

**Material for Developing a  
Youth Training Wood Turning Program**

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**A Resource Compendium**

**Compiled by Jacques Blumer**

**July 2005**

## Introduction

This compendium was compiled as part of a presentation on youth training conducted at the AAW Symposium at Overland Park, Kansas in 2005. It was created to provide “best examples” for people who desire to develop a youth training program and to assess current levels of youth training curriculum development.

In order to develop the compendium over 300 people involved in wood turning were contacted including all AAW Chapter presidents, members of the AAW Educational Committee, Educational Opportunity Grant recipients awarded for youth training and various established wood turning educational centers. The document represents the best examples of turning curriculum currently available. Other material may be available and when identified should be added as identified.

The focus of the compendium is on curriculum development rather than project development. Once a program is organized, the literature is replete with “how to” articles on accomplishing individual turning projects.

It might be observed that there is a great deal of training going on, but very little curriculum development and documentation. Most instructors have developed very personal or individualized material or fly by the seat of their pants.

Every training program is unique and reflects the needs of the students and style of the instructor. This effort is directed at helping others to develop training programs to teach the next generation of turners.

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  - Course in Wood Turning. A.S. Milton and O.K. Wohlers 1919
  
- Woodturning Tools, Techniques, and Projects
  - Wood Sprite Turnings, Chapel Hill, NC  
John C. Campbell Folk School
  
  - Frank Penta and Alan Leland  
[frank.penta@edtsi.com](mailto:frank.penta@edtsi.com)
  
- Basic Woodturning on the Lathe
  - Richard Anderson, Green Valley, AZ  
[rjavea@aol.com](mailto:rjavea@aol.com)
  
- Wood Turning Center Educational Manual
  - Wood Turning Center, Philadelphia, PA  
[www.woodturningcenter.org](http://www.woodturningcenter.org)
  
- Wood Turning Syllabus
  - Jerry Brownrigg, Northwestern Oklahoma State University  
[dollyb@mailstation.com](mailto:dollyb@mailstation.com)
  
- Turning and Finishing Student Inventory
  - Jack Grube, Pinkertion Academy  
[jackgrube@adelphia.net](mailto:jackgrube@adelphia.net)
  
- Turning and Finishing Student Inventory
  - Jack Grube, Pinkertion Academy  
[jackgrube@adelphia.net](mailto:jackgrube@adelphia.net)
  
- Course Outline for the Lathe/Woodturning Safety
  - Steve Jennings  
[jenste@holmen.k12.wi.us](mailto:jenste@holmen.k12.wi.us)
  
- Campolindo High School Program Curriculum
  - Hal Bain, Jacques Blumer, Jim Rodgers  
[jacquesblumer@hotmail.com](mailto:jacquesblumer@hotmail.com)

- Curriculum Outline for Outreach Program
  - S. Gary Roberts  
SgrIcr71@cs.com
  
- Child Protection Policy and Procedures
  - Capital Area Woodturners, Inc – Tom Boley  
tboley@erols.com

### **Electronic Resources**

#### Resources On Line

##### Hands on Wood Turning

An excellent seven module/55page program for teaching wood turning. Developed and posted on the AAW Tampa Bay Chapter web site. Available online at <http://tampabay.rr.com/woodturn/beginner.htm>.

Contact Ronald Browing and Randy Leach who developed the program.  
rbrowni5@tampabay.rr.com

#### Resources Available Electronically

The following documents included in this compendium are also available electronically.

- Course Outline for the Lathe/Woodturning Safety
- Child Protection Policy and Procedures

The following document included in this compendium will be available on line or electronically at some time in the future.

- Wood Turning Center Educational Manual

**Statement on Wood Turning**  
**Course in Wood Turning. A.S. Milton and O.K. Wohlers 1919**

Wood turning has had a definite place in the commercial world for a great many years. It is used in various forms in making furniture and furniture parts, building trim, tool parts, toys, athletic paraphernalia and many other useful and beautiful articles in common use.

When properly taught in the schools it is one of the most valuable types of instruction. It appeals to pupils, more than any other type of manual work, as it embodies both the play and work elements. It is very interesting and fascinating and, in the hands of a skilled instructor, is readily correlated with other work.

Wood turning gives a pupil preliminary experience necessary in pattern making and machine shop work. It brings into play the scientific element by demonstrating the laws governing revolving bodies. In bringing the chisel into contact with the revolving surface, the mathematical principle of the "point of tangency" is illustrated. Excellent tool technique is developed in wood turning as on the exactness of every movement depends the success of the operator, and any slight variation will spoil a piece of work. This brings in a very close correlation of the mental and motor activities and also gives the student an opportunity for observing and thinking while at work. When his tool makes a "run" he must determine the reason and figure out why a certain result is obtained when the chisel is held in a given position. Certain cuts must be fully mastered, and it takes a good deal of experience and absolute confidence in one's self in manipulating the tools before it is possible to attempt skilful work. If scraping is allowed the educational value of the work is lost.

In woodturning a vast field for design and modeling is opened, and art and architecture can be correlated. The pupil will see for himself the need of variety in curves and must use his judgment in determining curves that are so harmonious and pleasing that they will blend together. If properly taught the beauty in the orders of architecture can be brought out in the making of the bead, fillet, scotia, cove, etc.

A feeling of importance is excited in a boy when he sees his hands shaping materials into objects of pleasing form. Wood turning properly taught awakens the aesthetic sense and creates a desire for the beautiful. The boy or man who has learned to make graceful curves and clean-cut fillets and beads will never be satisfied with clumsy effects which are characteristic in cheap commercial work, made only to sell.

Success in turning depends on the following:

1. Care of lathe, tools, selection of materials.
2. Study of the scientific elements of
  - a. Revolving bodies.
  - b. Points of tangency.
  - c. Study of results by reasoning and observing.
3. Development of technique and exactness.
4. Correlation of mental and motor activities.

Course in Wood Turning, A.S. Milton and O.K. Wohlers, The Bruce Publishing Company, Milwaukee, Wisconsin, 1919, 1948.

**Woodturning Tools, Techniques, and Projects**

**Wood Sprite Turnings, Chapel Hill, NC  
John C. Campbell Folk School**

**Frank Penta and Alan Leland  
[frank.penta@edtsi.com](mailto:frank.penta@edtsi.com)**

**Note:**

**This is an excellent comprehensive manual for a basic program in woodturning. Due to the length of the document only the introduction, table of contents and course outline have been included in this compendium. For further information please contact the authors.**

# Woodturning Tools, Techniques, and Projects

Frank Penta  
Alan Leland

*Wood Sprite Turnings*

Chapel Hill, NC  
fpenta1@nc.rr.com



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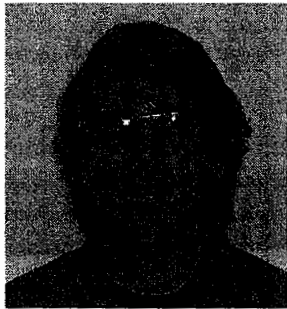
*Meet the Authors*

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*Frank Penta*

President of the Woodturners Guild of North Carolina, Frank has been involved in woodworking throughout his life. He began to focus specifically on woodturning in 1997. His work integrates function and aesthetics with fine detailing and finishing to enhance the natural beauty of the wood. Frank's one-of-a-kind designs are exhibited in private collections and sold through museums and galleries. He has been a demonstrator at numerous woodturning clubs and symposia and has conducted workshops in a variety of settings including John C. Campbell Folk School. He has also been a featured author in American Woodturner magazine. Frank's professional experience in education is reflected in his teaching ability and the high quality of his woodturning classes, demonstrations, and instructional handouts.



*Alan Leland*

Alan Leland serves as vice president of the Woodturners Guild of North Carolina. He has been a demonstrator at numerous state and national meetings, including the American Association of Woodturners Annual Symposium. He has also published an article in American Woodturner magazine. A true woodturning aficionado, Alan has studied with internationally known turners such as Allan Batty, Bill Jones, Stuart Batty, George Hatfield, Soren Berger, Roger Jacobs, Stoney Lamar, and Mike Mahoney. He, in turn, has shared his knowledge and skills by teaching at John C. Campbell Folk School, the North Carolina State University Craft Center, the Woodworking Shop and the Woodcraft Store in Raleigh, NC, and Chimney Stack craft school in Chapel Hill, NC. Owner of Sliding Dovetail Woodworks, Alan likes working with clients to develop custom designs especially suited to their needs. He also enjoys collecting and working with many different woods and says that he could spend a lifetime doing this and still not explore all of the ideas that fill his creative vision.

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## ***Introduction***

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**This manual on Woodturning Tools, Techniques, and Projects was originally developed for a course taught by the authors at John C. Campbell Folk School. It provides a content outline for a week-long workshop to develop wood turning skills and produce attractive projects on the mini-lathe. Each day includes instructor demonstrations of essential skills followed by projects that will help students develop and use those skills. Studio time in the evenings allows students further opportunities to practice skills and complete projects.**

**The manual can be used by instructors teaching a similar course and by students participating in the course. The first section includes a course outline, safety guidelines, sharpening tips, lathe terminology, and spindle-turning profiles. There are suggestions of materials for further study and information on sources for tools and equipment.**

**The second section provides one set of handouts on tool techniques (Activity 1 Tab) and another set with complete, illustrated directions for all of the projects in the course (Activity 2 Tab). A third, supplemental set of handouts (Activity 3 Tab) gives instructors directions for projects that they can include in a longer course. To aid students in selecting projects after they complete the course, these handouts are classified as beginning, intermediate, or advanced. A gallery of the authors' turnings at the end of the book (Activity 4 Tab) offers additional project ideas.**

**Although the authors developed most of the handouts for this manual, other experienced woodturners have also made contributions. Individual contributor's names are listed on their handouts. The authors wish to express their gratitude to each contributor and their appreciation that users of this manual will have access to materials from these turners.**

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  - **Turning and Detailing Platter Bases**
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## Course Outline

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### Teaching/Learning Approaches

Each segment of this course begins with an introductory demonstration by the instructor(s) to model appropriate methods for producing a turned project. Proper use of turning tools, essential for quality results, is emphasized during the demonstrations. The turning projects for the course have been pre-selected to focus on specific tools, techniques, and ability levels. Time is allocated after every demonstration for students to work on projects. This enables them to develop, practice, and improve their turning skills. The instructor(s) is(are) available during these sessions to provide feedback and encouragement. Each demonstration and practice cycle builds on skills from previous sessions, with students learning more complicated skills as they progress through the course.

### Introduction (2- to 3-hour Pre-Session)

Introduction of participants and instructors

Discuss lathe safety

Review parts of the lathe and their functions

Review types of turning: spindle and end-grain turning

Overview of basic turning tools

Introduction to and sharpening techniques (reinforced throughout the course)

### Mastering Spindle Tools (Day 1)

**Demonstration:** Using a Roughing Gouge and a Beading/parting Tool

**Project:** Bead Stick

**Demonstration:** Using a Spindle Gouge to Turn a Bead and Cove Stick

**Project:** Bead and Cove Stick

Lunch Break

**Demonstration:** Making a Skew Chisel and a Three-point Tool

**Project:** Skew Chisel, Three-point Tool

**Demonstration:** Using a Spindle Gouge and a Skew Chisel

**Project:** Tool Handles

Evening

Studio open to practice using spindle tools and to work on individual projects

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***Course Outline, continued***

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***Spindle Turning, continued (Day 2)***

**Demonstration:** Turning a Buffing Wheel Extender and a Weed Pot

**Project:** Buffing Wheel Extender, Weed Pot

Lunch Break

**Demonstration:** Turning Mushrooms

**Project:** Mushrooms

Evening

Studio open to finish spindle work and work on individual projects

***Introduction to Bowl Gouges and End-Grain Turning (Day 3)***

**Demonstration:** Use of Bowl Gouges to Turn a Shallow Bowl

**Project:** Shallow Bowl

Lunch Break

**Demonstration:** Turning and Detailing a Platter

**Project:** Detailed Platter

Evening

Studio open to practice skills and work on individual projects

***Exploring and Expanding New Skills (Day 4)***

**Demonstration:** Turning an Acorn Birdhouse Ornament

**Project:** Acorn Birdhouse

Lunch Break

**Demonstration:** Turning a Lantern Ornament

**Project:** Lantern Ornament

Evening

Studio open to practice skills and work on individual projects

***Project Completion and Cleanup (Day 5, 2- to 3-hour final session)***

Complete projects, Clean Studio, Dismiss

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**Materials for Further Study**

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**Books**

Allan Batty	<u>Woodturning Notes</u>
Tony Boase	<u>Woodturning Masterclass</u>
Robert Chapman	<u>Woodturning a Fresh Approach</u>
Mike Darlow	<u>The Fundamentals of Woodturning</u>
Jan Kessler & Dick Burrows	<u>Rude Osolnick a Life Turning Wood</u>
Ray Key	<u>Woodturners' Workbook</u>
Ray Key	<u>Woodturning with Ray Key</u>
Michael O'Donnell	<u>Turning Green Wood</u>
Liz & Michael O'Donnell	<u>Decorating Turned Wood</u>
Richard Raffin	<u>Turning Wood</u>
Keith Rowley	<u>Woodturning a Foundation Course</u>

**Videos**

<i>Bowl Turning with Del Stubs</i>	Del Stubs
<i>From Tree to Table</i>	Mike Mahoney
<i>Richard Raffin Videos</i>	Richard Raffin
<i>The Joy of Woodturning</i>	Soren Berger
<i>Turning Boxes-The Basic Box</i>	Ray Key
<i>Turning Unusual Materials</i>	Bonnie Klein
<i>Vessels of Illusion</i>	Trent Bosh
<i>Woodturning Getting Started Right</i>	Alan Lacer

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***Sources of Turning Tools and Equipment***

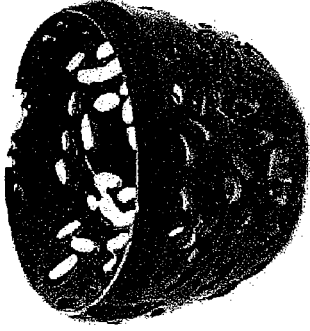
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Craft Supplies	800-551-8876	woodturnerscatalog.com
Choice Woods	888-895-7779	choicewoods.com
Enviro Safety Products	800-637-6606	envirosafetyproducts.com
Klingspor's Woodworking Shop	800-228-0000	woodworkingshop.com
Lee Valley Tools	800-871-8158	leevalley.com
Oneway Manufacturing	800-565-7288	www.oneway.com
Packard Woodworks Inc	800-683-8876	packardwoodworks.com
Penn State Industries	800-377-7297	pennstateind.com
The Beal Tool Co.	800-331-4718	bealtool.com
The Berea Hard Wood Co.	877-736-5487	bereahardwoods.com
The Cutting Edge	800-790-7980	cuttingedgetools.com
Tropical Exotic Hardwoods of Latin America	760-434-3030	anexotichardwood.com
Wood Finish Supply	800-245-5611	woodfinishsupply.com
Woodcraft	800-344-3348	woodcraft.com
Woodworker's Supply, Inc.	800-853-9292	woodworker.com

**Basic Woodturning on the Lathe**  
**Richard Anderson, Green Valley, AZ**  
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# NOTES

## BASIC WOODTURNING ON THE LATHE



A few basic notes about the lathe; safety considerations; methods of mounting wood to the lathe; tools and their use in carving and sculpting wood on the lathe; lathe speed; sharpening tools; and some notes on finishing a project.

These notes were prepared as a supplement to basic woodturning instruction. They are intended to give a basic understanding of woodturning and to aid a person in learning to work safely on a wood lathe. Everyone operating machinery and using cutting tools must use extraordinary care, be knowledgeable of their tools, follow proper safety procedures, use protective measures (face shields, goggles, dust extractors, etc.), and be diligent and thoughtful in the operation of equipment. Injuries can and do occur -- it is better to be safe than sorry.

Richard Anderson

September 2001

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## INTRODUCTION

In a few short pages are some notes intended to serve as a simplified reference guide and a quick way to refresh your memory on a few basic, but important points of woodturning. It is not all inclusive and each person should supplement these notes with their own notes specific to their learning experiences.

Woodturning for the hobbyist, professional or craft person can be most enjoyable and rewarding when employing proper safety rules, tool use techniques and attention to the work. Make it a safe experience.

