happens and how to best avoid it, operating a saw bench becomes much safer. A proper understanding creates a safer environment.

As with bandsaw blades, if you feel you are having to push too hard to cut the timber, the blade most likely needs sharpening. Saw blades are usually tungsten tipped, and can be expensive to buy, but can be re-sharpened.

### **PUSHSTICKS**

Pushsticks are an essential tool when using any woodworking machinery. The HSE recommends they are 450mm long with a 'bird's beak' cut into the end. You can buy them but as woodworkers we are likely to be able to find a length of 25mm square timber to use as a pushstick.



A suitable pushstick

# **PLANER/THICKNESSER**

he third machine I will describe is designed to smooth the edges of the timber, after it has been sawn roughly to size. Because most of my work is spindle turning, often these spindles have a square pommel at the top to allow for tenoning into a piece of furniture, or if timber needs to be joined to form a larger section, then it can be easily flattened on a planer/thicknesser.

When sawing a piece of timber, it needs to be cut approximately 5mm oversize; this allows it to be planed properly square and cleaned up.

### **PLANING**

he first operation is to flatten one face. Choose the face that cups or bows downwards toward the table, as this will be much more stable. This is then slowly pushed over the cutterblock, gradually removing the high spots to produce a flat surface. With the first face flat, the timber can be rotated, the flat face positioned against the fence, pressure being applied toward the fence, and once again pushed over the cutterblock. Several passes may be required to achieve a flat surface. You should now have two smooth faces, at 90° to each other.

The most important thing to know about planing over this machine is that you don't need to, and indeed should not, apply pressure directly down onto the cutterblock, only onto the infeed and outfeed tables. This makes feeding the timber feel rather awkward initially, until you get used to it.

Both hands should start holding the timber on the infeed table, the right hand feeding the timber, the left hand offering support. Once there is enough timber on the outfeed table, the left hand can pass safely over the bridge guard to apply pressure on the outfeed table, gradually assisting with the smooth feed of the timber. The right hand then passes

to the outfeed side to complete the action. Because the cutterblock rotates toward you, it is possible to experience kickback, but I have found this to be incredibly rare. As long as you continuously feed the timber forwards, from one end to the other, you are unlikely to have a problem.

# **Bridge guard**

The bridge guard – bright yellow on my machine – covers the cutterblock and should be adjusted as closely as possible to the timber and the cutterblock to minimise the chance of touching the spinning knives. Most accidents on this machine are caused by failing to use or correctly adjust the bridge guard, so it is a vital part of using the machine safely. Narrow sections must pass under the bridge guard, which should touch the fence.

# **Thicknessing**

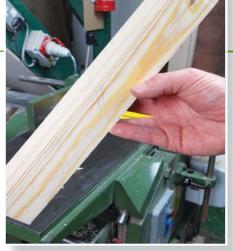
Thicknessing happens below the table on this machine, and the timber is fed by a serrated roller, which means that this is a particularly safe operation. Usually, the maximum amount a thicknesser can remove is 3mm, so with the thickness set, gently feed the

The next three photos show the correct hand positions and action when planing









A piece of timber planed with face edges marked, ready for thicknessing

# **PLANING (CONT.)**

timber into the machine. The faces created by planing over the top of the machine should face down onto the table. The feed roller will pick up the timber, and automatically pull it past the cutter block, a smooth outfeed roller will pull the timber away from the block. Repeat for both faces until the timber is the required size.

# **PERSONAL PROTECTION**

Nearly all of these machines are incredibly noisy. New machines are engineered to reduce noise as much as possible but older machines like mine are not. This means that hearing protection is essential, either with ear muffs or plugs.

As woodturners, we should be very aware of the dust issue. All of these machines ideally need extraction as they produce a large amount of dust and shavings very quickly. All machines should have extraction ports for you to link up to your extractor. I always wear my powered respirator and run an air filter at all times when working in the workshop, as well as extracting at source.



Thicknessing in action

# **CHAINSAWS**

ne piece of timber preparation equipment that is missing from this article, that woodturners often find useful, is a chainsaw. Because of the type of work I do, I have never had call to use one. I don't own one and have had no experience or training with one, so I will leave that article to someone with the appropriate knowledge.

# The old-fashioned way

If all this machinery sounds too expensive or too big for your workshop or just too scary, there is of course the old-fashioned way! A hand saw and a plane will do the same job as these machines. It will take much longer and quite a bit more effort, not to mention skill, but it is possible and arguably more satisfying. It isn't viable to prepare timber in this way when running a business, but there certainly is a satisfaction in knowing an item was made entirely by your hand and with your hard earned skills. •



Hand planing







What you need to know about...

# Designing & making hollow forms –

Continuing on from last issue, **Mark Sanger** looks further at hollowing tools, how they are used and shows you how to tackle a form with an undercut through a small opening Continuing on from last issue, Mark Sanger looks further

n the last issue - 264 - we looked at the various types of hollowing tools available, how these suit the various types of forms from open to those including undercuts through a small opening, as well as how proportion can be applied to construct a pleasing form. Finally, I showed how to turn a teardrop form with emphasis on the hollowing being achieved using a spindle gouge.

In this article, we look deeper into the tools, how they are used, how to tackle a form with an undercut through a small opening, how to deal with some of the

issues you may encounter along the way, as well as looking at an alternative method of proportion. For the project a parallel/ end grain section of seasoned yew (Taxus baccata) log was used but any close grain wood will do. The drawing overleaf shows the sequence and direction of cuts for wood of parallel grain orientation. If you do not have a hollowing tool that fits through a small opening, or if you are not confident working through this size, just open the hole out to suit your tool and so you can view the cutting process. As you progress, the size of opening can be reduced with subsequent forms.

# **MARK SANGER**



### About the author:

Mark is a professional turner living and working in Dorset. He specialises in creative turning that incorporates texturing, colour and mixed media. Mark has written

numerous woodturning articles, demonstrates the craft, runs courses and has produced DVDs on the subject.

Email: info@marksanger.co.uk Web: www.marksanger.co.uk

# **▼TOOL SHAFT DIAMETER**

he depth of hollowing for a tool depends on many factors starting with the diameter of the shaft. As a guide a 12mm diameter shaft tool will typically hollow to a depth of 150mm. With experience, you can use a 19mm

shaft to hollow to 300mm or deeper. The depth a tool will hollow to is also affected by the density of wood, the grain direction, inclusions such as knots, burrs or interlocking grain, the amount of cutting edge in contact with the wood, the angle of

cutting presentation and your experience. For example, a tool that has a large cutter will induce a greater force during cutting compared to one of the same type that is smaller. Always keep the cutting edge sharp and make sure it is set and used correctly.

### **EFFICIENT CUTTING**

orking with a hollowing tool is no different to any other turning tool, in that the cutting edge can be presented to produce the required cut, such as a heavy roughing cut or a fine finishing cut. The number of tools on the market makes it impossible to cover every variant, so it is important to read the manufacturer's instructions for your tool. The foundation of cutting, however, will be much the same for its group, in terms of the cutting edge presentation of either ring cutter or scraping variants, which is discussed here. Being able to safely manipulate your tools for the various cuts maximises your ability to achieve efficient and effective cutting. Here you can see a hollowing tool with a scraping tip cutting within a parallel grain form. Note the presentation angle of the cutter to the

wood - I will discuss this in more depth later. Some tools have flat sectioned shafts, which allow the cutter to be easily presented at the optimum angle to the wood for that specific tool. They also provide a solid platform during use, which helps to counteract the cutting forces. Tools with round section shafts allow the cutter angle to be presented to the wood at varying angles for roughing, optimum and finishing/shear cuts.

In short, the more obtuse the angle the cutting edge is presented to the wood, the greater the force exerted on it, thus resulting in aggressive material removal. The photo for stage 3 shows a scraping type cutter presented at 9 o'clock for maximum material removal. A ring type tool presented at 45° – shown in the photo for stage 2 below - gives an efficient slicing action with good material removal

and produces a good finish. A fine finishing cut, using a ring-type tool or a finishing shear scraper, is presented at 6.30-7 o'clock. The photo for stage 4 shows one of many finishing scraper attachments being used at a steep shear angle. Note, as shown in all three photos, it is only the angle the cutter edge is presented to the wood that alters, not the location of cut within the form, which should maintain on or just above the centre of the piece. Once presented, the cutter angle is maintained throughout the cut for as long as possible by sweeping the tool out in a smooth curve from the base into the shoulder of a form. Sweeping the tool in an arc from the base to the shoulder, using the interaction of the tool and toolrest as a fulcrum, keeps the cut perpendicular to the surface of the wood, as shown in stages 5-6.



Stage 1: a hollowing tool with a scraping tip cutting within a parallel/end grain form



Stage 2: a ring tool being used to hollow out the parallel/end grain form from centre out to the rim



Stage 3: a scraping-type cutter presented at 9 o'clock for maximum material removal



Stage 4: one of many finishing scraper attachments being used at a steep shear angle



Stage 5: sweep the tool out in a smooth curve from the base into the shoulder



Stage 6: use the tool and toolrest as a fulcrum - this keeps the cut perpendicular to the surface of the wood

#### **PREVENTING A CATCH**

catch occurs when the tool tip uncontrollably and violently loses stability, thus digging into the wood and potentially ruining the piece you are working on. When hollowing, it is vital to know where and how the cutter is being presented to the wood at all times. Doing this not only helps to produce an efficient cut, but also maintains stability and prevents catches. Ultimately, we want to direct the

cutting forces along the tool and down into the toolrest instead of into ourselves. Fighting with a tool indicates something is wrong and will eventually result in damage to the project and/or injury.

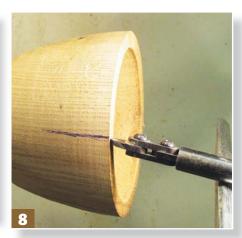
#### **TIPS FOR SAFE HOLLOWING**

- Keep your tool sharp
- If you are able as with limited/shielded cutters – to reduce the size of cut, this in turn will reduce the forces on the tool.
   This is especially useful for very deep hollowing. A small controlled cut is safer than struggling with a heavy cut
- For scraping tools, the size of cut is reduced by simply applying less force to the cut, or by trailing or angling the edge as shown in the photo for stage 6
- Make sure any linkage system is set so that it positions the cutter in line with the shaft whenever possible – this will reduce the twisting forces
- Never present the cutter or tool uphill, as this is the ideal position for a catch
- Know the location and angle of cut by marking the tool handle or by positioning a locking screw at 12 o'clock when the cutter is presented at 9 o'clock. Use this mark to monitor the angle of the cutter as you hollow. Never rotate the mark beyond 12 o'clock or the cutting edge will point upwards again, the ideal situation for a catch
- Make sure the tool handle trails slightly into the form from the toolrest

# "Make sure the tool handle trails slightly into the form..."



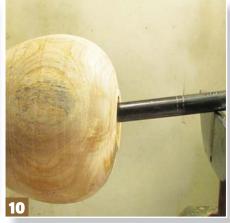
Stage 7: when using an articulated tool, make sure the cutter is positioned in line with the shaft – this will reduce the twisting forces



Stage 8: to prevent a catch, never present the cutter or tool uphill



Stage 9: position a locking screw at 12 o'clock and use this mark to monitor the angle of the cutter as you hollow



Stage 10: make sure the tool handle trails slightly into the form from the toolrest

#### **REMOVING SHAVINGS**

s you hollow, it is essential to stop regularly to remove the shavings. If you don't do this, the cutter can bounce over the shavings uncontrollably with a high chance of a catch or the tool binding in the form. The tool can be snatched from your hands, thus resulting in damage and/ or injury.

