# μLathe 1.5
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**μLathe** (MicroLathe) is an easy to use modeling tool that allows you to create three dimensional objects using the metaphor of the carpenter's lathe. To become a registered user, or to obtain the source code for this program, please see the "Registration Information" topic below.

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Registration Information

**Creating a 3D Object**

The Lathe view is used to create the outline of an object. This outline will be spun 360 degrees in lathe fashion about its <span style="color:red">axis</span> to create a three-dimensional object.

Let's say you want to model a bottle. Imagine the bottle laying on its side. The top half of the bottle's contour is the shape that will be entered into the **μLathe** window. Start at either the left or right side of the object, and click the mouse at various points along the contour of the bottle. Each time you click, a new endpoint is added to the outline, and a line segment will be drawn between the last two endpoints entered. Continue in this manner until your object attains the desired shape. The outline of your bottle might look something like this:
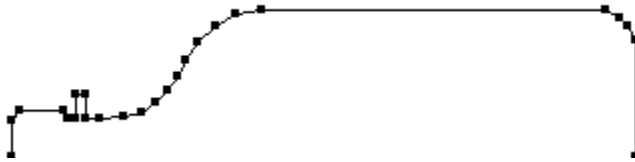


When the mouse is moved directly over a <span style="color:red">handle</span>, the cursor becomes a circle, indicating that the endpoint beneath can be moved if the mouse button is pressed and held.

The cross-hair cursor indicates that a new endpoint and line segment will be added if the mouse button is clicked.

**Note:** Holding the Ctrl key down while the mouse button is pressed will cause the new or existing endpoint to be snapped to the nearest gridpoint.

**Axis**

For drawing purposes, the axis of an object is the *bottom* edge of the **μLathe** window.

**Handle**

The large dot at each endpoint of an object outline.

**Viewing a 3D Object**

After creating the outline of an object in the Lathe view, select the 3D option from the View menu, or click the View button in the Control Panel. Your outline will be rotated 360 degrees about its axis to produce a 3D object. Using the Control Panel, you can change the position and appearance of your object.

The graphic below shows three views of an object. Click on the figures below to see a description of each view:



(a)

(b)

(c)
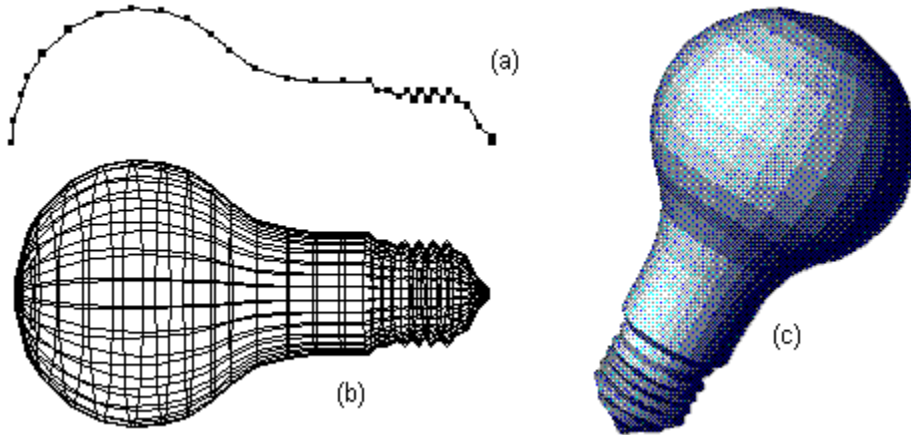
See also:
Creating a 3D Object, Using the Control Panel

**Object Outline (Lathe View)**

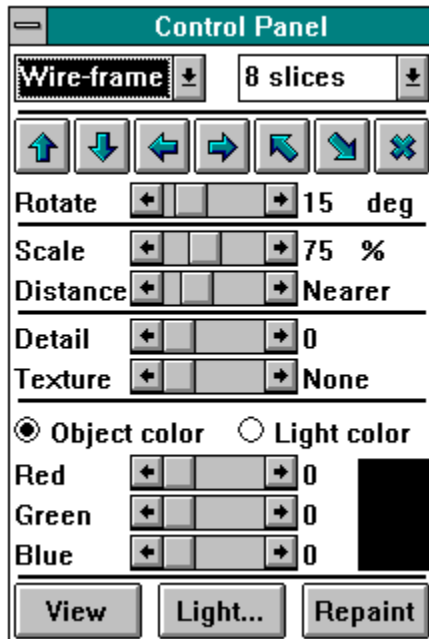Figure (a) shows a typical outline, in this case, a light bulb.

**Wire Frame Object (3D View)**

Figure (b) shows the outline of the light bulb (a) rotated around its axis, creating a wire frame object.

**Shaded Object (3D View)**

Figure (c) depicts the object after rotation and constant shading have been applied using the Control Panel.