It is my hope that you will learn about the many wonderful woods available, about woodturning as an art form, and above all, that you realize many hours of pleasure and enjoyment.

## REFERENCES

Many excellent books, manuals and video tapes prepared by professional woodturners are available to learn about the lathe, tools, safety equipment, turning techniques and projects. I strongly suggest that you review the list of reference material in these notes and select several to further your study of woodturning. This is an excellent way to learning the techniques, methods and art of woodturning. In addition the American Association of Woodturners offers a wealth of information and an annual symposium with lectures and woodturning demonstration.

1. More Woodturning: This is an excellent newspaper published by Fred Holder, 950 S. Falcon Road, Camano Is., WA 98292. Email: fred@fholder.com
2. American Association of Woodturners Journal, 3200 Lexington Ave., Shoreview, MN 55216; Published quarterly and included with membership in AAW.
3. Mike Darlow, Fundamentals of Woodturning, The Lyons Press, 1998.
4. Richard Raffan, Turning Wood with Richard Raffan, The Taunton Press, 2001.
5. Dale L. Nish, Artistic Woodturning, Brigham Young University Press, 1980.
6. Bob Flexner, Understanding Wood Finishing, Rodale Press, 1994.
7. Woodturning Techniques, The Best From Woodturning Magazine, GMC Publications Ltd, 1994.
8. Woodturning, GMC Publications, Ltd., 166 High Street, Lewes, East Sussex BN7 1XU, England.
9. Web Sites

[www.woodturner.org](http://www.woodturner.org)  
[www.woodturningplus.com](http://www.woodturningplus.com)  
[www.kestrelcreek.com](http://www.kestrelcreek.com)  
[www.woodonline.com](http://www.woodonline.com)

(Also, there are many AAW Chapter web sites):

## FINISHES

How important is finishing or the finish that is applied to the wood? This is personal taste that varies from person to person. Each person has their own preferred methods and materials for finishing. Finishing is an important process. However, remember the finish will not hide poor workmanship nor conceal poor form. Form is a presentation of a vision and is everlasting. Good form will forever attract the eye to the woodturning.

**Sanding:** Messy, time consuming, costly, and boring, but extremely important. A main element of quality. The finish that you apply to wood can bring out the character and color of the grain. It will also highlight poor workmanship and improper sanding. Start with the coarsest grit needed and do not skip any intermediate grits.

The predominant finishing substances are oils, varnishes, shellacs, lacquers and waxes.

- Oils are classified as curing, partial curing and non-curing and include boiled linseed oil (curing), which has metallic dryers added to speed the curing process by accelerating oxidation, tung oil (curing) and mineral oil (non-curing).
- Polymerized Oils: made by heating the oil to 500° F. in the absence of oxygen. Polymerized oils cure fast, glossy and hard and can be built-up like a varnish.
- Varnish: oil + resin + metallic dryer + heat = varnish.
- Shellac: A fast drying and long lasting finish. Poor resistance to water, alcohol, heat and alkalis.
- Lacquer: A very fast curing finish. The solvent is toxic and requires good ventilation.
- Wax: Animal (beeswax), vegetable (carnauba), mineral (paraffin) and blends using oils or turpentine.

## LATHE SAFETY GUIDELINES

(Excerpts from AAW Safety Guidelines)

1. Safe, effective use of a wood lathe requires study and knowledge of procedures for using this tool and constant attention to the effort at hand.
2. Always wear safety goggles or safety glasses that include side protectors and a full face shield when needed. Wood dust can be harmful to your respiratory system. Use a dust mask or helmet and proper ventilation (dust collection system) in dusty work conditions. The dust from many woods (e.g. cocobolo, silk wood, ironwood, walnut, etc.) can be toxic and/or allergenic, thus proper ventilation and respiratory protection is important. Wear hearing protection during extended periods of operation.
3. Tie back long hair, do not wear gloves, loose clothing, jewelry or any dangling objects that may catch in rotating parts or accessories.
4. Use slower speeds for larger diameter or rough pieces and increased speed for smaller diameters and balanced pieces. If the lathe is shaking or vibrating, lower the speed. If the work piece vibrates, always stop the machine to check the reason. A good general rule of thumb on lathe speed (balanced pieces) is: diameter of the piece in inches times the lathe speed in rpm should equal 6000 to 9000.  
See Chart on Page 4.
5. Check that all clamping devices (locks), such as on the tailstock and tool rest are tight. Also, make sure the indexing pin is in the safe position.
6. Rotate your work piece by hand to make sure it clears the tool rest and bed before turning the lathe "on". Be sure that the work piece turns freely and is firmly mounted. It is always safest to turn the lathe

## Lathe Safety Guidelines (cont.)

- "off" before adjusting the tool rest. During the turning process periodically check to make sure the work piece is securely mounted.
7. Exercise caution when using stock with cracks, splits, checks, bark, knots, irregular shapes or protuberances.
8. Hold turning tools securely on the tool rest and hold the tool in a controlled but comfortable manner. Always use a slower speed when starting until the work piece is balanced. This helps avoid the possibility of an unbalanced piece jumping out of the lathe and striking the operator.
9. When running a lathe in reverse, it is possible for a chuck or faceplate to unscrew unless it is securely tightened on the lathe spindle. Similarly, when stopping the lathe the momentum of the chuck and work piece can cause it to unscrew from the spindle.
10. Know your capabilities and limits. An experienced woodturner may be capable of techniques and procedures not recommended for beginning turners.
11. When using a faceplate, be certain the work piece is solidly mounted. When turning between centers be certain the work piece is secure.
12. Always remove the tool rest before sanding or polishing operations.
13. Don't overreach, keep proper footing and balance at all times.
14. Keep tools sharp and clean for better and safer performance. Don't force a dull tool. Don't use a tool for a purpose not intended.
15. Stay alert. Watch what you are doing, use common sense. Don't operate tools when you are tired or under the influence of drugs or alcohol.

## SHARPENING

**Grinders and Grinding:** There are very few wood-turners, other than those with much experience, that can effectively and efficiently freehand sharpen woodturning tools. Fortunately there are adjustable tool rests and several types of grinding jigs available to simplify the task and produce very fine and consistent results on all your cutting tools. Grinding jigs and tool rests are a wise investment when considering the cost of tools and importance of sharpening.

The grinder is often the most abused tool in the shop and the least understood. Here are a few pointers:

- Always wear proper eye protection when grinding.
- 60 grit white wheel for shaping a tool.
- 100 grit for sharpening skewers and scrapers.
- Don't use the side of the wheel for sharpening, it was not made to take the pressure.
- Install new wheels following the manufacturers instructions and don't over tighten the wheel.
- After installing a new wheel, stand out of the way and turn the grinder on for a minute or so. If a new wheel is to come apart it will likely do so in that initial run.
- Keep the grinding surface trued with a diamond dresser; this also cleans out the metal particles left from grinding.
- Keep the tool rest close to the wheel.
- Use a gentle touch when sharpening a tool.
- Use water to cool carbon steel during grinding.

**Honing:** On course grained woods you can use the tool straight from the grindstone with the burr left on the tool. On soft woods and tight grained woods the burr should be removed and the tool honed with a slip stone and leather strop. Skew chisels should be kept razor sharp.

## Suggested Cutting Tools

### Minimum Set for small spindle work:

- 3/4 inch Roughing Gouge (see note on 1/2" bowl gouge below)
- 1/2 inch Skew Chisel
- 3/8 inch Spindle Gouge
- 1/16 inch Parting Tool
- 1/2 inch Square Nose Scraper
- 1 inch Round Nose Scraper

### Additional tools for larger spindles and bowls:

- 1 inch Skew Chisel
- 3/8 inch Bowl Gouge
- 1/2 inch Bowl Gouge (can be used for roughing out spindle work)
- 1-1/4 inch Radius Scraper

### Additional tools for deep hollowing of Hollow-Forms and Vases:

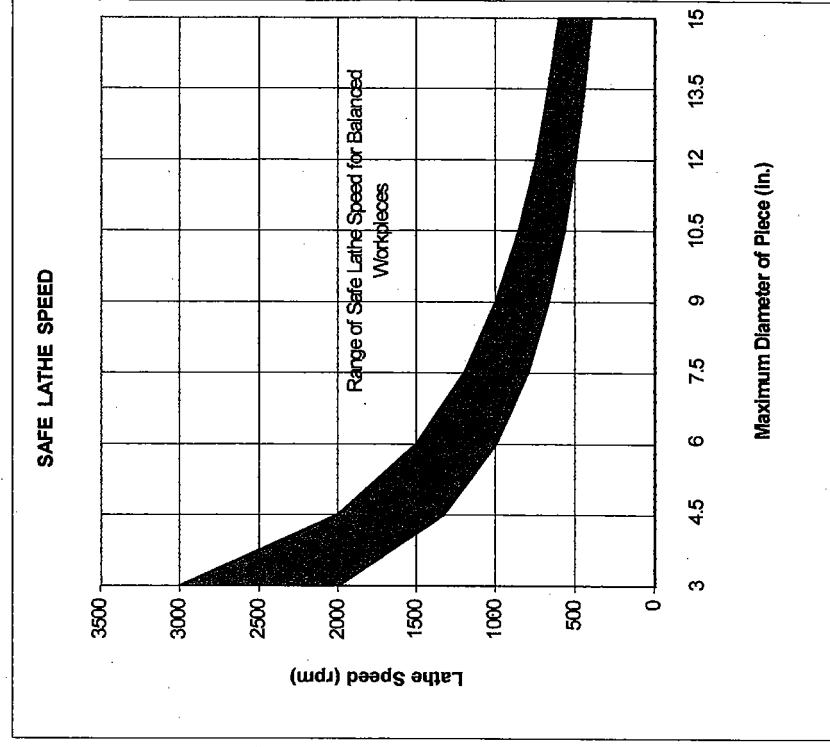
- Stewart System or
- Sorby Tool
- Lyle Jamison System
- Boring bar (you can make this with 3/16" or 1/4" cutting bit)

There are many specialty tools like thread chasers, Chinese Ball tools, beading tools, ring cutting tools, and hook tools for deep hollowing to name a few. You may decide to try some of these specialty tools as you progress in woodturning.

Woodturners often make many of their own tools. It is common to make hollowing tools using 3/16-inch or 1/4-inch high speed steel (HSS) cutting bits and to purchase special shaped HSS scrapers.

## Lathe Safety Guidelines (cont.)

16. Form a habit of checking the lathe and work piece setup before switching on the lathe.
17. Safe Lathe Speed: The chart below is a general guideline and not an absolute. The woodturner needs to take into account other factors such as the size, weight and rigidity of the lathe, whether the work piece is trued, is the work piece segmented or laminated, and the density of the wood.



## WOODS

There are thousands of species of woods available to the woodturner. Common local varieties can be obtained free from people seeking to dispose of pruning and unwanted trees. The exotic woods like rosewoods, ebony, pink ivory, etc. and the unusual woods (burls, figured woods, etc.) are usually obtained from various specialty stores and mills.

Wood has an extraordinary range of character and beauty, including every color, grain pattern and figure imaginable. Experienced turners often seek unusual woods containing bark inclusions, spalting (a fungus in the decaying wood that colors the wood and creates patterns of black lines), and roots, burls and crotches with unruly grain patterns. The beginning or novice woodturner should work with solid, common woods that are more predictable when accepting the cutting tools.

The dust from many domestic and exotic woods can be allergenic or hazardous to breathe. Spalted woods with the active fungus is very dangerous to breathe. Good ventilation and dust masks are very important safety elements.

Woods are classified as hardwoods and softwoods. Balsa is classified as a hardwood, but is very soft. Yew is classified as a softwood, but is quite hard; a good wood for turning.

Green (wet) woods will cut easier than dried wood, but may crack and distort ruining an otherwise great piece of wood if drying is not properly handled. To prevent cracking use wax or a wood sealer to slow the drying.

**Spindle Gouge:** These are made from round bar stock with a shallow rounded flute cut into the bar. They are used for detail work in cutting beads, coves, ogees, etc. on spindles where the cutting is done close to the tool rest. Spindle gouges for detail work are usually ground at a 30° to 35° angle with a fingernail shape. Spindle gouges can also be used for hollowing small end-grain boxes, goblets, scoops, etc. in which case they are usually ground with an angle of about 45 degrees.

In making a planing cut with the spindle or bowl gouge the bevel must be pointed in the direction of the cut and the cutting edge well supported at the beginning of the cut. If this rule is not followed the tool will skate producing beautiful, but unwanted deep spiral cut in the most inappropriate places.

**Bowl Gouge:** The bowl gouge, made of round stock with a deep flute, provides more rigidity than the spindle gouge; thereby more stability and less tool vibration for the longer overhang over the tool rest when working inside a bowl. Bowl gouges are ground at various bevel angles and in several different shapes depending on the woodturners preference and use. A shallow bevel angle (35°) will not cut efficiently in the bottom of a deep bowl. A good compromise is a fingernail grind with a bevel angle or 45 to 55 degrees.

All cutting tools must be kept very sharp if they are to be used efficiently and safely. Proper grinding or sharpening is a learned task and will improve only through practice and patience. Always use the proper tool for the job and purchase quality tools. Also, I strongly recommend that you do not make any cutting tool for use on a lathe out of metal files since the steel is very brittle and subject to breaking with the potential for disastrous results.

**Roughing Gouge:** A half round, fluted tool ground square across. It is a must for spindle work to reduce a square blank to a round section. Roughing gouges are not used for bowl turning. The grind angle should be about 45°, but can be reduced to about 35° if you are turning primarily soft woods. As with all gouges the bevel must rub the wood for a clean, smooth cut.

**Parting Tool:** As the name suggests this tool is used to part off (separate) the work piece from the waste block or divide a piece into two parts. Generally parting tools will be 1/8", 1/4" or 3/16" (diamond) in thickness. The 1/4" parting tool can also be used to cut grooves, roll beads and square off the work piece. It is important when using the parting tool to part off or cut a deep groove to make the cut wider than the blade width to prevent the tool from binding in the work. When dividing a piece between centers do not complete the cut with the lathe running, since the two pieces will flex and bind the tool with sorry results. Make the final 1/4" or so cut using a thin blade saw and the lathe off.

**Skew Chisel:** This tool, used in spindle work, cuts in a planing (slicing) action with the bevel in constant contact with the wood. It also is used in a shear cut when cutting across end grain and in rolling beads where the long point or the heel of the tool is used for the cut.

## THE LATHE

**Headstock:** The drive end of the lathe features a shaft threaded to accept chucks and a hollow Morse taper spindle. May also include an indexing wheel, hand wheel and speed control (belts, rheostat).

**Tailstock:** an integral part of the spur drive turning, but also should be used whenever possible with any chucking method to provide greater stability to the work piece. As a general rule of thumb any work that exceeds 3-times the chuck body diameter should never be turned without proper tail stock support.

**Tool Rest and Lathe Bed (ways):** Keep them clean, free of rust and smooth. Tool control depends on a smooth rest.

## MOUNTING WOOD ON THE LATHE

There are multiple ways to attach a piece of wood to a lathe for carving and sculpting. Although the means of attaching wood to a lathe has evolved over time into the easy-to-use chucks we have available today many of the early day methods are still available to us today and are very useable and often preferable.

Most chucking methods, except screw chucks and faceplates, require turning a tenon or dovetail to hold the wood. The tenon becomes waste unless it can be incorporated into the final piece.

**Spur Drives:** 2-prong and 4-prong. Commonly used for roughing out odd shaped pieces such as burls, root

burts, etc. and to cut a spigot to mount the wood blank in a chuck.

**Chucks:** There are a wide variety of mechanical chucks, including those with independently adjusted jaws for irregular shaped stock, scroll chucks with self-centering jaws, collet chucks and Jacobs chucks. Scroll Chucks (Nova, One-Way, Axminster, Vicmarc, etc.) grip by either expanding within a dovetail or contracting onto a tenon together with seating on a flat rim. They have good holding power in contraction, especially for working end-grain.

The Screw Chuck consists of a single, centered screw in a special face-plate. It is one of the most versatile, convenient and simple tools for holding wood and can be used in combination with other specialty methods for attachment such as waste blocks. One of the greatest advantages is the ability to get almost perfect recentering of rechucked work.