Never place your fingers into a rotating form. If the size of an opening allows, then remove the shavings by hand or with a workshop vacuum. Alternatively, use a small home-made attachment and fit a small pipe on a vacuum for smaller openings. Ribbon shavings will have to be pulled out using a bent piece of wire or similar. Using air to blow out shavings is not advisable unless



Stage 11: a small home-made attachment can be used to fit a small pipe on a vacuum for smaller openings

#### **◄ REMOVING SHAVINGS (CONT.)**

you wear a full-face respirator mask for the entire time you are in the workshop. Blowing the shavings out disperses fine particles that cannot be seen. They can stay in the atmosphere for hours ready for you to breathe.



Stage 12: ribbon shavings will have to be pulled out using a bent piece of wire or similar

#### **REACHING INTO AN UNDERCUT**

eaching into an undercut is generally not a problem when using a swanneck or cranked tool. However, a few considerations will help with the task with the first being design. A form with a gradual undercut and larger opening will be more accessible than one with a steep undercut turned through a small opening. Don't beat yourself up from day one: hollowing a form with an undercut is just like any other skill in turning – you need to start at the beginning and gradually work up safely to more difficult forms. A few points will help here.

Make sure the cutter projects just enough

from the centreline of the shaft to cut the wood without being excessive. If this is not correct, it will induce excess twisting forces

Lathes with a swivelling headstock allow you to gain access into a form without having to lean over the bed - this reduces the risk of back issues and catches. Alternatively, if you have a short bed lathe or can slide the head along the bed, then hollowing can be carried out from the end of the lathe.

Alter the toolrest to maximise support by keeping the shaft as perpendicular as possible on the rest.



Stage 13: make sure the cutter projects just enough from centreline of the shaft to cut the wood without being excessive



Stage 14: the greater the cutter offset, the greater the twisting forces



Stage 15: lathes with a swivelling headstock allow better access into the form



Stage 16: alter the toolrest to maximise support and keep the shaft as perpendicular as possible on the rest

FINISHING THE INSIDE OF A FORM

#### **MEASURING DEPTH AND WALL THICKNESS**

hen hollowing, it is critical to know the depth and thickness of the wall remaining as, without care, you will soon cut through the side or base. Depth is gauged by accurately drilling out to depth to leave a 5-10mm extra as a cushion. Check the wall thickness regularly using one of the many callipers and depth gauges available, or make your own from scraps of wood and dowel.

17

Stage 17: use a pair of callipers or make your own from scraps of wood and dowel

**Woodturning** No 265

#### here are many options available for finishing the inside of a form. The photo here shows a selection of both home-made and manufactured tools, which are designed for this purpose. The size and shape of form will dictate the most suitable tool for

finishing. As ever, safety is the key so reduce the lathe speed and take your time when working through the abrasives.

Stage 18: a selection of home-made and bought finishing tools



#### **FORM**

he form here has been proportioned by dividing the height by two instead of three, with the location of the widest diameter being halfway up the form, with both areas being turned above and below

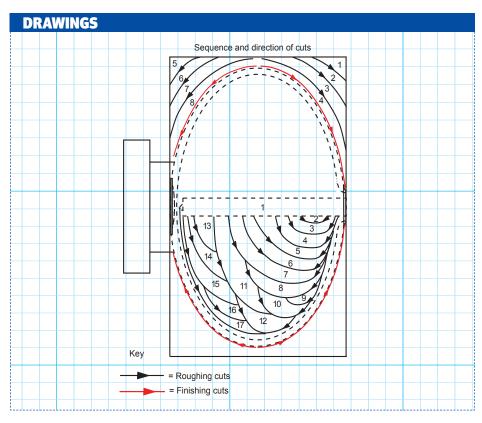
centre so they are symmetrical. This simple looking form is quite a challenge to make, so take your time as you produce the shape and stop the lathe regularly to check your progress.

"This simple looking form is quite a challenge to make..."

# GRAIN ORIENTATION AND DIRECTION OF CUT

he blank is orientated on the lathe with the grain running parallel to the spindle axis. For turning, wood is cut for the outside profile from large to small diameter, with the inside being hollowed from small to large - this enables you to work with the grain. The wood wants to be cut with the grain; this requires less force and produces a finer finish off the tool. Cutting against or into the grain makes for hard work, produces a poor surface finish and greatly raises the chance of a catch. Wood will always let you know if you are cutting it correctly, so if cutting becomes difficult, check the sharpness and set up of your tool and look at the way it is being presented and used to cut the fibres.

"Cutting against or into the grain makes for hard work..."



#### **MAKING THE FORM**

#### **INFORMATION**

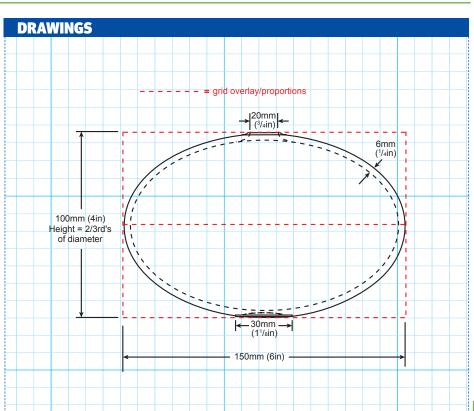
TIME TAKEN & COST Time taken: 2 hours Cost: £2

#### **TOOLS REQUIRED**

- 10mm bowl gouge
- 25mm square-end scraper
- 12mm end grain hollowing tool with finishing scraper attachment

#### **ADDITIONAL TOOLS**

- 20mm sawtooth drill bit
- · Abrasives from 120-320 grit
- Cellulose sanding sealer
- Microcrystalline wax
- Buffing system
- White diamond compound
- PPE: facemask, respirator/dust mask and extraction



#### **■ MAKING THE FORM (CONT.)**



Place the blank between centres and rough to the round using a 25mm spindle roughing gouge. Clean up the base to a safe distance from the tailcentre using a 6mm parting tool. Produce a spigot and waste area to suit the jaws of your chuck, then reverse and tighten into the chuck. Measure and mark the height of the form from the base, excluding the waste area. Clean up the front face to this line using the parting tool. Finally, mark halfway up the form to denote the centre with a marker and rule



Mark the diameter of the opening on the front face and turn the outside form with a 10mm bowl gouge following the sequence of cuts shown in the diagram. Continue working towards a safe distance from the chuck and tailcentre, stopping regularly to check the form



Refine using a 25mm scraper



Hollow the inside with a 12mm diameter shaft tool — here the tool has a small scraping tip. Follow the diagram for the sequence of cuts and stop regularly to remove the shavings. Note the blue mark on the handle, which indicates the cutting edge presentation angle. Stop regularly to check the wall thickness and depth with callipers and a gauge. Once complete, and if you can safely gain access with a scraping attachment, finish the inside of the form by taking fine shear cuts. Finally, finish the inside with abrasive using a suitable sanding attachment/tools



Measure from the rim to the base using a rule. Subtract 10mm from this and mark onto a sawtooth bit held in the tailstock, then drill out to depth



Finish the outside with abrasive from 120-320 grit



Reverse the form onto a cone friction drive, protect the surface of the opening with some kitchen towel and bring the tailcentre up applying moderate pressure. Refine the base profile working into the form using a 10mm bowl gouge or spindle gouge. Make sure the foot is concave so the form will sit without rocking



Reduce the waste to leave around 10mm and cut through the remaining waste using a fine saw blade



Blend the base with a sharp chisel or power carver, so you are working away from your body. Blend with abrasive held onto a sanding arbor, which is held in a piece of wood in the chuck

"Blend the base with a sharp chisel or power carver, so you are working away from your body"



Apply several coats of cellulose sanding sealer to the form and allow it to dry. Buff using a 200mm buffing wheel with white diamond compound. Finally, apply several coats of Microcrystalline wax with a soft cloth and buff by hand once dry



The completed project should look something like this .

# Great Woodturning Great Woodturners

### **Seamus Cassidy**



Seamus Cassidy, multi-prizewinning professional woodturner from Ireland, will be demonstrating for your delight and inspiration. After an early career in architecture, Seamus developed his passion for woodturning and has for several years run his workshop, gallery and turning school in Newgrange, near Dublin. He is a close friend of, and collaborator with, Robert O'Connor who demonstrated at our Open House last year.

# Saturday & Sunday

Please note the change of days: this event is *not* open on Friday





### **Peter Hromek**

# Open House at The ToolPost



# Born in Czechoslovakia, wood vessel sculptor and salt- and pepper-mill manufacturer Peter Hromek has for many years lived and worked in Germany. His work has been exhibited around the world in prestigious galleries and exhibitions including the renowned Del Mano gallery.

Woodcarvers Peter Berry and Simon Clements will also be featured. Trade support from leading suppliers. As always at The ToolPost, our show offers, free parking, free entry, free demonstrations and free refreshments.

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# Cheeseboard & dome

Philip Greenwood shows you how to make an easy-to-clean cheeseboard and dome

his cheeseboard and dome is made totally from wood, where most have a glass or ceramic dome. The idea came from a TV programme, from boards I have seen at The Mouseman – which is well known in my area for oak (*Quercus robur*) furniture – and people asking where to buy glass domes, as they have broken the one they had.

The size can be varied depending on how much cheese you wish to have on the board at any one time. Try to use a timber that will not taint the cheese, or a timber that is too soft, as it will mark when the cheese is being cut. That is why I have used oak for the board, but sycamore (Acer pseudoplatanus) and beech (Fagus sylvatica) are suitable timbers as well. As the dome is not in contact with the cheese, or being used to cut on, you have more choice for the timber, but you can still think about using one of the aforementioned timbers.

It is important that the finish for this type of item be considered – that is why I have used food-safe oil for the board and dome, both inside and outside. Using this type of finish means you can wipe the surface to clean, and then reapply the oil after it has been used a few times. If selling these, give the customer a care leaflet with the purchase, and check the type of finish you are allowed to use in your country.

When designing the cheeseboard, think about corners which may harbour food particles. That is why the groove in the board is round and not square, as square would be difficult to clean. It is also why I avoided adding detail on the board, like 'V' cuts. With more design opportunity – as you can see from my design – I have bandsawed the corners off the rectangular piece of timber, to make a handle at the ends. Don't cut too much away before turning, or

the edges could splinter away while turning. If you like carving, then you can carve the handles after you have turned the board, but keep the design simple to avoid creating any nooks and crannies where pieces of cheese could collect.

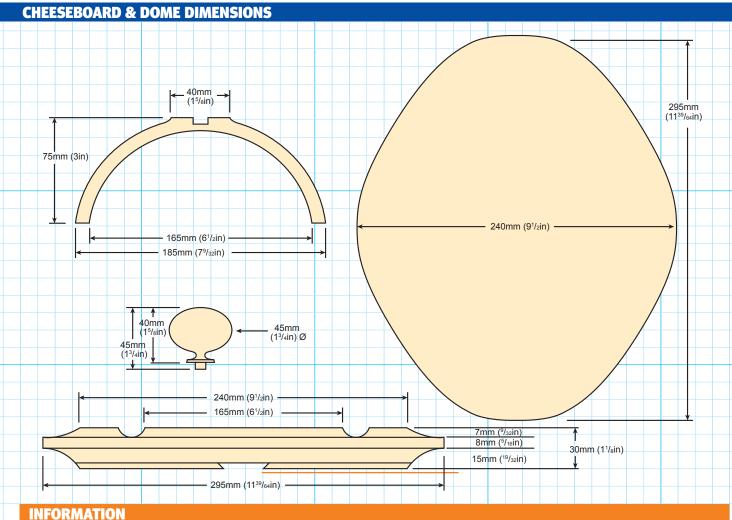
#### **PHILIP GREENWOOD**



About the author: Philip has been turning since 1980 and started turning professionally in 1986. He was accepted onto the Register

of Professional Turners in 2006. He is also a member of the AWGB. He can be seen working in his workshop in North Yorkshire and has demonstrated at the woodworking show at Harrogate since 2008. He also runs courses.

