Contents

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Introduction

You have made the right choice.

PolyForm is the professional's choice for creating and converting 3D logos and objects.   Use PolyForm's powerful auto-tracing facilities to automatically convert your scanned or .BMP logos into 3D outlines. Then use PolyForm's logo wizard to easily extrude and bevel your logo.

Do you have any 3D objects that you cannot load?   PolyForm will load and save 20 different 3D file formats, allowing you to convert between all of them.   And best of all, PolyForm will let you view your object in a fully interactive viewer, making it ideal for quick and easy viewing of all your 3D objects.   You can move, rotate and scale any object in any one of 5 different rendering modes.   And with the addition of advanced polygon optimization algorithms, visual 3D hierarchy dialogs and full conversion of EPS files and fonts to 3D, PolyForm is the 'must have' utility for today's 3D professional.

Related Topics:

Hardware and Software Requirements

Installation

About this manual

Getting Help

Hardware and Software Requirements

IBM compatible computer 80386 (with a math co-processor chip) or 80486 processor or greater.

4 megabytes of RAM

Windows version 3.0 or greater.

A hard disk drive

A mouse

Related Topics:

Note:

Note:

If minimum memory requirements are not met you will not be able to use Undo or the cancel features.   It is recommended that you have more than the minimum   amount of RAM   listed above.

Installation

It will be assumed that Windows has been started and you are in the Program Manager window.

To set up PolyForm on your computer

1. Insert the disk labeled "Disk 1" in your floppy disk drive.

2. In the Program Manager window, choose Run from the File menu.

3. In the Command Line box, type **a:\setup**

If your floppy disk drive is not drive A, use the correct letter instead.

4. Click the OK button, or press ENTER.

5. Follow the instructions displayed on your screen.

From the PolyForm Set Up screen you will be asked if you wish PolyForm to be installed on a different drive or in a different directory.   Enter this information or accept the default and then click OK.

6. You will then be asked to install WIN32s.   This must be installed to allow 32 bit applications to run.   If you do not have WIN32s installed or are unsure click YES.

7. Insert the next disk in your floppy drive, if need be enter the correct drive letter and click OK.

8. The PolyForm installation will be complete.   The WIN32 set up will now be performed.   Click OK to continue.

9. After completing the WIN32 set up you may need to reboot your computer.   After rebooting, PolyForm will be ready to run.

About this manual

This manual is divided into nine chapters.   The first chapter Getting Started will run you through a few of the basic, yet fundamental functions of PolyForm.   It is highly recommended that you read chapter 1 and try out the different functions in it.   The later chapters will serve as reference.

There are a few conventions to note:

Major topic subdivisions are in bold and shaded.   An example is: "About this manual" directly above.

Each topic subdivision is shown in bold.   An example is: "**Using On-line Help"** below.

"To Do" boxes contain concrete step-by-step processes to follow.   They are usually preceded by explanatory paragraphs with extra information.   Here is the first To Do box:

Related Topics:

To read about getting help

To read about getting help

Go to the next section

Getting Help

Whenever you have a question, help is immediately available while you are working.   You can access this help facility with one or two key strokes.

Related Topics:

Using on-line Help

To select a help topic or index

To get more instruction on using Help

Using on-line Help

For quick and easy reference use on-line Help.   Simply click Help on the menu bar.

To select a help topic or index

Click on Help

Click Contents

Click on the underlined subject you want by clicking it
-OR-
To select from an alphabetized list of topics: (anytime you are in a help window)
Click the Search button
Type the keyword you want, and press Enter to display the list of   topics related to the keyword.

Click on the topic you want

When finished click Exit

To get more instruction on using Help

Click on Help

Click How to Use Help

Click Exit when finished

Getting Started

In this chapter, we will describe some basic functions and illustrate them   with a follow along example to help you get started with PolyForm.   You will see two of its fundamental capabilities, the very useful file conversion capability and the 3D object rendering capability.

Related Topics:

The PolyForm screen

Undoing an action

Loading an object / scene / image

Viewer controls

Drawing or rendering an object

PolyForm modes

Saving an object

The PolyForm screen

The top of PolyForm screen holds a pull-down menu bar and a tool icon bar directly below the window title bar.   There are some functions that can only be accessed from the menu bar. The middle part of the screen contains the area for drawing or rendering objects.   Upon opening PolyForm a grid appears in this area.   The bottom of the screen holds a status bar.   The leftmost division shows the name of the function that will be performed upon holding down a mouse key or the mode you are in.   However, if the cursor arrow is pointing to a tool bar icon, a preview description of its function will show here.   In the next cells are numbers that indicate one of the following depending on mode: the position of an object relative to its origin, the rotational values relative to its origin or the scale values of an object relative to the object's original size.

Undoing an action

A very useful thing to learn first is to undo an action.   If you have made a mistake, Undo will return you to the state just prior to making the mistake or the last action.

Related Topics:

Note:

To Undo the last action

Note:

Undo requires that you have enough memory set up to perform this action.

You need not worry about this unless you receive an error message from PolyForm about memory while attempting to use Undo.   If this happens, see CH 9: <u>Specify Memory Allocations</u>.

To Undo the last action

Choose Edit Undo

Loading an object / scene / image

There is no need to specify what type of file you wish to load, nor what the particular format is.   PolyForm automatically loads any file of a format it recognizes. In addition it will detect which files are 3D objects, scenes or collections of objects and bitmap images.