Screw Chucks are designed with special screws and face plates. The screw is hardened steel, cylindrical in shape with threads that are thin and widely spaced. The cylindrical shaft requires a pre-drilled hole in the work piece the same diameter as the minor of the screw. The wood stock must have a flat surface to assure good, even contact around the face of the screw chuck plate.

**Face Plate:** When attaching into end-grain it is suggested that an appropriate face plate be used, rather than a screw chuck. Since screws do not hold well in end-grain an adequate number of long and strong screws is necessary to insure good holding power.

**Jam Chucks:** A fairly crude but very effective chuck. Easy to make. A jam chuck with a compression fit (compressing the working) is preferable to a tension fit since a thin box shell is stronger in compression than tension, especially in softer or punky woods. A jam chuck needs a true radial fit and needs to be seated against a rim or shoulder to resist turning forces.

This covers the common and more essential methods of mounting wood stock to the lathe. However, there are many more types of chucks for a variety of special uses, including pin chucks, ball chucks, ring chucks, vacuum chucks, Morse taper chucks, eccentric chucks and mandrels for pen and light pull turnings. Many of these can be made by the woodturner to fit his/her special needs.

## CUTTING TOOLS

All cutting tools will produce fine, clean and pleasing cuts when sharp, properly presented to the wood and when all elements of the lathe operation are in balance. When the cutting is not right the wood will talk to you, and it may be in unpleasant terms. Listen to the sounds of cutting and interpret the cause of anything abnormal like chatter, vibration, snatches, etc. If you are getting dig-ins, catches, unwanted spirals, tool/wood chatter, or wood flying off the lathe then some aspect of your woodturning is amiss. Dig-ins, catches and spirals are created by improperly presenting the tool to the wood. Spirals and chatter marks can be created when the wood or tool is flexing or vibrating.

## BASIC LATHE INSTRUCTION

- I. Introduction and Orientation 10 min.
- A. Student Introduction: Who has lathes? How much experience?
  - B. Woodcraft Paperwork
  - C. Objective: To provide a basic understanding of the lathe and the carving and shaping of wood using the lathe.
  - D. Course Outline:
    - 1. Safety considerations in using a lathe:
    - 2. The lathe -- its components and operation
    - 3. Tools
      - a. Methods of attaching wood to the lathe
      - b. Cutting tools (roughing gouge, scew chisels, spindle and bowl gouges, scrapers, parting tools, etc.)
    - 4. Practice in using the tools
    - 5. A project:
      - Spindle; planing cut, beads, coves, "v" groove, ogee, ring, parting tool cut.
      - End-grain box or Scoop
      - Face plate; plate or bowl
- II. Safety: Refer to the AAW Lathe Safety Guidelines 5 min
- Speed (see chart)
  - Show articles from AAW on real injuries
- III. The Lathe: Its components and uses (explanation at the lathe) 10 min
- A. Headstock: Morse Taper, Indexing Wheel, Through shaft, Hand Wheel, Speed Control (belts, rheostat), Knockout bar.
  - B. Tailstock: Morse Taper, Through Shaft (sometimes), Locking lever.
  - C. Tool Rest: Keep it clean and smooth. Tool control depends on a smooth rest.
  - D. Ways: Keep it clean and lightly oiled to prevent rust from green wood moisture.
  - E. Correct lathe height: spindle axis should be at about elbow height.
  - F. Set lathe speed at 1800 rpm or 1240 rpm if students are more comfortable.

IV. Wood Attaching Systems: How Much Wood Can A Woodchuck Chuck?

5 min

- A. **Spur Centers** (2-prong, 4-prong, step center)
- B. **Scroll Chucks:** Nova, Oneway, Axminster, Vicmarc
  - \* Some chucks have serrated jaws. Need a shoulder on a tenon for secure grip.
  - \* Compression grip is generally more solid and secure.
  - \* An expanded grip can break through the dovetail if wood is too thin or soft.
- C. Collet Chucks
- D. **Screw Chuck**
- E. **Face Plate:** Screws into end-grain have less holding strength than into face-grain.
  - Mention glue blocks
  - Discuss double-back tape
- F. Jacobs
- G. Mandrels: Pen, Light-pull, etc.
- H. Eccentric Chucks
- I. Specialty Chucks
  - 1. **Jam**
  - 2. Ring
  - 3. Ball
  - 4. Jumbo Jaw/Longworth
  - 5. Morse Taper (home-made using wood dowel for glue block)

**NOTE:** The students will use a 4-prong drive center, a scroll chuck and a screw chuck in the exercises and projects.

V. Turning Tools: Demonstrate noted (\*) tools and have students try each tool.

- Show each type of tool and explain function and use.

**NOTE:** **Inspect students tools and sharpen those that need it.**

- A. Types of cuts are planing, shearing and scraping.
  - **Demonstration using spindle (roughing gouge, skew chisel, spindle gouge and scraper) and bowl blank (bowl gouge and scraper). First show with lathe off then with the lathe turning.**
- B. Wood grain direction and cutting direction
  - **Show face grain and end grain cutting directions. Use demo block.**

## VI. Student Exercise

### A. Roughing Gouge\*:

**First Exercise:** Reduce a square spindle blank to round. Start with bevel rubbing and small cut near right end of stock. Proceed with successive cuts from the left cutting to the right. Explain left end cut.

### B. Parting Tool\*:

For parting off a piece **make the cut wider than the blade** to prevent the blade from binding in the cut.

- Plunge cut (scraping cut)
- Planing cut: note tear-out if the cut is started by planing

**Second Exercise:** Use the parting tool to make the plunge and planing cuts. Make cut wide enough for beads or thin ring in the next exercise.

### C. Skew Chisels\* (also explain square chisel)

- To produce the proper cut the bevel must be rubbing. A knife edge ground at about 40 degrees angle is the most optimum for all types of woods.
- On a tool made from square stock the edges should be rounded to prevent damage to the tool rest.

**Third Exercise:** Make the following cuts in the rounded spindle: Planing, slicing cut across end-grain, "V" cut, 1/2 bead, full bead, and the long point to cut a dove-tail.

- Show on stationary stock the correct position for planing (cutting edge 45-degrees to axis, bevel rubbing and cutting in lower portion of tool).
- Show on stationary stock how the long point can dig-in.
- Planing cuts with long point up and with long point down; bevel rubbing.
- Sequence of cuts:
  - Planing
  - Clean-up end-grain with slicing cut
  - In parting cut channel make 1/2 of "V" cut.
  - Make thin ring with slicing cuts
  - "V" cut
  - Bead (using skew with short point and then with long point)

### D. Spindle Gouges\*:

Handle pointed down or level. Keep the bevel rubbing (like a wood plane). A gouge can be used to produce a shearing cut.

- The bevel must be pointing in the direction of the cut and rubbing. Putting the point directly into the wood without adequate bevel support will make the tool skate.

**Fourth Exercise:** On the spindle make a planing cut, a bead and a cove using the spindle gouge

- E. Bowl Gouge\*: Handle pointed down or level. Keep the bevel rubbing (like a wood plane). A gouge can be used to produce a shearing cut.

**Fifth Exercise:** Mount a bowl blank on a screw chuck and rough turn the outside with a dove-tail for mounting on the scroll chuck. Use bowl gouge and scraper (shear cut and scraping cut) in turning the outside and the inside of the bowl. Show and explain (wood moving away from the scraper) the proper position of the scraper on the outside and the inside of the bowl.

- F. Scrapers\*

- Below center on outside of bowl, above on inside. Handle to be kept horizontal or pointing slightly down toward the work. Explain what happens with the tool pointing up.
- A burr is left on the scraper after grinding. This cuts well in course grained woods, but will grab (snatch) in tight grained woods. Remove the burr when using a scraper in tight grained woods such as rosewoods, ebony, madrone, ironwood, etc.

**Sixth Exercise:** Shear scraping cut on spindle using scraper tilted at about 45-degree angle.

- G. Other Tools

1. Hollowing Tools (Stewart System)
  - straight, curved, home-made
  - 3/16" straight cutting bit
  - kidney shaped cutting bit
2. Beading
3. Thread Chasing

VII. What Cutting Tools Should a New Woodturner Have? Minimum Set:

- |                                     |    |                                     |
|-------------------------------------|----|-------------------------------------|
| A. 3/8 inch bowl gouge              | or | A. 1/4 inch bowl gouge              |
| B. 3/8 inch spindle gouge *         |    | B. 1/2 inch bowl gouge              |
| C. 1/2" Square Nose Scraper         |    | C. 3/8 inch spindle gouge           |
| D. 1/16" Parting Tool (Chris Stott) |    | D. 1/2" Square Nose Scraper         |
| E. 1/2 inch skew chisel * #         |    | E. 1/16" Parting Tool (Chris Stott) |
| F. 3/4 inch roughing gouge * #      |    | F. 1/2 inch skew chisel * #         |

Add-ons:

- A. 3/4" Round-nose scraper
- B. 1/2" Bowl Gouge (deep-fluted) or 3/4 inch roughing gouge
- C. 1" Skew Chisel (round-edge or oval)
- D. 1/4" Spindle Gouge

Note: Don't <sup>buy</sup> ~~buy~~ a cheap set of tools (ie 6 tools for \$49.95), your wasting your money. Woodcraft offers a set of 5 Crown tools for spindle turning (\$125.) or a set of 8 Crown tools that will allow spindle and bowl turning (\$220.)

- \* Those in the 5 tool set
- # Those in the 8 tool set

CHECK THE VARIOUS VENDORS FOR TOOL PRICE AND COMPARE VARIOUS SUPPLIERS (SORBY, TAYLOR, HAMLET, ARTESIAN, ETC.) BEGINNERS SHOULD START W/ M2 STEEL

VIII. Projects:

1. Use roughing gouge to turn square blank to round
2. Practice cutting "V's", beads and coves using spindle gouge and skew
3. Small Lidded Box (Chinese Box)
  - Mount rounded blank in scrow chuck
  - Turn top of the lid and underside to the tenon.
  - Sand and finish the lid and part-off.
  - Turn outside of box and sand.
  - Turn inside of box with opening to provide snug fit with lid.
  - Sand inside and fininsh inside and outside
  - Part-off the box from waste portion.
  - Turn jam chuck on waste portion and mount the box to finish the base.
4. Small Vase or Weed-pot
  - Mount rounded blank in scrow chuck
  - Form outside of weed pot
  - Drill hole
  - Sand and finish
  - Part-off and clean-up base

IX. Projects for a continuation of Basic Woodturning Course

- |               |                  |
|---------------|------------------|
| 1. Finial     | 5. Spinner       |
| 2. Bird House | 6. Candle Holder |
| 3. Lidded Box | 7. Scoop         |
| 4. Small Bowl |                  |

**Wood Turning Center Educational Manual**  
**Wood Turning Center, Philadelphia, PA**  
**[www.woodturningcenter.org](http://www.woodturningcenter.org)**

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*Wood Turning  
Center  
Educational  
Manual*

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## WOOD TURNING CENTER

Education • Preservation • Promotion

Wood And Other Lathe-Turned Art

This manual was devised to help educators incorporate the Wood Turning Center's exhibition experience into their curricula by providing background information and classroom activities related to the exhibition. It is intended to serve as a resource both in conjunction with and apart from the exhibition.

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The Wood Turning Center is a non-profit arts organization dedicated to the education, preservation and promotion of the field of wood and other lathe-turned art. For more information about the Center and its programs, please call 215/923-8000 or visit our web site at [www.woodturningcenter.org](http://www.woodturningcenter.org).

# THE WOOD TURNING CENTER

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## WOOD TURNING: AN OVERVIEW

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This overview is for those not familiar with wood turning. It answers some questions that children might ask in a classroom discussion. Questions like: What is wood turning? When did it begin? Is wood turning a craft or an art? What is the history of wood turning in Pennsylvania and Bucks County? Can children turn wood or is turning only for adults? Is wood turning compatible with conserving trees and forests?

### **What is wood turning? When did it begin? Is wood turning a craft or an art?**

Originally, all wood was shaped by hand. Wood turning began as a craft as early as the 8th century B.C., and is a process used to shape wood while it rotates on a lathe. The bow lathe is believed to have been invented in Egypt around 740 B.C. The bow lathe supported the wood being worked between two pointed pieces of wood. The bow string made one loop around this wood. While the turner moved the bow forward and backward with one hand, the work rotated in opposite directions. It is believed that the cutting tool was applied only when the piece rotated toward the turner.

The spring-pole lathe is another type of lathe that was used by the ancient Egyptians. It was used by turners around the world until the 18th century and is still used by some turners today. A rope was fastened to the end of a tree branch. The rope extended downward, made one turn around the work-piece and the lower end was tied to a loop to serve as a foot treadle. When the turner pressed down on the rope around his foot, the wood rotated. When the turner released his foot pressure, the tree branch pulled the rope up again and reversed the rotation. The cutting tool was used only when the wood rotated toward the turner. The spring-pole was an improvement over the bow lathe as the turner had both hands free to use during turning. Lathes were operated by hand or foot power or by water wheel until the Industrial Revolution when motors were used to power lathes and machines could be made to shape as well as turn the wood. Lathes can be used to turn materials other than wood such as metal, ivory, bone, plastic, coal, soapstone, marble, jade, rubber and ice.

A modern wood lathe is operated much like a horizontal potter's wheel. The raw wood is attached either to the left end of the lathe, usually the source of power, or to both the left and right ends. As the lathe is turning, the raw wood spins, and material is gradually carved away with the sharp tool. Common tools are gouges, scrapers, parting tools, and skewers.

Since the lathe was invented, craftspeople and artists have used it to create a variety of things. Early objects were often functional kitchen ware like bowls, vessels, goblets and plates. Turning expanded to create decorative elements for furniture and buildings, i.e. spindles for chairs, balusters for railings and staircases, and columns for porches.

At the end of the 20th century, lathe-turned art became part of the Craft Art Movement. Craft artists used the lathe to create non-functional, sculptural

pieces with varied shapes and ornamented surfaces. These works allow the artist to express their feelings about life and their expertise in turning wood. Michelle Holzapfel, turner, has said of turning: "It is made with my hands and for my hands. It is my continuing effort to integrate the unique sensibilities of the body and the mind." Turning, once a utilitarian endeavor, has become a forum to explore diverse woods and their beautiful grains as a basis for art.

Lively classroom discussions and/or essays could be created from exploring the questions: What is art? How does a craft become art? Dave Hardy, a Bucks County woodturner, has joked: "If it can't hold soup, it's art!"

Master craftsman Robert Whitley reflects on turning: "Turning the spindles is a rhythmic discipline. As the pieces turn, they hum. I listen to the sound of the wood as it spins. When my tools are sharpened just right, it's much like playing a song. One after another, playing exactly the same tune, they all come out the same. It is only in hearing the music of the lathes that uniformity is achieved. Many approach the tool as a machine, attempting to achieve machine-like tolerances. I follow the rhythm, the melody and the mood of the tools, the woods, and the great machine itself. Bringing all these elements together creates a harmony in rapport with the materials."

Turning requires a knowledge of woods, design, lathe operation, and mathematics. George Radeschi explains the mathematics of his turning in this way, "Each turning is made with hundreds of pieces of various woods, each precisely measured and carefully cut to form a pattern . . . To make each one-of-a-kind vessel, I apply skills in design, mathematics, woodworking, joinery, and finishing."

### **What is the history of wood turning in Pennsylvania and Bucks County?**

European traditions of wood turning traveled to the New World as the colonies were settled. In Europe, wood turning was an apprenticeship characterized by formal training with a master wood turner. Wood turners from Germany and the British Isles settled in Pennsylvania.

In Pennsylvania, early wood turners made spinning wheels, slat chairs, Windsor chairs, toys, and various household items by hand. These turners lost much of their trade as the machines and automated lathes of the Industrial Revolution claimed much turning business.

Still operating in Philadelphia, is the John Grass Wood Turning Company founded in 1863 located on North Second Street. The shop makes flag poles, balusters for stairways, rolling pins, night sticks, crash sticks and household items. Look for the photographs and an architectural drawing of the John Grass Wood Turning Company in Artmobile.