**Email:** philip@woodturningintoart.co.uk **Web:** www.woodturningintoart.co.uk



**TIME TAKEN & COST** 

Time taken: 90 minutes

Cost: £12

#### **TOOLS REQUIRED**

- 10mm bowl gouge
- · 3mm parting tool

- · 20mm skew chisel
- 20mm spindle roughing gouge
- · 10mm spindle gouge with a fingernail profile

#### **ADDITIONAL TOOLS**

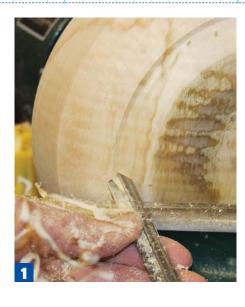
- Pencil
- Ruler
- Food-safe finish

- Screw chuck
- Jacobs chuck
- Abrasives
- Bandsaw
- Belt sander
- Sawtooth bit
- PPE: facemask, respirator/dust mask and extraction

#### **MAKING THE CHEESEBOARD**

The first step is to mount the round blank for the dome on a screw chuck and turn the outside true, using a bowl gouge. Start turning the dome by removing the waste from the corner, but be careful not to remove too much or the dome's internal volume will be reduced, which will limit the amount of cheese that the dome will cover

2 Continue to shape the dome with the bowl gouge. Try to keep the bevel in contact; this will leave you with a smooth surface and will minimise sanding. Always turn towards the rim on cross-grain timber - where the grain runs across the lathe - as opposed to running parallel to the lathe bed

















You can see I have marked the centre to aid marking the chuck jaw diameter on the base of the dome

4 Use a parting tool to cut to the left of the pencil line, and part down around 4mm. Then remove the waste to the left of this with a bowl gouge, and blend in to the dome top. Use the long point of the skew chisel to cut the dovetail to suit the profile of your chuck jaw

5 Using a Jacobs chuck with an 8mm drill bit, drill to a depth of 6mm. If you drill too deep then you will have a hole through the dome. Hold on to the chuck as you remove the drill from the hole

6 Sand the dome to remove any tool marks, starting with 120 grit abrasive. Stop the lathe and chuck to make sure you have removed the tool marks before you move on to the next grade, then work your way through to 400 grit

## "After you have removed around 30mm in depth, use a pair of callipers to check the wall thickness..."

**7** Use a bowl gouge to start removing the inside of the dome. This is the same technique as you would use for a bowl: keep the bevel in contact to produce a clean cut and a smooth radius. If you experience any vibration, then take smaller cuts

After you have removed around 30mm in depth, use a pair of callipers to check the wall thickness of the dome. You are looking for an even wall thickness, so remember that the more material you remove, the more vibration you will experience. When you have removed all the inside, the top can flex slightly if turned thinly, so you don't want to return to the top part if this is too thick. Once turned with the gouge, use a scraper to remove any ridges

Pinish the bottom part of the dome with the bowl gouge, keeping the bevel in contact, for an even surface. Keep checking the wall thickness with the callipers, which will leave you with an even wall. Remember that hole you drilled in the top? You need to take that into account here

10 Use the French-curve scraper to refine the surface and remove any ridges. Take small cuts rather than large cuts, then sand up to 400 grit. Check for any tool marks or rough grain after each grit used, before moving on to the next grit

Next, re-turn the spigot to remove the chuck jaw marks. Also, check the size for the knob, which will go in the hole later. Sand to a smooth finish, up to 400 grit

2 Cut the board to size on the bandsaw. Now for the corners. Prepare a template for the corners to ensure that they all match. The design can vary from the one I have used here. Keep the template for other projects

Bandsaw the four corners off the board, keeping the guard as low as possible to cover the blade. In order to keep the shape, try to cut as close as possible to the line. Sand the corners on a belt sander, or by hand if you prefer. Use a 50mm sawtooth bit to drill a hole which will fix the board to the chuck - it needs to measure about 4mm deep

14 Once mounted on the chuck, use a pull cut with the bowl gouge, starting at the corners and create the recess that will become the handles on the board ends. Take a cut across the base as well but don't worry too much about the surface finish at this stage

## "Bandsaw the four corners off the board, keeping the guard as low as possible..."

15 Continue to clean the base until clean and smooth. Shape the handles at the end but leave the board thickness around 30mm – this will allow you to clean the top side. Use a push cut to achieve a smooth finish. Take small cuts on the corners; this will avoid breaking the edges off

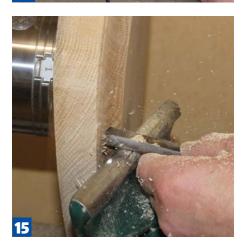
16 Using a pencil and ruler, mark the recess for the chuck jaws. Use a parting tool to cut the recess to a depth of 4mm. Using the bowl gouge, remove the waste in the centre. This can be sanded later with the rest of the underside of the base

Here I am using a French-curve scraper to remove the tool marks from the bowl gouge. Take several light cuts until smooth. If the shavings turn to dust, this indicates that the scraper is blunt and needs sharpening. You can sand the base, but only the recess and the round base part while the lathe is turning. Do not sand the handle part or you could damage your fingers or hand. Instead, do this by hand with the lathe switched off

18 Now mount on the chuck using the recess. Using the bowl gouge in pull cut mode, cut until the top is flat and the chucking point has been removed

































19 Now start turning the top of the handles and take small push cuts for a smooth surface. Take this down until the handle part is around 8mm thick. Now use a scraper to finish the top surface until smooth

20 Measure the dome – both outside and inside diameters. Find the centre of the board and using a pencil, lightly mark, then make the dome dimensions on the board using the same pencil. Start cutting the rebate with the bowl gouge

21 Continue to cut the recess until the dome will fit. Do this by stopping the lathe and checking the fit, adjusting the width as necessary as you go. The recess wants to be around 5mm deep in the centre. Now sand the top part, but for safety reasons, as before, only the round part and not the handle part

22 Here you can see the lathe is switched off and I am sanding by hand. This is the only safe way when you have parts extending out from the main board. Make your way through all the grits until smooth

23 Place the piece of timber for the dome knob between centres and turn a spigot to fit your chuck jaws. Place it in the chuck and start to shape this, using the spindle gouge. Try to match the diameter of the knob to the dome spigot so it will blend in when fitted. Sand this to a smooth finish

24 Use a parting tool and callipers to turn the spigot so it will fit in the hole in the dome – this is 8mm diameter. Check the hole depth so you know how long the spigot needs to be, then part off, or stop the lathe and use a hand saw

25 Use a food-safe oil to finish the dome will need around three coats while the base only needs two coats

**26** The completed piece should look something like this

### **Handy hints**

- **1.** Don't try to sand an irregularly shaped item while the lathe is running. Always stop the lathe and sand by hand
- 2. Always wear the appropriate PPE while using any equipment
  - **3.** Always protect yourself from exposure to dust even when sanding by hand
- **4.** Always check toolrest clearance before starting the lathe

# Martha Collins in profile



Briony Darnley finds out about Martha Collins' start in woodworking and how she developed her favourite mosaic bracelets

artha Collins was born in New Canaan, Connecticut. Her family then moved to Birmingham, Michigan. At the beginning of high school they moved to Ann Arbor, home of the University of Michigan. Martha's father had left his executive position at Ford Motor Company to become a professor at the graduate school of business; finance. "Ann Arbor was a wonderful place to grow up. I did not grow up with a shop in the basement of our home, working with tools and making things - that came later," Martha tells us. Martha did grow up under the axiom that it does not matter what you do in life, just be the best at it. Be totally passionate and committed to it. Her father would use the example of the ancient city of Ur, and say: "If that's what interests you, then know everything about Ur." And so here she is, at 66 years old, a woodworker. She contemplates "who would have ever thought that this would become my passion? To make beautiful laminated pieces. bowls and bracelets from different exotic woods and maple (Acer saccharum) veneer that I dye."

Originally Martha went to study medicine to become a doctor, thinking that she would know something concretely and be able to help others. That idea was quickly dispelled after she followed an ophthalmologist around one day and she also disliked organic chemistry. The class she did best in was philosophy so that became her major, with history, literature and chemistry minors. Martha graduated in humanities and then went to

the University of Michigan school of Natural Resources to qualify as an environmental advocate. Unfortunately, trying to change public sentiment about littering just didn't excite her.

# A carpenter's apprentice

In 1973 Martha was given an opportunity to become a carpenter's apprentice and she found that she enjoyed working with her hands. She was a young single mother of a two-year-old and needed direction in her life. Some friends of Martha's ran the Treehouse Cabinet Shop in Ann

Linear mosaic straight stack bracelet, 75 × 25mm, ebony edges, 250 pieces of wood, 12 different species and artist dyed maple veneer

OPPOSITE TOP: Linear mosaic 'Weaver 9', 75 × 25mm, ebony (Diospyros spp.) edges, made up from 400 pieces of wood, 12 different species and artist dyed maple (Acer saccharum)



Michigan Rehabilitation and Technical Institute for a two-and-a-half year programme in cabinetmaking. "It was wonderful," Martha recalls, "I was in the workshop every day from 8am to 3pm learning how to draft, how to use hand tools, the importance of sharpening, about tolerances, the joy of making something to specific dimensions and how to create square, parallel and flattened surfaces and shapes with only hand tools." Nowadays there are many places woodworking can be learned but in the early '70s this was not the case. Martha is greatly indebted to the State of Michigan for her

precision needed to create her art on such a small scale. It was here that she learned about lamination, the beauty of the exotic woods and the derivative process of making a laminated block, resawing it and relaminating it to make a new object. It was in this shop that the helical mosaic bracelet was discovered. "It was a 'what if...' moment. We had taken a 'fletch' of matching rosewood (Dalbergia latifolia) veneer and shifted it upon itself and then turned it on the lathe. Examining it, the Maestro said "it looked like I'd created my own grain." The other apprentice asked "what if we did that with a laminated material?" This introduced a whole new world for me to discover and play in," Martha explains. This is a process she has now been exploring for four decades.

### Being her own boss

Martha did not stay long at the Widdicomb Factory as she wanted to have her own shop and wanted to bracelets. After working in the marine industry, Martha dedicated herself again to her artwork, going to national art shows and expanding her product line to include bowls, tableware and jewellery. This last year Martha added a new platform to her jewellery line: intricate mosaics of wood, inlaid into silver bezels for bracelets, cuffs, pendants, pins and rings.

After the death of her son in 2012, Martha began working on another new project, remembrance vessels. These were shared around the family for her son's remains. These are small, two-part threaded round boxes with Martha's signature mosaic inlay on the top. "Some are even made with a hidden mosaic pattern on the inside," Martha tells me.

Martha teaches at the Port Townsend School of Woodworking and, like her father, she enjoys teaching very much. Martha also has people come to her shop for one-onone consultations and classes.



Martha learned how to turn on a machinist lathe and still uses one for the majority of her bracelet work. It is only recently that she has started learning the proper turning techniques, thanks to Bonnie Klein. Martha believes that sharp tools are a necessity and like everything, if you do it long enough, then you learn how to do it.

### Martha's workshop

Martha lives above her workshop on a south-facing slope looking at the Olympic Mountains. She designed

factors in the time at shows and the running of the business. This is 50% of her time in a year; so that allows 1,000 hours to work on her art. Martha explains, "The work in my shop is like cooking; there are many courses being prepared all at the same time.

