An Introduction to a Design Method for Woodturners

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Introduction

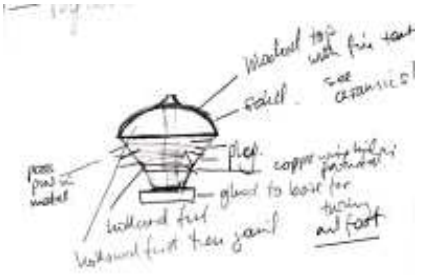
To be successful in woodturning design it is important to have the willingness to begin a journey of discovery. There are a few essential tools and materials needed at the beginning stages but the approach to the subject is individual. Further acquisition of tools, materials and methods will also be individual as there is no right or wrong way, just your way.

It is assumed that a degree of skill and familiarity with the craft aspect of woodturning has already been achieved and that the reader is ready to move on. A natural progression is to begin to think how those skills can be utilised to provide a more personal form of expression, how to research and develop new designs and ways of working.

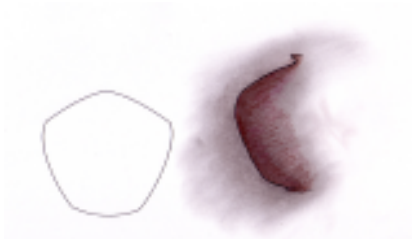
For some, the technical side of the craft is more important and the shapes forms and design process will reflect this. For others, self-expression is the key to their stimulus and the desire to convey their sense of beauty or challenge current perceptions overrides the necessity for perfect craft skills. Each way is personal and relevant, each has its merits and it is for the individual to decide which is the appropriate path.

Enthusiasm, commitment and an inquiring mind will lead you along the path to discovery of both self and new directions in your chosen craft. Remember what it was like to be a child, free to play and experience new things without prejudice or self-criticism and try to unlearn the logic based teaching of your school years. The following material will hopefully help this process by offering some guidance and exercises to enhance your design experiences.

Developing Drawing Skills

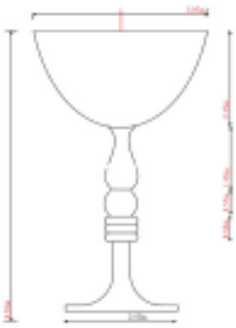


A thumbnail sketch with notes capturing initial ideas



A sketch worked up to a more finished idea

Subject to the level of drawing and rendering skills an individual pocesses a finished drawing is produced. In this case fully rendered with 3D software



A final production drawing with working dimensions added

Intimidating, as it may seem for those who feel they cannot draw, at some stage the designer has to commit the idea seen or imagined onto paper in two dimensional form. Drawing is like any form of communication it has to be learned. Bad teaching during school years may have resulted in poor results but if you feel you do not have natural ability the only option is to keep trying. If you cannot draw well at present don't be put off trying because with practice you will improve. In another section of the site there are some exercises and simple technical aids to help you draw better.
The need for drawing is twofold, to act as a recording method for ideas of all kinds and as a method of describing to yourself or to someone else what your intentions are in the piece you are designing.

Drawing Styles

Drawing has a variety of purposes in the design process so the style you chose at any given moment is decided by the needs of the communication process.

If you are recording thoughts, ideas or inspiration, sketches are usually used. Here you can quickly record information and then develop them with further sketches.

If you are using drawings to explain your intentions to a client for approval then a more accurate form of drawing and rendering will be necessary.

If you are using the drawing for manufacturing purposes then a technical drawing with accurate measurements is needed.

It is for the individual to decide the level of skill needed or required to sustain their design efforts but it is crucial in terms of self-development in design to spend some time, regularly, developing drawing skills. The more you practice the better your results and the larger your vocabulary in developing designs.

