

## μLathe v.1.4

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μLathe (also MicroLathe) is an easy-to-use 3D modeling tool that allows you to create three-dimensional objects using the metaphor of the carpenter's lathe.

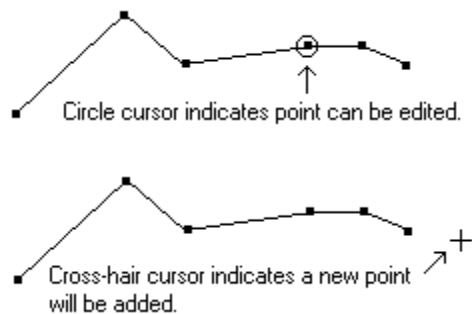
### Lathe View:

The Lathe View is used to create the outline of an object. This outline will be spun 360 degrees in lathe fashion about its axis (in this view, the bottom edge of the μLathe window) to create a three-dimensional object.

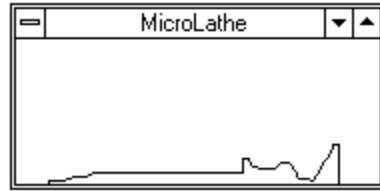
The outline of a μLathe object is composed of several straight line segments. To create the initial line segment, click the mouse in the μLathe window at the first endpoint of the segment. A dot will appear. Move the mouse to the second endpoint of the segment and click again. A line segment will be drawn between the two endpoints.

The last endpoint entered becomes the first endpoint of the next line segment. Move the mouse to the second endpoint and click again. Another connecting line segment will be drawn. Continue in this manner until your object attains the desired shape.

Note the large dots at the location of the endpoints. These are known as "handles," and can be used to reposition the endpoint beneath at any time. When the mouse is moved directly over a handle, the cursor becomes a circle, indicating that the location of the endpoint beneath will be modified if the mouse button is pressed. When the mouse is not over a handle, the cross-hair cursor indicates that a new endpoint will be created if the mouse button is pressed.



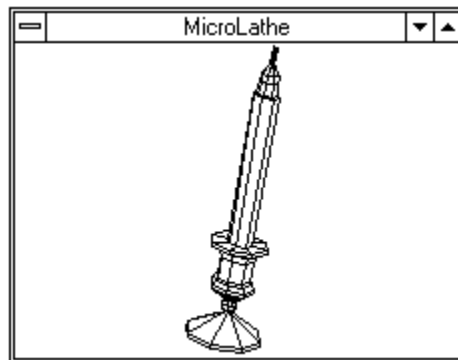
The outline displayed below (sans handles) is that of a candle and holder.



## 3D View:

When your outline is complete, select the "3D View" option from the "View" menu, or click the "3D View" button in the Control Panel. The outline you created will be spun about the X axis and the resulting three-dimensional object will be displayed centered in the  $\mu$ Lathe window. The Control Panel (see below) is used to vary the object's appearance and position.

Here is the candlestick outline above viewed in three dimensions:



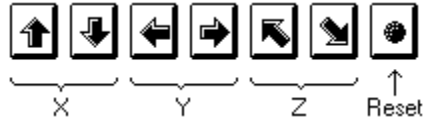
## Control Panel:

The Control Panel allows you to change several parameters which govern the appearance of your 3D object, including modeling method, spatial position, relative size, apparent distance, and color.

**Modeling method** - There are three modeling method choices: wire-frame, hidden surface removed, and shaded surface.

**Resolution** - The number of slices controls the resolution of your 3D object. Lower values yield speedier rendering at the expense of resolution quality, higher values yield better resolution but require more time for the rendering process.

**Position** - Use the six arrow buttons in the control panel to rotate your object around the X, Y, or Z axis. The number of degrees of rotation per button click is determined by the position of the slider immediately beneath. The reset button cancels all previous rotation and returns the object to its original position.



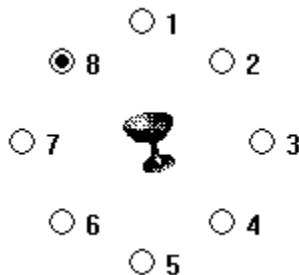
**Scale** - The scale slider varies the 3D object's size relative to the size of the outline created in the Lathe View.

**Distance** - The object's apparent distance from the viewer can be modified via the distance slider, allowing you to create the illusion that the object is being viewed at extremely close range, or from far away. The effect is subtle, but useful.

**Texture** - In shaded surface mode, this slider controls the smoothness of your object, and thus how light is reflected from it. A rough object will scatter light more evenly around itself, a smooth one will reflect light better from the surfaces closest to the light source. This is another subtle effect.

**Color** - The colors of either the object or the light cast upon it can be altered by moving the red, green, and blue sliders. These colors will be used by the rendering process in the shaded surface mode.

**Light Source** - The spatial position of the light source can be modified by pressing the "Light..." button in the Control Panel. The light source can be set to illuminate the object from nearly any angle using the eight direction buttons and the distance slider. Note that the light source always lies on the viewer's side of the 3D object, never behind the object.



## Sequences:

The "Save Sequence" option allows you to save multiple views of your 3D object as separate Windows 3.0 bitmap files. These bitmaps can be loaded into any application that supports the .BMP file format, or displayed in animated fashion by the MiniMovie application, available on many BBS's, or from the author at the address below.

To save a sequence, you must supply a sequence path and prefix. Your entry is used to generate file names for the bitmaps that the sequence operation produces. No extension should be entered, since  $\mu$ Lathe automatically appends the sequence number and the .BMP extension to the prefix you supply. For example, the prefix:

C:\MYDIR\CANDLE

will cause  $\mu$ Lathe to save several bitmaps in the form:

C:\MYDIR\CANDLE0.BMP

C:\MYDIR\CANDLE1.BMP

C:\MYDIR\CANDLE2.BMP

...

C:\MYDIR\CANDLEn.BMP

In the X, Y, and Z rotation fields, enter the number of degrees you wish your object to rotate around that axis for each frame in the sequence. Negative values are allowed.

The number of bitmaps generated depends on the value you supply for the number of frames. The length of the file name portion of the prefix ("CANDLE" in the example above) plus the count of digits in the number of frames field should be no larger than eight, since these two entities are combined to create bitmap file names.

Be prepared for a lengthy delay if your object is complex, or the number of frames you request is large. At this time, the  $\mu$ Lathe program must be in the foreground for sequencing. The sequence can be aborted by clicking the mouse button in the  $\mu$ Lathe window.

## Notes:

$\mu$ Lathe is intended for use in the Standard or Extended modes of Windows. Real mode is not supported.

If your object is complex, the rendering process may take some time. Clicking the mouse will stop the process. The object will be drawn again only if changes are made in the Control Panel, or if the "Repaint" button in the Control Panel is pressed.

$\mu$ Lathe supports 256 colors on capable video card/monitor/driver combinations. On systems that support fewer than 256 colors, 16 color mode (with dithering) is used. In 256 color mode, 256 color bitmaps are generated by the "Save As Bitmap" and "Save Sequence" options.

A donation of \$15 for the use of this product will be graciously accepted. You will receive an authorized copy of  $\mu$ Lathe on diskette, and will be entitled to free upgrades and fixes. If you are a Windows programmer, an extra \$15 will get you the complete C-language source code to  $\mu$ Lathe. Send check or money order to the author at the address below.

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