There will be material all machined and ready to be selected into blocks, there will be blocks ready to glue, blocks already glued and ready for re-sawing, there will be different stacks of laminate material for all the different styles of bracelets and

PHOTOGRAPH BY BOB BARRETT



#### **ARTIST'S PROCESS**

Beginning with 12 or 13 different species of exotic and domestic hardwoods, a block will be laminated. Each hardwood piece measures 6mm thick × 90mm wide × 405mm long. There are 40 different species of wood ready to be used in making the original block. Choosing the 12 and establishing their order takes time. Each piece is selected for its natural colour and grain. Once this order is chosen, I add the maple (Acer saccharum) veneer that has been dyed in my shop. After placing the dyed veneer next to the hardwoods. I check the block for visual interest. Each three pieces of wood and veneer must look right all across the block. It is dry clamped so its aesthetic composition can be evaluated over the next few days. An enormous amount of artwork will come from this block. It is very

important that it has a strong pleasing pattern.

The block is laminated together with a jeweller's epoxy, which has a thin viscosity and a long working time. The block is glued in a fixture with five enormous 'C' clamps. Once it is cured, the block is squared up on the jointer and taken to the bandsaw for slicing. This is the hard part! These slices need to be 0.6mm thick and within 0.05mm on all four corners of the slice. It can take all morning to set up the bandsaw. The blade has to have a smooth weld, otherwise a ripple will be transferred to the slice. Currently I am using a 10/6 blade, which is 10 tpi with a slightly deeper gullet. This blade works well with the epoxy and the resinous exotic woods so a smooth glueable surface is left. 25 slices are taken, jointing the block between each slice.

Care is taken to keep the slices in sequential order so that the grain lines will match up in the later laminations. After the slicing, the edges are chosen for the piece and it is glued up all at one time while shifting the slices into the desired pattern. After this second lamination, the piece is taken to the lathe to be turned into either a bracelet or bowl. Bracelets are finished with the same epoxy they are built with; bowls are finished with lacquer.

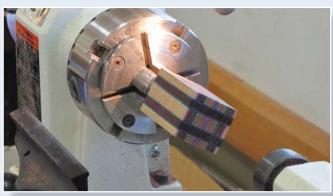
There will still be block left and this is one of the fun parts. Different thicknesses of slices produce different laminated patterns. The orientation of the slice will also produce different appearances as will the addition of either natural veneer or dyed veneer between each slice. The variations are endless!



Just some of the veneers used by Martha



The pieces of veneer, all clamped up



The bottle stopper blank mounted on the lathe, ready for turning



Once the block is turned into the desired shape, the range of colours and patterns becomes more evident



Sanding the item on the lathe



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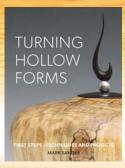
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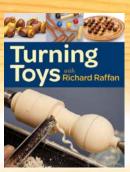




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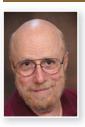
In the first of a new series, **Kurt Hertzog** tells you all you need to know about sanding

oodworkers often spend time in equal thirds on a project. Planning and building, prepping for finish and applying the finish. Projects can range from taking days to possibly months to finish. Woodturners often start and finish in just one session. Some have longer projects but most woodturners fall in the 'immediate gratification' crowd; mount it, turn it, sand it, finish it and then show it. Usually, sanding is done as quickly as possible and is very much disliked.

Depending on your turning skills, sanding may help you with your shapes and contours, but the most important reason for sanding is to create the best surface possible to receive the finish. Whether friction

finish, oil or multi-coat lacquer, the final appearance can never be any better than the surface beneath it. Unless you are painting, the finish will accentuate any surface flaws beneath it. Sanding needs to fair-cut surfaces together and ready the turning to finish. Proper sanding blends everything together and creates progressively finer scratch patterns until they are invisible to the eye. Understanding the basics of sanding and sandpaper can help you select, buy and use it wisely. Sanding may never be your favourite pastime or it may end up consuming one third of your total time, but it is extremely important in contributing to the end result. Let's explore some of the things you should know about sandpaper and sanding.

#### **KURT HERTZOG**



About the author: Kurt is a professional woodturner, demonstrator and teacher and writes for various woodturning and woodworking publications in the United States as well as writing for *Woodturning* magazine. He is on the Pen

Makers' Guild Council and is a member of the Board of Directors of the American Association of Woodturners (AAW).

**Email:** kurt@kurthertzog.com **Web:** www.kurthertzog.com

#### **■ SAFETY FIRST**

anding any material such as wood, metal, plastic, etc. will create airborne particles that can be hazardous to your health. Regardless of the material, debris that is inhaled can cause both short-term

and long-term problems. Dust extraction at the point of generation helps minimise the amount of debris that would become airborne. Even with extraction at the source it is wise to use personal protective equipment to guard

yourself from the inevitable airborne particles. Overhead or shop-wide dust extraction is helpful but it removes the dust after it has been dispersed into the air and you have been breathing it. Always use proper dust protection.



Dust extraction at the point of creation reduces the amount of sanding debris that is cast into the air. Personal protective equipment such as a dust mask is still recommended



Depending on your needs you can use a powered filter helmet, permanent dust mask or a disposable mask

#### **ABRASIVE SELECTION BASICS**

brasive is simply a backing material with cutting agents bonded to it. Long since gone, flint and garnet used to be an abrasive cutting medium. Today, aluminium oxide and silicon carbide are the most commonly used by woodturners with emery, aluminium-zirconia, chromium oxide, ceramic aluminium oxide and diamond being others selected for special needs. This can include use for metals, high temperature, high pressure or high hardness level applications. Unless you have special needs, select aluminium oxide for your woodworking sanding. Silicon carbide is a second choice because of its shorter usable life in wood

#### Materials and their most common applications

Aluminium oxide - wood, metal, paint, fibreglass and plastic

Silicon carbide - metal, paint, fibreglass and plastic

Ceramics - wood - hardest, most costly other than diamond, coarse only, usually on belts for aggressive sanding and shaping Diamond - most common on stone and

hard inlay

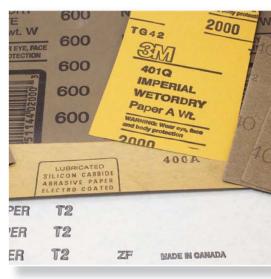
Abrasive terms you will often hear are 'stearated' and open or closed coat. Stearated indicates that the sandpaper was produced with a dry lubricant embedded. Stearates, or soaps, help to prevent clogging of the sandpaper and can stretch the useful life. It has no detrimental effect to the material being sanded or the ability to take finish. Open and closed coat refer to the density of the cutting material

over the surface. Open coat abrasive is usually selected for woodworking as the less dense or open spaces help prevent clogging. Closed coat abrasive is a better selection for sanding metals or wood finishes where clogging is less of a problem. Don't overlook your industrial supplier and automotive refinishing suppliers as sources for your abrasives in addition to your woodturning supply houses. They can offer backing and abrasive particle selections that your woodturning supplier doesn't carry as well as grits in the very fine ranges.

The backing materials commonly used for sandpaper are paper, a variety of cloths, fibre, rubber and various plastic films. These assorted backings are available for different hand and power sanding applications as well as material being sanded and types of lubrications that might be used. Your selection of backing will be important if you venture from wood to metals, plastics, cast materials, and other sandable materials. The backings most commonly used for hand sanding by woodturners are paper and cloth. Paper is acceptable for most materials in a dry environment with cloth most used when wet lubricants are used in the sanding process. Paper will stand up to a dry or wax lubricant where cloth is more functional when water, oils, solvents and other liquids are used as sanding lubricants. Cloth is a more durable backing and is often selected for non-wood sanding applications. One of the most important considerations when selecting sandpaper is the backing weight rating. Paper runs from the lightest or 'A' to the heaviest at 'F' in sequence. Cloth runs from J, X, Y, T to M, from lightest to heaviest. The flexible



Think of sandpaper as a cutting tool, much like your lathe tools. Each particle of abrasive works the same as your tools



There is a wealth of information printed on the back of the sandpaper including measuring system, grit, backing type, backing weight, manufacturer, abrasive, lubrication and more

#### **ABRASIVE SELECTION BASICS (CONT.)**

sandpaper can easily follow irregular curves in your work while the more rigid is applicable to round or flat surfaces not needing flexibility or curving capability. Common backings for power sanding, depending on the mounting and service use, can be the paper, cloth, fibre or mesh.

You'll encounter two common grading systems used for abrasives. The CAMI – grit number alone – and the ISO/FEPA – grit number prefaced by P – only match up in two spots in the middle of the scales and diverge going higher and lower. You'll make things less error-prone if you buy and use one or the other rather than mixing systems. A good selection

from the coarsest you'll need to the finest needed in the same system is wise. While the common 120, 220, 320, 400 grits are widely available, don't overlook the intermediate grits such as 150, 180, 240, 280, 360, etc. The common rule of thumb is to never make more than a 50% increase in grit number when sanding. For example, from 150 to 220 or 220 to 320 is a 50% increase. That said, there are many materials, very dense woods and plastics for example, that benefit by using the intermediate grits in the sanding process. You can usually buy up to 2,000 in the wet/dry silicon carbide sheets and these are available in the automotive refinishing retailers.

# Common woodturner hand sanding selection

- Aluminium oxide
- Open coat
- Paper backing A or B
- Stearated or not
- 80, 100, 120, 150, 180, 220, 240, 280, 320 and 400 – all in CAMI or FEPA
- Heavier duty, such as mixed materials or a lot of wet sanding:
- Silicon carbide
- Cloth backing J
- with all the rest of the parameters the same as mentioned

#### **COSTS OF ABRASIVES**

brasive is not a wise place to scrimp. You can overpay when buying small quantities, fancy packaging or at high markup merchants. Aside from these, you usually get what you pay for. Three important characteristics of concern are: uniformity of grit size, quality backing material and good

particle bonding to backing. Inexpensive or poorly manufactured abrasive may have grit particles that range widely from the indicated size. As you move through the grits to progressively make smaller and smaller scratch patterns, big variations in grit sizes or overlaps into different grit sizes will cause

problems. There will always be some variation in grit size but the smaller that variation, the better. Poor particle bonding to the backing material is also indicative of cheap abrasive. There will be some shedding of cutting particles when sanding but far less when using a better quality abrasive.

#### **SANDING IN A NUTSHELL**

brasives used in the process of sanding can accomplish two simple tasks.

Properly done, the turning cuts that haven't been completely blended will be after the sanding process and the scratches introduced to effect that will be removed from sight. At completion, the surfaces and curves are faired together and the turning is sanded to the proper level, depending on the

finish that will be applied to the piece you are working on. Whether sanding by hand or power sanding, you must be sure to select a grit that is coarse enough to remove the 'high spots' as needed to blend cuts together. Depending on the design, material and your turning skills, if you need 80 grit, then so be it. There is no shame in starting where you need to. Your friends may brag about starting

at 220 but that is not really important here. That may or may not be accurate but properly done to completion, nobody will ever know what grit you started with. Remember to start with a grit that is coarse enough to remove the damages to the turning from the turning process and then work through the grits to effectively 'erase' the scratches that were put in by sanding.

#### **WET SANDING**

et sanding can be more appropriately called lubricated sanding. It is the addition of anything to the sanding process that will cool things and keep the dust down. The typical items used for wet sanding can range from plain water to waxes, oils and even finishes. I often use wax to help lubricate my sanding with the coarser grits – both hand and power. The soft rub-on paste wax seems to assist the process by letting the cutting occur

with less heat, less dust and less aggressiveness. Depending on your mentor, they may suggest you use it everywhere, only in the coarse grits, only in the fine grits, or never at all. There are only two cautions that I would make. Mind the power cabling, boxes and switches. Fluids, especially water, can not only cause damage but present a very dangerous situation to you. You also need to be aware of any interaction your lubricating agent will have on your ultimate

finish. My use of wax at the coarser grits has never impacted any finish I choose to use. It is long gone physically prior to the arrival at the final grit. Be aware that any penetration of your lube into the material may cause problems later on. Of course, paper backing isn't as durable with lubes as cloth backing but, depending on your lube and your service needs, you may need to move to a different backing material on your abrasive, or change it more often.