Keeping Records

Keeping records is one the most important jobs you should do as a designer. There are three forms of records you should keep:

1. A Visual Workbook
2. A Technical Workbook
3. A photographic record or catalogue of your turned work

The Visual Workbook or sketchbook is where you record anything that visually excites you or triggers your imagination. Shape, form, colour, pattern, texture, words, music etc are some examples. I have chosen the words Visual Workbook because I think sketchbook implies drawing and although drawing is fundamental, other methods should be used. Photographs, cut-outs from magazines or publications, photocopies, scanned images etc. are all valid methods of gathering and recording visual information. More on Visual Workbooks later.

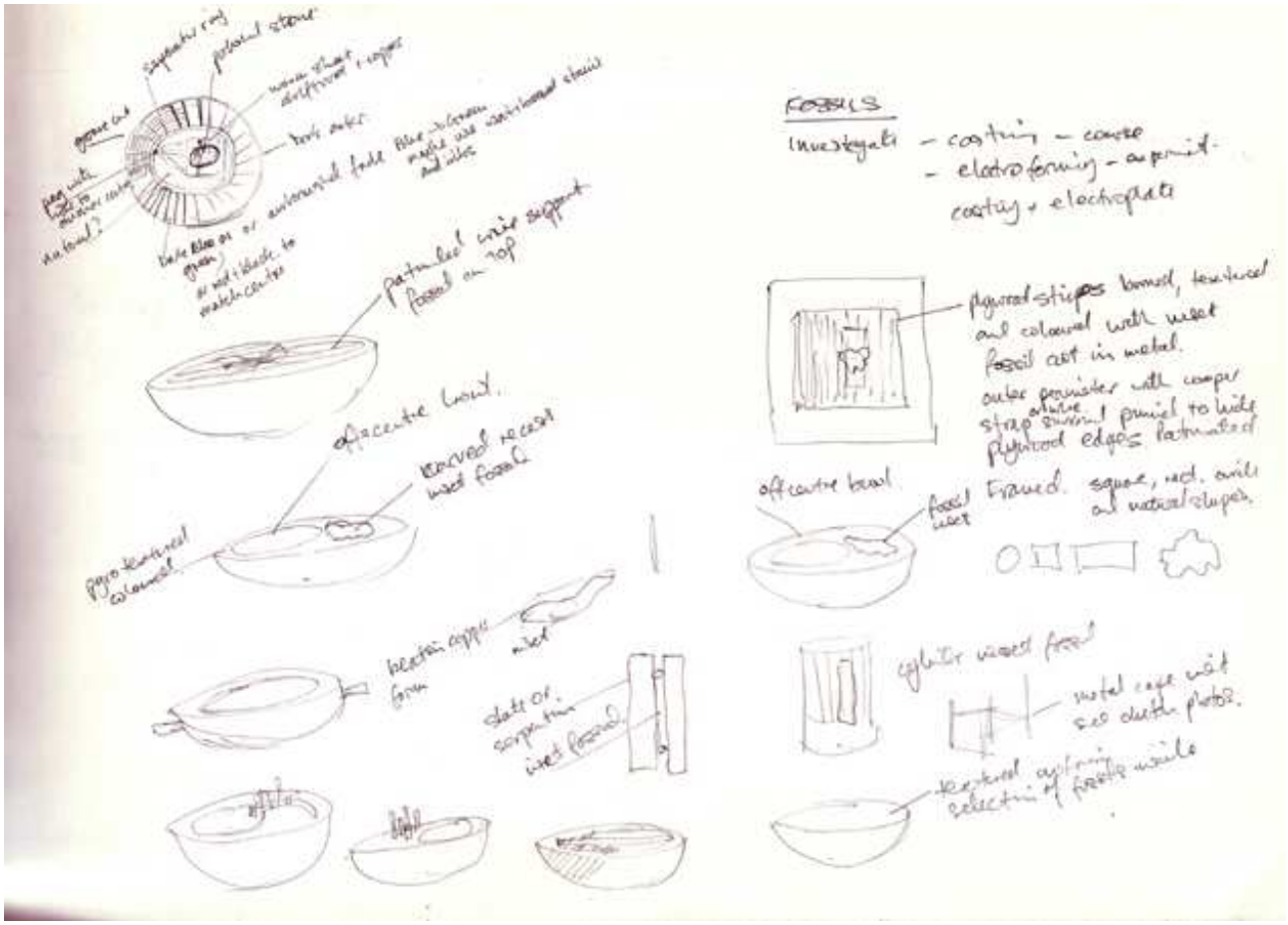
In your Technical Workbook you should record experiments with materials and processes. On and off lathe, successes and failures alike! Many ideas can surface or be developed from what may be considered a failed object overall. Constituent parts of the object may have provided positive learning points and these should be noted with the reasons for overall disappointment so that you don't repeat mistakes but can remind yourself of things that worked. Recipes, methods for texturing or carving, surface finishes anything that might be useful for future use or development should be recorded. Experimentation with materials and processes is where major learning takes place but unless you record the results they will be forgotten over time. If your drawing skills are not yet fully developed then buy a digital camera to photograph results, print out small photos and then write detailed notes. More on Technical Workbooks later.