Bucks County is the birth place of the Wood Turning Center of Philadelphia. During discussions at turning symposiums hosted by the George School, Palmer Sharpless, who taught at the George School, along

with Albert LeCoff and others, conceived of the Wood Turning Center as a non-profit arts institution dedicated to developing the art and craft of the lathe-turned object.

Bucks County Community College has integrated lathe turning into its fine woodworking program and hosts the Bucks Woodturners. Many Bucks Woodturners have generously donated items and provided expertise to our exhibition. The Bucks Woodturners meet at the Wood Shop in the Hicks Art Center at Bucks County Community College on the third Monday of even months. If you are interested in attending a meeting, please call Matt Haist at 215-357-8017 for more information.

### **Can children turn wood or is turning only for adults?**

Children love to turn wood! The Wood Turning Center's residency programs have taught children as young as eight to turn. Children have turned honey dippers, keychain fobs, and ornaments after learning the basics of turning and the safe operation of a lathe. The Wood Turning Center provides lathes and instructors when they bring their residency program to schools. For more information about the Wood Turning Center's residency programs, call Albert LeCoff at 215-844-2188.

### **Is wood turning compatible with conserving trees and forests?**

Children might question the ecological implications of cutting trees for turning. Such concerns can be laid to rest when they learn how turners obtain their wood. Turners often use wood from local trees that have been cut down by tree services. Homeowners often need to have overgrown or diseased trees removed. This wood is often referred to as "found wood." For example, this summer a beautiful old beech tree became diseased in Newtown, PA and was cut down so that it would not fall down on surrounding houses during a storm. The wood was harvested and some was given to local turners. Turners often like to use wood that is diseased. The bugs create wonderful patterns in the wood!

One of the most interesting pieces we have in *TURNstyles* is made of "found wood" from a peat bog in Ireland. It lay buried in the bog for almost 5,000 years. It was turned wet from the bog into a plate. As it dried, it shrunk from its original round shape to an irregular oval shape.

Most turners use very little wood from tropical rain forests. As children will discover, the majority of the woods presented in *TURNstyles* come from trees commonly grown in Pennsylvania. Varieties of maple, birch, oak, beech, walnut, cherry, yellow wood, osage orange, dogwood, apple, plum, pear, hemlock, pine are often used in wood turning. The woody branches of shrubs can also be turned. Lilac, box wood, grape vine, and even poison ivy can be used in turning!

## Ornamental Turning Q & A

### 1. How is ornamental turning different than just woodturning?

In plain turning, the work spins on a lathe while the artist uses a tool held in place to make a cut. In ornamental turning, the work is fixed in place and a spinning tool is used to make a cut. Then, the work is repositioned and the next cut is made one after another until the entire surface is decorated.

Ornamental turnery has been used to embellish plain-turned objects with designs that typically elevate them from utilitarian objects into the realm of decorative arts. Although many materials may be used, including metals, some types of rock, horn and plastic, the two primary ones are wood and ivory. Specific ornamental lathes were made to accomplish many complex forms including elliptical, eccentric, rectilinear, swash, rose, and other kinds of designs.

Guilloché is another form of ornamental turning, sometimes referred to as engine turning due to the engine lathes used to create this work. Guilloché is a type of engraving that produces wavelike patterns of parallel or intersecting lines – circular, oval or straight – on the surface of all kinds of materials and objects.

### 2. How long has this been going on?

From the 16th century through the 19th century (essentially from the Renaissance to the Age of Enlightenment) ornamental lathes were used by the elite of society. These machines stood in residences from Stockholm to Florence, from Paris to Moscow, for princes to learn and for rulers to dabble in turning. The programmed machine was a source of great fascination for court society, being "the example and model of hierarchical order for the absolute monarchy."

In the 18th through mid-20th centuries, guilloché work found application in architectural detailing and in the decoration of precious metals. It became a common decoration for watchcases and was also used for designing the patterns of banknotes, securities and stamps.

### 3. Why haven't I seen any ornamental turnings before?

Although examples of the craft can be seen in many of the world's museums, it is almost impossible to find any pieces for purchase in even the finest art and antique shops. Practically all such existing work is either in public or private collections.

### 4. Where can I see more ornamental turning?

To see ivory works created by European craftsmen from the 17th through 19th centuries, visit Pitti Palace of the Museo degli' Argenti in Florence, the Bayerisches Museum of Munich, the Musée du Conservatoire des Artes et Métiers in Paris, the

Metropolitan Museum of Art in New York, the Science museum of London, and the Rosenbourg Castle in Copenhagen.

More common are the guilloché and enameled works from the jewelry trade. These reached a state of high art under the influence of Carl Fabergé (1846-1920), whose products included boxes, cigarette cases, compacts, picture and mirror frames, vases, knives, letter openers, and of course the famous, extraordinary Fabergé Easter eggs.

### **5. What is a rose engine lathe?**

The rose engine lathe differs from a regular lathe in that the headstock rocks on a pivot. It contains a series of patterned discs or cams called rosettes that consist of a few bumps or up to two hundred. As the work is rotated the mandrel rocks back and forth on the rosette while a tool is used to cut into the work surface.

### **6. Where did these machines come from? Where can I get one?**

The primary maker of ornamental lathes was the Holtzapffel firm of London. Additional European makers include Evans, Birch, Plant, Goyen, Fenn, and others. The last ones were made in the late 1920s. Engine turning machines were manufactured for the jewelry trade in England, Germany, Switzerland, France and later in the United States, until the mid-20th century.

Today, the best place to locate an antique machine is through an auction house or dealer that specializes in antique tools. It is also possible to modify a metal or woodworking lathe to accomplish some of the same results.

### **7. What happened to ornamental turning? Why did it die out?**

The craft declined with the rise of industrialization in the late 1800s, specifically with the invention of the automobile, which became the fashionable pastime. Today, the number of surviving machines may only be a few hundred with perhaps just dozens actually in use.

### **8. Where can I learn more about ornamental turning?**

On the web:

- Society of Ornamental Turners - [www.the-sot.com](http://www.the-sot.com)
- Ornamental Turning Center - [www.turners.org](http://www.turners.org)
- Pledge & Aldworth - [www.pledge.co.uk](http://www.pledge.co.uk)

In print:

- *The Principles & Practice of Ornamental or Complex Turning*, by Holtzapffel (1894)
- *Ornamental Turnery*, Frank Knox (1986)
- *Ornamental Turning*, T.D. Walshaw (1990)
- Society of Ornamental Turners Bulletins (CD#1: 1948-1998)

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## ABOUT THE EDUCATIONAL ACTIVITIES

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The following pages offer pre-visit and post-visit educational activities for elementary through high school students.

- **Pre-visit activities** familiarize students with the materials and concepts they will encounter in their visit to *TURNstyles*.
- **Post-visit activities** reinforce what students have learned during their Artmobile visit. These exercises allow students to reflect on and interpret their experience creatively.
- **Activity levels** are suggested but certainly can be modified for other grade levels.

Both pre-visit and post-visit activities integrate other curriculum areas with the fine arts. Wood turning invites students to explore mathematical concepts along with history, science and art.

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## PRE-VISIT ACTIVITY - GRADES K AND UP

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### Scavenger Hunt for Turned Wooden Objects

**Subject Areas:** Fine Arts, Language Arts

**Materials:** List of Turned Objects (Appendix A)

**Objective:** Students will find wood objects that may have been turned.

**Description:**

Students will go on a Scavenger Hunt to identify possible turned wood objects. The Hunt can begin in school and continue as a homework assignment. Students will bring in their objects, or if too large, sketch and present their objects to the class. A show and tell can be held. The class can discuss whether they believe an object may be turned or not (this of course depends on prior knowledge of turned objects.)

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## PRE-VISIT ACTIVITY - GRADES 3 THROUGH 9

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### Two Dimensional Spiral to Three Dimensional Object

**Subject Areas:** Fine Arts, Math, Language Arts, Science

**Materials:** Archimedian Spiral (Appendix B), scissors, hole punch, string, lamp

**Objective:** Students will transform a two-dimensional spiral into a three-dimensional object by cutting.

**Description:**

This activity will help children grasp the difference between a two- and three-dimensional object. It will help them grasp the three-dimensional nature of wood turning. In addition, this activity can be used to prove that hot air rises by hanging the three-dimensional spiral over a lamp. **Caution: Paper can burn so demonstrate this for children.**

1. Have children study spirals. Discuss spirals in nature, such as shells, waves, spiraling horns on mountain sheep, elephant tusks, a growing fern, spiraled tail of sea horse, a hurricane, a galaxy of stars spiraling out, etc.
2. Pass out spirals to children. Lead a discussion about why its two-dimensional.
3. Demonstrate cutting spiral. Have each child cut their spiral, stopping when line ends.
4. Punch hole in center of spiral. Attach string through it and secure with a double knot. Pull on string and see what happens to spiral. (It becomes three dimensional.) Discuss findings.
5. Suspend the spiral over a lamp and turn the light on. The spiral will start to move because of the hot air rising.

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## PRE-VISIT ACTIVITY - GRADES 5TH AND UP

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### Draw a Turned Object from Different Angles

**Subject Areas:** Fine Arts, Math

**Materials:** Turned Object, Paper, and Pencil

**Objective:** Students draw a three dimensional turned object from different angles to discover different views of the object.

**Example:** A small table with turned supports.

Top

Long Side

Short Side

Bottom

---

## POST-VISIT ACTIVITY - GRADES K AND UP

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### Measuring Turned Objects

**Subject Areas:** Fine Arts, Math, Language Arts

**Materials:** Turned objects children and teacher brought from home, measurement devices (rulers, tape measures, calipers).

**Objective:** Children will measure turned objects.

**Description:**

Use the turned objects the children brought in from the Scavenger Hunt for Turned Objects. (The teacher may wish to bring additional turned wooden objects.) Set up stations around the class. At each station have measuring tools available. Divide children into cooperative groups to measure and record their findings at each station. Depending on their level, children can measure in inches, centimeters, or by arbitrary units like paper clips, small blocks, etc. Concepts of length, height, distance around can be measured. Children will be reinforcing their knowledge of three-dimensional objects and measurement. Very young children can have stations set up so they can compare concepts like "small and large" or "shorter and taller".

A classroom discussion could follow based on the groups' findings. Results might be graphed. Further discussion could be held on the importance of measurement to wood turning. What pieces in *TURNstyles* required careful measurement and planning when they were made? What pieces required little measurement? Why?

---

## POST-VISIT ACTIVITY - GRADES K AND UP

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### Acting Out Wood Turnings

**Subject Areas:** Fine Arts, Language Arts, Physical Education

**Materials:** List of Turned Wooden Objects (Appendix A), Chant

Chant:           "Wood, would you be,  
                  A turned object just for me?  
                  I must think and guess you see,  
                  to figure out what you must be!"

**Objective:** Students act out or pantomime a wood turned object.

**Description:**

Teacher writes chant on board and distributes the list of turned wooden objects (Appendix A). Teacher leads class in learning chant. Teacher has class recite chant and then teacher acts out a turned object. Class guesses what object must be. Child with correct guess then leads the next pantomime.

---

## POST-VISIT ACTIVITY - GRADES 6 AND UP

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### Creating Symmetrical Patterns for Wood Turnings

**Subject Areas:** Fine Arts, Math

**Materials:** Three Handouts (Appendix C )

How is Turned Work Designed?

What are the Types of Turned Work?

How is a Design for Turning Used?

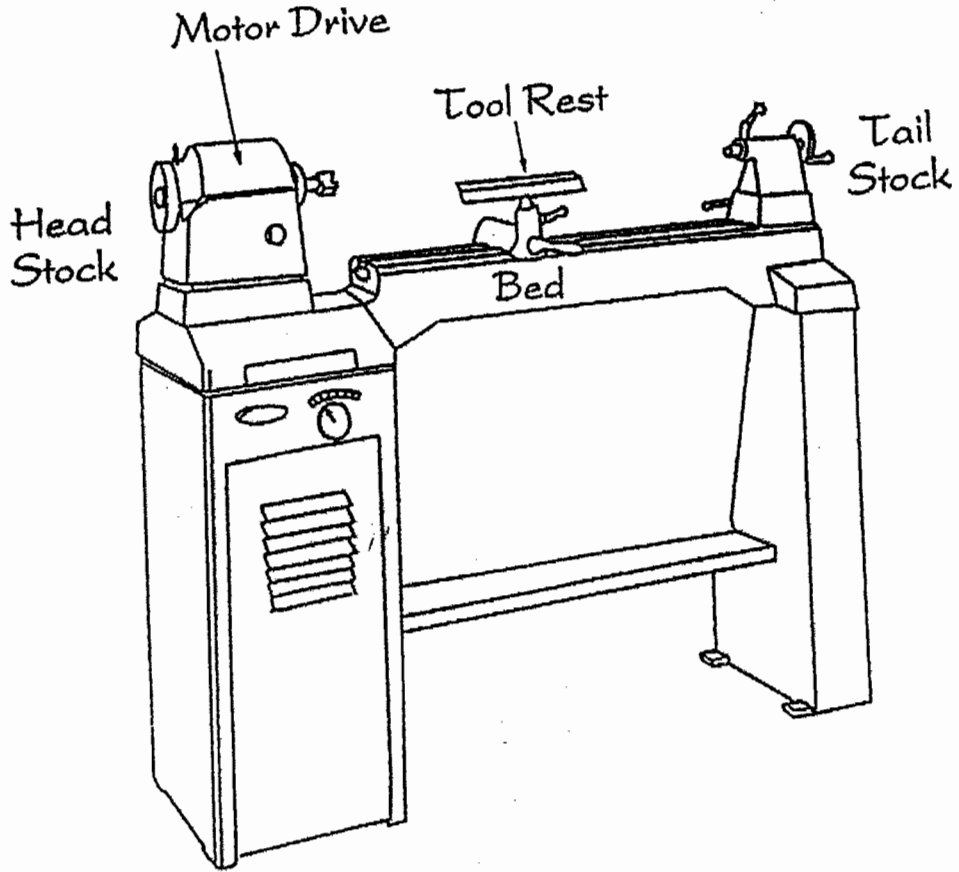
Paper, pencil, scissors, ruler. The knowledge that on each step of a staircase there are typically two balusters; one approximately 29 inches and the other 33 inches in height.

**Objective:** Students design a symmetrical pattern for a wood turning.

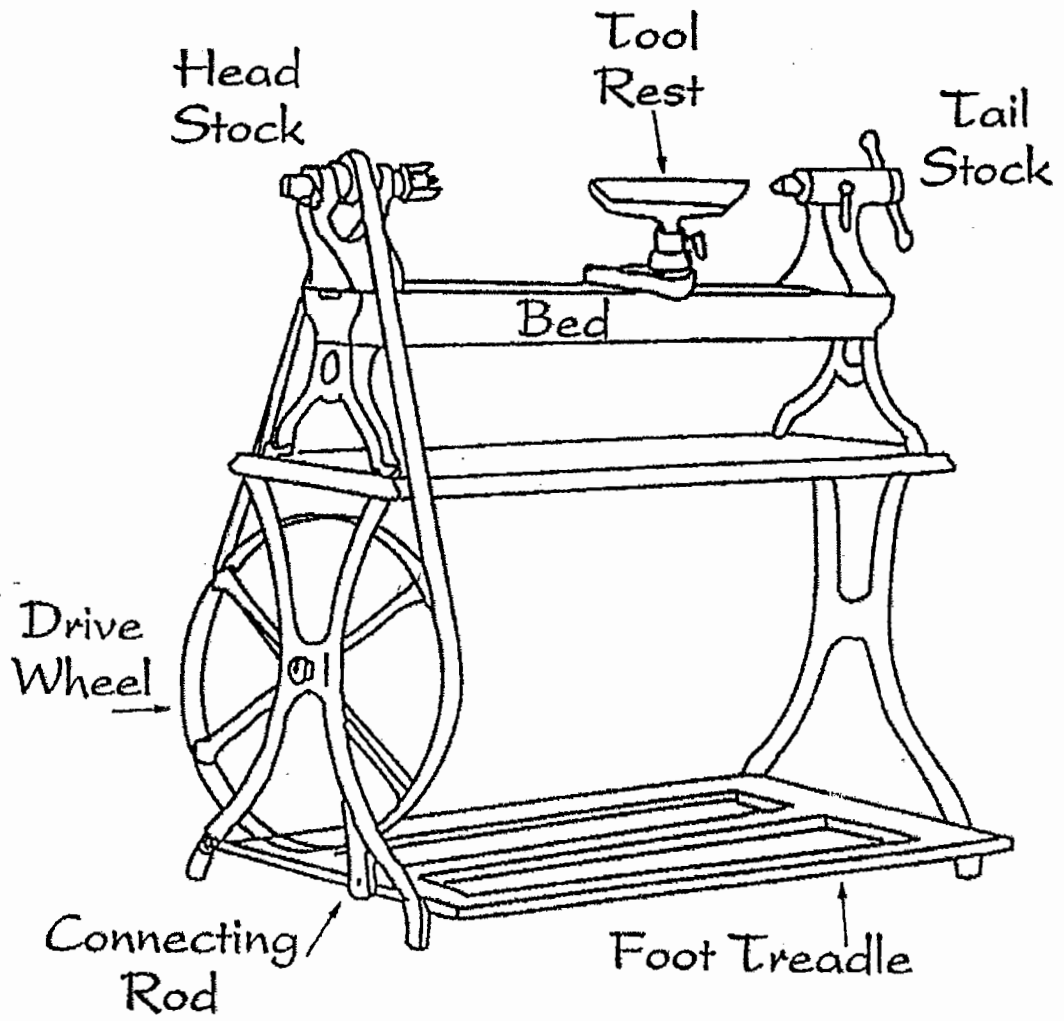
**Description:**

After reading and discussing the three handouts, students design two balusters for a staircase. The patterns can be drawn on a piece of folded paper and then cut as shown on the handout, "How is a Design for Turning Used?"