A cloth-applied light paste wax makes a great lubricant for the coarser grits of sanding. Many use lubes throughout the grit sequence



When the disc gets clogged, a crepe belt sander cleaner will rejuvenate the sanding disc. Add wax, or your chosen lubricant, as needed when removed



#### **⋖ KEEP IT SLOW**

anding is a cutting process. Each and every particle of silicon carbide, aluminium oxide or other grit material is a tiny cutter. It cuts into the wood with the relative motion between the sandpaper and the material and the pressure applied. High speed relative motion on coarse grits is

counterproductive. The faster the speed, the less the abrasive is engaged with the wood and therefore, the less effectively it cuts. It is not only less effective at cutting but it also increases heat generation. Heat is the enemy of wood in general. When you need to wear a glove so that you can bear the heat

generated during sanding, you are going far too fast. I suggest that you slow the speed right down to be able to cut more effectively and minimise the heat created. Going slowly keeps your sandpaper in contact with the wood and following the contours instead of hopping over the surface.

#### **HAND SANDING**

and sanding can be as simple as folding a piece of abrasive into thirds and holding it to the work as the piece spins on the lathe; however, there are safety considerations to think of. In addition to the safe turning attire and practices you must always use, presenting the sandpaper so that the work is running away from your point of contact is a wise choice. Somewhere in the seven to eight o'clock position, referenced as facing the headstock, both on the inside or outside of a turning rotating CCW will allow the paper to be pulled away safely and keep your hands from being 'jammed' by the

turning. Always keep the sandpaper moving so that you don't create any flats. When needed, open the folded thirds paper to expose a fresh surface.

There are many ways of holding sandpaper other than with your hands. Commercially offered or home-made fixtures can reach into difficult places and keep you from putting your hands at risk. Another great use for holding fixtures is to conform to a shape or contour. Rather than freehanding, find or make a mandrel to match the radius you are sanding so that you can effectively sand it without deformation.



The safe zone for hand-held abrasives with the lathe running normally is at the seven to eight o'clock position. The abrasive can be safely pulled away and the hands won't jam



Reaching into places where you put your fingers at risk can be done safely using other holders such as forceps or similar, but don't hold them with your fingers in the loop holes!!!

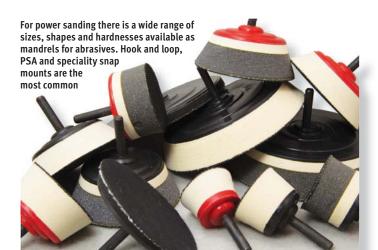


Home-made
sanding sticks —
padded or not —
can be used to
reach into open
vessels where you
can't normally get
to safely. They are
also helpful for
sanding interrupted
surfaces without
having your fingers
and hands at risk

#### **POWER SANDING**

specially popular with bowl turners, power sanding adds another way to fair curves and prepare for finishing. Power drills or rotating sanders will work. Be especially careful when using corded power drills. Be certain that the cords are

free and clear of all potential catching and the corresponding danger it presents. Battery operated drills work nicely as well providing variable speed, reversing, manoeuvrability, and the absence of a cord to get tangled. The turning can be stationary and the sanding disc rotating, or they can both be rotating. Either way, there is relative motion between the wood and the cutting edges of the abrasive so cutting can take place. Abrasives are available for power sanding in a variety of backing, grits, attachment methods and more. All of



I find it quicker to change the entire mandrel than to change the abrasive pad. The pads last far longer and hand tightening secures the mandrel for use





There are savings to be had cutting your own pads and sanding discs. Whether scalloped or folded up edges, you can soften the sanding process and cornering



Stopping the lathe lets you attend to areas needing special attention and use the pad flat. This is combined with normal power sanding as needed

#### **POWER SANDING (CONT.)**

the standard abrasive selection criteria hold true here, with the addition of attachment method, diameter and special edge softening characteristics. The abrasive is usually attached to a sanding pad – with that pad mounted into a drill or similar device. These sanding pads are available in a wide array of diameters, shapes and durometer. The user can select the size that will fit the part to be sanded along with the correct contour and hardness or flexibility. Depending on the shape you wish to sand, the selection of the pad and abrasive is key to the success of the task.

The tendency is to use a small pad because it will fit into areas and be very maneouvrable. This is the wrong approach for the most part. Pick the biggest pad that will fit so that your sanding doesn't introduce hills and valleys based on the sanding pad diameter. Go to a smaller pad as needed to get into areas but be aware that it can alter

your curves and shapes quickly and usually not for the better. There are soft edge pads and special cut abrasives for working on the insides of bowls and platters that will be gentle on inside lips and curves. You can find those or even make them as necessary.

Like hand sanding, letting the abrasive cut is key. If you go too fast with the lathe rotation or the rpm of the drill powering the sanding disc, you'll build up heat and skate over the surface rather than cutting with the edges of the grit. There are many ways to refine your power sanding. The relationship of the rotational part speed in relation to the abrasive rotational speed also has an impact on the quality of the sanding process. The direction of rotation and speed of one or the other, or both, can have an impact. The opportunity to refine the shape and remove scratches with the combination of relative motions and directions is exhaustive. Coupled with the various abrasive grits, you have an enormous

opportunity to sand the turning to the desired end point. Power sanding abrasive discs are more expensive because of the pre-cutting and pad attachment methods. The attachment can be hook-and-loop, adhesive, special snap features or other. Because of their cost, I clean power sanding discs to maximise their life. More sturdily built, the sanding discs lend themselves to cleaning with the crepe belt sanding cleaner pads. You can hold the abrasive disc, spinning at low speed, to the crepe cleaning pad to clean the debris from the disc. This has the effect of extending its life considerably. There are special cuts of sandpapers for power sanding. Special-cut scalloped edging will be softer on the corners. Home-cut square papers can reach into undercuts nicely. Learn from your turning mates. At club meetings, look for work with flawless finishes, regardless of their turning type, and ask the maker for some of their tips and tricks for sanding and finishing.

#### **SANDING ZONES**

olding abrasives to the work needs to be in an area where it can be effective and less prone to problems. With the lathe running anti-clockwise as usual for cutting, hand and power sanding can readily be done at the 7 or 8 o'clock position. This

position can be used on the inside of turnings as well. If you reverse the lathe as many do for sanding, be sure the grub screws on your chuck or faceplate are secured for safety. The sanding zone on the outside of the turning is now better suited for 10 to 11 o'clock and the

inside is 4 to 5 o'clock. With the lathe switched off, any area can be sanded with the headstock locked or with the turning being controlled by hand on the hand wheel. This allows for special attention to be paid to any problem areas you may have.



Power sanding position on the outside of a turning with the lathe running anti-clockwise or the normal turning rotation. Be careful with large pads and small shafts



A good sanding zone for sanding, powered or not, on the inside of a turning when the lathe is running anti-clockwise

#### **SANDING ZONES (CONT.)**



The sanding zone for the outside of a turning when the rotation is reversed and the turning is spinning clockwise



The sanding zone for the inside of a turning when the rotation is reversed and the turning is spinning clockwise

#### **SPECIAL ITEMS**

brasive sheet and cut discs can be bought from extremely coarse to extremely fine. Because of the high costs of cut discs with special features, many turners opt to make their own. Pad materials are available as are hook-and-loop sheet goods. The abrasive materials can be bought in long roll so individual pieces or discs can be cut and modified as desired with cost savings to be had by the maker. While not usually needed for wood, plastics and other materials can benefit from the very fine abrasives.

In addition to woodturning suppliers, you can turn to automotive refinishers and

plastics processors to take advantage of their speciality abrasives. There are whole families of speciality abrasives with special backings, padded and not, pre-made shapes and forms, lubricants, chemical abrasives, rouges and more. Abrasives and forms used in the cosmetics industry can solve special problems. While you can find 'traditional' sandpaper products from below 30 and above 2,000 grit, there are other products specifically for high polish and gloss finishes. These are used on very dense woods, plastics and metals. Micro-Mesh products use a totally different scale ranging from 1,500 to 12,000. They equate to

about 400 grit at their low end and are far off the FEPA and CAMI scales at the high end. The chemical polishes and super fine abrasives find favour with the pen turning community because of the frequent use of plastics and metals. Depending on your application, there is something already available to fill your need. Sometimes it is in a different industry, but it can be applied. Often it is already in your workshop. When it fits, I often use my random orbit sanders on turnings. Again, be careful of power cords or compressed air lines lest you put yourself in jeopardy.





Like buffing wheel compounds and jeweller's rouge, these plastic polishes carry a fine abrasive. Micro-Mesh abrasives can bring a mirror finish

Flapper wheels and plastics with embedded abrasives have a valuable place in your sanding toolbox



Abralon and Abranet from Mirka are products from the automotive painting arena that work great on wood and plastics



#### **SPECIAL ITEMS (CONT.)**





In addition to the powered power sander, there are many sizes and versions of the non-powered, rotary sander using the turning rotation for power



The non-powered rotary sanding pad gets its power from the rotation of the part. After learning the knack for getting it running, you'll enjoy using it



The various stropping and rotary sanding brushes work nicely on carved and textured areas. They will sand without significant loss of detail or digging

#### **GOOD SANDING PRACTICES**

he good practices for sanding are pretty simple:

- 1. Use good lighting inspection of surfaces with a bright light at a high angle of incidence will let you see things which are often missed
- 2. Start with the correct grit don't try to make 320 do the job of 180 grit. Begin as coarse as you need and work through the grits
- 3. Keep the sandpaper moving while sanding staying in one spot will create a flat spot or dig grooves. With the sandpaper continually moving you are always feathering your sanding area into the adjacent areas
- 4. Sand slowly and let the abrasive work for you – slower speeds let the grit cut and minimises excessive heat generation
- 5. Clean between grits when you have finished with a particular grit, clean the

sanded area of dust and shed grit prior to moving onto the next grit

6. Step through the grits – avoid big jumps in grit size as large jumps are not very helpful in achieving a great finish. Remember the 50% change is the maximum recommendation. Smaller change is better

7. Don't change grits until it is time – with the coarsest grit removing tool marks and each successive grit removing the scratches from the previous, don't move until the only thing there is the scratches from the current grit. Until then, keep sanding

- 8. Throw away spent abrasive clogged up 220 shouldn't be used as 320. It should be thrown away
- 9. Only go as far as needed progress to the end point you need based on the material and the finish that you will apply. You can





Examine the surfaces as you go with a high angle of incident light. If you missed any scratches then go back to the grit that you need to be able to correct the problem



Don't be afraid to stop the lathe and sand with the grain. Using the same grit will make a marked difference. Do this at each grit if necessary



With proper PPE, a quick wipe with mineral spirits will often show sanding flaws easily overlooked on the turning. Mineral spirits won't raise the grain



The coarsest grit of abrasive is used to remove the tool marks. Start where you need to with your abrasives. Starting too fine won't be effective



Once the tool marks are gone with the coarsest abrasive grit, each successive finer grit removes the scratches from the prior grit. Keep going until your level of scratch 'invisibility' is reached

#### **GOOD SANDING PRACTICES (CONT.)**

sand too far. Don't sand to 1,000 when you only needed to sand to 320 or 400

10. Sand with the grain – sanding on a lathe usually means sanding across the grain, which is not ideal. That said, there is nothing that stops the woodturner from sanding with the grain. Turn the power off and sand by hand with the grain. The lathe makes a good workholding fixture. Even after the work is dismounted, you can

sand with various grits by hand and work in the direction most conducive to the best looking finish

- 11. Use lubricants as needed waxes, oils, water and some other chemicals are great for sanding. Use them with care of the electrics and the finish to ultimately be used
- 12. Use proper protective equipment a dust mask is in order regardless of other

air and dust handling. Don't find out later that you've been abusing your body. Always use the appropriate PPE, especially during sanding tasks

13. Reverse the lathe properly – many turners reverse the lathe direction with each grit whether hand sanding or power sanding. Remember good sanding areas based on direction and the security of the grub screws.

