Segmented Turning:
An Illustrated Guide

Ralph S. Buckland
Since woodworking involves risks of injuries or damage, this book cannot guarantee that the projects are safe for everyone. This book is sold without guarantees of any kind implied or expressed by the author. The author disclaims any liability for injuries, loss or damage of tools and materials. The author suggests that the woodworker thoroughly understand woodworking techniques and the manufacturer’s safety guidelines. In many of the photos the safety guard has been removed to have a better view of the operation. I strongly recommend using safety guards.
Dedication

This book is dedicated to my wife, Kathy. I would also like to thank Paul Hershberger, Larry Lance and Merle Mast, of Keim Lumber in Charm, Ohio, for the use of their wood species photographs and helping to select various woods used in the book. Also I would like to thank Craig Jackson and Robert Q. Smith at Easy Wood Tools in Lexington, Kentucky for the use of the photographs of their lathe tools.

Preface

Segmented turning offers a realm of design possibilities. Add this to the creative freedom offered by lathe work and an endless adventure begins. I prefer to work with wood while others express their designs with a variety of other materials. Whether you are a novice or a professional woodworker, I hope you will find new and meaningful advice in this guide.

Always follow the manufacturer’s safety instructions. Taking advantage of woodworking classes and seminars is encouraged. As you explore segmented turning as well as other woodworking endeavors, make safety your first priority. I have included some safety tips and advice I use which I think you will find useful.
Table of Contents

1. Introduction
2. Topics and Processes
3. Project Designs
4. Design by Layers
5. Feature Ring, Border and Accent Ring
6. Top Designs
7. Inside Bottom Design
8. Masonry Patterns
9. Silhouettes
10. Projects

A. Spiral Bowl

B. Layered Twig Vase
C. Basket

D. Teepee Vessel
E. Arrowhead Vessel

F. Course Ashlar Brick Vessel
G. Kokopelli

H. Black Bear Bowl
I. John's Lamp
J. Fish Bowl

K. Tulip Vase
Chapter I – Introduction

Segmented turning involves cutting small pieces of wood called segments at a predetermined angle to form a wooden circular ring. Various colors of wood can be used for each segment thus creating a colorful ring. Rings are stacked and glued together to form an object, such as a bowl, box, vessel, lamp and sculptured pieces. Some individual segments may be made up of smaller pieces of wood. It’s not unusual for one segment to have 25 or 30 pieces of wood. A ring with segments of multiple pieces of wood may have three or four hundred pieces. These rings that are more complex are often called featured rings or design rings. Other rings that are less involved and have a lesser number of features can be called border rings. Accent rings, such as the triangle shape, are often added randomly to “spruce up” a project. It is not uncommon for a segmented project to have several hundred or even several thousand pieces of wood.

This book will provide guidance and information for designing your own project, angles and sizes of commonly used rings, feature rings, border rings, accent rings, designs for the top and bottom of a project, masonry as well as silhouette designs. Techniques and processes are discussed in chapter II.

Some of the common tools used in segmented turning are: wood lathe, radial arm saw, table saw, band saw, table jig saw or scroll saw, a belt sander, a drum sander, a disc sander, orbital sander, segmented presses, various measurement tools, lathe tools, workbench or table, Forstner bit, twist bit, router, drill press, faceplate and various lathe accessories, a good collection of woodworking hand tools and a rotary power carver. Buying tools seems like a neverending event, seems like there is always something I would like to have.

 Needless to say segmented turning requires preparation, a good plan and also a lot of time to complete. The rewards from all this are great in the completion of a beautiful project that may take
days, weeks or even months to complete.
I hope this guide will be thorough in its content and help you to accomplish a rewarding project while having a safe experience.
Chapter II-Topics and Processes

A. Cutting Segments

Segments can be made two ways. First, staves are made with the grain running vertically and would be a similar process as used in drum or barrel construction. When looked at from the top it would have the same general shape as a segment in segmented turning.

Segments are smaller in height and are usually from an 1/8 inch to about 4” in height. The face of the wood is always facing outward, that is, with no end grain showing.

The grain can run vertically, horizontally or at an angle. Often when segments are made, they are made a little taller than necessary and can be turned down to the correct size as you flatten the ring.
Listed are commonly used rings sizes as well as the correct segment size and angle for the rings being shown. I have included ring sizes from 16” in diameter thru 2” in diameter. The rings will vary in size every 1/2”. The rings are shown with commonly used number of segments. The first consideration in designing or turning a project is to know the largest diameter your lathe is capable of turning. For example, if there is 5” from the center of your spindle to the bed of the lathe than you can only turn a 10” diameter. Keeping this in mind I will call this outside diameter the point to point distance.

The red line shows the largest diameter you can turn from this 8” point to point ring. Detail A shows a ring with four segments.
The point to point distance would be 8”. After this is turned, you can only achieve a 5 21/32” diameter. The blue area on the outside of the drawing is wood that will be turned off and wasted. Now look at detail B. This diagram shows the same 8” point to point ring but with more segments, six in this case. Using more segments, you will be able to get a larger ring, in this case almost 7”, it’s actually 6 59/64”. In detail C an 8” ring is shown with 16 segments.
Notice there is very little blue on the outside. This means there will be very little waste and theoretically the largest diameter would be 7 21/32”.

B. Common Ring Sizes
In the following diagrams I have shown point to point rings from 16” thru 2” and varying every ½”. On each of these the red dimension shows the largest theoretical diameter possible for that particular ring. Also given is the angle for each segment as well as the segment width.
16 " POINT TO POINT RING

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

24 SEGMENTS

30 SEGMENTS

36 SEGMENTS

ø16

ø15 3/32

 ø15 11/16

 ø15 29/32

 ø15 5/8

 ø15/16

 ø15 5/32

 ø15 27/64

 ø15 19/32

 ø15/32

 ø15 31/64

 ø15 3/64

 ø15 1/8

 ø15 7/32

 ø15 1/16

 ø15 5/64

 ø15 1/32

 ø15 3/64

 ø15 1/16

 ø15 5/64

 ø15 1/32
15-1/2" POINT TO POINT RING

12 SEGMENTS

\[ \phi 15 \frac{31}{32} \]
\[ 4 \frac{1}{64} \]

16 SEGMENTS

\[ \phi 15 \frac{13}{64} \]
\[ 3 \frac{1}{32} \]

20 SEGMENTS

\[ \phi 15 \frac{1}{2} \]
\[ 18.00^\circ \]
\[ 2 \frac{1}{64} \]

24 SEGMENTS

\[ \phi 15 \frac{5}{16} \]
\[ 15.00^\circ \]
\[ 2 \frac{7}{64} \]

30 SEGMENTS

\[ \phi 15 \frac{27}{64} \]
\[ 12.00^\circ \]
\[ 1 \frac{5}{8} \]