**Using the Control Panel**



The Control Panel allows you to change several parameters that govern the appearance of your 3D object. Click on any item in the Control Panel to view a description of its function.

**System Menu**

This menu allows you to move or close the Control Panel.

**Title Bar**

Click and hold the mouse button in the title bar to move the Control Panel.

**Model List**

This list allows you to select the way your object will be rendered. The options are:

Wire-frame
Hidden
Constant
Gouraud.

**Wire Frame**

In this rendering mode, each surface of your 3D object will be outlined in a solid color; the interior is left transparent.

**Hidden**

In this rendering mode, each surface of your 3D object will be outlined in a solid color; the interior is filled to eliminate hidden lines.

**Constant**

In constant shading mode, a color value is calculated for each surface based on the surface's orientation, the color of the object, and the color of the light source. The entire surface is filled with that color.

**Gouraud**

In Gouraud shading, a color value is calculated for each vertex of a surface based on the surface's orientation, the orientation of each surface that shares the vertex, the color of the object, and the color of the light source. The color values for interior pixels are interpolated to yield a smooth shading effect.

Rendering an object in this fashion can take a considerable amount of time, especially on computers lacking a math co-processor. Be prepared for a lengthy delay if your object is complex.

Gouraud shading is **not** effective on 16 color systems.

**Slices List**

This list allows you to change the resolution (or quality) of your 3D object. The number of slices represents the number of surfaces generated around the object's axis.

**X Rotation - Positive**

Clicking this button rotates your object around the X axis. The amount the object rotates is dependent on the setting of the Rotate scroll bar.

**X Rotation - Negative**

Clicking this button rotates your object around the X axis. The amount the object rotates is dependent on the setting of the <span style="color:red">Rotate</span> scroll bar.

**Y Rotation - Positive**

Clicking this button rotates your object around the Y axis. The amount the object rotates is dependent on the setting of the <span style="color:red">Rotate</span> scroll bar.

**Y Rotation - Negative**

Clicking this button rotates your object around the Y axis. The amount the object rotates is dependent on the setting of the <span style="color:red">Rotate</span> scroll bar.

**Z Rotation - Positive**

Clicking this button rotates your object around the Z axis. The amount the object rotates is dependent on the setting of the <span style="color:red">Rotate</span> scroll bar.

**Z Rotation - Negative**

Clicking this button rotates your object around the Z axis. The amount the object rotates is dependent on the setting of the <span style="color:red">Rotate</span> scroll bar.

**Reset**

This button cancels any rotations applied to the object and returns it to its default position.

**Rotate**

This scroll bar allows you to change the number of degrees your object is rotated around an axis per rotate button click.

**Scale**

This scroll bar changes the size of your 3D object relative to the size of the outline in the Lathe view.

**Distance**

This scroll bar modifies the *apparent* distance of the viewer (i.e. you) to the 3D object, allowing you to create the illusion that the object is being viewed at extremely close range, or from very far away. Note that the size of the object does not change; only the way the object is drawn.

**Gouraud Detail**

This scroll bar changes the level of detail in Gouraud shading mode. At low settings each surface is blended with every adjacent surface. At higher settings, only surfaces that adjoin at shallow angles will be blended; surfaces that adjoin at sharp angles will not be blended. At maximum setting, Gouraud shading is effectively disabled.

**Gouraud Texture**

This scroll bar allows you to add texture to your 3D object. This control works only in conjunction with Gouraud shading.

**Object Color**

Activating this radio button allows you to change the color of the object using the Red, Green, and Blue scroll bars below.

**Light Color**

Activating this radio button allows you to change the color of the light source using the Red, Green, and Blue scroll bars below.

**Red**

This scroll bar allows you to change the red component of the object or light source color.

**Green**

This scroll bar allows you to change the green component of the object or light source color.

**Blue**

This scroll bar allows you to change the blue component of the object or light source color.

**Color**

This box displays the current color of either the object or the light source depending on whether the Object color or Light color radio button is selected.
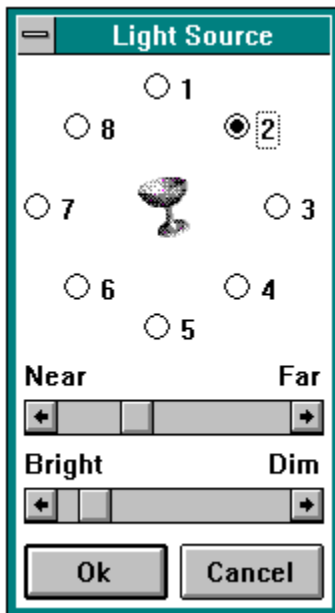
**View**

Clicking this button alternates the current mode between the Lathe view and 3D view.

**Repaint**

Causes your 3D object to be re-rendered. This button performs the same function as the Repaint command in the Edit menu.