#### **CONCLUSION**

ou may never fall in love with sanding, but I'd suggest you learn to tolerate it. Without a quality sanding job, your work will never be as good as it could be. Good practice includes sanding slowly and starting with the appropriate grit. Work through the grits and move on only when you have successfully removed the scratches from the previous grit. Skipping grits or not completing any one of them properly will show under your final finish. There is no fix for this other than sanding through the finish, going back to the problem grit, doing it correctly and then continuing. Explore the available sanding sponges, steel wools, fibre sticks, flap sanders, manicure items and a myriad of other items that can perform sanding functions. Don't lose sight of the fact that buffing and

polishing is sanding on a very fine scale. Try to remember the finer and finer scratches until optically imperceptible. While you may never spend 30% of your time sanding, I can assure you that hurrying through the sanding process is a disservice to your end result. Invest the time needed to get to the end point your turning deserves. •



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In the first of a new look series, we meet June McKimmie.

who shows us around her workshop and tells us about her turning journey

une McKimmie, an Australian woodturner, began turning 15 years ago and hasn't stopped since. As a member of the Sydney Woodturners Guild, June is no stranger to woodturning symposiums, demonstrations, workshops and Turnfest, taking inspiration from all of the woodturners she has met over the years at such events. We take a closer look at June's woodworking life.

#### How, why and when did you start turning?

About 15 years ago I overheard a conversation about someone who'd taken a woodturning course. I just had to try it. After four lessons I was smitten. I had my first lessons from John Ewart, who was one of the founders of the Sydney Woodturners Guild over 25 years ago. By the end of the fourth week of lessons, I had made a set of serviette rings, a clock, a dish with a curved rim and a goblet. I then joined the Guild and met with a handful of turners in my locality. I was totally hooked!

#### What and who have been the greatest influences in your work?

Just about everyone I have watched and read about has had some influence. Personally I do not aspire to highly decorative or sculptural work. I like to make functional articles in our beautiful timbers, often burls of red gum (Eucalyptus camaldulensis), red mallee (Eucalyptus longicornis), coolibah (Eucalyptus orgadophila) and jarrah (Eucalyptus marginata). I let the wood speak for itself.

#### If you were to offer one sage piece of advice to someone what would it be?

I would encourage anyone to attend symposiums, demonstrations and workshops, to watch and learn from some of the best. By doing this, you make great friends and enjoy the camaraderie of the woodturning community. I would also advise that there is more than one way to turn, and to not be afraid of experimenting.

#### What music and which book are you currently into?

I love Beethoven symphonies, Mozart concertos and several other classical works. I also love traditional jazz and all kinds of folk music.

I don't like crime, fantasy or chicklit, but I do enjoy good fiction, especially by Australian authors. Tim Winton writes wonderful prose but often his stories are a bit dark. Richard Flanagan is also a favourite. I do cryptic crosswords and sudokos. And of course I read Woodturning magazine!

#### What is your silliest mistake?

This is easy. Not checking the lathe speed before I turned the lathe on. I had a delicate Norfolk pine (Araucaria cunninghamii) hollow vessel, which I had reversed into a heavy jarrah faceplate jam chuck for some finishing touches. I had previously used the lathe at high speed. When I turned it on there was a huge BANG as the faceplate flew apart, and my delicate turning broke into five pieces. I affixed them all together, using CA adhesive, then disguised the glue joints by burning a dot pattern.

#### What has been your greatest challenge?

Unfortunately my tiny workshop only has room for my Teknatool lathe and my grinder. I have my tools on a shelf behind the lathe, and some bench space on the opposite side. There is only 1sq.m of floor space in my workshop. I believe I am the only turner in the world who has her bandsaw in the guest bathroom!



# If you could change one thing what would it be and why?

I would like to have been a professional woodturner. I am 79 years old now, and I get more satisfaction from my hobby than I ever did in my career as an educational psychologist and school counsellor. By this, I mean I enjoy the instant feedback after putting a lump of wood on my lathe and turning it into something useful and beautiful, in a fairly short time, whereas the results of my counselling may not be known for years, if at all!

#### What is your favourite type of turning.

My favourite kind of turning would have to be any kind of bowl. The variety of design and purpose is endless. Finding the most aesthetically pleasing form can be a challenge, but it is so satisfying when I feel I've got it right!

# If you could have one wish, what would you wish for?

I guess I wish I continue to remain physically strong and fit enough to keep enjoying my woodturning hobby for many years to come.

# If you could have one piece of equipment what would it be, and why?

There really is no room in my small workshop for other equipment. There is no denying that woodturning creates an incredible mess and it is very difficult to keep things shipshape. If I had the ceiling space, I would dearly love a powerful overhead dust extraction system, but instead I have to make do with a small air filter.

Email: junemckimmie@gmail.com

#### **Handy hints**

- **1.** Always check your lathe speed before starting any turning job
- 2. Take the opportunity to watch how others turn
- **3.** Make the effort to go to woodturning events
- 4. Don't waste time with poor-quality wood
- 5. Try wet sanding to get rid of cranky grain
- **6.** Keep your toolrest clean and smooth; this will allow for smooth cutting and efficiency
- **7.** Try using hot glue to help attach your work to a faceplate. It is amazing!
- **8.** Read old and new woodturning magazines for ideas and inspiration

#### **LIKES & DISLIKES**

#### Likes:

- The smell and feel of wood, and the surprise when you see what is under the bark!
- The satisfaction of creating something useful and beautiful from a lump of wood
  - Doing something no-one else seems to do,
     e.g. ring turning to make animals
  - The friends I have made through my hobby
  - Regular meetings with other women turners from the wider Sydney area

#### Dislikes:

- · High gloss finishes on wood
- Leaving evidence of how the article was attached to the lathe





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t is sometimes said that problems are just opportunities in disguise, and most woodturners who have tried to dry green wood will have been presented with the 'opportunity' to deal with large shrinkage cracks in their part-turned bowl blanks. With a small split, you may get away with filling the crack with a paste made of fine shavings from the same wood, mixed with PVA adhesive. With a large split, however, filling it may just produce an unsightly scar in an otherwise pristine bowl. My father used to say 'If you can't hide it, make a feature of it', and that is how I like to approach an 'opportunity' in a bowl blank. I just make the crack bigger and line it with

gold! It gives the impression that a solid gold bowl has been concealed within a wooden skin, and the trick has been revealed when it has split open.

A lot of people think gilding would be beyond their skills, but it is really quite a simple process, as I hope to show in this article. Imitation gold leaf is cheap and easy to obtain from art stores and is also quite easy to handle. Its only drawback is that it is basically brass foil and needs sealing with shellac, artist's varnish, or another clear 'skin' to prevent it from tarnishing. Real gold leaf of 18-24 carats, gives a truly golden finish that will stay bright forever without any sealer, but it costs a lot more, and is

harder to handle. I will show you how to use both mediums, so you can progress from the economy option to the luxury finish if and when you want to.

#### **STEVE BISCO**



#### About the author:

Steve Bisco has been carving and turning as a hobby for over 25 years, specialising in decorative carving and period styles. He is inspired by a love of historic buildings and aims to capture the spirit of a period

in pieces for display in the 'home gallery'.

#### WORKING WITH CRACKED POTS



Step 1: I rough-turned a green log of cherry wood (*Prunus spp.*) into some bowl blanks, sealed them with Danish oil and put them away to dry for a year. While others of the batch were mostly OK, this one is split from top to bottom on one side. Apart from the split, the wood is attractive and it would be a pity to waste it, so it is time to mount a rescue operation



Step 2: to work on a split blank, you need to be able to grip the base in compression mode. Using your chuck in expansion mode would open the split further and the grip would be unsafe. If you can't fit the whole foot of the bowl in the chuck, then cut a spigot into the base so you can grip it safely in compression mode. Here I am using the tailstock to steady the foot, while a round piece of wood in the chuck is providing a friction drive to the part-turned bowl blank. Lathe speed is about 200-300rpm



Step 3: always use whole-face protection. Keep the lathe speed low when turning a split blank to minimise the risk of the blank coming apart



Step4: with the outside of the bowl turned, it is clear that hiding this crack is not an option! We now have a 'golden opportunity' to turn it into a feature



Step 5: with the bowl held securely in compression mode by the spigot, in the base, we can finish turning the rim and interior. A good wall thickness will give a larger area to splash with gold — and will be stronger — so if you love to show off your thin-walling skills, restrain yourself when working with a cracked bowl



Step 6: sand the bowl while it is still held in the chuck. Hold the abrasive so it flows over the crack, with your fingers pointing 'downstream' to the direction of rotation. Apply your chosen finish. If you apply wax with the lathe rotating, always hold the cloth between fingers and thumb so it can snatch out without harming your fingers if it catches



Step 7: when the chuck work is finished, remount the bowl using the tailstock and friction drive – as in step 2 – and turn away the spigot in the foot

#### ◆ PREPARING THE CRACK FOR GILDING



Step 1: hold the bowl gently in a vice, protected with padding, and use a coping saw to cut out a wider crack. Splay the sides of the crack outwards to create a greater surface that is easier to get at and give it an interesting convoluted shape



Step 2: use a rotating multi-tool and abrasives to enhance the convoluted surface, and smooth it



Step 3: you can now seal the bare wood with a sanding sealer and, when dry, use fine abrasives to get the surface really smooth

#### THE ECONOMY OPTION: GILDING WITH IMITATION GOLD LEAF



Step 1: the cheapest and easiest way to gild is by using imitation gold leaf, which is basically brass. It is sold at most art stores, in books of 25 sheets, for about £10. Each sheet measures 140mm square, so a book can cover a lot of wood, even allowing for wastage. You will also need some gilding size, a brush to put it on with and a soft brush to press down the leaf



Step 2: apply some gilding size thinly to one side of the crack and leave it for about 10 minutes until it is dry, but so it is slightly tacky to the touch. The leaf will stick exactly where you put the size, so take care not to get it on the surface of the bowl. If you do, then wipe it off with a damp cloth



Step 3: take a sheet of gold leaf, still in its cover papers and cut it into pieces about 50mm × 25mm. Fold a small piece of paper and use it to pick up a piece of leaf, then slowly and carefully place it on the sized area. Press it down gently with a soft brush and brush away any loose pieces of leaf. This is a bit tricky at first, but you will soon get the hang of it. Continue over the whole area, and then go over any gaps with more leaf. Repeat the whole process on the other side of the crack

#### THE ECONOMY OPTION: GILDING WITH IMITATION GOLD LEAF (CONT.)



Step 4: imitation gold leaf needs a sealer to stop it tarnishing. I generally use clear artists' varnish – as here – or French polish if I want to 'antique' the gold



Step 5: the ugly scar of the shrinkage crack has now been replaced with an intriguing flash of gold

#### THE LUXURY OPTION: USING REAL GOLD LEAF



Step 1: some jobs are worth going the extra mile and there is nothing quite like the glow of pure gold. Real gold leaf – I use 23% carat gold – also comes in books of 25 sheets, but each sheet measures only 80mm square, which is a third of the area of an imitation leaf. The price of gold fluctuates frequently, but at the present time expect to pay around £36 for a book, which you will need to get from a specialist supplier – I buy mine online from www.tiranti.co.uk. You will also need a 'gilder's tip' brush to handle it and, as with the imitation leaf, some gilding size, a brush to put it on with and a soft brush to press down the leaf



Step 3: real gold leaf is much thinner than imitation gold and the first time you try gilding with it, you will find it frustrating, but with a little practice you will soon get the hang of it. Carefully fold back the cover paper on a sheet of gold leaf – it is very delicate – and gently score across the leaf with a knife at the edge of your fold. Cut a piece about 25mm × 50mm, pick it up slowly and carefully with the 'gilder's tip' – rub it in your hair first to build up static – and lower it carefully into position. Press it down gently with the soft brush