36 SEGMENTS

\[ \phi 15 \frac{7}{16} \]
\[ 10.00^\circ \]
\[ 1 \frac{11}{32} \]
14-1/2 " POINT TO POINT RING

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

24 SEGMENTS

30 SEGMENTS

36 SEGMENTS
14" POINT TO POINT RING

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

24 SEGMENTS

30 SEGMENTS

36 SEGMENTS

\( \Phi_{14} \)

\( \Phi_{13 \frac{33}{64}} \)

\( \Phi_{13 \frac{47}{64}} \)

\( \Phi_{13 \frac{53}{64}} \)

\( \Phi_{13 \frac{59}{64}} \)

\( \Phi_{13 \frac{59}{64}} \)

\( \Phi_{13 \frac{61}{64}} \)

\( \Phi_{14} \)

\( \Phi_{13 \frac{7}{8}} \)

\( \Phi_{13 \frac{7}{8}} \)

\( \Phi_{14} \)

\( \Phi_{15 \frac{1}{32}} \)

\( \Phi_{12 \frac{1}{16}} \)

\( \Phi_{12 \frac{1}{16}} \)

\( \Phi_{15 \frac{1}{32}} \)

\( \Phi_{12 \frac{1}{16}} \)
13-1/2 " POINT TO POINT RING

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

24 SEGMENTS

30 SEGMENTS

36 SEGMENTS

\( \phi 13\frac{1}{2} \)

\( \phi 13\frac{3}{64} \)

\( \phi 13\frac{15}{64} \)

\( \phi 13\frac{1}{2} \)

\( \phi 13\frac{21}{64} \)

\( \phi 13\frac{25}{64} \)

\( \phi 13\frac{1}{2} \)

\( \phi 13\frac{27}{64} \)

\( \phi 13\frac{29}{64} \)

30.00°

22.50°

18.00°

15.00°

12.00°

10.00°
9-1/2 " POINT TO POINT RING

8 SEGMENTS

10 SEGMENTS

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

30 SEGMENTS
8-1/2" POINT TO POINT RING

8 SEGMENTS

10 SEGMENTS

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

30 SEGMENTS
5” POINT TO POINT RING

8 SEGMENTS

10 SEGMENTS

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

30 SEGMENTS
4-1/2 " POINT TO POINT RING

8 SEGMENTS

10 SEGMENTS

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

30 SEGMENTS
4 " POINT TO POINT RING

8 SEGMENTS

10 SEGMENTS

12 SEGMENTS

16 SEGMENTS

20 SEGMENTS

30 SEGMENTS
3-1/2 " POINT TO POINT RING

4 SEGMENTS

\[ \varnothing \frac{3}{2} \]
\[ \frac{215}{32} \]
\[ 90.00^\circ \]

6 SEGMENTS

\[ \varnothing \frac{3}{2} \]
\[ \frac{3}{4} \]
\[ \frac{31}{32} \]
\[ 60.00^\circ \]

8 SEGMENTS

\[ \varnothing \frac{3}{2} \]
\[ \frac{11}{32} \]
\[ \frac{315}{64} \]
\[ 45.00^\circ \]

10 SEGMENTS

\[ \varnothing \frac{3}{2} \]
\[ \frac{3}{3} \]
\[ \frac{21}{64} \]
\[ \frac{36.00^\circ}{3} \]

12 SEGMENTS

\[ \varnothing \frac{3}{2} \]
\[ \frac{29}{32} \]
\[ \frac{3}{8} \]
\[ 30.00^\circ \]
3" POINT TO POINT RING

4 SEGMENTS
\[ \Phi_3 \quad 90.00^\circ \quad \Phi_2 \frac{1}{8} \]

8 SEGMENTS
\[ \Phi_3 \quad 45.00^\circ \quad \Phi_2 \frac{49}{64} \]

6 SEGMENTS
\[ \Phi_3 \quad 60.00^\circ \quad \Phi_2 \frac{19}{32} \]

10 SEGMENTS
\[ \Phi_3 \quad 36.00^\circ \quad \Phi_2 \frac{55}{64} \]

12 SEGMENTS
\[ \Phi_3 \quad 30.00^\circ \quad \Phi_2 \frac{57}{64} \]
C. Cutting Segments
The first method is using a power miter box. After each segment is cut, you may have to sand off the burrs. This is easily done by hand or with a disc sander. The second method is using a sled on the table saw which is made to slide in the T-slot grooves of the table saw’s table. The fence on the sled can be adjustable or I prefer to make a sled for the various angles of the segment being cut. If I’m cutting 16 segments, I would have a sled for 16 and if I’m cutting 32 segments, I would make a sled for 32; that way, I know the sled is always correct and I don’t have to worry about adjusting the angle. A third method is to use a band saw to cut the angle then touch it up using a disc sander. I use this method, usually on thicker or larger segments.

D. Spreading Glue onto Segments
I have several methods of spreading the glue. First using a small brush made by rockler.com; these are easily cleaned and reuseable. The second method is using a throw away brush; I wrap these in
aluminum foil after gluing and they will stay moist for several days. The third method is using one block to spread glue on the other.

E. Gluing Segments into Rings
The segment can be glued with titebond glue into semi-circles by holding each segment against the adjacent segment for a few seconds until they bond together, gluing a half ring at a time.

Once this half ring is dry make sure it is straight on the bottom by touching it up using a disc sander. Check to be sure the bottom is straight on a flat, machined surface. A try square or a straight edge would work also. Press the two semi-circles together and lay them on wax paper. Once these adhere together, set them up and they will dry quicker.

A second method of gluing a ring and probably the most common is to use a band clamp. Trial glue the segments together and if you have a slight gap correct it on a disc sander.
To check for gaps, hold the ring up against a light source or a window. Once the ring is correct, apply glue and tighten the band. With the ring firm but not too tight, flatten the segments together with a hammer. The ring is now ready to be held in a press. The press shown is made using a heavy screw from a wood
Another method is to drill a hole in a table. Put a heavy bolt, ½” works well, up through the table and through a disc on top of the ring. Notice I have used wax paper on both sides of the ring to prevent gluing it to the plywood disc or the table. Once the glue has dried on the ring, it can be flattened.

F. Flattening the Ring
The first method is to hold the ring against a disc sander and sand it flat.
If you don’t have a disc sander it is easy to make a disc. Shown, is a 12” plywood disc attached to a faceplate with 12” adhesive sandpaper.

Another method is to drill holes on the inside of the ring and attach the ring to a disc so it can be turned flat on the lathe. This works well for lamps since the holes will not show because you do not turn the inside
of a lamp. Turn the ring flat. Check and see if the ring is flat by using a straight edge. A third method and probably the easiest is to use a drum sander which can be used to flatten both sides quickly.