A photographic record or catalogue of your turned work has two purposes. The first is obvious, for later identification and archive uses. The second reason is also important, it allows you reflect on your development over time and identify key changes in direction or influence. Sometimes looking backwards helps you to move forward. Whatever method you chose you should include a note of materials, size, title if appropriate, who it has been sold to or where it is currently held if at a gallery for example.
Some help with digital methods will be illustrated in another section of this site.

Your Visual Workbook

Your Visual Workbook is your ideas search and retrieval system where you record anything that provides you with visual stimulus or excitement. It is your aide memoir, where you work through ideas, colours, shapes, your inspiration, your reference work and where your personal style begins to develop. You should be meticulous in your record keeping because ideas can fade as rapidly as they appear. We are bombarded with communication nowadays and it is difficult sometimes to hold onto thoughts especially if you are not a fulltime artist/craftsman and only have limited time to focus on your turning work.
Your workbook can take many forms but the ideal one is a hard-back sketchbook with plain paper. Hardback bindings are less prone to lost pages and if it has a fairly substantial paper weight it will allow the use of water media, felt tips, pen and ink and gluing in without too much bleedthrough or distortion. You may decide on one book to store everything or you may have several in use of varying sizes for various purposes. You should have one with you at all times.

Page from a sketchbook showing the noting and development ideas

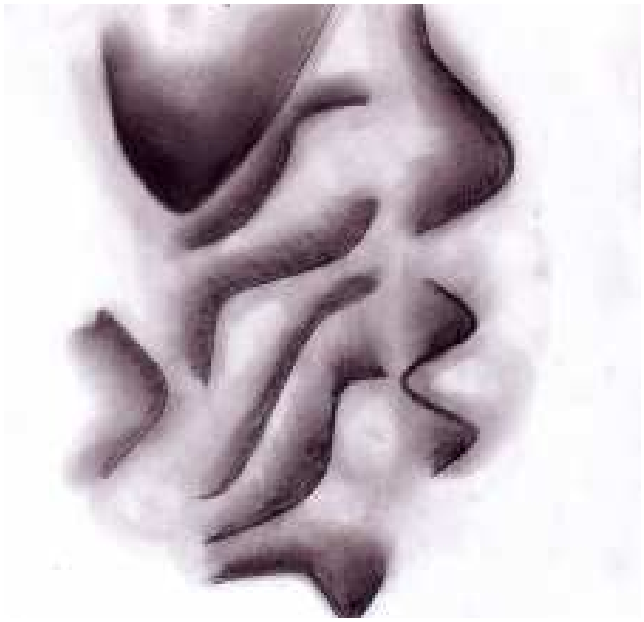


You will over time begin to develop your own style of presentation. Drawing is an important feature of your workbook and if you are not yet proficient still try to describe what you see with pen or pencil and where you can supplement the sketches with notes. As you practice your sketching it will improve. Try different methods and materials.