# DIAGRAM OF ELECTRIC LATHE



# DIAGRAM OF FOOT TREADLE LATHE



---

## GLOSSARY

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**baluster** - any of the small posts that support the upper rail of a railing, as on a staircase.

**bead** - a convex surface carved into the wood while it turns on the lathe.

**box** - a turned wooden container that has a fitted lid.

**chuck** - a clamp-like device on a lathe by which the wood to be turned is held.

**cove** - a concave surface carved into the wood while it turns on the lathe.

**Craft Art Movement** - Some lathe turned works were recognized as art, not only as craft, during this 20th Century Movement.

**faceplate** - a disk fastened to the spindle of the lathe that holds in place work to be turned.

**finial** - a wooden, decorative, terminal part at the tip of a spire, gable, lampshade, bedpost, newel post, etc.

**finish** - the treatment applied to a turned wooden object such as polish, oil (often salad or cooking oil), wax (often beeswax or paraffin) to bring out the luster and grain of the wood.

**foot treadle** - a lever or pedal moved by the foot as to turn an early lathe.

**goblet** - a turned, shaped, wooden bowl without handles used as a drinking container.

**gouge** - a tool used for cutting large blanks of wood into rounds and for cutting shallow coves, having a curved cutting edge with a bevel ground on the outside of the tool.

**grinding** - sharpening wood working tools so that they cut efficiently.

**headstock** - a bearing or support for a revolving or moving part of a machine; specifically, the part of the lathe supporting the spindle.

**lathe** - a machine operated earliest by hand or foot, commonly now operated by electrical motor, that rotates a piece of wood so it may be shaped by a cutting or abrading tool. Operates much like a horizontal potter's wheel.

**live center** - the center in the revolving spindle of a lathe on which work is turned.

**lubricant** - a substance that reduces the friction of moving parts of the lathe.

**motor speed** - speed at which the lathe motor operates. Usually there are four or five motor speeds on a lathe within the 400 rpm to 2500 rpm range.

**newel post** - the post at the top or bottom of a flight of stairs supporting the handrail or the central upright pillar around which the steps of a winding staircase turn.

**parting tools** - narrow, chisel like tools used primarily on centerwork to get into odd corners and to cut, or part, turned pieces from the lathe while its running.

**pattern** - a model or plan used as a guide in making things; set of forms to the shape of which material is cut for assembly into the finished article.

**scraper** - flat tool of a square section with a cutting edge of various shapes.

**skew** - a chisel used in cutting wood on a lathe.

**spindle** - in a lathe the shaft-like part (live spindle) that rotates while holding the thing to be turned, or a similar part (dead spindle) that does not rotate.

**spindles** - short, lathe turned pieces of decorative wood often used in the back of chairs.

**spiral** - see Volute.

**symmetry** - similarity of form or arrangement on either side of a dividing line or plane.

**tailstock** - the adjustable part of a lathe, containing the dead center which holds the work.

**turner** - a person that turns wooden objects on a lathe.

**vessel** - a utensil for holding something, as a vase, bowl, pot, etc.

**volute (spiral)** - a spiral or twisting form; turn or whorl.

**wood turning** - a craft initiated as early as the 8th century B.C.. The art or process used to shape wood while it rotates on a lathe.

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## BIBLIOGRAPHY AND RESOURCES

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### Bibliography

A search provided only one book on wood turning for elementary children. However, there are many books on trees readily available. The following are some newer books.

#### Grades K - 3

Burnie, David. *Eyewitness Books - Tree*, Alfred A. Knopf, New York, 1988, ISBN 0-394-89617-3.

Gamlin, Linda. *Trees*, Dorling Kindersley, Inc., New York, 1993, ISBN 1-56458-230-2.

#### Grades 2 - 6

Dorros, Arthur. *A Tree is Growing*, Scholastic Press, New York, 1997, ISBN 0-590-45300-9.

Ruiz, Andres Llamas. *Cycle of Life - Trees*, Sterling Publishing Co., Inc., 1996, ISBN 0-8069-9327-8.

Russo, Monica. *The Tree Almanac: A Year Round Activity Guide*, Sterling Publishing Co., Inc., 1993, ISBN 0-8069-1252-7.

Sanders, Scott Russell. *Meeting Trees*, The National Geographic Society, Washington, D.C., 1997, ISBN 0-7922-41401.

Seifert, Patti. *Exploring Tree Habitats*, Mondo Publishing, New York, 1994, ISBN 1-879531-35-6.

Starr, Richard. *Woodworking with Kids*, The Taunton Press, Newtown CT, 1982, ISBN 0-918804-14-0.

*Trees and Forests*, Scholastic Inc., New York, 1995, ISBN 0-590-47639

#### Grades 7 and up

Jones, Phil. *Woodturner's Project Book*, Sterling Publishing Co., Inc., New York, 1987, ISBN 0-8069-6478-2.

Nish, Dale. *Creative Woodturning*, Brigham Young University Press, Salt Lake City, 1975, ISBN 0-8425-1557-7.

Raffin, Richard. *Turning Wood*, The Taunton Press, Newtown, CT, 1985,  
ISBN 0-919904-24-8.

*A Sampling of Papers from the 1993 World Turning Conference*, Wood Turning  
Center, Inc., Philadelphia, PA, 1997, ISBN-0-9624385-5-3.

Spielman, Patrick. *The Art of the Lathe*, Sterling Publishing Co., Inc., New  
York, 1996, ISBN 0-8069-4272-X.

*Woodwork: A Magazine for all Woodworkers*, published bi-monthly by Ross  
Periodicals, Inc., 42 Digital Drive #5, Novato, CA 94949.

## Resources

### **The Wood Turning Center**

P.O. Box 25706, Philadelphia, PA 19144  
E-mail address 76143.137@compuserve.com  
<http://www.libertynet.org:90/-woodturn>  
Telephone: 215-844-2188

*Turning Points* - a publication of the Wood Turning Center.

The Wood Turning Center offers wood turning Residency Programs  
to schools. Contact at address and phone above.

### **Bucks Woodturners**

Meetings on the third Monday of even months at Hicks Arts Center,  
Bucks County Community College. Contact Matt Haist at 215-357-8017  
for more information.

### **Bucks County Community College**

Division of the Arts/ Fine Woodworking Program  
Swamp Road  
Newtown, PA 18940  
Telephone: 215-968-8425

*Knock on Wood* - student publication of the Fine Woodworking Program.

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**APPENDIX A**

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**List of Turned Wood Objects**

## Turned Wooden Objects

The following is a list of wooden objects that are commonly turned on a lathe. How many of these objects can you find? Circle found objects. On the back of this sheet, draw your favorite object. Bring a wooden object to class that you think may have been turned.

Bowls	Recorders	Tops
Butter Molds	Newel Posts	Mortar and Pestles
Candle Sticks	Columns	Mallets
Gavels	Balustrades	Ball and Cup Game
Mustard Pots	Rosettes	Clarinet
Hat Pegs	Boxes	Oboe
Egg Cups	Whistles	
Knife Rests	Rattles	
Buttons	Drumsticks	
Earrings	Cribbage Board/Pegs	
Knobs	Thimbles	
Table Lamps	Honey Dippers	
Chandeliers	Crochet Hooks	
Nut Crackers	Jump Rope Handles	
Door Knockers	Toothpicks	
Cup/Saucer	Spoons	
Salt and Pepper Shakers	Spools	
Coasters for Glasses	Pool Cues	
Clothespins	Pencils	
Chess Sets	Nesting Dolls	
Ornaments	Doll Furniture	
Paper Weights	Darning Eggs	
Banks	Toy Rockets	
Chairs	Door Knobs/Handles	
Jewelry Boxes	Pasta Servers	
Spinning Wheels	Tinker Toys	
Tables	Croquet Mallets	
Baseball Bats	Paint Brush Handles	
Canes	Finials	
Walking Sticks	Architectural Elements	
Police Night Sticks	Wool Spinner	
Rolling Pins	Wooden Eggs	
Rulers	Pens	
Beds	Key Chain Fobs	
Drawer Pulls	Flag Poles	
Goblets	Cutting Boards	
Plates	Trays	

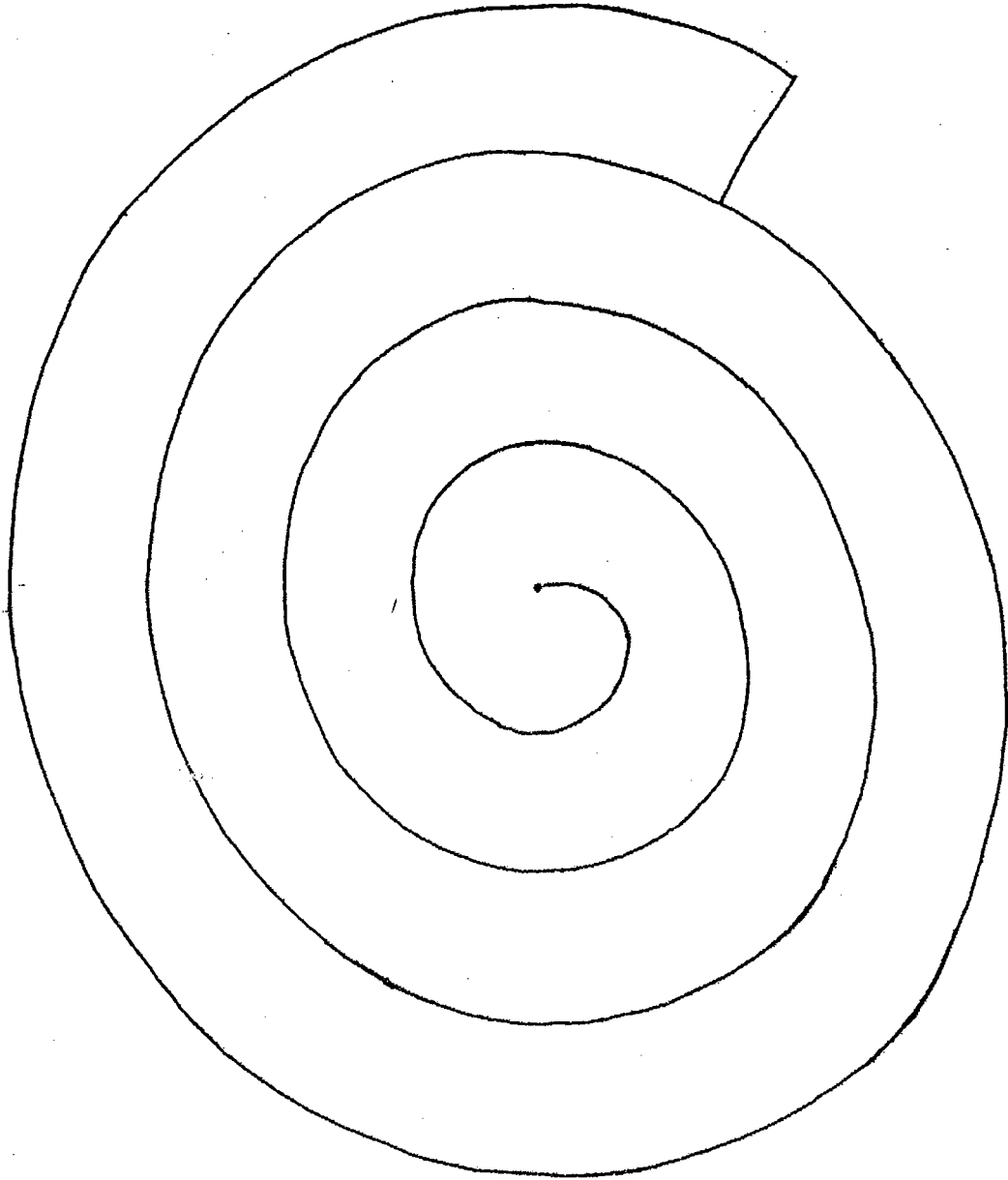
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## APPENDIX B

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### Archimedean Spiral

# Archimedean Spiral



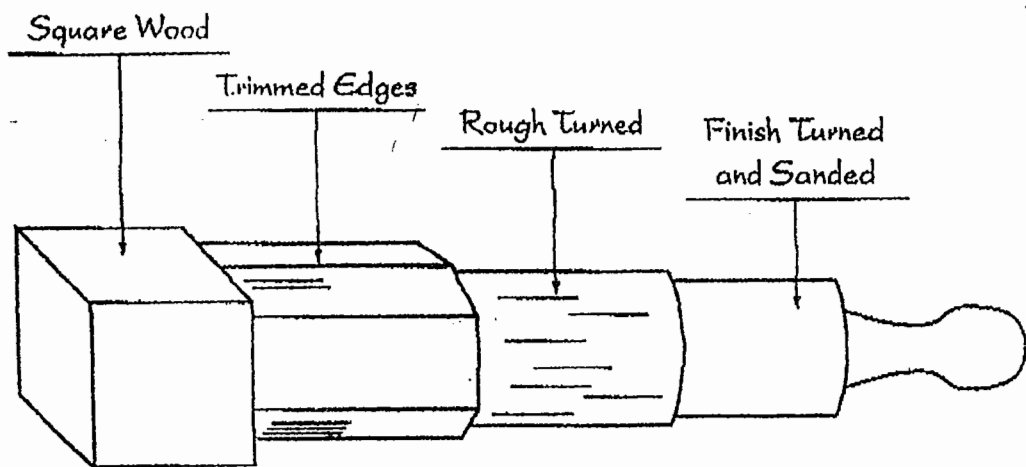
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## APPENDIX C

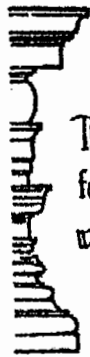
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### Four Handouts

Examine wood that shows the steps  
of creating on a lathe.



# HOW IS TURNED WORK DESIGNED?



The general form of turned work may be derived from the classical column.

The turned work found in many architectural and furniture styles is highly distinct in character. Correctness comes from careful study of original pieces and measured drawings.