Related Topics:

Supported formats for loading

To load an object / scene / image

Note:

To clear the screen

Supported formats for loading

PolyForm will recognize and load any of the following file formats:

3D Professional

3D Studio ASCII

3D Studio Binary

DXF

BMP bitmaps

Caligari

Draw 4D

Draw 4D Pro

Imagine

LightWave Objects

LightWave Scenes

PostScript (ASCII or Encapsulated)

Scenery Animator DEM

Sculpt 3D and 4D

TrueSpace

Turbo Silver

VideoScape ASCII objects

Vista pro DEM

Wavefront

To load an object / scene / image

Choose File Open

In the Open dialog select a drive, path and filename

Click OK

As an example of loading an object:

Open spaceshp.lwo in the PolyForm Objects directory now.   A wireframe drawing of a space ship will show in the viewing portion of the screen.

Note:

You may load more than one object onto the screen.   However, if you wish to load an object on a clear screen and an object is currently showing on the screen, you will need to clear the screen.

To clear the screen

Choose File New

Click YES from the warning dialog (unless work you want to save has not been saved previously)

Viewer controls

PolyForm can perform three object motions: move, rotate and scale.   Besides object movements, the camera (either targeted on the object or not) can be moved or rotated.   Moving an object changes its position while   moving the camera changes the viewers position.   We suggest that you try a few movements of the space ship object you loaded in the previous section.

For in depth information on Viewing see   **CH 3 Viewing, moving and scaling objects.**

Related Topics:

To select an object

To select an object

To move a selected object

To rotate a selected object

To return to the starting view position

To select an object

Load an object if one has not been loaded

Choose Mode Object Selection

In the Select Object dialog, click on the desired object

Click OK

This is another very quick way to select an object.

To select an object

Hold down the Shift Key

Click the left mouse button on an object to select
Click again to unselect

A selected object will have a lighter gray wireframe.   During movement of an object the wireframe will disappear and be replaced with a bounding box and an orientation arrow on the bottom of the box.   The bounding box will indicate movement.   After movement stops the wireframe model will be redrawn.   Notice the status bar at the bottom of the screen.   The coordinates of the object will change with movement.

To move a selected object

Choose Mode, Object, Move

Position the mouse over the object

Hold down the left mouse button and move forward   or backward to move the object IN or OUT of the screen

Hold down the left mouse button and move left or right to move the object LEFT or RIGHT on the screen

Hold down the right mouse button and move forward or backward to move the object UP or DOWN on the screen

Hold down the right mouse button and move left or right to move the object LEFT or RIGHT on the screen

To rotate a selected object

Choose Mode, Object, Rotate

Position the mouse over the object

Hold down the left mouse button and move forward or backward   to change the PITCH of the object

Hold down the left mouse button and move left or right to change the HEADING of the object

Hold down the right mouse button and move forward or backward to change the PITCH of the object

Hold down the right mouse button and move left or right to change the BANKING of the object

After moving an object around, you might have lost it from view.   Use reset to set the camera back to the first viewing position.

To return to the starting view position

Choose View, Reset

Drawing or rendering an object

An object is a 3D wireframe model with a surface applied to the polygons that make up the wireframe. Drawing an object simply draws its wireframe.   Rendering an object will apply the surface to give an apparent 3D look.

For in depth information on PolyForm's Drawing and Rendering capabilities see   **CH 4 Drawing and Rendering Objects**

There are three different renderings available in PolyForm: flat shading, Gourad and Phong.   The most realistic renderings take longer to complete.   There are two drawing modes: wireframe and hidden line wireframe, both of which can be done using a color wireframe.   At this point you may want to try drawing a hidden line wireframe model and one or more of the renderings for the space ship object.

Related Topics:

To draw a hidden line wireframe model

To render an object using flat, Gourad or Phong rendering

To draw a hidden line wireframe model

Load an object if one is not already loaded

Choose Draw Hidden Wireframe

To render an object using flat, Gourad or Phong rendering

Load an object if one is not already loaded

Choose Draw Flat Shading, -OR-

Choose Draw Gourad Rendering, -OR-

Choose Draw Phong Rendering

PolyForm modes

PolyForm is always in a mode.   For example after selecting Mode, Camera, Move from the menu bar, PolyForm will be in camera move mode.   The current mode is displayed on the left of the status bar.   To exit a certain mode, you simply select another mode. Not all functions are available in a particular mode and will be ghosted on the menu.

Saving an object

If you have not changed an object in any way there is no need to save it.   However, saving is the means by which automatic format conversion takes place.

Related Topics:

Automatic format conversion

Supported object formats for saving

To perform automatic format conversion

Note:

Exiting PolyForm

To exit from PolyForm

Automatic format conversion

If you have a file in any of the formats listed in the section "Supported formats for loading"   then you may convert it by then Loading and Saving to any of the formats listed below.

Supported object formats for saving

3D Professional

3D Studio (ASCII)

DXF

BMP bitmaps

DigitalArts

Draw 4D

Draw 4D Pro

Imagine

LightWave Objects

LightWave Scenes

Sculpt 3D and 4D

TrueSpace (ASCII)

TrueSpace (Binary)

Turbo Silver

VideoScape (ASCII)

Wavefront

To perform automatic format conversion

Load the file to convert

Choose File Save As...