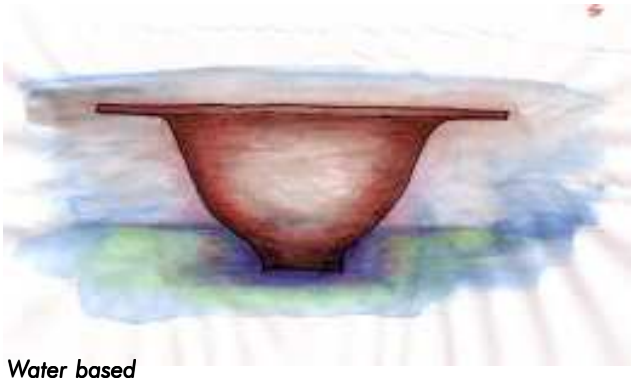
Keep sketching, if you are a beginner your style and presentation will improve with practice

Experiment and play with variations on themes

Try different media for your sketches

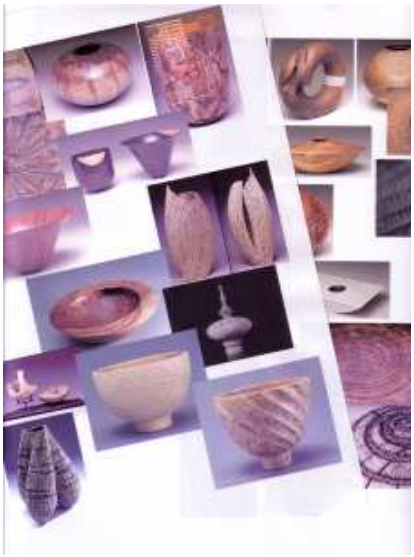


Play with curves, negative and positive shapes



Water based

Felt tip and crayon



Images from books, magazines or downloaded from the internet can be saved for future reference. Note what attracted you to the shape, detail, texture etc. When you are stuck for ideas this swipe file can provide a visually stimulating starting point for ideas that can be re-interpreted and incorporated into your work. It also illustrates how others have solved problems. Don't get stuck with just woodturning; ceramics, glass, adverts for perfume, textiles, metal can all provide starting points for new ideas.

Digital photography offers opportunities for photographing found objects, these can be used later in a variety of ways. Here, a holiday picture taken in Greece of a decomposing pomegranate.

Other methods of recording should also be used including photographic, computer scanning, photocopying, cut and stick, found objects etc.
Digital methods of recording are my preferred method for photographic or printed images because they can be easily manipulated and altered. I use both a digital camera and scanner for both flat and 3D objects. Try black and white as well as colour. Pictures from books can be resized or cropped to fit pages but if you don't have a scanner or copier, fold pages to fit and tip glue them in.
Your workbook is your diary of your visual development and like a written diary it is personal and is not necessarily for others to see.

A texture study from an old door.

Many museums still allow non-flash photography of displays these are from Musee Guimet in Paris, don't copy other woodturners work find your own sources of inspiration.

An example of how a scanned found object can be used to add ideas to your sketchbook

A split peach kernel was scanned on a flatbed computer scanner

Taken into photo software and the background removed

Artistic filters can be used to simlify the form via a simulated sketch

Other filters can be used to simplify colour

Add edge definition

Fixed distortion applied

Variable distortion

Another form of edge definition reduces colour and records the edge with a line. This graphic image can be taken into 3D software and lathed.

This is the result of the lathed graphic image

This can then be modified

Your Technical Workbook

Experiments in colour, texture and finishes should be noted and recorded for future reference. My background in printing and graphics caused me to experiment with a new way of applying colours using printing technology, never been done before to my knowledge. Is there a technique you could adapt from your experiences.

Your Technical Workbook may be highly visual in its look and content but it serves a very different purpose. Its about solutions rather than ideas. It is still an aide memoir and can have inspirational content but this is where you record technical experiments, production problems and solutions both on and off lathe. It will become your practical reference system where you explore and learn about technical issues.