G. Splitting Rings
In order to save money, you can split a ring into two rings easily by cutting straight in with a parting tool. Once you have about 1/16” of wood left use a multi tool or a backsaw to cut the rings apart.

This technique is useful on a zigzag ring. Detail A shows using a parting tool to split the ring. Detail B shows that a new smaller ring has been made and detail C shows that a larger thinner ring has also been made.

H. Lathe Parts
Lathes may vary in appearance but all have the same basic parts.

I. Standard Lathe Tools
The most common sets include six lathe tools.

J. Carbide Lathe Tools
Lathe tools can be bought with carbide tips which saves you from sharpening and they last a long
Once the edge becomes dull the carbide tip can be rotated to a new sharp edge. I like to use Easy Wood Tools. Using these tools are sort of like driving a Lamborghini. They are fast, fun and smooth in the corners. Actually I’ve never driven a Lamborghini but it would probably be fun as well. The Easy Rougher Tool can be used on the inside or the outside surfaces.

The Easy Finisher Tool has a round tip and works well on curved and concave surfaces.

The Easy Detailer Tool has a nice sharp point and is ideal for beads and very detailed cuts.
For hollowing out bowls the Easy Hollower Tool can be used to get started.

Then you can progress to the Easy Hollower 2 and 3. Replacement blades can be bought for each of the previously mentioned tools.

To start hollowing out the inside of a bowl, you can use a Forstner bit to drill a hole or use an Easy Rougher. Then you would want to use the Easy Hollower 2 and 3.
K. The Janka Scale
The Janka Scale is used to determine the density and hardness of wood. The hardwood flooring business refers to the Janka Scale often when referring to a particular flooring. The density or hardness of wood is determined by forcing a steel ball-bearing into the face of a piece of wood. The ball-bearing is pressed in halfway and the pounds of pressure needed are used to determine the hardness of the wood. In the section on woods, I use the Janka Scale to describe the hardness of each wood.

L. Commonly Used Woods
Listed are some of the woods you may want to use in segmented turning. There is a variety of color, figured woods and woods of various hardness. Many of the woods that I have listed may be straight grain or figured. Figure refers to the unusual
markings and grain direction found on the surface of the wood. These figures may be caused by many factors: stress, location, nutrient, genetics, location of limbs, insects, growth pattern of the tree and other reasons.

The angles which the log is sawn will produce different visual effects and stability.

The fastest method of sawing lumber is called plain sawn. This produces the most affordable lumber and is available at most lumber yards. Quarter sawn lumber is more stable than plain sawn lumber. It is less likely to warp, twist and cup. Quarter sawn lumber has a flick pattern usually found in white or red oak. The quarter sawn method is more expensive than plain sawn. Rift sawn lumber is the most expensive way to cut lumber since there is more waste and more labor intense. Custom furniture makers like the rift sawn lumber since it is the most stable of the three methods of cutting. A curly figure is often called tiger stripes or fiddle back. These are ripples that are common in maple, cherry, walnut, ash, sycamore and many others. Quilted refers to a blistered figure. It looks somewhat 3 dimensional. A good example is in the big leaf maple. Spalted refers to a pattern caused by decay from a fungal attack. Spalted maple is used in several projects in this book. A burl is a warty growth found on a tree and has very unusual
grain patterns. Birds eye is often found in maple. This is a spotted or dimpled effect that may look like an eye. A crotch is where a tree splits, an example would be a branch splitting off from the trunk of the tree. A swirl is usually found in a crotch. This is also called marbling, which is commonly found in claro walnut. Ambrosia maple grows in North America. It is also called wormy maple because of the ambrosia beetle which worms its way through the soft maple wood. Ambrosia is caused by an infection from the ambrosia beetle. The beetle leaves a black streak as it goes through the wood. The Janka Scale is 950.

Beech grows in North America. Beech is reddish brown in color with a straight grain. The Janka Scale is 1300.

Birch grows in North America. The heartwood is reddish brown and has a straight grain with a fine and even texture. The Janka Scale is 1260.

Blackwood also known as African Blackwood, grows in Africa. It has a straight grain pattern and
is also called Mozambique Ebony. The Janka Scale is 1720.

Black Ebony grows in Cameroon, the Congo and Gabon. The heartwood is jet black and the sap wood is a yellowish white color. The Janka Scale is 3220.

Bloodwood grows in Brazil, Venezuela, Peru and Panama. Bloodwood is usually a deep red color, I use it extensively in turnings. Its Janka Scale is 2900.

Bocote grows in Florida, West Indies, Central America, Brazil and Argentina. The heartwood is usually reddish brown to dark brown with black streaks. It has a Janka Scale of 2200.
Box Elder is a fast growing tree which can reach 70 feet tall. It grows in the United States. Box Elder has bright red streaks and should be kept out of the sun to keep it from fading.

Bubinga grows in Cameroon, Gabon and the Ivory Coast. The heartwood is a reddish brown with pink and red stripes. Its Janka Scale is 1980.

Canary Wood grows in Panama, Ecuador and Brazil. The heartwood is orangish to yellow and is
striped. It has a Janka rating of 2000.

Chakte Kok grows from southern Mexico to Brazil and Paraguay. It has a Janka rating of 1400.

Cherry grows in North America. The heartwood is a reddish brown and usually has straight grain with narrow lines. Cherry can be quilted, curly and figured. The Janka Scale is 950. This table is from Ralph’s book *Building Natural Edge Slab Tables*

Coco Bolo grows in Mexico and Central America. It varies in color ranging from reds, oranges, yellows to black and brown. It often has swirly patterns as well as straight grains. Its Janka Scale is 1136.

Coconut Palm grows worldwide in warm areas near salt water. The wood is dark brown with light
streaks. Its Janka Scale is 1600.

Cumaur grows in Northern South America. The heartwood is a medium dark brown and the wood becomes lighter when it comes in contact with a light source. Its Janka Scale is 3540.

Holly’s origin is North America. The heartwood is very white and has a close grain. Its Janka Scale is 1020.

Jatoba grows in the West Indies, Central America, Venezuela, Paraguay, Peru and Brazil. The
heartwood is reddish brown or orangish brown; its Janka scale is 2820. Kingwood grows in Brazil. This wood is a violet brown and sometimes almost black with streaks of gold and yellow. Its Janka Scale is 3340. Lacewood grows in South America. It has a pattern that resembles lace. The Janka Scale is 840. Leopardwood grows in South America, Chile and Brazil. The wood is pinkish brown to medium
brown. It has a speckled figure in a lace like pattern. Its Janka Scale is 840.

Lignum Vita grows in Florida, Central America and the West Indies. The heartwood is greenish in color with a featherish pattern. Its Janka Scale is 4500.

