

BowlShape Software

by Bill Ooms

www.billooms.com

Version 1.2

Introduction:

Thank you for trying this free version of BowlShape software. This was written in hopes of helping wood-turners to develop pleasing shapes for their bowls and hollow forms. By modeling the shape in 3D on the computer, you can get an idea of what it looks like prior to putting in the time and effort of turning.

System Requirements:

The software was written in Java, so it will run on most computers. It was developed on a Mac and was tested on both PPC and Intel based computers. I've also tested it on PCs running Windows XP and Vista (including 64 bit). Several Linux users have reported that it runs OK for them too.

Older computers may have problems running the 3D software due to limitations in older graphics card. For example, I have an old Sony VAIO circa 2002, and I had to update the drivers for the graphics card in order to see the 3D shape. Even then, I could not save or print the 3D image.

You need to have the Java run-time software loaded on your computer. Mac OSX comes standard with Java run-time environment. Make sure you have the latest updates (Apple -> Software Updates).

Windows and Linux users are less fortunate because Java run-time environment is generally not included on most PCs. The good news is that this is free, but you have to take the time to download and install it on your computer. Go to <http://www.java.com> and click on the big blue "Free Java Download" button. It will check to see if you have the latest version of Java installed on your computer. If not, it's real easy to download and install the latest version.

Downloading and Running:

After installing the latest Java, simply click on the [Launch BowlShape](#) button on my web site page (www.billooms.com/bowlshape.html). The software will download to your computer, and also download any additional stuff it needs to run on your computer.

If you find that it simply saves a file called "launch.jnlp", then click on that file and you should see the program launch (something about Java should pop up). If you just see a dozen lines of text (or your computer doesn't know what to do when you click on the file), then the Java run-time software is not installed properly on your computer.

You will probably be asked something about "Certificates" or "Trust" or "digital signatures" which is OK. Java has a lot of security features built into it. In particular, it can detect if the files you download from my site have been tampered with in any way since I created them. It's safe to click "Trust" or "Run" on things from "Studio of Bill Ooms" or from "Sun Microsystems".

You'll see this each time you run the program, unless you check the box that says "Always trust".

Making it easier to run:

After you use the program and decide you want to keep it, you may find it a pain to download it from my web site every time. The program and all the additional stuff it needs is saved on your computer in a temporary cache. You can keep the program on your computer all the time as follows:

For Mac users, run "Applications -> Utilities -> Java Preferences". Select the "Network" tab and then select "View Cache Files...". You should see the "BowlShape" software listed. Click on it to select it, then click on the icon with the arrow near the top center of the window to add a link to the software on your desktop (or wherever you want).

For PC users, run "Start -> Control Panel -> Java" and select "View..." (lower right of the screen under the "General" tab). You should see the "BowlShape" software listed. Click on it to select it, then click on the icon with the arrow near the top center of the window to add a link to the software on your desktop.

Program Overview:

There are two main windows that you'll see: the 3D display window, and the Outline Editor window. There are also separate windows for Preferences, and for controlling the size of the bowl. Each of these are described in more detail below. You can move them and resize them independently. If you close the main 3D display window, this is the same as quitting the program. After editing the outline, you can close the outline editor window and it will hide. To get it back, go to the "Window" menu and select "Outline Editor".

3D Display Window:

Click with the mouse and move it around while holding the button down. This lets you rotate the view around. You can move the view left/right/up/down by using the right button (Mac use Apple-click). You can zoom in closer (or further away) by using your mouse scroll-wheel (Mac use option-click and move the mouse up or down).

While rotating the view, you'll notice that the grid moves as well, and the light source remains above the bowl. Another option is to rotate the bowl with respect to the grid and light source -- click the pop-up menu in the lower right corner of the screen and select "Bowl" and try moving the bowl around. This is good to see the underside features of

the bowl. In this mode, right-click moves the bowl left/right/up/down (Mac apple-click), and alt-click (Mac option-click) moves the bowl closer or further away.

The “Restore View” button always brings you back to the starting default viewpoint. The default view is adapted to some extent to accommodate very large (or very small) bowls.

If you don't want to see the grid, turn it off (or back on again) with the “Display” menu and “Show Grid”. Under the display menu, you can also change the color of the background and the color of the bowl material.

Outline Editor window:

The outline of the shape is edited in the Outline Editor window (the one with a black background). The center line of the bowl is always on the far left edge of this window no matter where you move the window. You'll see a number of white dots on the screen -- these white dots are what you move. The yellow line is automatically curve-fit to the dots.