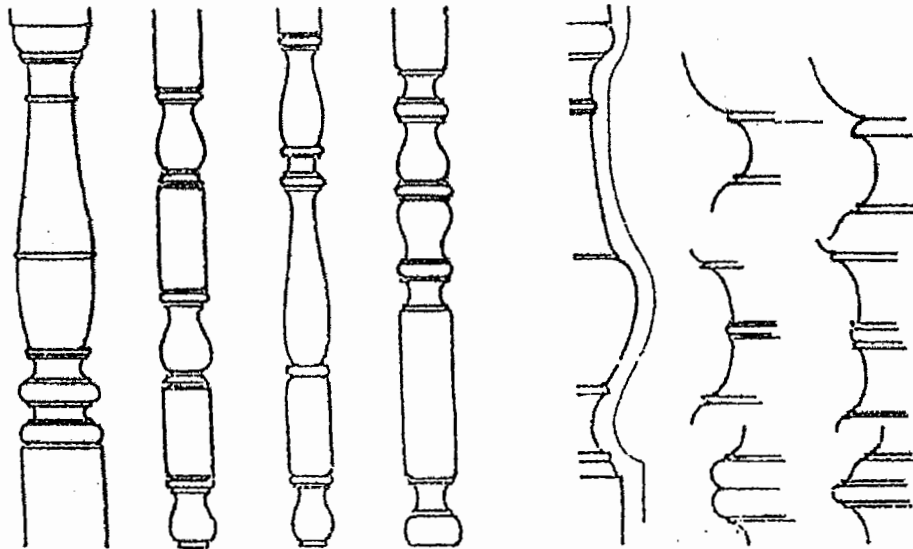
The curve of force is usually employed for contour lines.



Forms generally are simplified to a very few different diameters.

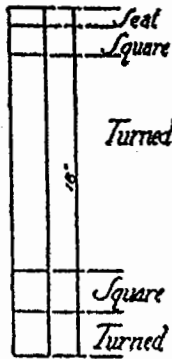
As a rule designs consist of one or two elements (such as the vase form) repeated in one or another of various combinations with a connecting element between.

The elements are joined by shoulders, or beads to avoid the monotony of long and unbroken curves. Long curves may be interrupted by small rounds or coves in varied combinations.

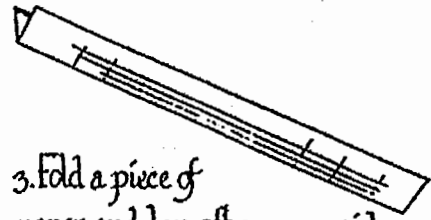


Element & variation    Element & repeat    Repeat in reduced size    Repeat in reverse    Continuity with breaks    Straight and curved shoulders, coves & beads

## HOW IS A DESIGN FOR TURNING USED?

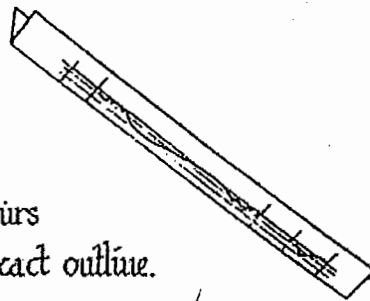


1. Lay off all fixed dimensions, and areas not to be turned, such as the squares for joining rails and stretchers.
2. Outline major diameters, and size of square stock to be cut.

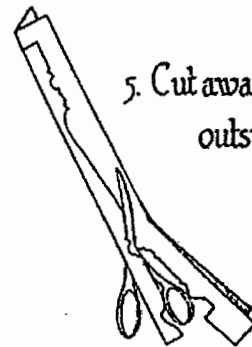


3. Fold a piece of paper and lay off on one side the previously determined dimensions in full size.

Chair Leg

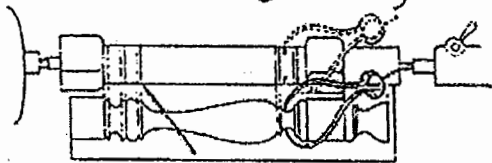
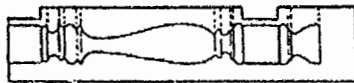


4. Draw contours in detail and exact outline.



5. Cut away paper outside lines.

6. Open, connect points, and examine pattern. Make corrections or try another pattern.



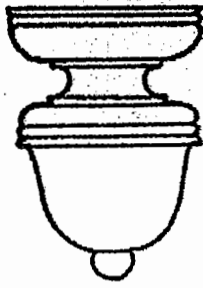
7. Paste this pattern to a piece of thin wallboard, pressboard, or thin veneer. Extend all arrises to edge of mounting board. This will permit the accurate and rapid transfer of all points to the revolving stock through the touch of a pencil.

8. By setting calipers to actual diameters on the pattern depth cuts may readily be made. The turning is completed by connecting these points by eye.

The lathe is an excellent example of a tool whose use distinctively affects the product. It differs from straight line cutting tools (such as the plane) in that it imposes few restrictions on form. Designing for the lathe is made more difficult by this very freedom. Order and balance must be guarded vigorously lest the result be only chaos. As a rule simplicity helps to produce work most likely to give lasting satisfaction.

# WHAT ARE THE TYPES OF TURNED WORK?

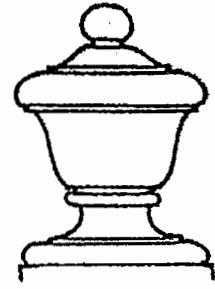
As to Use



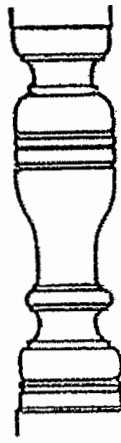
Pendant



Independent Vessel



Finial



Support



Connection



Banister

As to Form.



Bulb



Vase

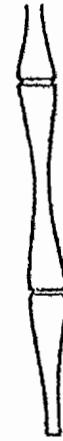


Ball

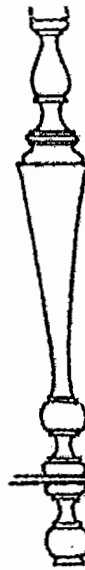
Ball



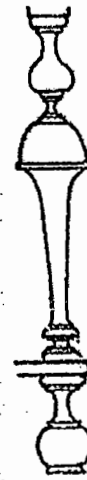
Arrow



Bamboo



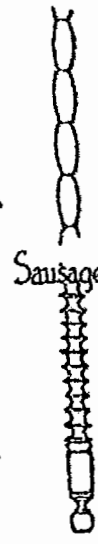
Trumpet



Cup



Bell



Sausage

Spool

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**APPENDIX D**

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Example of Parent/Guardian Approval Form

[Faint, illegible text and lines, possibly representing a signature area or form content]

## PARENT/GUARDIAN APPROVAL FORM

### Lathe-turning Demonstration and Hands-on Workshop for Students

This workshop is designed to give the students a basic understanding of the craft and art of lathe-turning, along with real hands-on experience. Each workshop will include a demonstration by (demonstrator) followed by a chance for each of the participating students to try lathe turning in a very safe and controlled environment. Each class will have a special lathe-turning project designed for them by (demonstrator), from decorating wooden tops to making hall passes. All participants will wear full-face shields, will be instructed to follow safety guidelines, and will have one-on-one assistance from (demonstrator), his assistant, and other adult volunteers. Only 4 or 5 children will participate in the hands-on component at a given time. As the children take turns, the rest of the class will watch videos of professional turners at work, or work on a project on symmetry. (venue name), (demonstrator) and his/her adult assistants will take every measure to insure your child's safety at every moment of the workshop.

Time and Date of Workshop \_\_\_\_\_  
-----

By signing this form, you indicate approval for your child to participate in this hands-on lathe-turning workshop.

Student's Name \_\_\_\_\_

Parent/Guardian's Signature and date  
\_\_\_\_\_

Parent's Name (please print) \_\_\_\_\_

Are you able to assist during the workshop? \_\_\_Yes \_\_\_No

**Wood Turning Syllabus**  
**Jerry Brownrigg, Northwestern Oklahoma State University**  
**dollyb@mailstation.com**

NORTHWESTERN OKLAHOMA STATE UNIVERSITY  
INDUSTRIAL TECHNOLOGY DEPARTMENT  
WOOD TURNING 2132

Outline for the Course

This is a beginning course in wood turning which deals with some of the various methods of turning, the equipment used, design, safety, and methods of finishing.

GRADING

1.	Mid Semester test.....	33	1/3%
2.	Final Examination.....	33	1/3%
3.	Laboratory Problems.....	<u>33</u>	<u>1/3%</u>
		100	%

REQUIRED PROJECTS

1. Spindle Exercise.
2. Elliptical Turning.
3. Face Plate Turning.
4. Cheese board or Salt and Pepper Shaker Set.
5. Free Elective (at least one).

ACADEMIC ACCOMODATIONS -- AMERICANS WITH DISABILITIES ACT OF 1990

If any member of the class feels that he/she has a disability and needs special accommodations of any nature whatsoever, the instructor will work with you and the university Office of Disabled Student Services to provide reasonable accomodations to ensure that you have a fair opportunity to perform in this class. Please advise the instructor of such disability and the desired accommodations at some point before, during or immediately after the first scheduled class period.

Topics and Areas Covered:

UNIT I. HISTORY OF THE LATHE.

Study Questions & Discussion Topics.

1. How were the first lathes made?
2. When was the bow lathe invented?
3. What was the name of the next type of lathe following the bow lathe?
4. What was the great wheel?

UNIT 2. LATHE EQUIPMENT AND ITS CARE.

Study Questions and Discussion Topics.

1. Name the parts of the lathe.
2. Name the common cutting and scraping tools used.
3. What are some of the common accessories used on the lathe?
4. List the measuring tools used on the lathe.
5. Explain how to sharpen the common tools.
6. Name some basic ways to care for the lathe.
7. List the safety rules for the lathe.
8. What should you look for when buying a lathe?

UNIT 3. SPINDLE TURNING.

Study Questions and Discussion Topics.

1. What is spindle turning?
2. How is stock prepared for spindle turning?
3. How is stock mounted in the lathe for spindle turning?
4. Know the proper procedures for roughing and finishing a spindle.
5. What tools are recommended to cut tapers, V-cuts, beads, shoulder cuts, and concave and convex cuts?
6. Explain the proper position of the rest, hands, and tools when using the various tools for making combination cuts on spindles.
7. List the various methods of making a split turning and tell how they are made.
8. What are the recommended turning speeds for various spindle diameters?
9. Explain the proper procedure of turning a hammer handle.

10. List some procedures for turning duplicate parts.
11. Compare the advantages and disadvantages of the cutting and scraping method.
12. What is the difference between a cove and groove?
13. What is a mandrel? List some types and explain how they are used.

UNIT 4. FACEPLATE AND CHUCK TURNING.

Study Questions and Discussion Topics.

1. List the different kinds of face plates.
2. Give the proper procedure for fastening stock to the face plate.
3. Describe four occasions of using an auxiliary face plate.
4. What is chuck turning and what are the various types of chucks?
5. What types of cutting is done on face plate work?
6. What is re-chucking and how is work removed from chuck?
7. Explain glue chucking.
8. What is ring clamp chucking?

UNIT 5. SPECIAL TYPES OF SPINDLES.

Study Questions and Discussion Topics.

1. What is post blocking?
2. Explain several types of turnings which are off-center turnings.
3. How are spirals made?
4. What are split turnings?
5. Explain combination turnings.
6. How is metal turned free-hand?

UNIT 6. BUILT-UP TURNINGS.

Study Questions and Discussion Topics.

1. Define built-up turnings.
2. Describe the three general classes of built-up turnings.

UNIT 7. JIGS AND ATTACHMENTS.

Study Questions and Discussion Topics.

1. Describe some of the common sanding jigs.
2. What is a steady rest?
3. How are dowels made on the lathe?
4. Explain the set-up of a fluting jig.

UNIT 8. FINISHING.

Study Questions and Discussion Topics.

1. What is the recommended speed for sanding?
2. How do you sand straight cylindrical stock, concave grooved, beads, shoulders, and convex cuts?
3. How are bowls sanded?
4. What is a French Polish?
5. Know how a wax finish is applied on the lathe.
6. Explain oil finishing on the lathe.
7. What type of finish is recommended for kitchen ware items?
8. How is PEG coated wood finished?

WOOD TURNING REFERENCES

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2. Ensinger, Earl W., Problems in Artistic Wood Turning.
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18. Stokes, Gordon, Woodturning for Pleasure.
19. Thorlin, Anders, Ideas for WoodTurning.

NORTHWESTERN OKLAHOMA STATE UNIVERSITY

ALVA, OKLAHOMA

DEPARTMENT OF TECHNOLOGY

WOODTURNING TECHNIQUES

4300 - 3 HOURS CREDIT

AGENDA

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1. DISCUSSION AND DEMONSTRATION ON TURNING GREEN WOOD

WORKING WITH GREEN WOOD

A. Cutting the Wood:

1. Saw mill - circular saw.
2. Saw mill - band saw.
3. Portable saws - both circular and chain.
4. Re-sawing with circular and bandsaw.

2. Characteristics of Wood:

1. Wood we use.
2. Sapwood and Heartwood.
3. Water in wood.
4. Checking moisture content.
5. What happens when wood shrinks.

3. Drying Wood and Moisture Content:

1. Air Dry.
2. Kiln Dry.
3. Micro-wave.

D. Treating of Wood:

1. Polyethylene Glycol - 1000
2. Paste Wax.
3. Paraffin Wax.
4. Mobilcer - M
5. Green wood sealer.
6. Paint.
7. Glue. Glue and water, Elmers, etc.
8. Palmolive Concentrated Dishwashing Liquid and water (50-50).

II. DEMONSTRATION AND PARTICIPATION ON SPINDLE TURNING AND LETTER OPENER:

1. Safety of the Lathe.
2. Roughing out gouge.
3. Regular gouge.

III. DEMONSTRATION AND PARTICIPATION OF KALEIDOSCOPE PROJECT:

1. Regular gouge.
2. Regular skew chisel.
3. Cove cutting.
4. Bead cutting.
5. Vee cutting.

IV. PROJECT AND BOOK DISPLAY:

- A. Displayed.

V. SELECTION OF WOOD:

- A. Displayed.

VI. WOODTURNING SYMPOSIUM - SLIDE PRESENTATION:

VII. TURNING GREEN WOOD BOWLS:

- A. Discussion and Demonstration.
- B. Class participation.

VIII. DISCUSSION OF DIFFERENT HOLDING DEVICES:

1. Screw Chuck - Turned Letter Opener and Kaleidoscope.
2. Three Jaw Chuck.
3. Precision Chuck (6 in one chuck); vicmarc, oneway, stronghold, etc.
4. Glue Chuck.

IX. HOLLOW TURNINGS:

- A. Shallow boring.
- B. Deep boring.

X. SHARPENING AND CARE OF TOOLS:

- A. Information sheet.
- B. Demonstration.

XI. VIDEO PRESENTATION:

- A. Turned Forms. Selected works from "The Irving Lipton Collection."

**Turning and Finishing Student Inventory**  
**Jack Grube, Pinkerton Academy**  
**jackgrube@adelphia.net**

## Pinkerton Academy

(Turning Curriculum & Finishing 3/2002 - Woodworking)

# Turning and Finishing Student Inventory

Name \_\_\_\_\_

### Level 1

- Plate & Bowl
- Mandrel Project(s) – Key ring

### Level 2

- Set of miniatures and tools.
  - Tools – scraper, gouge and skew.
  - Projects – plate, goblet, bowl, egg and top

### Level 3

- Finishing I (refer to sheet explaining requirements)
- Surface Preparation I
- Chucks and Tools Use (This chart is not in order)

Completed	Project	Chucks	Tools
	Mandrel Projects	Mandrel	Skew
	Bowl	Glue Block	Bowl Gouge
	Bowl	Screw chuck & Reverse	Bowl Gouge
	2 Eggs	4 Jaw Chuck	1/skew & 1 w/ spindle
	Oil Lamp	D/S Tape & Jamb chuck	Bowl & Spindle Gouges
	Wooden finger ring	Jamb chuck	Spindle gouge
	“Button” Project	D/S tape	
	Bottle Stop	Jacobs Chuck	
	Tool handle, bottle opener or dandy duster	Spindle Project	
	Shaker Table		
	Tops	(see related readings)	
	Boxes (Beall system)	(see related reading)	
	Ring Holder	(see related reading)	

Name \_\_\_\_\_ Period \_\_\_\_\_

### Finishing Turned Objects I

Mr. Grube's signature

**Finish**

**Project**

_____	Wax - Soft (Beeswax, Linseed Oil & Walnut Oil) (BriWax is beeswax and carnauba. Use a sanding sealer)	_____
_____	Wax – hard (Hut)	_____
_____	Danish Oil (6+ coats)	_____
_____	Urethane Oil	_____
_____	Danish Oil + Buffing System	_____
_____	Shellac	_____
_____	Rapid Pad	_____
_____	Myland's (shellacbased) (sanding sealer & friction polish)	_____
_____	Wipe on Poly	_____
_____	Crystal Coat (Hut) Shellac and Carnauba	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

**Course Outline for the Lathe/Woodturning Safety**  
**Steve Jennings**  
**[jenste@holmen.k12.wi.us](mailto:jenste@holmen.k12.wi.us)**

# Course outline for the lathe

1. Lathe Safety
2. Tool Identification
  - a. Gouges
  - b. Skews
  - c. Parting tools
  - d. Chattering tools
  - e. Specialty tools
  - f. Scrapers
3. Chucks and Centers
  - a. Spur
  - b. Safety
  - c. Live
  - d. cup
  - e. Drilling chucks
  - f. Holding chucks (Oneway)
4. Sharpening
  - a. Grinders
  - b. Abrasives
  - c. Systems (Wolverine)
  - d. Free hand
5. Turning Spindles
  - a. Tops
  - b. Turning a Captive Ring
  - c. Reverse Turning
  - d.
  - e.
  - f.
6. Turning Bowls
  - a. Standard Bowls
  - b. Dishes
  - c. Segmented bowls
  - d. Natural Edge
  - e. Hollow forms
7. Boxes
8. Sanding
  - a. Speeds
  - b. Grit
  - c. ?
9. Finishing
  - a. Polyurathane
  - b. Laquers
  - c. Filler
  - d. Cyanoaacrylate
  - e. ?