Maghony (Honduras) grows in Southern Mexico, Columbia, Venezuela, Peru, Bolivia, Brazil. The heartwood can range in color from a light tan to a reddish brown, 02-075 CCC. Its Janka Scale is 800.

Maple (hard) grows in North America. It is a creamy white color and usually has a straight grain pattern. The Janka Scale is 1450.

Marblewood is found in South America. This wood is yellowish to golden brown with black
streaks. Its Janka Scale is 3532. Mesquite (black) is chocolate brown to a purplish color. The Janka Scale is 2345. Padauk grows in West Africa, Gabon, Congo, Cameroon, Nigeria and the Ivory Coast. The heartwood is a orangish red with a Janka Scale of 1720. Pau Amarello grows in Brazil. The heartwood is a bright yellow, it is also called yellow heart. Its Janka Scale is 1820. Peruvian Walnut originates in Bolivia, Peru, Nicaragua, Guatemala and Mexico. This is a rich dark brown wood similar to American Walnut with a Janka Scale of 1880. Pink Ivory grows in South America. Its color is pink to reddish with a Janka Scale of 995. The
wood is considered to be very rare.

Purpleheart originates in Brazil, Trinidad and Panama. The color is a deep purple with a straight grain pattern with a 2710 on the Janka Scale.

Red Oak grows in North America. Red oak has a slight tan to pink tinge. Usually it is straight grain with a Janka Scale of 1290.

Rosewood (Honduras) originates in Belize. This wood is a dark pinkish brown with some streaks usually in a straight grain pattern. Its Janka Scale is 2200.

Shedua has a heart wood that is light golden brown to reddish brown. The wood grows in Africa and has a 710 Janka rating.

Snakewood grows in South America. This wood is very rare and extremely expensive. It is red, brown and black in color. The pattern of the wood is similar to a snakes skin which makes for an
Teak grows in India, Burma, Thailand, Indonesia, Java. The heartwood is a dark goldish-yellow, streaked with light and dark lines. This is an oily wood with a Janka Scale of 1070. Tulipwood grows in Brazil. This wood should not be confused with the American Poplar which is sometimes called Tulipwood. Also it should not be confused with the Tulip tree. The heartwood has a pinkish, yellow color with a striped figure. The Janka Scale is 2500.

Walnut grows in North America. Black Walnut is a dark brown to a medium chocolate color. It usually has a straight grain but can also be figured with nice crotches and stripes. The Janka Scale is 1010.

Wenge grows in Africa. This has a dark heartwood with black and brown streaks. From a distance it looks totally black. The Janka Scale is 1630.

Yellowheart is often called Pau Amarello, it’s from Brazil. The color is yellow and it is a fine
grain wood. Its hardness is 1820.

Zebrawood grows in West Africa. The heartwood is a pinkish brown with dark streaks of brown.

The Janka Scale is 1670.

M. Scrap Disk
To attach the first solid ring to your faceplate, without leaving holes in your project, use a scrap disk with a piece of manila folder glued between the scrap disk and the project. Once the project has been completely turned, you can split the paper with a chisel and remove the project. The bottom of the project can be turned or simply sanded with an orbital sander.

N. Steam Bending
It is easy to make a steaming chamber using 6” duct pipe. First screw a board to the duct pipe so it can be easily clamped to a table. Using a 6” cap, your pieces that will be bent can be hung from the cap. Use a hot plate and a pan of water, clamp the duct pipe to a table with pieces to be bent inside. Boil the water and allow the steam to go up into the pipe for about two hours. With a semi-circular pattern, having been made, clamp the pieces to be bent around the pattern and let them dry. Once dried these pieces can be glued together, using wax paper to keep your pattern clean.
O. Mortise and Tenon
Layout the size of the mortise and drill a hole with a Forstner bit. Use a good sharp chisel and cut the corner. Insert the tenon and make sure you have a snug fit.
P. Diameter Gauge
I make these diameter gauges using a Forstner bit the same size as the turning that will fit in it. Cut a little more than half way through the hole and turn your project so it will fit snuggly.

Q. Stack Cutting
Stack two colors of wood on top of each other and draw the pattern on the top piece. Number each piece. Attach these two pieces together with double sided tape and cut them out. Alternate the colors and be sure to mark the number on each piece. Clamp and glue these together. Wipe off excess glue and the project can be sanded after the glue dries.

R. Inserts
I like to call this topic “inserts” instead of “inlaying” because inlaying are usually thin and these
inserts need to be thick in order to turn. This process can be used with the small bears and the arrows in this book. The bear will be inserted into a piece of birch. Lay the birch on a scrap board with the bear laying on the birch and spray paint around the bear. Any dark color is okay. Once dry, this should leave you with an exact pattern. Drill a hole in the bear, insert your jig saw blade and cut out the bear. Place the bear in the hole and tap it in lightly. If it doesn’t fit use an awl and mark the areas that require a little more cutting. Once the fit is satisfactory, put some glue inside the birch and slowly press the bear inside. The bottom side should be flush. Using a disc sander, sand the part of the bear that protrudes out of the birch. Then sand the other side. At this point, the bear can be cut into a segment for your bowl.
S. Arrow Carving
Glue a full size paper arrow pattern to the wood. Shape the arrow using a disc sander. Then using an exacto knife or other carving tool, slightly put cut marks all over the arrow, so it will resemble a real arrow that has been chipped into the shape.

T. Segmented Safety Jigs
Over the years, I have designed all sorts of jigs to hold small parts often using clamps and various holding devices. Anytime you are working with small pieces of wood, take the time to make a holding jig. In the photo use a piece of strap metal to hold the segment to be cut.
Tighten up the screw and you can cut the segment with one hand with the other hand behind your back, which insures a safe operation. With any woodworking machine, be sure to wear safety glasses. Sometimes I will use just a long stick to hold the pieces instead of holding them with my hand.

To cut the small purple heart pieces at an angle, they are placed in the jig as shown and tightened down with a screw. With the piece to be cut in the jig, I can safely cut this with one hand.

U. Router V-Cut
Some of the projects in the book require a “V” cut in a segment. I make a holding jig with plywood
so my router can slide back and forth. With your ring fitting snuggly on each side, clamp it down on the end that’s not cut with a couple of screws and a scrap board. Slide the router in the jig and make the “V” cut.

V. Inlaying a Disc
To insert a disc, first measure the diameter using inside caliper. Turn the project and check the size of the hole using the inside calipers. Enlarge the hole slightly till your disc has a snug fit.

W. Kokopelli Carving and Inlace
I like to use a power rotary tool to carve the Kokopellis.

Fill the cavaties in with Inlace.

I like to sand these down individually with an orbital sander then sand it on the lathe. Sometimes I touch these up using an oil base enamel.