**Light Source**



This dialog box allows you to change the position and intensity of the light source. Click on a control in the dialog box to view a description of its function.

**Light Source Positions**

The light source can be assigned one of eight positions around the object.

**Light Source Distance**

The distance from the light source to the object can be modified using this scroll bar.

**Light Source Intensity**

This scroll bar allows you to change the intensity of the light source.

**Ok**

This button accepts any changes made to the light source in the dialog box.

**Cancel**

This button cancels any changes made to the light source in the dialog box.

**File Menu Commands**

New
Open
Save
Save As
Save Image
Save Sequence
Exit

**New**

This option clears any existing object a prepares the program for the creation of a new object. If there is an unsaved object, you will be given the opportunity to save you changes.

**Open**

Opens a saved lathe object. If there is an unsaved object, you will be given the opportunity to save you changes.

**Save**

Saves the current lathe object.

**Save As**

Saves the current lathe object under a new file name.

**Save Image**

Saves a bitmapped image of the 3D object to disk. Currently, two bitmap file types are supported, BMP and TGA. Using the list box at the right of the Save Image dialog box, you may specify the resolution of the bitmapped file in bits-per-pixel. The recommended setting will be hilighted.

**Note:** There is no advantage in saving a bitmapped file in a resolution higher than the recommended resolution; the image quality will not change, but the resulting file will be considerably larger. Specifying a resolution lower than the one recommended will result in a loss of color accuracy.

**BMP**

The standard Windows bitmap format.

**TGA**

The Targa image file format. Currently, only 24-bit TGA files are supported.

**Bits-Per-Pixel**

The number of bits which comprise the color information for a single pixel of a bitmapped image. The number of possible colors in an image is 2n, where *n* is the number of bits per pixel.

1 bit - 2 colors (Monochrome)
4 bit - 16 colors (VGA)
8 bit - 256 colors (Super VGA)
24 bit - 16 million colors (True-color)

**Save Sequence**

This option allows you to save multiple views of your 3D object in a single Windows DIB file. These bitmaps can be displayed in animated fashion by the Autodesk Animator Player for Windows, or by the **MiniMovie** application bundled with **µLathe**.

When selected, you will be prompted for a DIB file name. In the X, Y, and Z rotate fields, enter the number of degrees you wish your object to rotate around that axis per frame. Negative values are allowed. You must also specify the total number of frames for the sequence.

**Note:** Even though the sequence operation has been greatly accelerated in this new version, the process can take a long time if your object is complex, or the number of frames you request is large. The sequence can be aborted by clicking the mouse button in the **µLathe** window. The **µLathe** program must be in the foreground for sequencing; don't switch to another application while the sequence is in progress.

**DIB**

Device Independent Bitmap; a Windows file format for graphic images.

**Exit**

Exits the **µLathe** application.

**Edit Menu Commands**

[Undo](#)
[Copy](#)
[Clear](#)
[Grid](#)
[Light Source](#)
[Repaint](#)

**Undo**

Undoes the previous endpoint insertion or endpoint move.

**Copy**

Copies the contents of the **µLathe** window to the clipboard. On paletted video systems (generally all 256 color systems), the palette is copied as well. Note that when the snapshot is taken, the Control Panel window will disappear momentarily if it covers any part of the **µLathe** window.

**Clear**

Erases all endpoints in the current lathe object. Unlike the New command, this option does not reset Control Panel settings.

**Grid**

Allows you to create a grid of evenly spaced points in the Lathe view. Using the Ctrl key, you can force endpoints to be aligned on the gridpoints.

**Repaint**

This command causes the 3D object to be completely re-rendered. This command performs the same function as the Repaint button in the Control Panel.

**View Menu**

[Lathe](#)
[3D](#)
[Control Panel](#)

**Lathe**

Changes the current mode to the Lathe view, where objects are edited.

See also:
Creating a 3D Object

**3D**

Changes the current mode to the 3D view, where 3D objects are rendered.

See also:
Viewing a 3D Object, Using the Control Panel

**Control Panel**

This command hides the Control Panel if it is currently displayed, or displays it if it is currently hidden.

See also:
Using the Control Panel

**Registration Information**

A **$15** donation for the use of this product will be graciously accepted. You will receive an authorized copy of **μLathe** on diskette, and will be entitled to free upgrades and fixes as they are available.

If you are a Windows programmer, **$30** will get you the aforementioned registration, *plus* the complete C-language source code to this program. Send check or money order (US funds only, please) to the author at the address below.

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**71551,2300**

**Printing**

At this time, the **µLathe** application does not support native printing. To output an image to a printer, you must use the Save Image command to save an image of your object to disk. Then import the image file into an application which supports printing, such as Paint Shop, a shareware utility from JASC Inc., or Aldus PhotoStyler, a commercial product.

See also:
Save Image