In the Save dialog select:
      the desired format
      Single File Save

Click OK

In the Save Object dialog select: the drive, directory, filename, and the type of file format

Note: The type of file format chosen here has no effect on the format under which the file will be saved. The save format is set above in the Save dialog.

Click OK

Note:

It is a good habit to use a file extension that corresponds to the file format under which it was saved.

Exiting PolyForm

Please see later chapters for in depth information on any topic.   You now have a few basic skills to help you get started, but there are many important features that have not been covered.

To exit from PolyForm

Choose File Exit

Loading images and objects

There is no need to specify what type of file you wish to load, nor what the particular format is.   PolyForm automatically recognizes each format it knows how to load, and it detects which files are 3D objects, scenes or collections of objects and bitmap images.

Related Topics:

Supported formats for loading

Clearing the screen

To clear the screen

Loading an image

Loading an object

Creating a new image from text

Creating a 3D object from text or loaded images

Supported formats for loading

PolyForm will recognize and load any of the following file formats:

3D Professional

3D Studio ASCII

3D Studio Binary

DXF

BMP Bitmaps

Caligari

Draw 4D

Draw 4D Pro

Imagine

LightWave Objects

LightWave Scenes

PostScript (ASCII or Encapsulated)

Scenery Animator DEM

Sculpt 3D and 4D

TrueSpace

Turbo Silver

VideoScape ASCII objects

Vista pro DEM

Wavefront

You may load more than one object onto the screen.   However, if you wish to load an object on a clear screen and an object is currently showing on the screen, you will need to clear the screen.

Clearing the screen

It is important to realize that clearing the screen will remove any objects showing on the screen and will NOT save any material.   You will lose any work that you have not saved before you clear the screen.

To clear the screen

Choose File New

Click YES from the warning dialog

Loading an image

PolyForm has the powerful ability to convert bitmap text or pictures to 3D objects.   This makes it trivial to create a professional 3D logo.   After loading a bitmap you can manipulate and enhance its transformation into a 3D object. However, you must create or edit the bitmap outside of PolyForm.   (See the one exception to this rule in: creating a new image below.)

When loading a bitmap image, PolyForm will perform an automatic count of the number of pixels for each color.   This is to help to determine what is the background and what is the foreground of the bitmap. The 3D object will be created out of the foreground.   After the pixel count is finished, the color with the largest number of pixels will be shown and will be assumed to be the background color unless otherwise specified.   You can view the bitmap to check out this assumption.   If the color corresponding to the highest pixel count is not the background   select the color that is the background.

After selecting the background, PolyForm will convert the bitmap into a flat 3D object made up of polygons.

After conversion of the bitmap a smoothing dialog will appear.

Related Topics:

Note:

To load an image

Note:

Note:

It is highly recommended that you allow PolyForm to smooth out the flat 3D object.   There may be jagged edges that will compromise the quality of the 3D image, take up memory and require more time to render. It should also be noted that the smoothing process can only be used once on a converted bitmap.

To load an image

Choose File, Open

In the Open dialog select a drive, path and filename of a BMP bitmap file

Click OK

In the Select Bitmap Background Color dialog :
        Click View   to determine the background color
        Click OK
        Click on the color that is the background
        Click Convert

(Recommended) In the Smoothing Converted Bitmap Object dialog select :
        Static Smoothing   -OR- Interactive Smoothing (using default numbers)

Click Smooth

Note:

After conversion and smoothing of the bitmap follow the easy steps below to create a 3D object.   See <u>Creating a 3D object from text or loaded images</u> below.

Loading an object

Use the procedure below to load any supported file format.   If you are loading a bitmap image there will be more information requested as described above in Loading an image.   This also holds true if you are loading a PostScript file.

Related Topics:

To load an object / scene / image

Loading PostScript files other than fonts

Note:

Note:

To set the PostScript font file directory

To load a PostScript file

To load an object / scene / image

Choose File Open

In the Open dialog select a drive, path and filename

Click OK

Loading PostScript files other than fonts

PolyForm can convert an ASCII text PostScript file (which typically has a filename extension of ".ps") or an Encapsulated PostScript file (which typically has a filename extension of ".eps") into a 3D object. It will handle single or multi-page PostScript files and monochromatic or color PostScript files.

Note:

Adobe Illustrator files or .AI files are not supported.

Use the standard loading procedure to load a PostScript file that is not a PostScript font file.   You will need to make selections for the settings below. The standard loading procedure is used even if the PostScript file contains text from a PostScript font.

Note:

See the Using PostScript Fonts section below if the file is a PostScript font file.

Settings:

Choose Curve Resolution in low, medium, or high settings   depending on how smooth you want curved letters or portions of letters to be. Medium is a good compromise setting, and is the default setting.

Ignore Standard Text   If this is selected, any text in the PostScript file will be replaced by dummy circles.

Ignore Filled Curves   If this is selected, any curves that are filled will be ignored.

Ignore Stroked Curves   If this is selected, any curves that are not filled will be ignored.

The Center Object option is the default. It will center your converted font object on the grid.   -OR-

If   Allow Offsets is selected, offsets found in the PostScript file will be applied to the converted file.

Inter Element Step defaults to a setting of -0.005.   Entering a larger value here will cause more separation (depth) of the polygons in the converted image along the Z-axis.