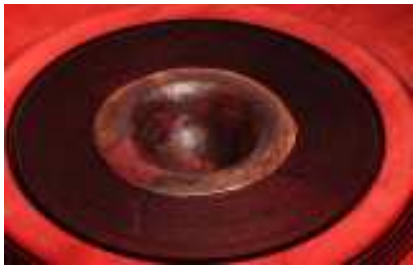
By recording your successes, failures, experiments, recipes, materials, finishes, textures, carving, staining etc. on a variety of materials and projects you are both increasing your sensitivity to working processes and increasing your repertoire with future design projects. Costly mistakes can be avoided

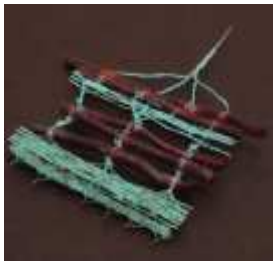
You should record particular difficulties or hazards with woods used. Chucking, holding, tooling, jigs etc you may use or come across in books or magazines can be recorded for future reference. It avoids those 'now I remember seeing somewhere' thoughts that occur when you are struggling to find a solution.

Like the Visual Workbook it is for you to decide how you organise its appearance and content. One overall reference work or several books devoted to individual subject or process areas.

Sketching becomes important again in your note taking. I also use my digital camera again to record results and sequences, produce prints on lightweight paper and stick them in my workbook.

When you reflect back you will discover that your design and technical development are interdependent. As you become more technically aware you will begin to design more challenging projects.





Don't think inside the box, experiment with other materials that could be incorporated into your turning. Shown here are some of my experiments in casting with metal and resin, low tech electroplating and electroforming onto wood, weaving and patination of metal and wood, a beaten copper bowl insert with firescale patination. Learn tp play and record the results. Next time you want a handle, knob or lid you might be able to enhance your turning using a different material or technique and make it yourself.

Photographic Records

Get into the habit of photographing your work, especially key pieces. Learning or changes in design direction should be noted, you need to be able to look back as well as forward when considering or re-assessing your work. It is especially important if you are submitting work to galleries or for exhibitions, things get lost or misplaced! Make notes to go with the photos of materials used, finish, sizes, date completed, price etc. If you are going for fame and fortune then your catalogue of work is important for archival and reference purposes. If you decide to publicise your work or produce a web site then your best work is always available to you for selection and inclusion. It may be too late when you've sold that key piece of work! Try also to record your purchasers details for future reference and for invitations to shows and exhibitions. Professional photography is expensive so try to learn some basic techniques that will allow you to produce good quality pictures on plain backgrounds. If there is a demand then a tutorial could be included on this site.

Basic details
Wood: Sycamore
Colour: Spirit based stain
Finish: Oil
Copper bowl insert with firescale patination - waxed
Size: 19"dia, 3" deep
Date completed: 2004

Research & Development of Designs

There are similarities and differences in developing and researching ideas, objects and components of a design. Broadly speaking the methods are the same for art based or function based woodturning but there are perhaps more specialised considerations to be made if an item is to be used rather than be decorative there may also be a middle path where things are functional and decorative.

Art or decorative woodturners would be more concerned with ideas, concepts or descriptions. Their research and development would be within their chosen field of expression looking for ways to re-express or re-interpret new or existing themes. They may be exploring one theme or a variety of themes. Their research might be more to do with intellectual considerations and might be academic in nature. It could involve looking, reading and finding information from multiple sources in the arts, philosophy, psychology, psychotherapy, science etc. for inspiration and initial solutions to problems or questions posed. It could also involve researching historical design styles. Sketches would capture initial ideas, developmental drawings or schemes would be about refining ideas to capture the essence or explore alternatives.

Woodturners making functional items may at first sight be more concerned with the practical, (or) the technical and may dwell on measurement, tooling and finishing. By researching the item they are about to design and produce, unique and personal solutions can be achieved. Their research and development would possibly be more consumer based, seeing what is used a present, how, why and where it is used, its price and presentation. As above sketches would capture initial ideas, developmental drawings would be refining shapes, exploring alternatives.

The common themes in the two examples above are exploring, expanding on ideas, looking for alternative solutions to problems. Considerations will include form, shape, colour, texture, function, materials and finally whether or how the design solution can be made.