# **-WARNING** Woodturning

is a potentially dangerous activity. Improper use of tools and/or equipment, products or materials as well as not following recommended safety guidelines can result in serious injury or death. It is your responsibility to make sure you are properly educated in all aspects of woodturning and to follow safety guidelines and manufacturers recommendations regarding the proper use of product to ensure your safety. If you have questions regarding proper lathe operation, tool use or safety guidelines, please consult an expert.

## **Woodturning Safety Guidelines-**

- 1. Safe and effective use of a wood lathe requires study and knowledge of proper machine operation, tool use and correct turning techniques. It is your responsibility to read and follow all warning labels and owners/operators manuals supplied on or with machinery, chucks, tools and other products. It is your responsibility to become properly educated in all aspects of woodturning prior to turning wood.**
- 2. Always wear a full-face shield at all times. Shop/Safety glasses alone are not sufficient protection from flying debris.**
- 3. Exposure to wood dust can be harmful to your respiratory system. Always use a proper dust mask or air filtration helmet in addition to adequate ventilation.**
- 4. Always wear adequate hearing protection. Long-term exposure to noise can damage hearing.**
- 5. Do not wear loose clothing, gloves, jewelry or any objects that dangle as they may become entangled in the lathe. Always tie back long hair. Check your person and your surroundings for any other items that may be accidentally entangled.**
- 6. Check your owner/operators manual for proper speed recommendations. If you cannot find recommended speeds, please seek the advise of a professional prior to operating the lathe. Use slower speeds for larger diameter or out of balance work. NEVER start the lathe before checking to make sure the lathe speed setting is correct for the size of work to be turned. If excess vibration or shaking occurs, stop the lathe and determine the cause before proceeding.**
- 7. Prior to starting the lathe, rotate the work piece by hand to make sure that it clears the tool rest support and lathe bed. Also, make certain that all clamping devices are locked and that the tailstock is proper seated against the work.**
- 8. Be sure the work piece is securely mounted and is free of imperfections or substandard glue joints that may result in the work piece separating or flying apart.**
- 9. Make certain that the belt guard and/or control and motor covers are in place. Check to make sure all tightening handles are properly tightened.**
- 10. Make sure that the tool is resting on the tool rest before beginning the cut. Always run the lathe at slow speeds while making roughing cuts and NEVER use a roughing gouge on a bowl.**
- 11. Prior to running the lathe in reverse, make sure that necessary steps are taken to prevent the work piece and/or chuck from unscrewing itself from the lathe.**

12. Always know your capabilities work within your limits. Many techniques and procedures used by professional woodturners may be beyond your abilities or skill level and can prove to be dangerous if attempted.
  13. Utilize the tailstock whenever possible. This provides an added level of safety as it often times prevents the work from coming off the lathe during a mishap.
  14. Always remove the tool rest before sanding and finishing. Failing to do so can result in serious injury to your hand and fingers.
  15. Do not overreach! Although many of today's tools have long blades, this does not mean that they are designed to reach long distances over the rest. Overreaching can cause the blade and/or handle to break causing serious injury.
  16. Keep your tools sharp and properly ground. Dull tools are dangerous as they require excessive pressure to make them cut. If you have difficulty in sharpening, seek the advice of an expert for proper training. Keep tools out of the reach of children.
  17. Do not use tools for purposes for which they are not designed or intended for. Using a tool, chuck or lathe component for purposes other than what they were designed to do will likely result in an accident.
  18. Properly dispose of finishing rags and unused finishes.
  19. Do not leave finish containers open and keep them away from open flame.
  20. Keep your work area clean and free of clutter and debris.
  21. Use caution when finishing with cloth rags, they may become entangled and cause injury.
  22. Inspect your lathe and equipment frequently. Check power cords, connections and do not use extension cords for providing power to your lathe.
  23. Stay alert, take frequent breaks and never operate the lathe or other shop equipment when under the influence of drugs, medication or alcohol.
  24. Never leave the lathe running unattended. Be certain to turn off power to the lathe when not in use.
  25. Use a well-balanced stance when turning while maintaining a firm, comfortable grip on the tool.
  26. Use common sense, if you're unsure, see the advice of an expert. Always take necessary safety precautions to prevent serious injury.
- Safe turning practices are not limited to the recommendations listed above. It is your responsibility to become properly trained and educated prior to attempting woodturning.**

## **WARNING!**

### **Do Not Use Roughing Gouges to Rough Turn Bowl Blanks**

Roughing Gouges are designed to take square spindle stock down to round and should never be used for roughing bowls. Using a roughing gouge to rough turn a bowl blank may result in a serious catch that may break the tang of the tool and result in serious injury. Always wear a full-face shield when operating the lathe at all times.

#### **Proper Use-**

A Roughing Gouge should be used with the cutting edge slightly above the centerline of the work with the tool handle held 2 to 3 inches below center of the spindle. The toolrest

should be positioned approximately 1/2" away from the work and should be adjusted as needed to maintain a safe working distance over the tool rest. Always keep the tool rest within 3/4" of the work piece. Do Not Over Reach.

## What tools do I need?

Prior to purchasing tools, it is important to determine what types of turning you want to be able to do. If turning bowls is your primary interest you will want to choose only tools necessary for turning bowls and similar projects. Likewise, if you want a set of tools that will cover both spindle and bowl turning, it will require more tools and a slightly larger budget. In order to make it easier to choose the correct tools for the job, we have listed the types of available tools below and a description of how they are used. This does not mean you need each of the tools listed below, it is simply a description of the tool and its use. Among the many brands of tools we offer, you will find recommended sets.

## What steels are tools made from?

Today's woodturning tools are produced primarily from two types of tool steel, M2 and ASP series. M2 High Speed steel is the industry standard and holds an edge 6 times longer than carbon steel tools. Unlike carbon steel, M2 High Speed steel maintains its edge holding ability even when "bluing" the edge during grinding. Tools manufactured from M2 are relatively inexpensive and offer good value. ASP series steel is a relative newcomer to the woodturning industry. The edge holding ability of tools manufactured from ASP series steel is 3 to 4.5 times that of M2 High Speed steel. Although ASP series tools can be expensive, these tools last many times longer than M2 and are an excellent investment.

## Bowl Gouges

Deep fluted bowl gouges are easier to control and will remove wood faster than shallow, spindle type gouges when turning bowls. We recommend a 1/2" Bowl Gouge as the first choice when getting started turning bowls. Use the same gouge for rough turning the bowl as well as finish turning. We highly recommend a good scraper to "clean-up" the interior surface after you're finished with the gouge. You can add other sizes of bowl gouges to your collection as needed.

## Spindle Gouges

Although shallow fluted gouges are generally referred to as "spindle" gouges, they are also used for general purpose turning including twig pots, shallow bowls or boxes, detail work, pens, and other smaller work. We recommend a 1/2" Spindle Gouge as the first choice with the 3/8" the next. You can add other sizes and variations of spindle gouges depending on your needs.

## How are gouges measured?

**Spindle Gouges-** are measured by the diameter of the round stock.

**Bowl Gouges-** are measured by the width of the flute. Add 1/8" diameter to the flute size and you will have the diameter of the round stock.

**Exceptions-** Oneway Mastercut tools are measured by the diameter of the round stock.

## Scrapers

At times, scrapers are essential, particularly for interior clean-up work after the gouge work has been completed. Most bowls, boxes, goblets and scoops benefit from light scraping cuts completing the final shaping and improving the surface. Scrapers vary widely in shape and size. Many are ground to unusual shapes to aid in specific types of work such as reaching inside the narrow opening of a hollow form. "Shear" scraping can provide a smoother than normal surface by tilting the scraper on its edge to create a "shearing" cut. All scrapers require a burr edge to do the cutting similar to a cabinet scraper used on cabinetry. When the burr is gone, it needs to be re-sharpened. For a first scraper, we recommend a thick scraper (preferably 1" wide by 3/8" thick) with a "french curve" or radius shape on the end.

## Roughing Gouges

Designed primarily for taking square spindle stock down to round. The deep, wide flute of the tool allows rapid removal of stock and allows heavy cuts. Recommended primarily for spindle turning. In most cases, a 3/4" roughing gouge is the recommended first choice.

## Parting Tools

A parting tool is a must for most woodturners. It is used to part off the waste, establish diameter or cut small flat areas. We recommend the Diamond Parting Tool, as the side clearance permits deep cuts with a minimal amount of drag on the tool. A thin kerf parting tool is recommended for box turning.

## Skew Chisels

The skew is essential for cutting beads and round areas on spindle work. Properly used, the skew will produce smooth surfaces on boxes, goblets, scoops, etc. Skews with a rounded top and bottom edge are recommended. We recommend a 1/2" or 3/4" skew chisel for your first skew.

## Detail Gouges

A very popular tool today, the detail gouge features a long, fingernail point with a shallow flute and heavy cross section that allows turners to reach well beyond the tool rest without the associated vibration caused by thinner tools. It is used for cutting fine detail on beads, decorative grooves and other detail work on bowls and spindles. A 3/8" or 7/16" size is preferred by most turners.

### **Bead Forming Tools**

There are several variations of tools made specifically for cutting beads. Formed beading tools are ground to cut a specific size of bead when used. Fluted beading tools are used with the fluted section of the flute in the downward position with the tool tilted downward from the work piece. Beading tools that do not cut a pre-determined bead size are a rectangular shape tool with a long bevel on the end. This is a shearing tool and is used in a similar manner to a skew. If you find yourself frequently cutting beads, you may want consider one of these types of tools.

(Formed Beading Tool)

(Beading Tool)

(Fluted Beading Tool)

- **Wear a full-face shield at all times for protection.**
- **Make sure tool is on the tool rest before starting a cut.**
- **Always keep tool support as close to the work as possible.**
- **Make sure lathe is set at a safe speed before starting lathe.**
- **Always sharpen a new tool prior to use to ensure it performs properly.**

**WARNING: Failure to follow these basic rules can result in serious injury or death.**

### ***GUIDELINES FOR USING GOUGES:***

Today's gouges feature long shafts and extended flutes for longer wear.

However, this does not

mean these gouges are designed to reach a significant distance beyond the tool rest!

Reaching too far beyond the tool rest results in vibration, increases the likelihood of a serious

"catch" and in some cases may result in the tool shaft or handle breaking causing serious

injury. The chart on the reverse side lists gouge sizes and the recommended distance that a

gouge can safely reach beyond the tool rest. Not working within these recommended distances

can result in serious injury or death. "Max. Reach" indicates the maximum distance that

the tool can safely reach beyond the tool rest. Copyright© 2004 by Craft Supplies USA

### **BOWL GOUGES:**

Gouge Shaft Dia. Max. Reach

1/4"	3/8"	1 1/2"
3/8"	1/2"	2 1/2"
1/2"	5/8"	3 1/2"
5/8"	3/4" or larger	4"

### **SPINDLE/DETAIL GOUGES:**

Gouge Shaft Dia. Max. Reach

1/4"	1/4"	3/4"
3/8"	3/8"	1"
1/2"	1/2"	1 3/4"
9/16"	9/16"	1 3/4"

### **ROUGHING GOUGES:**

Gouge Size Max. Reach

3/4"	1 3/4"
1 1/4" or larger	1 3/4"

Roughing Gouges are for spindle use only,  
NEVER use for bowl turning as the tool may  
break resulting in serious injury!

### **HANDLE SIZE:**

Tool handle length should be at least 5  
times the maximum distance you intend  
to reach beyond the tool rest in order to  
provide the needed leverage for proper  
tool control. Example: For a maximum  
reach of 3" over the tool rest; your handle  
must be a minimum of 15" in length.

**"Max. Reach" indicates the maximum distance that the tool  
can safely reach beyond the tool rest.**

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**Campolindo High School Program Curriculum**  
**Hal Bain, Jacques Blumer, Jim Rodgers**  
**[jacquesblumer@hotmail.com](mailto:jacquesblumer@hotmail.com)**

**Campolindo High School Turning Center  
Moraga, California  
Lathe Certification Program  
Course Outline**

**Program Objectives**

- Teach lathe safety and operations Instill an enthusiasm for lathe work
- Instill an enthusiasm for lathe work in the students
- Teach tool skills using the roughing gouge, spindle gouge, skew, bowl gouge, parting tool and scrapers as part of project work
- Complete at least one spindle and one faceplate turning project
- Teach basic skills (i.e., lathe maintenance, tool sharpening, tool techniques, etc.) as a part of project work.
- Gain sufficient experience to create an on going turning program
- Create a fun and creative environment for both the students and instructors

**Course Guidelines**

- Maximum/minimum of four students
- Six week course syllabus
- All students must agree to dedicate their time during the program to only lathe work
- Volunteer instructors will be present for three periods per week with two periods allocated for student practice
- A certificate will be awarded to each student upon successfully completing the program
- Upon earning certification students can proceed to advanced projects such as natural edge bowls, platters, segmented bowls or projects of student choice. Individual instructor supervision will be a available.
- All student should earn certification prior to working on the lathe

## **Program Outline**

### **1. Spindle Work**

Proposed projects: Bottle stopper, letter opener, weed pot, pen, etc.

Tools: roughing gouge, spindle gouge, skew, parting tool

Program:

#### **Week One**

- Lathe safety
- Lathe basics
- Mounting between centers
- Spindle basics using a 10" 2x2 turning block
  - 1/2", 1/4" and 1/8" practice of:
    - V groove
    - Cove
    - Bead
- Tool sharpening: roughing gouge, spindle gouge

#### **Week Two**

- Students select project (all must do the same project)
- Demo of turning selected project
- Tool sharpening: skew, parting tool
- Student work on selected project

## **2. Faceplate Turning**

Proposed projects: Green wood practice bowl/dry wood final bowl

Tools: bowl gouge, spindle gouge, scrapers, parting tool

Program:

Weeks Three and Four

- Bowl basics
- Instructor Demo of green wood bowl turning-start to finish in one period
- Follow green wood bowl turning outline
- Sharpening
- Lathe Maintenance

Weeks Five and Six

- Dry wood bowl turning

## **3. Graduation**

- Certificate presentation
- Advanced projects as requested

Program Instructor: Don Dupont

Volunteer Instructors: Hal Bain  
Jacques Blumer  
Jim Rodgers

## **Curriculum Outline for Outreach Program**

**S. Gary Roberts**

**SgrIcr71@cs.com**

## Curriculum Outline for Outreach Program

I have looked for the original curriculum that I used at the American Institute for Learning and been unable to locate the file.

I will, however, give you an outline of what we did, and perhaps, that will help you integrate this with your other information.

### Concept:

The concept was to take adolescent students and teach them woodturning. I felt that in this effort, it was important to take the project further and teach them to be Teachers of Woodturning. As you know, those that are successful in learning to turn will eventually teach others. Therefore, properly organized, and with a minimum of additional guidance, this can be accomplished. Telling the students at the beginning that they are to become teachers changes their entire attitude toward the classes—and that is a good thing!