When you put the final finish on these, the enamel will blend in and you will not be able to tell the difference between the Inlace and the enamel.
Most Forstner bits you buy today have a center point and do not drill a perfectly flat bottom hole.

In order to drill a flat bottom hole, which is nice to do on the bottom of a turning, you need a bit without a center point. The Forstner bit shown does not have a point and will drill a flat bottom hole. See Forstner bit in websites. The hole on the left of the walnut board has been drilled with a center bit Forstner bit and the hole on the right has been drilled with a Forstner bit without a center point. Using the bit without the center point will be used in the topic called “bottom turning”.
Y. Lubrication
Sometimes the toolrest or the tailstock doesn’t slide as smoothly as I would like it. Rubbing down the bed with Slipit will create a nice smooth surface and your lathe parts will slide easily. I use this on the table of the table saw, threads on clamps and various other places around the shop.

Z. Bear Carving
The bear can be carved in one piece or two. I think it is easier to do it in two pieces. Draw two of the legs on back side and two of the legs on the front side. Put these together to see if they look correct. Draw the lines on the front side where the stomach of the bear will be carved out. Using a rotary power carving tool, carve the legs and the stomach out on the front of the bear. Carve the legs as shown. After carving both the front and the back, the two parts can be glued together and the ears and the face can be carved out.

AA. Fixing a Broken Turning
As I was finishing up the top of the bear bowl, the tool grabbed jerking the bowl off the lathe. The bowl broke away from the faceplate where the paper was glued to the scrap disc.
At this point, I chisled the black ring off at the bear’s feet. I made a new segment and was able to insert it where the old segment broke loose. Instead of trying to turn the new bear, I carved it with a dremel tool close to the same curvature as the existing bowl. I did this inside and out. Then I placed this on a faceplate and sanded the bear with a coarse 80 grit sandpaper. I was a little bit afraid to turn with tools because I may chip the new bear out. Next I mixed some black ebony sawdust, that I gathered from the disc sander, with some CA glue. Touch up any cracks that you may have.
Next I was able to save the top part of the bowl and added a new black wenge ring. I turned the top part to an almost finished state. At this point I glued the bottom part to the new top part on the lathe. Notice that there is a faceplate on the tailstock end. This allows me to make sure that the top part is concentrically lined up with the bottom part. With both of these glued together, I sanded them with a coarse paper where they are joined. Again I would be a little hesitant to use tools.

Next I took off the faceplate and the scrap disc on the top of the bowl and using a steady rest finished turning the bowl on top and inside.

BB. Vibration Control

In this topic, I am referring to the vibrations of the project and not the lathe. The further you get away from the headstock with you project and not being supported by the tailstock or anything else the more likelihood the project will vibrate. To eliminate vibrations when cutting inside, I use a
With the hole on the top of the bowl already having been turned, turn a male joining member out of a scrap piece of wood that will fit snug into the hole. Tighten your tailstock ball bearing center against this scrap disc and this should eliminate any vibrations as you turn the outside of the bowl. When turning a lamp, I add a board in the center of the lamp permanently and use the tailstock to control the vibrations as the lamp grows taller.

CC. Finishes

Here is my wife, Kathy, finishing several of the bowls in the book. We like to use a lint free cloth, lambs wool or sometimes a natural bristle brush to apply the first coat of Waterlox Original Sealer finish. Waterlox is a tung oil mixed with a resin. Depending on the hardness of the wood, you may or may not need to sand. If you are using a wood like beech, which is used in the black bear bowl, it will probably need to be sanded for one or two coats. We use a 600 wet and dry sandpaper and WD 40 as a lubricant as we sand. Spray the project with WD 40 as well as your sandpaper, and sand lightly. Usually two or three strokes will produce a smooth surface. The black ebony, the carved black bear, will not require any sanding since the wood is much harder. Check the Janka Scale in the topics to determine the hardness of various woods.

After one or two coats and you feel you have a nice smooth finish, you can use Waterlox satin or the high gloss finish. Be sure the area is ventilated well and you have a dust free environment. That’s the reason Kathy is working on our dining room table because my shop is never dust free. Allow twenty four hours to dry between coats. The last coat should not be sanded but can be buffed. As you work through the finishing process, you may want to wear gloves, a respirator and
safety glasses. Waterlox can be cleaned up with paint thinner or mineral spirits. Check the Waterlox website for additional information.

DD. Bottom Turning
To turn the bottom of a bowl, make a male disc to fit firmly into the bowl.

The bowl shown was a teensy bit too big so I added a couple pieces of sandpaper which made the bowl fit snuggly. Use a Forstner bit to drill a flat bottom hole. See Forstner bits in topics. Use your tailstock and drill a hole about ¼” deep.

I use a flat-ended tip in my chuck to hold the bowl firmly. You may want to use a ball bearing center and actually do a better job than the chuck. With the
bowl tight against the disc, start turning the bottom concave to match the depth of the hole previously drilled.

Continue the concave cut on the bottom. Once this is finished it can be sanded on the lathe or by hand with an orbital sander. Below is another example.
EE. Zigzags

The zigzag pattern is a favorite among segmented turners. It is easily done but needs to be done with accuracy. After gluing up your striped material, cut at the desired angle for your zigzag. Make a jig as shown. Be sure the part of the jig shown is square. Place your previously cut pieces in a zigzag pattern on the jig. The board at the end of the jig has a screw, which is screwed into the jig at an angle, to keep the segments tight. The screw acts as a vice and tightens up against the segments holding them firmly. Use double sided tape which will also help prevent any movement of the segments. With the segments in the jig, I screw another board on
top which will hold them even tighter. Begin your cut. Once the saw blade has cut all the segments, you can turn the saw off which keeps your hand about a foot away from the blade. This insures a safer operation. There is no need to go all the way through with your hand closer to the blade. In photo these segments have already been cut on both sides. You will notice I have added a 1” board. Make sure that distance B is the same as distance A when you make this cut. My finger is on the 1” board that I have added. Also notice that I have screwed a long board on top of the segment with tape below them to keep the
Start cutting the segments. Again, as before, once all segments are cut and your hand is at a safe distance from the blade the saw can be cut off. I turn the saw off with a paddle switch which I keep my knee on as I am working on the table saw. I like to label the top of all the segments and number them as well. At this point the segments are ready to have the angle cut which can be done with a segmented safety jig, see topics.