Inter Page Step defaults to a setting of -2.0 and will have an effect only on a multi-page PostScript file in a similar way that Inter Object Step affects the polygons within a single-page PostScript file.

If the PostScript file contains text from a PostScript font, set the directory for PostScript fonts first.

To set the PostScript font file directory

Choose Options Specify Paths...

Click Specify PostScript Font Path...

Select:

       Font filename
       Directory
       Drive

Click OK

To load a PostScript file

Choose File Open

In the Open dialog select a drive, path and filename of the PostScript file

Click OK

In the PostScript File Conversion dialog Select:
        Curve Resolution
        Ignore Curve or Text options
        Center   or Offset Object
        Inter Element and Inter Page steps

Click Convert

Creating a new image from text

Most images must be obtained from outside PolyForm.   The exception is for text images.   It is possible in PolyForm to quickly create 3D objects from text in a selection of fonts, font styles and point sizes. After creating the new image from text see the next section <u>Creating a 3D object from text or loaded images</u> to complete the creation of a 3D object.

Related Topics:

<u>Note:</u>

<u>Using Installed Screen Fonts</u>

<u>Note:</u>

<u>To create a text image from installed screen fonts</u>

<u>Using PostScript Fonts</u>

<u>To create a text image from PostScript fonts</u>

Note:

To easily create a logo from scratch, use the logo wizard.   See <u>Creating a 3D object from text or loaded images</u>

Using Installed Screen Fonts

PolyForm easily converts text from a True Type font into a flat 3D wireframe.   The conversion is a simple one-step process.   You can easily see if a font is in True Type form by viewing the Font dialog.   A double T appears to the left of all True Type font names.

PolyForm also converts non-True Type fonts into flat 3D wireframes.   The difference in converting a True Type verses a non-True Type font is that non-True Types will be converted from bitmaps.   As a consequence of using a bitmap, after conversion you will be asked to smooth the converted image.   After conversion of the bitmap a smoothing dialog will appear.

Note:

It is highly recommended that you allow PolyForm to smooth the flat 3D object created from non- True Type fonts.   There may be jagged edges that will compromise the quality of the 3D image, take up memory and require more time to render.   The smoothing process can only be performed once.

To create a text image from installed screen fonts

Choose Modify, Text

Click Installed Screen Font

Click Specify Font...

In the Font dialog Select:
   Font
   Font Style
   Point Size
   optional effects
   Color

Click OK

Type in desired text

Click Build

After Build if a non-True Type font was used, a smoothing dialog will appear. (See below)

(Recommended) In the Smoothing Converted Bitmap Object dialog select
   Static Smoothing -OR- Interactive Smoothing (using default numbers)
   Click Smooth

Using PostScript Fonts

Follow a similar procedure for converting   PostScript font text   into a 3D object, as outlined above. Except here you need to provide directory information on where to find the PostScript font and make selections for the settings described for PostScript files above.

To create a text image from PostScript fonts

Choose Modify Text

Click PostScript Font

Click Specify Font...

In the PostScript Font dialog Select:
        PostScript Font filename
        Drive
        Directory where font file resides

Click OK

Type in desired text

Click Build

In the PostScript File Conversion dialog Select:
        Curve Resolution
        Ignore curve or text options
        Center or Offset Object
        Inter Element and Inter Page steps

Click Convert

Creating a 3D object from text or loaded images

After creating a flat 3D wireframe from any of the following: imported BMP bitmap, PostScript file, or text created using the text dialog, you can easily obtain a 3D object.

The simplest way is to use the Logo dialog.

Related Topics:

To create a 3D object from converted text or image

To specify color

To create a 3D object from converted text or image

Click Modify, Logo

Click on No Extrusion -OR- Small Extrusion -OR- Medium Extrusion -OR- Large Extrusion

Click on No Bevel -OR- Small Bevel -OR- Medium Bevel -OR- Large Bevel

Click on Flat Bevel -OR- Rounded Bevel

Click on Specify Color (see procedure for color below)

Click on Surface Type

Click Build

To specify color

Click on Specify Color...

Select a color by:
Clicking on a Color -OR-

Hold down the left mouse button and move around color palette
letting up on the desired color (Click on Add to Custom Colors if desired)

Click on OK to accept   -OR- Cancel to keep old color

Viewing, moving, rotating and scaling objects

This chapter will describe movements and views of objects on the screen.

Related Topics:

Default view upon opening an object

An newly loaded object will appear in perspective mode as a 3D wireframe model. The object will be shown on a grid that lies like a horizontal plane in the viewing area.

Front, top and side viewing modes

The object can also be viewed from the front, top, or side without having to move the object.   Such a view will be flat or orthogonal; showing the wireframe and vertices.   These views can be helpful when editing an object.   See CH 6: <u>Selecting vertices and polygons</u>.   All objects currently in memory will be shown in this mode.

Related Topics:

<u>To view the front, top or side of objects</u>

To view the front, top or side of objects

Choose View Front
    -OR- View Top
    -OR- View Side

Viewing objects in foreground or background

You can assign objects to the foreground or the background of the screen.   This creates two different universes and allows you to view foreground and background separately and perform various operations on only one set.   See CH 9: <u>Putting objects in the foreground or background</u>. Objects are placed in the foreground by default.