Step 2: apply a thin coat of size and leave it to become touch dry. This should be done in exactly the same way as for imitation leaf



Step 4: brush away any loose leaf from the edges and go over bare patches again with small pieces of leaf. This bowl now has a heart of pure gold that will never tarnish. It doesn't need sealing and will retain its brightness for many years

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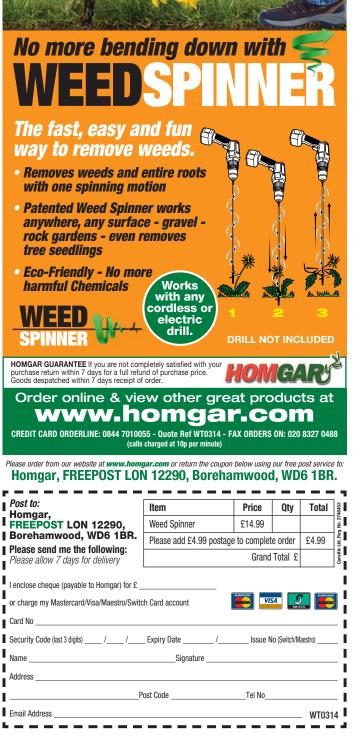
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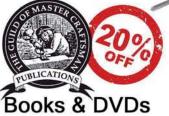
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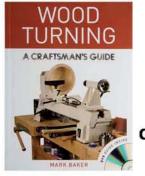
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# Segmented bowl

Rod Tallack shows you how to prepare blanks and then make a segmented bowl

sing up those small pieces of wood that inevitably accumulate under the bench or at the back of the workshop is a problem most woodworkers have to face, whether in industry or at home. There are various solutions to this: the easiest is to have a fire, but there can be many problems associated with that. Another solution is to make small toys and/or small objets d'art. An alternative, which involves rather more work, is to glue them together, make something bigger, and perhaps more useful. However, that means a lot of preparation.

This article is focused on the groundwork required to prepare a blank, ready for turning, using smallish offcuts of wood - rather than about the turning operations that follow. The essence of the article details cutting the angled segments

required for the blank, which is generally referred to as 'stave jointing'.

This technique, using compound angles, will allow for deeper and larger bowls to be created from relatively small and thin material. In this particular case, from 30mm thick pieces, it produces a turning blank that is effectively 80mm thick by about 250mm square. For general interest, the necessary drawing and calculations for the compound angles have been included.

Some years ago I was given a section of willow (Salix alba) which measured about 700mm long × 200mm diameter. Shortly after receipt, I cut the log into two pieces, roughly 700mm  $\times$  150mm  $\times$  70mm, and put them to one side to dry out. Recently during a bit of a tidy-up, I happened across these pieces of willow and decided to find a use for them.

They had warped and split, which I had expected, but I managed to salvage about 50% of the total for the project I had in mind.

woodturning which is not circular.

Email: rodfred@talktalk.net

#### ROD TALLACK



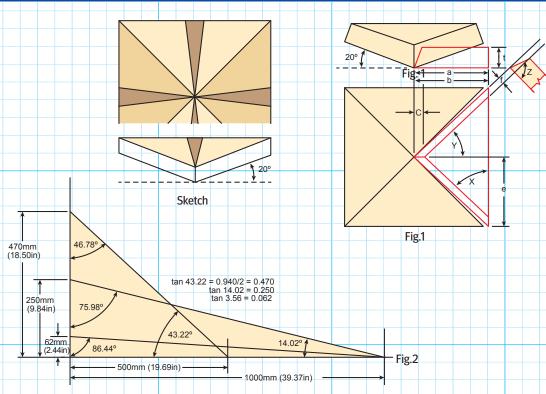
#### Having acquired many skills in the various fields of woodworking covering a period of more than 50 years,

About the author:

Rod has retired from professional life and now lives in Devon. He keeps himself occupied, designing and creating unusual pieces of woodwork on the lathe, which he built to produce a form called 'sculpture-turnery' or

for extra

#### **SEGMENTED BOWL DIMENSIONS**



#### **INFORMATION**

**Time taken:** 8 hours (plus sanding & polishing)

#### **TOOLS REQUIRED**

 The nature of Rod's lathe precludes the use of traditional woodturning tools – see his profile in issue 241.
 All of the cutting is done with a router

#### **ADDITIONAL TOOLS**

- Sawbench
- Auxiliary sliding table
- TCT sawblade
- Flat machine table
- · Copper/resin mix
- · Engineering vernier protractor
- Sharp smoothing plane
- Router
- PPE: facemask, respirator/dust mask and extraction

#### **USING THE DRAWINGS**

Using the sketch as a guide, Fig. 1 was produced to obtain the details. It shows the plan and elevation of the project – drawn in black – with one segment of the blank rotated to the horizontal – drawn in red. From this projection all the required angles – X, Y and Z – can be calculated

#### **BASIC DIMENSIONS:**

150mm = r = radius 45 = v = 180/no. of sides of polygon

20 = w = elevation angle of polygon

30mm = t = thickness of material

#### **COMPUTATION:**

**a = r.cos(v)** = 150 x 0.707 = 106.07 **b = a/cos(w)** = 106.07/0.940 = 112.87 **c = t.tan(w)** = 30 x 0.364 = 10.92 **e = r.sin(v)** = 150 x 0.707 = 106.07

 $f = c.sin(Y) = 9.97 \times 0.685 = 7.49$ 

#### ANGLES:

 $X = tan^{-1}(b/e) = tan^{-1}(112.84/106.07) = 46.780$ 

 $Y = tan^{-1} (e/b) = tan^{-1} (106.07/112.84) = 43.220$ 

 $Z = tan^{-1}(t/f) = tan^{-1}(30/6.83) = 75.980$ 

CUT ANGLE =  $X^{\circ}$  = 46.78° MITRE ANGLE =  $Z^{\circ}$  = 75.98° INTERNAL ANGLE = 2 x Y = 86.44°

## ENGINEERING VERNIER PROTRACTOR

If an engineering vernier protractor is handy then there should be no problem setting the required angles. If such an instrument is not accessible, then a basic bit of trigonometry will give an accurate result. Using the dimensions shown in Fig. 2, apply them onto a large flat sheet — a sliding bevel can be set with sufficient accuracy

#### PREPARING THE BLANK

After trimming the willow I ended up with about a dozen pieces measuring 150mm × 125mm × 30mm. I selected four of these and added a piece of 30mm African mahogany (*Khaya ivorensis*)

"After trimming the willow I ended up with about a dozen pieces..."













- The next step was to cut the four pieces of willow on the diagonal...
- 3 ... and the long edge running with the grain was levelled straight and square, to accept the gluing of the mahogany

As my sawbench is quite basic, provided with only rise and fall together with the facility to tilt the blade, it was necessary to construct an auxiliary sliding table. The sliding table is to ensure better control of the work piece when performing the cuts. The faces produced by the TCT sawblade would be suitable for many gluing purposes, particularly when clamping is an option, but clamping can be rather difficult when working with compound angles. However, working with fairly small pieces of wood most of the time, and given that the joint surfaces are flat, then applying the glue and rubbing the faces together works fine. Scoring marks from the sawblade are quite fine, measuring only about 0.07mm deep, and can be removed quite easily with the help of a sharp smoothing plane

# "Scoring marks from the sawblade are quite fine, measuring only about 0.07mm deep..."

- 5 After gluing, the inserts were cut to their finished size and then the matching willow triangle was glued to the other side of the insert
- 6 The next stage was to draw two datum lines: the first is to establish the centre line of the mahogany insert and the second, a line at right angles to that centreline. The face produced when cut to this line will be the register for the first of the angled cuts

#### **Handy hints**

- 1. The moisture content of the timbers used for segmented work should be less than 10% and of a similar percentage. If this is not the case, then differential shrinkage will cause splitting and cracking
- 2. As cramping is not really an option with stave jointing, it's really important to get the matching surfaces truly flat. When gluing, apply the adhesive to one face and rub the two surfaces together ensuring that the adhesive is spread evenly across both faces before pressing them together. You must also hold the pressure for three or four minutes with your hands before putting the piece aside to set

Referring to the dimension sheet, the saw blade was tilted to 14.020°/75.980° and the sliding fence set to 46.780°. Using the base of the assembled triangle against the fence, the first of the cuts was made, and adjusted forward until the cut face just finished at the interface between the mahogany and the willow. The fence was then reset to 86.440° for the second of the compound cuts

8 The first two of the quadrants were then glued together to make half of the blank, and using a flat machine table helped with the final joint alignment. I then repeated these for the other two quadrants

When the glue had dried the two halves When the glue had direct and the blank ready were joined, completing the blank ready for turning

All that remained was to cut and glue some softwood wedges to generate a flat surface, which a piece of MDF was screwed onto; this enabled the blank to be mounted on the lathe and the bottom face to be turned. There was enough willow to make two blanks, which allowed me to utilise the same calculated cutting dimensions

"Referring to the dimension sheet, the saw blade was tilted to 14.020°/75.980° and the sliding fence set to 46.780..."

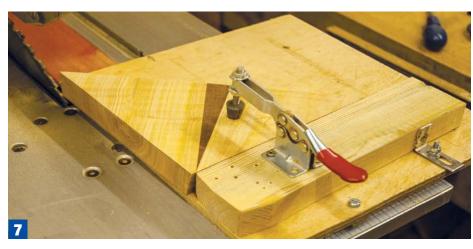
#### **USING THE BLANKS**

The first of the blanks was used to make a circular bowl. After the final shaping of the outer face of the bowl, a piece of softwood was glued to the bottom, and turned to a diameter, to give a true register for when the bowl was reversed and mounted on a faceplate, for the inside to be shaped

The finished item should measure 220mm diameter × 40mm high. The dead-knots were filled with a copper/ resin mix

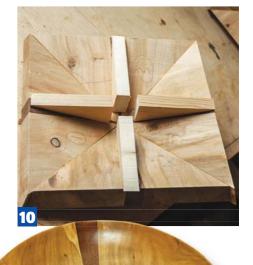
#### **OVAL BOWL**

3 As you can see here, the second of the blanks was to be shaped using an oval-ish cam. Again, after shaping the outer face of the bowl, a piece of wood was glued onto the bottom and the centre identified; this facilitated location when the bowl was reversed for the final inside shaping •















12



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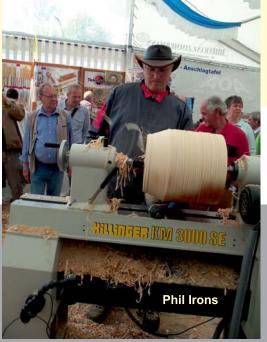
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**Guy Ravine** shows you how to make a winged laburnum bowl from a split branch with sapwood

urned from a rectangular section of split branch, this style of bowl is best turned from wet, or at least part wet, wood. Dry wood tends to be more brittle, and prone to vibration on the 'wings'. Wet wood is more forgiving and more elastic. The blank can be prepared without needing a bandsaw. A branch can be split with a wedge and then made a suitable length sawn with a handsaw.

Laburnum (Laburnum anagyroides) is chosen for its colour contrasts and amenability to this style of turning. It is also more forgiving than many woods. I aim for a maximum thickness of 4mm. If thicker than that, it is likely to split.