FF. Websites
Here is a list of websites for specific items used in this book:

Buffing         arizonasilhouette.com
               woodcraft.com
               woodturnerscatalog.com
               Rockler.com

Carving Tools   katools.com
               texaswoodcarvers.com
proxxon.com

Chucks            oneway.ca
teknatool.com

Doubled-Sided Tape        Rocker.com
woodcraft.com
For wood

Finishes        Rockler.com
woodturnerscatalog.com
mcfeelys.com
myland.co.uk

Forstner Bit         woodshopbits.com
(flat-bottom)        southeasttool.com

Janka Scale       ejmas.com

Kreg Screws       kregtool.com
pocket-hole-jig.com
Lamp Parts         grandbass.com

Lathes            southern-tool.com
toolnut.com
many others

Lathe Accessories eagleamerica.com
teknatool.com
oneway.ca

Lathe Tools         easywoodtools.com

Leather             tandyleatherfactory.com

Lumber        keimlumber.com
hearnehardwoods.com
frankmiller.com
and others

Measurement
Equipment          wixey.com
Paddle Switch  
(safety switch)  grizzly.com

Router Bits  cmtutensili.com

Sanding
Equipment  rjrstudios.com
sand-rite.com
industrialabrasives.com (sand-0-flex)

Sharpening  tormek.com

Slip It  grizzly.com
(sliding compound)

Steady Rest  oneway.ca
theokspindocto.com

Table Saw  htcproductsinc.com (Brett Guard)
Safety Jig

Woodplugs  smithwood.com

Wood Tap  mikestool.com
&Dies
In designing your own project a variety of layout and measurement tools are useful. First a good 30-60 degree triangle and a 45 degree triangle are often needed. To establish a smooth flowing line on the outside of your project, a variety of french curves are ideal for this task. Sometimes you need to draw a specific angle and this can be done with an adjustable triangle. A couple of good compasses are also useful in drawing arcs and circles. Combination square, try-square and T-square are useful to find the center of a circle, laying out lines and drawing lines at a specific degree.
When designing your project, such as the shape shown, you will notice that some rings are wider and some are narrow. Usually I make the bottom ring out of a solid piece of material. Keeping this in mind, decide what you would like to make, a lamp, a bowl, a box, a vase or some type of vessel. As an example, I will go through the steps of designing a vase.
The vase I am going to design will be 10” tall and 8” wide and it will be a segmented vase. The bottom of the vase will be 3/8” thick. So I will only need to design one side of the vase since the other side is a mirror image. See detail A. In detail B, you can draw several different shapes, shape A, B or C. I think I like shape C best so I will continue with that design. Detail C shows the full vase. Next you can pick a featured ring design from chapter five. There is a very large selection of designs that you may want to use. In detail D, I’ve shown the vase with a feature ring around the center. In detail E, the vase is shown with a colored bottom and a couple of colored rings at the top of the base. Detail F, shows the height measurement and detail G, shows the diameter of the ring as well as the segment width.

As a final
consideration before making your vase, consider the color possibilities you may want to use,

Shown are a variety of different colored woods that you may want to consider.
Chapter IV - Designing by Layer or Ring

The whole project can be designed using layers and alternating the colors within that layer or within the ring. By this I mean we are not using a featured ring or any of the designs found in chapter five. Three examples are shown designing the project only with solid color segments and rings. This is an excellent method of designing and making your first segmented project.
Chapter V - Feature, Border and Accent Rings

When designing your own project you can select from this large variety of featured rings, accent rings or border rings. I consider a feature ring, a ring that has 20 or 30 parts in one segment and may have 100’s of parts in one ring. A border ring would have fewer parts but still could have many parts but not as many as the featured ring. An accent ring would only have such things as dots or small triangles, usually randomly spaced. Accent rings are less complicated and have fewer parts than the featured ring and border ring.

You may also like to design your own ring, particularly after you have done a few segmented projects. Some of the following designs are described and others you only need to study the drawings.
16 SEGMENTS = APPROX. 10" RING

SIDE WALL SEGMENT

STEP 1

STEP 2
Making the black piece between segments wide helps to not turn the tip off.
STEP 1

CENTER LINE

STEP 2

STEP 3

STEP 4

STEP 5

16 SEGMENTS = APPROX. 10" RING
In step 7 the brown piece goes between segments and after the segments angle has been cut.
16 SEGMENTS = APPROX. 10" RING

STEP 1
In step 4 and 5 the black top and bottom are separate rings.
16 SEGMENTS = APPROX. 10" RING

STEP 1

STEP 2

SAW KERF

GLUE THESE STRIPS ON

STEP 3
In step 6 the red top and bottom are separate rings. The red piece between segments goes in after the segment has been cut at an angle.
In these drawings a separate piece has been added after the segment has been cut. Also the top and bottom solid color is a separate ring. This is the design used on the basket. Two options are shown.
16 SEGMENTS = APPROX. 10" RING
16 SEGMENTS = APPROX. 10" RING

STEP 1

STEP 2

STEP 3

STEP 4

STEP 5

12 SEGMENTS = APPROX. 10" RING
STEP 1

PART A

PART B

PART C

CUT LONGER THAN NEEDED FOR A SAFER OPERATION

STEP 2

STEP 3

CUT THE REQUIRED ANGLE

STEP 4

ADD THIS PIECE AFTER THE ANGLE IS CUT

CUT LONGER THAN NEEDED FOR A SAFER OPERATION
12 SEGMENTS = APPROX. 10" RING

STEP 1

STEP 2

STEP 3

STEP 4

STEP 5

YOU WILL HAVE A LITTLE EXTRASCRAP STRIP

SCRAP WOOD

STEP 6

SAW KERFS MAY VARY DEPENDING ON YOUR BLADE
TOP VIEW OF LONG BOARD TO MAKE SEGMENTS

STEP 1
11.225 DEGREE CUT FOR SEGMENT

STEP 2
DADO CUT

FRONT VIEW OF LONG BOARD TO MAKE SEGMENTS
TOP VIEW OF SEGMENT

FINISHED SEGMENT

STEP 3

FINISHED SEGMENT

STEP 3

FINISHED SEGMENT

STEP 3

FINISHED SEGMENT

STEP 3

FINISHED SEGMENT

STEP 3

FINISHED SEGMENT

STEP 5

12 SEGMENTS = APPROX. 10" RING

STEP 1

STEP 2

STEP 3

STEP 4
STEP 6

YOU WILL HAVE A LITTLE EXTRA SCRAP STRIP

SCRAP BOARD

STEP 7

SAW KERFS MAY VARY DEPENDING ON YOUR BLADE

STEP 8

STEP 9

STEP 10
This plug cutter project requires some accuracy. The plugs must go all the way through.
Step 1 shows stack cutting. Rip the piece in STEP 4.
This design is made in horizontal layers.
CUT SEGMENT WIDTH TO 2" WIDE
16 SEGMENTS = APPROX. 10" RING
CUT SEGMENT WIDTH TO 2" WIDE
16 SEGMENTS = APPROX. 10" RING

ROW 1
ROW 11 AND 12
ROW 2 AND 3
STEP 7

STEP 8

STEP 9

STEP 10

STEP 11

STEP 12
The flower is a combination of stack cutting and using a plug cutter.
In step 12 use a plug cutter. Then stack cut and put the flower into the hole in step 15. Continue with a similar process.
Chapter VI- Top Designs

These designs are intended for lids or the top of the project. They could also be used at the inside or outside of the bottom of the project. Each design is described individually.
Chapter VII – Inside Bottom Designs

This chapter shows an example of how to stack cut a flower and insert it into the bottom of a bowl, vessel, box and etc. The process shown with the flower could be used with any design. A four petal flower and an eight petal flower are described in this chapter. Each design is described individually.