Related Topics:

<u>To view objects in the foreground</u>

<u>To view objects in the background</u>

To view objects in the foreground

Choose View Foreground

To view objects in the background

Choose View Background

Rotating and   moving the camera position

Moving or rotating the camera will keep all objects on the screen fixed in place and change the viewer's position.

Related Topics:

During Movement

During the movements, objects are replaced by bounding boxes with an orientation arrow on the bottom. After movement is completed (accomplished letting up on the mouse button) objects will be redrawn or rendered.

Selecting type of movement

To move the camera

Choose Mode, Camera, Move

Position the mouse on the screen

Hold Left mouse button down and move mouse left or right for LEFT or RIGHT camera movements

Hold Left mouse button down and move mouse forward or back for IN or OUT of   screen movements

Hold Right mouse button down and move forward or back for UP or DOWN movements

To rotate the camera

Choose Mode, Camera, Rotate

Position the mouse on the screen

Hold Left mouse button down and move mouse left or right for HEADING   movements

Hold Left mouse button down and move mouse forward or back for PITCH movements

Hold Right mouse button down and move left or right for BANKING movements

Targeting the camera

This option allows you to choose an object toward which the camera will always point.   A moving camera targeted on an object will always point towards the object while a non-targeted camera will not have any fixed target.

Related Topics:

Note:

To target the camera

To remove camera targeting

Targeting Camera options

To automatically target new objects

To have camera targeting when camera rotate is selected

Note:

A targeted camera can move but it cannot rotate.   Therefore if you select camera rotate, camera targeting will be automatically turned off.   However, see options below to disable the automatic camera targeting removal when camera rotation is selected.

To target the camera

Choose Camera Targeting...

Select an object for targeting

Click OK

To remove camera targeting

Choose Camera Targeting...

Select none

Click OK

Targeting Camera options

There are two options that can be enabled for camera targeting.   You can choose to always have new objects targeted and you can choose to have camera targeting automatically removed if you choose camera rotate.   A check mark will appear by an option that has been enabled.

To automatically target new objects

Choose Options

Click on Target Camera to New Objects

To have camera targeting when camera rotate is selected

Choose Options

Click on Remove Target for Camera Rotate

Rotating, moving and scaling an object

You must select an object before moving, rotating or scaling can take place.   You may select more than one object.

Related Topics:

During Movement

To select single or multiple objects for movement

To quickly select an object

Selecting type of movement

To move an object

To rotate an object

To scale an object

During Movement

During the movements, objects will be replaced by bounding boxes with an orientation arrow on the bottom.   After movement is completed, by letting up on the mouse button, objects will be redrawn or rendered.

To select single or multiple objects for movement

Choose Mode Object Selection...

Select an object from the list
      -OR-   Click Select All

Click OK

To quickly select an object

Hold down the Shift Key

Click the left mouse button on the desired object(s)
Click again to unselect

Selecting type of movement

Follow the procedures below for selecting the type of movement. A check mark will appear by its name after the selection has been made

To move an object

Choose Mode, Object, Move

Position the mouse in the viewer

Hold Left mouse button down and move mouse left or right to move the object LEFT or RIGHT

Hold Left mouse button down and move mouse forward or back to move the object IN or OUT of screen

Hold Right mouse button down and move forward or back to move the object UP or DOWN

To rotate an object

Choose Mode, Object, Rotate

Position the mouse on the screen

Hold Left mouse button down and move mouse left or right for HEADING movements

Hold Left mouse button down and move mouse forward or back for PITCH movements

Hold Right mouse button down and move left or right for BANKING movements

To scale an object

Choose Mode, Object, Scale

Position the mouse on the screen

Hold Left mouse button down and move mouse left or right
or forward and back for   SCALING

Resetting the view

Reset will reposition the camera to the default starting position, will fit all objects into the view and will re-size the grid so as to accommodate all objects in memory.

Related Topics:

To reset the view

To reset the view

Choose View Reset

Restricting rotation, movement and scaling

If movements or scaling are to be restricted to one direction or axes, it may be difficult to do so by controlling mouse movements.   There is an option that will disable movements or scaling in chosen directions or along chosen axes.

Related Topics:

To restrict motions, rotations and scaling

To restrict motions, rotations and scaling

Choose Options Axes...

Click on the axes check box

To remove any restrictions click on restricted axes check box

Click OK

Incremental rotation, movement and scaling

For small movements, rotations or scaling it is helpful to use the incremental feature.   Follow the procedures above to select an object and to invoke the desired movement.

Instead of using the mouse you can use the   , or . keys and the arrow keys.

Related Topics:

To make small incremental movements

To make small incremental movements

Follow the procedure above to select a movement type and to select an object

Press a direction key for one small movement

Locking camera and grid

Lock will cause the camera and grid to remain unchanged when loading a new object.   It locks down the camera and grid in their current orientation and size.

Related Topics:

To Lock the camera and grid

To Lock the camera and grid

Choose View

Click on   Lock

A check mark will appear next to Lock after it has been enabled.

To disable Lock perform the same procedure and the check mark will disappear.

Drawing and Rendering objects

This chapter covers the drawing and rendering modes available in PolyForm.   These modes are either enabled or disabled.   There are five basic drawing and rendering modes that are mutually exclusive. Only one of the five can be enabled at a time.   A selected mode will have a check next to it in the Draw menu.