To move a white dot, simply click on it and drag it to another location. The yellow line is automatically re-fit to the location of the new dot, and the 3D shape is redrawn. This will take some practice to get familiar with how the dot location affects the curve shape! However, the curve will always be smooth and continuous. It does not take very many points to define a smooth and pleasing curve. Avoid the temptation to add too many dots! For a smooth curve, fewer dots are better than lots of dots.

To add a dot, simply double click where you want the additional dot to be. After adding a dot, you are back in the edit mode and can drag things around again. To delete a dot, simply click on it and drag it out of the Outline Editor window and it will disappear (and you'll be back in the edit mode again).

After a bit of playing, you'll discover that dots that are very close together will define a sharp change in the curvature, and dots that are further apart define gentle changes in the curve. 3 dots are sufficient to define a simple, but pleasing shape. 5 dots will allow for one curvature on the bottom portion of a bowl, and a different curve on the top portion. More dots are required to have small details (such as with finials, etc). Due to the curve-fitting algorithm, you can't make sharp changes in curvature. However, you can closely approximate the appearance by using several dots close together.

The grid can be turned on/off by checking the box in the lower left corner of the window. You can clear all the points to start over fresh by pressing the “Clear” button.

Size Window:

The size of the grid and the size of the bowl are changed with a separate window which can be activated by clicking on the “Set Size” button in the Outline Editor. At the top, you can enter the desired size for the grid. Be sure to press the Return or Enter key to make the new number take effect.

To scale the bowl proportionally, you can enter a new number in the Height or Diameter field. Be sure to press the Return or Enter key to make the new number take effect. Both height and diameter will be changed in the same proportions.

To stretch the bowl in only one dimension, you can enter a new height or diameter in the stretch fields. Be sure to press the Return or Enter key to make the new number take effect. Only the one dimension will change, leaving the other dimension the same.

If the bottom point of the curve is moved up/down (or deleted), you may notice that you bowl may appear to float above the grid in the 3D view (or sag below). This can be corrected by pressing the "Move bottom point to zero" button which makes the bottom point always have a coordinate of $y=0.0$. Note that any time you change the height or diameter, this is automatically done for you. Thus, the height you specify is the actual bottom-to-top dimension.

Preferences Window:

The Preferences window is activated by the menu item "Window" -> "Preferences".

The print page orientation applies when printing both the 3D view and the Outline. In the case of the 3D view, the view is scaled smaller if required to fit on a single page.

When printing the outline, you may scale the outline larger by 2X, or smaller by 2X or 4X (or print actual size, of course). This is to accommodate very small or very large pieces. You also have the option of printing the grid on the outline or not.

You may select the units of inches or cm (which actually only comes into play when printing the outline).

The 3D graphic file may be saved either as a "png" file (generally smaller files) or as a "jpeg" file.

The following preferences are saved when you save a file: orientation, scale, print grid, units. These preferences will be set accordingly when you read the file back. Some preferences are saved when you exit the program for the next time: print grid, units, graphic format. These preferences will be set the next time you launch the program.

Saving and Opening Files:

When you save your work to a file, you will be able to read this shape back at some future time. The information that is saved are the coordinates of the white dots of the outline. You can save as many files as you need and locate them anywhere on the disk that you like. The file has a suffix of ".xml" which is a kind of text file. You can read the file if you like with any text editor, however this is not recommended because it's easy to mess it up and could make the file unreadable. In addition to certain preferences (see above), the bowl color is also saved, as is the size of the grid in the outline editor.

If you make further changes after saving, you can either over-write the saved file with the "Save" menu, or save it under a different name with the "Save As..." menu. Reading a file back in is easy with the "Open..." menu. If you make changes and decide you don't

want to keep them, you can “Revert to Saved” which goes back to the last saved version.

You can save a “snapshot” of the 3D view of the bowl by using the “Save Graphic...” menu. This will save a snapshot of the current view in a png or jpeg format which can be further edited or printed if you wish.

Printing:

You can print the outline with the “Print Outline...” menu (or from the “Print” button in the Outline Editor window). There will be a grid on the paper along with the outline curve. You can paste this to some hard material (fiberboard, etc.) to cut out and use as a template when turning your shape. The grid can be disabled, and you can also scale the outline for very small or very large pieces (see the Preferences window).

You can also print out the 3D view of the shape for reference using the “Print View...” menu. For large shapes, the size is reduced to fit on a single page.

Page orientation can be selected as Automatic, Portrait, or Landscape (see the Preferences window).

And finally:

Please let me know if you like it (or don't like it), let me know of any problems you experience, and any enhancements that you may find helpful. This program is free to all, but if you wish to make a donation see my web site (below) for a link to make a PayPal donation to this work. Any one who sends me an email will be notified when new versions are available.

Send email to bill@billooms.com

Any future updates will be posted on my web site at:
<http://www.billooms.com/bowlshape.html>

Enjoy!

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