### Schedule Outline:

#### Shop Orientation:

An explanation of the different machinery in the shop begins the basics of being comfortable in their surroundings. Stressing safety begins here. As an example, using the safety goggles that are kept by the grinder. Knowing the function of the different equipment forms a basis of knowledge for future reference.

#### Lathe Orientation:

Basic knowledge of the name identification of each part of the lathe, and its function, adds to the building layers of knowledge and enthusiasm. Legs and sturdy base, Head-Stock, Ways, Tool Rest and Tail-Stock all have different parts and purposes and these should be thoroughly covered. Spot quizzes are necessary to make sure they are familiar with the nomenclature.

#### Chisel Identification:

Learning the four basic chisels' names and how they are used in the turning process is essential to their being able to understand and follow directions. Roughing Gouge, Spindle Gouge, Parting Tool and Skew comprise the four basic units. Explaining the difference in their use and the way they are shaped helps the students understand how to modify the basic tool to become more efficient for their individual turning needs.

### **Grinding and Sharpening:**

I am a strong believer that all beginners should learn to hand sharpen their own tools. Jigs and sharpening systems can be learned later, but hand held shaping of the lathe tools should be taught from the very start. This part of the program should include care and maintenance of the grinder and function of the different grits of grinding wheels. Learning to sharpen on a belt sander will increase the life and sharpness of their tools.

### **Choice and properties of Wood:**

A general orientation of the properties and variety of wood is always necessary for those new to woodworking. The different parts of the tree, and their particular function, must be understood to make proper choices later. Stress should be placed on the variety of graining patterns available in the same log and how they can best be utilized for different projects. Wood preparation and drying processes should be a part of any woodworker's basic knowledge. An entire session should be spent on toxic woods to emphasize the necessity of wearing safety equipment.

### **Woodturning – General Information:**

A brief history of woodturning is recommended. This should include the evolution of the lathe as a machine and the tools used in the trade. The four basic tools changed very little until the American Association Of Woodturners was created. This association created the vehicle to exchange of information on a level never before experienced in any trade or craft. Consequently, in the last twenty years, we have seen major changes in lathes, tools and accessories.

### **Woodturning – Procedures:**

The three basic procedures in woodturning are Spindle Turning, Open Bowls and Lidded Boxes. All other procedures are merely variations of these basic disciplines.

### **Spindle Turning:**

Spindles are turned between centers from pre-prepared stock and are comprised of a series of Beads and Coves. This subject should include the preparation of the stock, variations of lathe speeds and the use of single and multiple pedestal tool-rests.

Duplication of an original pattern by hand, computer guided electronic machines and mechanical duplicators should be addressed. This should include the making and use of shop-made jigs, storyboards, and/or scratch-blocks to speed the process.

Tools and techniques used in hand-turned spindles are unique to turning and should be thoroughly covered in both the classroom and hands-on shop exercises.

### **Open Bowls:**

Bowl turning is an extremely broad subject and can be divided into a number of categories, depending upon the availability of time to be devoted to the subject. Open bowls are the basic, and most simple of the form. However, the degree of difficulty is increased as the opening is narrowed to a bottle form. Hollowing through a small opening requires a greater degree of experience and skill. Modern techniques include the use of laser guided wall thickness indicators.

### **Lidded Boxes:**

Wooden Boxes with fitted lids require that design techniques be utilized prior to commencement of the project. Working from shop drawings, or exact scale plans, are necessary for successful and consistent production in this discipline. Wood choice should be discussed and possible distortion considered as an important ingredient to any box making class.

### **Sanding Techniques:**

A history of sandpaper, discussion of grits, how they are identified and how to care for your inventory are good subjects to the introduction of sanding. This is one of, if not the most, critical disciplines in obtaining a quality finish on any turning project. Any finish will work well on a properly sanded piece. There is not a finish made that can be applied to a piece that is poorly sanded that will make it look good. The instructor must stress the importance of patience and self-discipline during this procedure on all products. Wearing safety equipment such as masks, helmets and the use of dust collector systems should be a part of the class.

### **Finishes:**

Use of finishing chemicals includes necessary cautions of working with hazardous material. Stress should be given to wearing safety equipment. Since there are a great variety of materials from which to choose, it should be discussed with the staff as to which is most applicable at the time. Buffing systems that are available today provide quality results to the many alternatives.

**Enjoy Turning!**

**S. Gary Roberts**

**Child Protection Policy and Procedures**  
**Capital Area Woodturners, Inc – Tom Boley**  
**tboley@erols.com**

# **Child Protection Policy and Procedures Capital Area Woodturners, Inc.**

## Child Protection Policy and Procedures

(Drafted 01/05)

“Each year in Virginia, over 39,000 children are reported to local social services departments for suspected child abuse or neglect.”

- The Virginia Department of Social Services

### **I. Our Mission**

Capital Area Woodturners, Inc. is a not for profit corporation established to promote the craft of woodturning through education of both the public and its members, teaching both safety and skills needed to perfect techniques.

### **II. Purpose**

Capital Area Woodturners, Inc, (CAW) expects that in implementing this policy, we will be providing a safe environment in which CAW may carry out its education program targeted toward the youth of the community, those who are between 12 and 17 years of age. The purpose of this CAW Child Protection Policy and Procedures is to ensure a caring and secure environment for youth and for the adults who interact with them at a sanctioned CAW event by:

1. providing procedures specifically designed to protect youth, CAW members, and others associated with CAW,
2. establishing appropriate ways of responding to alleged, reported, or suspected incidents of abuse,
3. and being in compassionate contact with all affected persons -- the alleged victim, the alleged victim's family, the accused, and the accused's family.

### **III. Capital Area Woodturners, Inc.**

CAW exists to educate our members and the public about the craft of woodturning. As we look around our meetings and events, we generally see older adults and few youth. Being concerned that the craft is not being taught to the youth of the nation because of the apparent demise of a woodworking curriculum in our public schools, one of our goals is to seek out and make contact with youth of the community in order to demonstrate and teach woodturning in a way which will interest our children and our neighbors' children in the craft. At the same time, we recognize that children must be protected from economic, physical, and

sexual exploitation, and from abuse. We therefore adopt this document, “The Child Protection Policy and Procedures,” for the prevention of child abuse during any woodturning event sanctioned by CAW. .

In observance of this policy and upon approval by the membership, the President will appoint a Child Protection Committee. The Members of this committee will include the president and consist of three to five members of CAW. The duties of the Child Protection Committee will be to carry out the mission and purpose stated in the Child Protection Policy and Procedures, to annually review and propose any revisions to the Policy, and to be responsible for the administration and interpretation of the Policy.

#### **IV. The Law**

##### **Definition of Child Abuse:**

Section 63.2-100 of the Code of Virginia defines an abused and/or neglected child as any child under 18 whose parent or other person responsible for the child’s care:

- Causes or threatens to cause a non-accidental physical or mental injury
- Neglects or refuses to provide adequate food, clothing, shelter, emotional nurturing, or health care
- Abandons the child
- Fails to provide adequate supervision in relation to the child’s age and developmental level
- Commits or allows to be committed any illegal sexual act upon a child including incest, rape, fondling, indecent exposure, and prostitution or allows a child to be used in any sexually explicit visual material.

##### **Reporting Requirements:**

Should there be an allegation of child abuse involving a child, youth or adult connected with CAW and its activities, we will proceed according to the reporting requirements found in Section 63.2-1509 of the Code of Virginia which states that “...any person associated with or employed by any private organization responsible for the care, custody, or control of children...who, in their professional or official capacity, have reason to suspect that a child is an abused or neglected child, shall report the matter immediately...to the local department of the county or city wherein the child resides or wherein the abuse or neglect is believed to have occurred or to the Department’s [Social Services] toll-free child abuse and neglect hot line.” (1-800-552-7096)

#### **V. Types of Child Abuse**

(Taken from the Virginia Administrative Code)

**A. Physical Abuse**

Physical abuse occurs when a caretaker creates or inflicts, threatens to create or inflict, or allows to be created or inflicted upon a child a physical injury by other than accidental means or creates a substantial risk of death, disfigurement, or impairment of bodily functions. Examples: asphyxiation; bone fracture; brain damage, skull fracture/subdural hematoma; burns/scalding; cuts, bruises, welts, abrasions; internal injuries; poisoning; sprains/dislocation; gunshot/stabbing wounds; Munchausen Syndrome by Proxy; bizarre discipline; battered child syndrome; shaken baby syndrome and exposure to sale or manufacture of certain controlled substances. (22 VAC 40-705-30(A))

**B. Physical Neglect**

Physical neglect occurs when there is the failure to provide food, clothing, shelter, or supervision for a child to the extent that the child's health or safety is endangered. This also includes abandonment and situations where the parent or caretaker's own incapacitating behavior or absence prevents or severely limits the performing of child caring tasks pursuant to 63.2-100 of the Virginia Code. (22 VAC 40-705-30(B)) Physical neglect may include multiple occurrences or a one-time critical or severe event that results in a threat to health or safety. (22 VAC 40-705-30(B)(1))

The types for a founded disposition of physical neglect include the following when the conditions have caused harm to the child, or threaten the child's health or safety: abandonment, inadequate supervision, inadequate clothing, inadequate shelter, inadequate personal hygiene, inadequate food, and malnutrition.

**C. Medical Neglect**

Medical neglect occurs when there is the failure by the caretaker to obtain and or follow through with a complete regimen of medical, mental or dental care for a condition which if untreated could result in illness or developmental delays pursuant to 63.2-100 of the Code of Virginia. (22 VAC 40-705-30)) Medical neglect includes when the caretaker fails to provide or allow necessary emergency care in accordance with recommendations of a competent health care professional to include: emergency medical care or treatment, necessary health care or treatment, necessary dental care or treatment, necessary mental care or treatment.

**D. Mental Abuse/Neglect**

Mental abuse or neglect occurs when a caretaker creates or inflicts, threatens to create or inflict, or allows to be created or creates a substantial risk of impairment of mental functions. (22 VAC 40-705-30(D)) Mental abuse may result from caretaker actions or inactions such as: overprotection, ignoring, indifference, rigidity, apathy, chaotic lifestyle, or other behaviors related to the caretaker's own mental problems.

**E. Failure To Thrive**

Failure to thrive occurs as a syndrome of infancy and early childhood which is characterized by growth failure, signs of severe malnutrition, and variable degrees of developmental retardation. (22VAC 40-705-30(B)(2)(a)) Failure to thrive can only be diagnosed by a physician and is caused by nonorganic factors...Nonorganic failure to thrive generally indicates the absence of a physiologic disorder sufficient to account for the observed growth deficiency.

**F. Sexual Abuse**

Sexual abuse occurs when there is any act of sexual exploitation or any sexual act upon a child in violation of the law which is committed or allowed to be committed by the child's parents or other persons responsible for the care of the child pursuant to 63.2-100 of the Code of Virginia. (22 VAC 40-705-30 (E)) Examples of such abuse are: sexual exploitation, sexual molestation, intercourse/sodomy, and other sexual abuse.

**VI. Recognizing Child Abuse and Neglect**

The following physical and behavioral indicators for recognizing child abuse and neglect are taken from the Virginia Department of Social Services brochure entitled, "Recognizing, Reporting and Preventing Child Abuse and Neglect in Virginia." (Publication 032-01-036-dated 10/02)

**VII. CAW's Guidelines for Safety**

In an effort to create the safest possible environment within the CAW youth education program, the abuse prevention measures described below will be implemented. These measures include screening of CAW member volunteers for past child abuse convictions or expungements, provision for regular training on child abuse issues to members who work with youth, use of the two adult rule, use of the six month rule, standards of appropriate discipline, guidelines for the release of youth, and information on maintaining open classrooms.

**A. Six Month Rule**

CAW will not use anyone as a leader for youth activities unless that person has had continuous active involvement in CAW for at least six months. Those persons involved in CAW for less than 6 months may serve in an assistant capacity.

**B. Screening For Those Working With Children**

Before working with our children/youth, each person, 18 years or older, who would like to be involved in the CAW youth woodturning education program will be asked to complete the Child Protective Training described below and sign a statement indicating that he/she has never been convicted of child abuse.

Also, the screening form will ask for the following: general information, criminal convictions, and prior involvement in any organization involving contact with youth. Anyone who has had a child abuse conviction or expungements, as well as anyone refusing to sign the statement will not be permitted to participate in any CAW event primarily considered to be a youth woodturning education activity. All persons seeking to be involved in CAW youth activities shall also undergo a criminal record check made through the Virginia State Police and the Central Criminal Records Exchange (CCRE). CAW will cover the cost of this fee. Following satisfactory completion of the application and the criminal record check, members in good standing may participate in CAW youth education activities.

**C. Training For Those Working With Children**

All members who work with children/youth must attend an orientation and training session, given by the Child Protection Committee before they may work with youth in CAW youth education activities. No individual will be excused from this screening regardless of other screening credentials or positions. Training will cover the following topics: sensitivity to issues that constitute child abuse; staffing that insures child safety and guards against unfounded accusations; identification of abuse occurring outside of CAW activities, and acceptable behavior and care for specific age groups.

**D. Two Adult Rule (Both should be 18 years or older.)**

- Adults will be assigned in teams of two or more for all youth activities.
- If the group is divided, each subgroup will have two adults..
- If two adults are not available for each group, then either the group will be combined with another group to make possible the presence of two adults or the activity will be cancelled or postponed.
- If a CAW-sponsored group leaves the primary site of a CAW youth education activity, two or more adults must be present and must include at least one male and one female, if the group is mixed gender.
- If the parent of a participating youth is in attendance, that parent may substitute for a trained CAW member if that parent agrees.
- All adult CAW members who may be involved in youth education events are not required to have been vetted and trained in accordance with this policy as long as two of the adult CAW members present have been so vetted and trained.

**E. Standards of Appropriate Classroom Discipline**

All leaders and workers with youth will use the following disciplinary measures. If a youth is behaving inappropriately, the leader or assistant will tell the youth specifically what he/she is doing that is not acceptable and state what the expected behavior is. If this measure is not effective, the youth's parents will be contacted and requested to come pick up the youth. The youth will be kept within view of the adult leaders until the parent/guardian arrives

to take charge of the youth. No physical punishment or verbal abuse; e.g., ridicule, may be used at any time.

**F. Open Activities**

Classrooms or workshops where CAW youth education activities are occurring may be visited at any time without prior notice by CAW officers or by parents.

**VIII. Outside Instructors**

If a CAW youth education activity involves the participation of an outside woodturning instructor who has not attended the CAW Child Protection Policy training, then two CAW members who have been trained and approved must be present in addition to the outside instructor.

**IX. Reporting Child Abuse**

Should there be an allegation of child abuse involving a child, youth, or adult connected with Capital Area Woodturners, Inc. and its activities, the matter shall be reported immediately to the president of CAW, or vice-president in the absence of the president, and to the chairperson or another member of the Child Protection Committee. Together, the committee shall ensure that appropriate actions are taken. If the alleged abuse occurred during a CAW activity, the following procedures will be followed:

1. Every allegation of child abuse shall be treated seriously.
2. The Child Protection Committee will meet in person or by telephone to consider appropriate actions.
3. No investigation will be conducted by the Child Protection Committee, nor will the accused be confronted.
4. All procedures that occur in handling the allegation will be documented.
5. If the accused has additional duties involving a CAW youth activity, that person may be relieved of such duties until the investigation is concluded.
6. It is appropriate to show care and comfort for the alleged victim. This should be the primary objective of the president from the moment the allegation is received or otherwise made known.
7. Confidentiality for both the alleged victim and the accused will be maintained.
8. Professionals will be involved as needed.

9. Should the Child Protection Committee determine that there is a reason to suspect that child abuse may have occurred, then the following steps shall be taken:
  - a. Immediately notify the Virginia Department of Social Services of the allegation. (within 72 hours as stated by Section 63.2-1509):
  - b. Immediately notify the parents if it is not known that they have previous knowledge.
  - c. Immediately notify the American Association of Woodturners who will notify its insurance company.

## **X. Policy Review**

The Child Protection Policy and Procedures of Capital Area Woodturners shall be reviewed annually by the Child Protection Committee and then by the officers. A verification confirmation will be made each year at the annual meeting to ensure the integrity of the policy and procedures.