Each object will be rendered using a collection of surfaces corresponding to the polygons making up the object.   For in depth information see   **CH 7 Surfaces.** Surfaces can have certain attributes such as smoothing and highlighting attributes.   The difference between rendering modes is how many surface attributes are used in the rendering.

Related Topics:

Wire Frame

Hidden Wire Frame

Flat Shading

Gourad Rendering

Phong Rendering

Color Wire Frame

Options for special problem avoidance

Showing points

Showing the grid

Wire Frame

Wire Frame will create a wireframe drawing of an object.   This is the fastest of the drawing modes. Newly loaded objects are drawn in this mode. There are no hidden lines in this mode.

Related Topics:

To draw using Wire Frame

To draw using Wire Frame

Choose Draw

Click on Visible Wire Frame

Hidden Wire Frame

Hidden Wire Frame uses hidden line removal.   Spatial relationships and object shapes may be more coherent in this mode.

Related Topics:

To draw using Hidden Wire Frame

To draw using Hidden Wire Frame

Choose Draw

Click on Hidden Wire Frame

Flat Shading

Flat shading will create filled flat-shaded polygons.   This is the most basic of the rendering modes and therefore the fastest.

Related Topics:

To render using Flat Shading

To render using Flat Shading

Choose Draw

Click on Flat Shading

Gourad Rendering

Gourad Rendering will shade and will apply smoothing if it is an attribute of the surface.   However, only darker shading is used - there are no highlight effects.

Related Topics:

To render using Gourad Rendering

To render using Gourad Rendering

Choose Draw

Click on Gourad Rendering

Phong Rendering

Phong Rendering uses the most information about a surface, produces the highest quality rendering and takes the most time.   Surface highlighting attributes such as gloss and metallicity as well as smoothing are used in the rendering process.

Related Topics:

To render using Phong Rendering

To render using Phong Rendering

Choose Draw

Click on Phong Rendering

Color Wire Frame

You can enable or disable the Color Wire Frame option.   It will produce a color wire frame when you select either of the wire frame draw modes.

Related Topics:

To use the Color Wire Frame option

To use the Color Wire Frame option

Choose Draw

Click on Color Wire Frame if no check mark appears next to it

Options for special problem avoidance

See Double Polygons below if you have rendered an object and there are holes in the result.

See Threshold Smoothing below if a rendered object has undesirable edges from connecting polygons.

Related Topics:

Double polygons

To use the double polygons option

Threshold smoothing

To apply Threshold Smoothing

Double polygons

In loading objects from some formats there will be orientation problems with the polygons.   PolyForm only renders polygons with a positive orientation, that is, polygons that would be visible to the viewer, normally.   This is a time saver.   However, some file formats will have polygon orientations that will not correspond to visible and non-visible categories.

You will know this is a problem if holes appear in a rendered object.   A quick way to solve this problem is to choose the Double polygons option.   What this does is ensure that PolyForm counts all polygons as visible and so will render them.   It will take more time since polygons that are in fact not visible will be rendered.   To see a more elegant and time saving way of solving the problem see CH 6: Auto flip polygons.

To use the double polygons option

Choose Draw

Click on Double Polygons if check mark not showing

Threshold smoothing

Apply threshold smoothing to an object to smooth out undesirable edges between polygons.   The angle for which smoothing is applied is 85 degrees or greater.

To apply Threshold Smoothing

Choose Draw

Click on Threshold Smoothing if check mark not showing

Showing points

With this option selected, PolyForm highlights the vertices of the polygons.

Related Topics:

To Show Points

To Show Points

Choose Draw

Click on Show Points if check mark not showing

Showing the grid

You can show or hide the gridded plane.

Related Topics:

To show the grid

To show the grid

Choose Draw

Click on Show Grid   if check mark not showing

Converting images to 3D objects

One of the most powerful features of PolyForm is its ability to quickly turn   bitmap images into 3D objects or logos.   Chapter 3 covers how to load these bitmap images and convert them into flat, smoothed 3D objects.   This chapter covers in depth information on smoothing and continues on to cover extruding and beveling to produce fully 3D wireframe models.

Related Topics:

Smoothing

Extruding converted images

Beveling

Smoothing

An automatic smoothing window appears after loading a bitmap image. It is possible to smooth the bitmap later if you did not choose smoothing immediately after loading. However the smoothing process can only be performed once for a particular bitmap image.

Related Topics:

Static smoothing

To perform static smoothing

Interactive smoothing

Note:

Smoothing parameters

Smoothing - Spline Option

To perform interactive smoothing

Static smoothing

Static smoothing will perform smoothing, finishing the process once and will close the smoothing window. The smoothed result will show in the viewing area.   If the results are not satisfactory, Undo the smoothing and try again using interactive smoothing.

To perform static smoothing

If not in the smoothing window: Choose Modify Smooth...

Click Static smoothing

Click Smooth

Interactive smoothing

Smoothing performed this way will allow you to smooth with a set of values, view the results but not close the smoothing window.   This allows you to repeat the process with adjusted smoothing values.   You can repeat this process until the desired result is produced.

Note:

Most often you will obtain very satisfactory smoothing results simply using default values for the three smoothing parameters below.