The Design Process

If you are new to design and have not had formal training in the subject you may be uncertain on how to begin. There are principles and methods of procedure common to all areas of design be it graphic design, web design, product design or in this case woodturning design. Following an established method helps to clarify thinking and brings structure and order to your work pattern. It aids rather than limits a creative approach to problem solving by introducing a stepped sequence that encourages consideration of your design proposal at each stage of its development. Douglas Wright in his DANotes on design (www.mech.uwa.edu.au) covers this process in depth and although the notes are geared for engineering students they are easy to understand and the principles he describes in the first sections contain all the essential elements you will need to enhance your appreciation of the subject.
Before design takes place we have to consider what the word 'design' means. Wright, after expanding a dictionary definition describes it as 'the application of creativity to planning the optimum solution of a given problem and the communication of that plan to others'. It is a problem solving process that has the potential to provide many solutions some mundane, some innovative, some unique, some practical and some impossible. The design process allows you to sort through likely contenders and fully develop ideas that after consideration seem to provide an optimum solution to the design brief.

Fig 1. Schematic of a Design Process

What then is a Design Process?

There are many formal design process models, some industry specific but a simplified procedure is illustrated on the left and I will expand on this to show how it can be put to use in solving a wood turning design problem or project.

Design Brief

The design brief should clearly state what is to be designed.
The brief should not be vague because it is here you are describing the problem to be solved - clear problems statements provide the opening for focussed thinking.

Generate and Investigate Ideas

Having written the brief, expand on this to include any additional information you think you may need. For example, function, how and where it will be used. Begin research and generate ideas.

Develop solutions

Begin to give consideration to what you feel are the better designs.
If appropriate look at limiting parameters such as price, size, materials, construction or manufacturing difficulties and your target market.

Finalise Concept
Evaluate all solutions, choose what you feel is your optimum design solution. Produce final drawings and specification.

Manufacture
Having worked through your design solution in theory, most of the manufacturing problems will have been resolved, materials and components will be at hand, you can now successfully resolve the design brief.

An example of how this process can be applied

We will now look at a case study that you could use to try this system of working. The study will not include any design solutions; instead it will provide examples, pointers and pose questions, which you could use as a design exercise.

Design brief
Design a matching salt and pepper mill set. They could be for kitchen or table use.

Generate and Investigate Ideas
Firstly you need to decide whether you are about to investigate mills suitable for kitchen use or table use or maybe both if it is part of new range of products. The use of your set(s) has a bearing on its size, shape, decoration and finish.
I began my search by trawling the net to find as many examples of mills and their uses in different situations. By searching under 'Pepper

Some examples of pages to be found during a Net search

Mills' and then 'Salt Mills' slightly different results were forthcoming, most were sites devoted to kitchenware or commercial manufacturers. By keying in 'Designer Pepper Mills' individual designers or

makers examples are shown. By finding commercial makers or suppliers, catalogues can be requested; individual designer makers with their own sites usually have illustrated examples online. A ready prepared design and construction leaflet by Nick Cook posted as a .pdf file could be helpful if you have not made mills before. Another source of online help can be acquired by keying in 'Problems with Salt Mills' various Forums are highlighted where people express their likes and dislikes with particular brands or grinding mechanisms

www.woodturner.org/products/aw/peppermill.pdf

Nick Cook's downladable instruction sheet on making a Pepper Mill

(elementary consumer research). Other rich sources of illustration or examples can be gained from magazines and visiting retail outlets. So you've found lots of examples and styles, what next. Examine them look for similarities and differences and if you have some physical examples available, take them apart see how they are constructed. Then start to ask yourself questions.

What are the strengths in design and construction, what are the weaknesses?
Which are easy to use and why?
Which are difficult to use and why?