Laburnum is mildly toxic – as are many woods and natural materials – but a considerable amount would have to be ingested for any ill effect to occur. The usual precautions of

using a facemask and extraction should eliminate risk, but careful hand washing is also good practice. I once swallowed some laburnum accidentally at a club demonstration - I had to promise to phone back the next day to prove I was still alive! I have routinely worked this wood for more than 30 years. The most dangerous part of the tree is the seed. Other suitable woods with a colour contrast are plum/damsonwood (Prunus spp.), yew (Taxus baccata) or sumac (Rhus typhina). Boxwood works well, too. A natural bark edge looks best, but is not always achievable.

On first seeing bowls with sharp corners, I had safety concerns. This project requires care but can be hand sanded with care at LOW speeds. Some use power sanders on the wings and will require some hand sanding on the flat sections.

The final dimensions of the bowl are  $120 \times 90 \times 30$ mm deep. Choosing the 'right' piece for such projects, and getting the configuration right is a skill that takes time to develop.

#### **GUY RAVINE**



About the author: Guy took up woodturning in 1979, following on from his father, Gus, who was also a professional woodturner. Guy

produces a wide variety of work, including both bowl and spindle pieces. His work is widely displayed throughout the UK. Guy is chair of the RPT and a demonstrator, who teaches classes as well as individuals at his Northamptonshire workshop.

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the centre out with the bowl gouge at first, but reverse the action to preserve the natural edges. They are less likely to tear if you do this. Do not finish the base as the bowl will be reverse turned to finish: the foot being turned from a larger mounting spigot, on which I leave the centre hole. The undersides of the wings are finished with the parting tool in scraping mode. The awkward part where the wing meets the bowl is turned with the solid spindle.

#### TOP AND INNER BOWL:

The inner bowl is turned normally with the bowl gouge and finished with the round-ended scraper. The top side of the wings are initially turned with the bowl gouge, and again finished with the parting tool in scraping mode. Vibration can be a problem

on the 'wings'. Bevel contact from the gouge and firm pressure helps counteract this, as well as using a light touch with the scraping action. To finish, I turn a dome in scrap softwood and hold the bowl against its padded surface with a revolving tailcentre, using a centre hole left over from the initial turning. Do not overtighten. Turn away the excess material around the spigot.

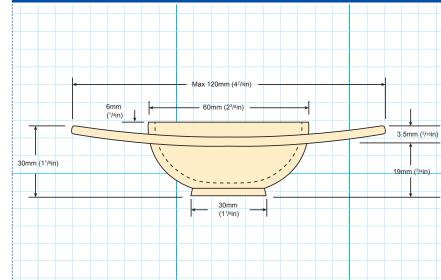


#### FINISHING:

I sand to 400 and use a three-part finish: starting with sanding sealer cut back with abrasive. then friction polish, cut back again, and finally Microcrystalline wax. I would not use steel wool or nylon abrasive pads here. Expect to hand sand to

finish off the wings. Sand with the grain, working through the grits and carefully repeat the finishing process by hand. The ends of the wings may have ragged sawn edges which require carefully sanding by hand.

#### **WINGED BOWL DIMENSIONS**



#### **INFORMATION**

#### **TIME TAKEN & COST**

Time taken: 40-90 mins Cost: £4-5 per blank

20mm round-ended scraper

#### **TOOLS REQUIRED**

- 10mm short-handled bowl gouge
- 10mm solid spindle gouge

#### **ADDITIONAL TOOLS**

• 10mm parting tool

 PPE: facemask, respirator/dust mask and extraction

#### **Handy hints**

- 1. Laburnum rarely dries without splitting and dry wood can be too brittle for this project. Wet or part dry wood is best
- 2. Look for features/faults/figures in the wood, all of which will help to enhance its appearance
- 3. Design the bowl to take into account the possibility of losing the bark edge. You won't always keep it
- 4. The solid spindle gouge resembles a spindle gauge without the flute
- 5. Running CA adhesive along the join between the wood and the bark may help with retention of the latter. Remember to let it dry before switching on or you will get splattered by glue
- **6.** When finding the centres for the initial turning, it can be helpful to remove bark. It can help locate the centre more easily and allows the revolving centre to locate safely
- 7. Initial turning should be at very low speed as the workpiece is likely to be unbalanced. When this problem has receded, speeds up of to 1,500rpm should be safe. Sanding should take place at a much lower speed
- 8. To sand the corners, I fold the abrasive and hold at both ends so that my fingers do not come into contact with the sharp corners
- 9. If you cannot complete a bowl of this sort in one go, and the wood is wet or part dry - put it into a plastic bag and you will create a damp 'microclimate', which should stop it splitting or warping. If you just leave it on the lathe, then it may become unworkable. Don't leave it in the bag too long, though, as fungal action can occur







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ith a foot operated lifting and lowering mechanism, this woodwork machine trolley is ideal for moving a wide range of machines around the workshop, easily. There are two different weight ratings available: 500lb or 700lb. The maximum adjustable size on the 500lb trolley is  $1,320 \times 1,320$ mm and the minimum size of the 500lb trolley is  $300 \times 300$ mm. The 700lb can carry 1,370 × 1,370mm at maximum and at minimum  $360 \times 360$ mm.

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**Contact:** Machine Mart Tel: 08448 801 265 Web: www.machinemart.co.uk

#### **HONESTAR**

his tool was designed for a number of applications, but the shape already indicates clearly its suitability for honing flutes of gouges or carving tools. The rods of the two long sides measure 2.7mm and 6mm respectively. The long flat surface measures  $145 \times 40$ mm and enables you to hone the outside of gouges and a variety of other tools. It fits solidly into your hand and is therefore easy to control and use. The company recommend that the tool is used with a few drops of lubricating and cleaning liquid, or, it can be used with water but ensure you clean off any steel particles and dry thoroughly.

The HoneStar is unbreakable and consists of a steel base coated with a super abrasive CBN grit. This grit, which is widely used in the metalworking industry for the grinding of hard steels, is almost as hard as diamond but better suited for working on steel. The grit size is 800, which is perfect for honing.

**Contact 1: Peter Child Woodturning Supplies** Tel: 01787 237 291 Web: www.peterchild.co.uk Contact 2: The ToolPost Tel: 01235 511 101 Web: www.toolpost.co.uk



he latest release in this range is a 100mm diameter sanding pad, which features a hook-faced fabric on the top surface, to which the loop-backed abrasive disc is affixed. This is bonded to the body of the pad using a high-temperature adhesive to better withstand the substantial temperatures generated at the surface of the abrasive when power sanding on the lathe. According to the manufacturer, this virtually eliminates the hook surface becoming detached.

**Contact:** The ToolPost Tel: 01235 511 101 Web: www.toolpost.co.uk



he new Axminster Evolution Series of products has been designed specifically with woodturners in mind and manufactured with careful attention to detail at Axminster Tools & Machinery's production centre in Devon. The series, launched in the autumn of 2013 with the revolving centre, marked the beginning of a whole new range of woodturning products.

The counterbore drive is used for accurately locating and driving items, such as lamp columns, which have already been partly bored through from one end. Where this differs from similar products is that an additional boring head is available allowing more accurate, efficient boring operations to be carried out. This is very useful when turning longer items that need to be made in more than one piece such as standard lamps or curtain poles. The boring head can be purchased separately or with the drive as a kit. Three Morse taper sizes are available.

The hollow live chip ejection

centre is made from EN8 steel and is a big improvement on the standard hollow live centre already available. It features three chip ejection ports, which means that during use the bit doesn't have to be completely withdrawn from the tailstock. With short and long removable points, twin ball bearings and an 8mm diameter through hole, this centre is an invaluable aid when long-hole boring. The short point protrudes a mere 3mm beyond the ring and allows an accurate impression of the ring to be made on the end of the timber. Having made the impression, the point can be removed from the centre and the work relocated on the ring impression, allowing an accurate hole to be bored. When boring right through, the timber is drilled from one end then reversed: a counterbore

drive is used to hold the timber in the headstock and the boring process repeated from the tailstock end. Fitting the long point gives good access for all sorts of miniature work, including light pulls and lace bobbins. Three Morse taper sizes are available.

Another new product in this series is the long hole boring kit, which is specifically designed to drill accurate holes in the end grain of wood mounted on the lathe. The parabolic flute design of the HSS-M2 steel bit clears the chips quickly and prevents chip burn. The twist-lock handle with a comfortable rubber grip is manufactured in Axminster.

#### **DFTAILS**

**Contact:** Axminster Tools & Machinery Tel: 03332 406 406 Web: www.axminster.co.uk

#### **KREG AUTOMAXX BENCH KLAMP RANGE**

eaturing new auto-adjust technology, Automaxx Bench Klamps do not need to be reset for every change in material thickness. Just squeeze the padded handles and the Automaxx Bench Klamp locks your material to your benchtop, no matter what the thickness. These clamps are compatible with the Kreg Klamp Plate and Klamp Trak, providing a versatile 360° clamping station. Simply remove the Bench Klamp to regain a flush work surface.

The Automaxx Bench Klamps System accepts any Kreg Bench Klamp. When not in use, you can remove the clamps to regain a flush work surface. The system is also compatible with the Klamp Vise.

The Automaxx Face Clamps feature new auto-adjust technology and do not need to be reset for every change in material thickness: just squeeze the padded handles and the clamp locks close. Featuring heavy-duty all**DETAILS** 

metal construction, these clamps also have padded grips for comfortable operation over years of rugged use. Compatible with the Kreg Jig, Kreg Portable Drill Guide Base, and Kreg Jig Jr.

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# Joshua Salesin – Pagoda

This intricate piece by Joshua Salesin features five boxes formed from 21 hand-turned parts

truly love making artwork using antique tools so it seems a natural extension to draw inspiration from historical sources as well. 'Pagoda Box' was inspired by the Ruiguang Pagoda, the earliest Buddhist temple in eastern China, which was built in the year 247. My miniature version is made from African blackwood (Dalbergia melanoxylon) and is accented with the natural glow of European boxwood (Buxus sempervirens).

The intricate design features five secret storage compartments constructed from an arrangement of 21 different parts, all handmade using a combination of traditional ornamental lathe and rose-engine lathe-turning techniques.

It is usually difficult to see the grain of African blackwood since it is such a dark colour, so it is often mistaken for a synthetic material. In fact, it is a prized wood for instrument makers and the source for this piece came from clarinet and oboe industry rejects. It is extremely dense and strong yet cuts fairly easily and leaves a fine smooth edge from any orientation of the grain - perfect to accurately represent the precise architectural details of this piece.

The process of ornamental turning typically uses a spinning tool to make a cut in a stationary object. The piece is then repositioned and the next cuts are made one after another until the entire surface is decorated. It is an ingenious and exacting practice with a fascinating history that dates back hundreds of years. The lathe I used to create this piece was made by Holtzapffel in London and was sold to its first owner 178 years ago. With its many accessories, it can function both as a lathe and a threeaxis milling machine - with eccentric, elliptical, helical, spherical, reciprocal, epicycloidal and other capabilities - to produce and decorate a stunning variety of geometric shapes and designs. I really enjoy challenging myself and the tools I work with to go

beyond what I think is possible as a way to take my art to new levels. The 'Pagoda Box' took several months of consistent and patient work, with many parts ending up on the shop floor! However, drawing inspiration from the designers of one of the earliest Buddhist temples, along with the delight of handcrafting on a lathe made by one of the finest toolmakers, provided the momentum to complete the project. As the replica formed with the layering of piece upon piece, it ultimately became a deeply gratifying journey and the highlight of my woodturning experience to date.

Email: info@joshuasalesin.com Web: www.joshuasalesin.com



'Pagoda Box', African blackwood (Dalbergia melanoxylon) accented with the natural glow of European boxwood (Buxus sempervirens). This intricate design features five separate boxes from the combination of 21 different parts, all hand turned using an ornamental lathe and roseengine lathe. The form was inspired by the Ruiguang Pagoda, the earliest Buddhist temple in Suzhou built in the year 247. This piece was awarded the Master's Cup at the 2010 **Ornamental Turners** International symposium



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