Smoothing parameters

DETAIL ELIMINATION - This parameter tries to find polygon segments that basically lie within a straight line. The value is a tolerance value - the higher the tolerance, the bigger the bend a line can have and still be straightened.

SEGMENT ELIMINATION - This parameter plots a course through the converted bitmap's polygons and lays down straight lines. The size of these lines is determined by this value. The larger the value, the less detail - the smaller the value,   the more detail will appear.

HORZ/VERT ELIMINATION - This parameter attempts   to restrain or hold down flat horizontal and vertical areas.   The smaller this value, the more that horizontal or vertical segments will be locked down. Horizontal or vertical segments will be more apt to be changed for smoothing, the larger the value.

Smoothing - Spline Option

SPLINE FITTING - Enable spline fitting when the first three parameters are insufficient for producing a desirable smoothing.

SPLINE COVERAGE - This parameter controls how many polygon segments will be converted to splines. The larger the value, the more polygon segments will be converted

SPLINE VERTEX SPACING - This parameter controls the spacing between vertices on each spline created - the higher the value, the bigger the spacing; the lower the value, the closer the vertices become.

RESET SETTINGS - This button will reset all the parameter fields to their default values.

To perform interactive smoothing

If not in the smoothing window: Choose Modify Smooth...

Click Interactive Smoothing

INTERACTIVE STEP

Choose:

          To keep default values

-OR-

          Select Values for: Detail Elimination

                                  Segment Elimination

                                  Hort/Vert Elimination

-OR-

          Select Spline Fitting and values for:

                                  Spline coverage

                                  Spline vertex spacing

Repeat interactive step until desired results

Click Smooth

Extruding converted images

The next step in the creation of a 3D object from the converted bitmap is to extrude it.   This will give it depth.

Related Topics:

Note:

Extruding all polygons or selected polygons

Static or interactive extrusion

To extrude a converted image

Note:

If you want beveled edges it is recommended that you skip directly to beveling, since you can extrude at the same time.   Additionally, you can use the logo dialog to perform all steps needed to create a logo.

Extruding all polygons or selected polygons

PolyForm allows you to extrude the entire converted bitmap or only a selection of its polygons.   To select only some polygons for extrusion see CH 6: <u>Selecting vertices and polygons</u>.

Static or interactive extrusion

Static extrusion will perform an extrusion with the default distance value of 50.   This gives the depth of the extrusion.

Interactive extrusion will allow you to click on increase or decrease   distance arrows, showing the result each time, until the desired result is achieved.

To extrude a converted image

Choose Modify Extrude...

Click: All Polygons -OR- Selected Polygons   for extrusion

Click: Static or Interactive

If Static selected:
    Click Extrude

if Interactive selected:
    Click interactively to increase or decrease the   extrusion distance until the desired
result is produced

Click Extrude

Beveling

Beveling will give a more professional look to logos, titles and animations.

Related Topics:

Beveling all polygons or selected polygons

Beveling in or out

Note:

Beveling values

Static and interactive beveling

Using a Router Bit Bevel

Note:

To bevel an converted image

Beveling all polygons or selected polygons

PolyForm allows you to bevel the entire converted bitmap or only a selection of its polygons.   To select only some polygons for beveling see CH 6: <u>Selecting vertices and polygons</u>.

Beveling in or out

This selection will determine whether or not the bevel is created inside or the outside of the polygon.

Note:

For best results on already extruded objects, use inward beveling only.   Conversely, when beveling out, bevel then extrude.

Beveling values

You may choose values for WIDTH, DEPTH AND EXTRUSION.   If width and depth are equal then a 45 degree angle is made by the bevel.   Extrusion will control the distance between the front and back plane polygons.

Static and interactive beveling

Static beveling will allow you to enter bevel values and perform the beveling.   Interactive beveling will allow you to see your changes to beveling values interactively.

Using a Router Bit Bevel

REGULAR BEVEL or ROUTER BIT BEVEL   determine whether to perform a regular bevel or to use a specified router bit to perform the bevel

SPECIFY ROUTER BIT - This button will allow you to choose a Router Bit file with which to bevel.

Router Bit mode allows you to utilize a user-defined   polygon to shape your bevel. It works as though you were using an actual workshop power router tool to finish   off the edges of your object.

All router bits must consist of one polygon only and must have been saved in VideoScape ASCII format. The actual bevel portion will follow the outline of the right edge of the   bit's polygon (when seen from the front view). PolyForm   finds the upper-right and lower-right most points and   follows the path between those points as the router bit.

Note:

The router bit polygon must be in clockwise order.   You can confirm this by viewing the bit in Perspective mode from the front.   Please see CH 6: <u>Polygon orientation</u> - for a discussion of   orientation (clockwise or counter clockwise).

ROUTER BIT SCALE - You can adjust the Router Bit Scale field   to alter the size of the router bit for use in the   Bevel function.

To bevel an converted image

Choose Modify Bevel...

Click: All polygons -OR-   Selected polygons for beveling

Click: Bevel In   -OR-   Bevel Out

Click: Regular Bevel -OR- Router Bit Bevel
        If Router Bit Bevel specify a router bit

Click: Static -OR- Interactive

If Static selected:
        Enter values for width, depth and extrusion
        Click Bevel

If Interactive selected:
Click interactively to increase or decrease the
                bevel values of width, depth, extrusion until the   desired result is produced

Click Bevel

Modifying 3D wireframe models

This chapter describes editing of the polygons and vertices that make up objects.   This editing capability is one of the strengths of PolyForm.