How could weak designs be modified to improve them?
Do most or all of them produce the ground granules from the bottom of the implement? Is this always necessary?
What are the hygiene or cleanliness problems associated with a design? What about residue granules dirtying worktops, could a wood design be affected by water on worktops? How could this be avoided?
Have you asked a cook what they feel about kitchen type grinders?
What makes a grinder comfortable and efficient to use, size, grip etc.?
What are the frustrations in its use, filling it, knowing when it needs refilling?
Are there special needs that have to be considered, elderly, disabled, children?

Examples of commercially produced mills.

The second main style of mill with its alternative grinding and filling mechanism.

This mill can be purchased for half the cost of a grinding mechanism from a woodturning supplies catalogue

Take mills apart, see how they are constructed.

Have you done a price survey, how much do they cost, how much do people seem to be prepared to pay.
How can you create added value?
Does your product have to be mainly wood, exclusively wood or mixed materials?
Which is the best wood to use?
Finish?
Durability?
What type and style of grinding mechanisms are readily available, what type is best for salt, or pepper or can the same type be used for both?

These are some examples of questions you could pose yourself during the generation of ideas in conjunction with sketches during the initial stages of idea generation. Next comes the *'what if'* stage of creative thinking.

What if?

I design the mill so it stands upside down
I could find a threaded insert so I could change the top of the grinder mechanism, what impact could this have on my design.
I incorporated a slide on base cover.

The familiar styles of grinder for salt and pepper. The left hand example shows poor hygiene problems from accumulated waste picked up from work surfaces.

What if?

I inserted nylon washers between the wooden surfaces, would it reduce friction and improve performance on finer grinds.
I produced an unconventional design.
I incorporate other materials.
I covered the body with a metal sleeve.
I cast some of my own components in aluminium or pewter.
I used contrasting woods.
I provided a funnel for filling purposes.
I textured the body or top to improve grip.
I looked at other handles used for twisting movements, say sink taps or radiator valves.

What if?

I coloured or painted the surface.
I asked someone else for help or an opinion.
I asked a member of the opposite sex.
I asked someone young.
I design something original and someone copies it.
I fail.
I succeed.
It doesn't sell
It sells more than I can produce.
If someone drops it.
It seems too expensive to produce.

Each question you pose could take you into a fresh area of research or investigation. An overall picture will begin to emerge.

What you need to keep in mind during the next stage is you are designing a product that has a function and the end user or potential purchaser also has a view and expectation of your product that you have to satisfy.

Finalise Concept

Having gone through idea generation you now have to select from your ideas likely candidates and work these ideas through. Final drawings, component selection, costings, special tooling that may be required. Then make your final selection(s), if you are proposing a radical or unique solution you may wish to sound out the idea with others. This is the final feasibility stage before committing to making. If there is any uncertainty make a model or prototype of the shape before purchasing parts, components or materials.

Manufacture

Order components and materials in sufficient quantities for first make and confirm future availability or alternative sources.

Post manufacture

A wise designer maker would add this additional item to the sequence to include thoughts around the marketing and sale of the newly designed mills. Thoughts or questions here might include:
Where is it to be sold?
How are you going to present it?
How do you get the edge over your competitors?

Things to consider here might include:

As your mills are going to cost more than mass produced examples and are likely to be presents, then consider some form of boxing with instructions for care and use.
A guarantee or returns policy.
Spare or replacement parts.
Your address and telephone number, a business card or stickers.

Attractive wrapping paper if you are direct selling.
If you are producing any kind of literature or selling via the web the design of these areas have some bearing on the way your product will be viewed or judged. Get it right.

So what would your designs be like? It will be more satisfying to develop your own designs than to copy or imitate work by others. Begin to look where influences come from and if a particular shape or style appeals then use research to try to find the root of the design idea and progress from there.

I hope this description of the Design Process helps you to approach design matters in a more constructive way. It can be used for almost all woodturning projects. Look for other Design articles in this series for additional help and guidance.

Philip Streeting 12/2004

Some Internet References

Design
www.mech.uwa.edu.au for DANotes on Design

Peppermills
www.woodturner.org/products/aw/peppermill.pdf
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www.reluctantgourmet.com
www.b3.ezboard.com (brand of peppermill to buy)

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