After cutting out your full size pattern, you can use school glue to glue the pattern to the wood to be cut. Notice I have three different colored woods stacked together and held in place with double sided tape. Glue the pattern to the wood. Using a jigsaw, start cutting out the flower.

Once all the parts are cut out, be sure to number each individual part. That is, there will be three number one’s, three number two’s and so forth. Pick out the flower you
like best and save the other two. Trial assemble the flower. Notice that the flower is not perfectly round on the outside. So it will be necessary to turn this on the lathe and center it exactly. Using a scrap disc from another project, mark the center as the lathe turns. After you have glued the flower and it is dry, drill a hole in the center. Drive a small nail or brad at the center point you previously marked on the scrap disc. Glue a piece of manila folder to the scrap disc and then glue your flower to the paper. With the nail protruding through the hole in your flower, this should center the flower exactly. Once the glue is dry, the flower can be turned using a parting tool.

To remove the flower, place a chisel on the manila folder. Tap this in several places and the flower should split right off. To inlay the flower you can use a parting tool, or square nose and cut a hole the same depth of the flower.

Using inside calipers, establish the correct diameter. Keep cutting until you get close to this diameter. Then try fitting the flower into the hole. Once the flower has been glued in, it can be drilled with a Forstner bit using your tailstock. Then glue the plug into
the hole.
PINWHEEL

STEP 1

STEP 2

STEP 3

STEP 4

SPIRAL DONUT

DRILL 2 HOLES TO START

STEP 1

STEP 2

STEP 3

STEP 4

PATTERN
Chapter VIII – Masonry Patterns

Several typical masonry patterns are shown in chapter eight. The names of these patterns come from standard masonry brick and block layout patterns. These patterns are easy, very attractive and ideal for segmented projects.
Chapter IX Silhouette

The bear design is a silhouette and is done with the “insert” method. See “insert method” in topics. The kokopelli design in this book is another silhouette design. Designs that require narrow lines are best done with Inlace, see topics. Methods and processes for the black bear bowl and the kokopelli vessel are both described in chapter two, topics and chapter ten, projects. Search silhouettes on the internet to find new ideas for a project.
The projects in this chapter are separated into several categories: projects built in layers, projects with border and feature rings, with thick inserts, with plug inserts, using Inlace and silhouettes. The basic steps of cutting segments and building them into rings and layers can be found in the previous chapters. Instructions will be given for specific and unique steps for each individual turning.

**A. Spiral Bowl**

The woods in the spiral bowl includes wenge (black), yellow heart or pau amarillo (yellow) and bloodwood (red). This bowl is attached to a scrap disc with a manila folder and all the layers are the same color combination. As you work your way up the bowl the layers are offset by ¼ of a turn. Glue up three or four layers and turn the inside of these first. Then turn the outside so the first four layers are round but not to the final state. Add the rest of the rings. I add each ring one at a time. Once all the rings have been added turn the inside of the bowl. Finish turning the inside of the bowl and sand it. Complete the final turning on the outside of the bowl, sand and remove the bowl from the scrap disc.
B. A Layered Twig Vase
The light colored wood is red oak, the black wood is wenge and bloodwood is red. The twig vase is attached to the faceplate with a scrap disc. This project is turned on the outside only. Start with a solid base, ring one, and glue the rest of the project using previously described segmented building procedures.
C. Basket
The basket is made from yellowheart (yellow), lignum vita (green color) and bloodwood (red). The featured ring, ring four, is built by gluing strips of different colors and then cutting the small pieces. Next glue up the material for the knob on the lid. Turn the knobs that hold the handle, detail E. These can be flattened on the end using a disc sander. Work your way from ring one thru ring eleven and turn this so it is perfectly vertical. See topics for detailed instructions for making and building layers. This can be checked with a framing square.

The lid is made from one solid piece with the top of the lid being attached to a scrap disc. Start the lid by turning it till it is perfectly round, I use a diamond nose. I also like to cut straight in, I use a
parting tool. Cut the notch in the lid so it will fit snuggly into the basket. Finish rounding the lid, sand and remove it from the scrap disc. Next, find the center of the disc so a hole can be drilled for the knob. Turn the knob to its final shape and sand it. Be sure to turn a spindle on the knob that will fit into the previous drilled hole in the lid.

Use a diameter gauge to determine the correct size, see diameter gauge in topics. Cut the knob off and it should be ready to insert into the lid. At this point the basket should be finished except for making and attaching the handle. See “steam bending” in topics for detail instructions for bending the handle.
The woods used are walnut, yellowheart, coco bolo rosewood and the lid is cochien rosewood. The teepee vessel’s ring one is glued to a disc with manila folder between the two. Use standard segmented building instructions for adding rings, see chapter II. The two designs used for the teepee vessel are in chapter V. Glue up the parts for the teepee as shown.
Add the walnut sides and bottom. To make the poles, that stick out of the teepee, I cut a saw kerf in a piece of walnut and put a thin piece of holly in the kerf.

To make the second design, see chapter III for detailed instructions. To make the lid, set your calipers to the distance shown in the picture.

With a solid piece of walnut glued to your rosewood cut the lid so it will fit into the bowl. Check this with the outside calipers. Once you’re close, unscrew the faceplate from the lathe and with the faceplate still attached to the lid
check and see if it fits into the vessel. Then finish turning and sanding the lid.

To make sure the steel ring fits firmly drill a hole in a scrap board and make a cut so the ring will fit firmly into the scrape board. Then drill the two holes into the lid using the same bit. The distance from one hole to the other is determined by how far you want your ring to fit down into the lid. My ring sits in the hole about 3/4 of an inch. Cut the center section out between holes, using a table jig saw. Use a very thin blade. The blade shown is .007 of an inch wide. Tap the steel ring down into the hole.
The piece that came out of the hole needs to be cut. Put this piece back into the hole and if it is too tall make a second cut. Once these two pieces are almost flush glue the piece back into the hole. Use CA glue. While the glue is tacky sand the lid and the inserted piece so they are flush. The excess sawdust should fill the crack.

At this point the teepee vessel should be ready to have a finish applied. After the finish is applied and dried, I wrap leather around the ring.
E. Arrowhead Vessel
This vessel is made from walnut and cherry. Ring one is a solid ring. Add rings two thru nine using the procedures described in chapter 4. The top is made by a process called stack cutting. Once the glue is dried on the top, sand it flat. I like to make a copy of the arrow head and glue it to a piece of scrap wood. Notice that the grain of the wood runs parallel to the bottom of the arrowhead. This will keep the bottom from breaking as you insert it in the opposite colored wood. Mark each individual piece with a number, on the top, and mark the arrowhead on the bottom with a corresponding number.
Place the arrowheads on the top in their exact location and spray paint around the arrow using a dark color. Once the paint is thoroughly dry lift the arrows off and you should have a nice pattern to cut out.

Drill a hole into the outline of the arrowhead. Insert the scroll saw blade and cut out the arrowhead. Do this so the blade barely touches the green. Using the arrow with the correct corresponding number, mark a line about 3/8” from the bottom. Make sure your arrowhead fits and do any necessary touch up before gluing it in the corresponding hole. Start inserting the arrow heads with a couple of light strokes with a hammer. I like to use an old vice to press the arrowhead in, go slowly. The arrowhead only needs to go in ¼ to 3/8” since the top is basically flat and has only a slight curve. The excess of the arrowhead can be cut off. At this point you need to add a lip for the bottom of the top. This lip will fit into the vessel. Spread glue on the bottom of the top and glue on a board which will be used for the lip as well as a scrap disc to
attach the faceplate. The scrap disc should have a manila folder between it and the project. While these are drying, finish turning the bottom of the vessel and sand it completely. The arrowhead protrudes slightly out of the top, so I prefer to sand these down flush instead of turning. If you turn these down they may chip down below the surface of the top. Attach the top to the faceplate on the lathe and turn the top.

Using a very sharp tool and a very fine cut, turn the top slowly particularly around the arrowheads to get a smooth finish and not chip any of the arrowheads. Using outside calipers, check the distance required for the top to fit into the vessel. Once you are very close, take the top off, with the faceplate on, and fit it into the vessel. You may have to do this a couple of times to get a snug fit. Then mark the bottom of the top so the top can be turned flush with the outside of the vessel. Drill a hole in the top with a Forstner bit. This hole only needs to be ½” deep and should not go through. See “arrowhead carvings” in chapter 2 to finish the arrowhead used for the knob. At this point your vessel should be ready to apply the finish.
DRILL 1/2 DIA.
3/8 DEEP

EACH SQUARE = 1/4"
F. The Coarse Ashlar Brick Vessel
This vessel is made from walnut and yellowheart. Ring one is solid and ring two through five use standard construction methods described in the topics chapter. See the coarse ashlar design in chapter VIII. Once the vessel is turned we can make the top. To make the top, glue a piece of yellowheart to a scrap disc, see “scrap disc” in topics. Using an outside caliper, determine the size of the lip that will fit into the vessel. Once the lid fits nicely into the vessel, mark with a pencil where the lid needs to be cut flush with the vessel. Finish turning the top. Make the knob and be sure it is square and sanded. Mark the location of the square knob on the top. See “mortise and tenon” in topics in chapter 2 for detailed instruction to insert the knob. Once the knob is inserted and the top fits correctly you are ready to apply a finish
This project uses wenge, holly and Inlace. The Kokopelli vessel is made from wenge (black wood) and holly (white wood). The kokopelli designs are made with Inlace. Ring one is made from a solid piece of wenge glued to a scrap disc with a manila folder between them. Once this is dry and attached to a faceplate, you can put it on the lathe. Then work from one layer to the next.
Turn the final, check it with a diameter gauge.

Sand the end using a sand-o-flex.
H. The Black Bear Bowl
The black bear bowl is made from beech, wenge and black ebony. Start by gluing the horizontal pieces for ring five. Add the short outside pieces. Glue and turn rings one through five. Notice I have added a black ring above and below the bear that is not listed with the rest of the rings. Turn the inside of the bowl. Check the black ring so it is flat.

Add the next ring and continue. After turning a few more rings and being almost finished, a tool grabbed and broke the bowl into two pieces. See “fixing a broken turning” in the topic section.
MOMMY BEAR

BABY BEAR

SMALLER BABY BEAR

2 3/8
I. John’s Lamp
This project was made for my friend, John. It is made using beech (it is inside and not seen), wenge and spalted maple. All the rings made of spalted maple have a backing of a less expensive wood, here I use beech. This allows more room when gluing one ring to the next and it saves on the more expensive and hard to find spalted maple.

Flatten the rings, in this case I used a drum sander. Next drill a small hole in every other segment as shown. Align this ring using concentric circles to a scrapboard which is attached to your faceplate.
Drill through each hole to mark their location on the faceplate. Reattach the first ring to the scrap disc. Attach the faceplate to the scrap disc.

Cut the tapered outside to within about 1/8” of its finished size. Continue adding rings as described in the topic chapter and tapering them as you go. As the lamp gets taller you may get a little vibration, see “vibration control” in the topic chapter. Drill two holes as shown and add a board from one side of the ring to the other. Glue this board in making sure it is flush with the ring.
The tailstock’s ball bearing center can rest against this board and stabilize any vibration you may have. Glue the next ring on leaving the stabilizer as a permanent part of the inside of the lamp. On ring 11, I glue in a scrap disc just to stabilize the bottom of this ring, since spalted maple is not structurally sound due to the decay possibilities in the wood.

The next two rings are wenge. Turn ring 12 and attach it. Then turn ring 13 and cut a hole in the top so the spindle will fit snugly. Once the spindle fits well, glue on the inside but not on the spindle. Press the spindle into ring 12 and glue it as it sits on the lathe.
Once this is dry, drill the hole in the spindle. Also drill a 1” hole through the scrap board in ring 11. Then glue ring 13 to ring 12 making sure you do not get any squeeze out. Drill a hole in ring 1 for the cord to come out. At this point your lamp should be ready to have a finish applied.
J. Fish Bowl
The fish construction is outlined in Chapter 5 showing step by step detailed drawings. I like to start the first layer which is solid by gluing it to a scrap disk with paper between then. This splits away later and is easy to do. The brown wood is walnut, yellow is yellowheart and the red on top and the fish gills are bloodwood. This is one of my favorite projects.
K. Tulip Vase

THIS IS THE RING WITH THE FISH

RING 5

RING 6

RING 7 IS YELLOWHEART
RING 8 IS WALNUT
RING 9 IS BLOODWOOD
DIMENSIONS ARE THE SAME ON ALL 3 RINGS
The light reddish or orangish wood is cherry, black is blackwood with the red tulip being padauk. As you work from ring to ring you will probably need to stabilize the project so it does not vibrate. See vibration in chapter 2. This project was made in two parts. The bottom going up to the last red ring and the top turned separately and later joined together.