There are actually several aspects to the topics in this chapter:

The actual modification of an object's vertices and polygons, so as to **change its shape**.

Changing the configuration of polygons and vertices to help in the conversion of objects between file formats, to help in rendering, to improve the organization of the object, but **not to change the shape**

Another is simply   **selecting polygons** for the selective application of a surface, editing or other operations.

Related Topics:

Selecting vertices and polygons

Deleting vertices and polygons

Moving vertices

Subdividing edges

Using the Polygon Modifier

Applying a surface

Selecting vertices and polygons

To select polygons, you select all of its vertices.   Selecting polygons is important for selectively applying surfaces or other operations.   You may want to move the object or go to a side view to help you best select the desired polygons.

You will need to go into Edit Mode to be able to select vertices and polygons.   In Edit Mode the object will be redrawn in wireframe mode.   After vertices have been selected they will appear in a lighter gray shade.

Related Topics:

To select vertices and polygons

Select Linked Vertices

To select linked vertices

Swap Vertex Selection

To swap vertex selection

Selecting / Unselecting All Vertices

To select all vertices

To unselect all vertices

To select vertices and polygons

Choose Mode, Edit

Click on Select

Select all the vertices of the desired polygons by either:
        Clicking on the vertices -OR-

        Holding down the Left mouse button and move the   mouse to draw a lasso around desired
vertices

After drawing a lasso around vertices, the object will be redrawn with all the selected vertices highlighted.

Select Linked Vertices

Sometimes it will be useful to select all vertices that are connected via polygon edges, for example when applying surfaces or moving sections of an object.

All points that are connected by polygon edges to the currently selected points will be selected.

To select linked vertices

Select one or more vertices from the group of linked vertices

Choose Edit, Select Linked Vertexes

Swap Vertex Selection

It is sometimes useful to be able to select some vertices and perform an operation like assigning a surface to them and then apply another surface to the other set of   vertices.

You can easily accomplish this by swapping vertex selection.   You select one set, perform an operation like applying a surface, then select swap vertexes to unselect the first group and select all those vertices not in the first group and apply the operation again. The object will be redrawn showing the swapped vertices highlighted.

To swap vertex selection

After selecting one group of vertexes

Choose Edit

Click on Swap Vertex Selection

Selecting / Unselecting All Vertices

Use the following steps for quick selection or de-selection of all vertices.   The object will be redrawn with all vertices highlighted or unhighlighted respectively.

To select all vertices

Choose Edit

Click on Select All Vertexes

To unselect all vertices

Choose Edit

Click on Unselect All Vertexes

Deleting vertices and polygons

Vertices can be deleted after selecting them.   To delete polygons, you need to select the vertices corresponding to the polygon.   If not all of a polygon's vertices were selected the polygon will not be deleted.

Related Topics:

To delete vertices

To delete polygons

To delete vertices

Select vertices for deletion

Choose Edit

Click on Delete Selected Vertices

To delete polygons

Select all vertices corresponding to the polygons to delete

Choose Edit

Click on Delete Selected Polygons

Moving vertices

You can move one or more points.

Related Topics:

To move vertices

Hint:

To move vertices

Select one or more vertices

Hold down the Right mouse button

Move the mouse to move the selected vertices

Let up on the mouse button at the desired location

Hint:

On slower machines, move the mouse slowly to allow time for redrawing of the object and to see the current location of the points during the moving process.

Subdividing edges

Subdividing edges will add a vertex between the vertexes of the selected edges.

Related Topics:

Hint:

To subdivide edges

Hint:

You can move added vertices to create more curves, etc.

To subdivide edges

Select the vertices of the edges to subdivide

Choose Edit

Click on Subdivide Selected Edges

Using the Polygon Modifier

The Modify Polygon dialog contains all of the functions described below to allow you to change the polygon and vertex database of objects in memory without actually changing the shape of the object.

An assortment of powerful object optimization algorithms

includes functions that reduce redundant data, increase

rendering speed and assist in converting objects from one file

format to another.

Seven informational fields occupy the top half of the Modify Polygon dialog below the All Polygons / Selected Polygons choice .   These values cannot be changed directly, but will change after certain functions below are invoked.

Related Topics:

Modify Polygon values

Divide polygons

Note:

To divide polygons

Reduce polygons

Reduce polygon values

To reduce polygons

Polygon orientation

Note:

Auto flip polygons

To auto flip polygons

Double polygons

Note:

To double polygons

Reduce Vertexes

Hint:

To reduce vertices

Modify Polygon values

VERTEXES represents the number of vertices in the

database depending on whether All or Selected has been chosen.

POLYGONS represents the number of polygons in the

database depending on whether All or Selected has been chosen.

SMALLEST and LARGEST Polygon fields represent the

number of sides on the smallest and largest polygons.

The TOTAL WIDTH is the actual width of all objects in memory.

The TOTAL HEIGHT is the actual height of all objects in memory.

The TOTAL DEPTH represents the actual depth of all objects in memory.

Divide polygons

Divide Polygons takes larger polygons and splits them up into smaller polygons.   Polygon division is automatically performed on multi-sided polygons when objects are saved in Imagine, Turbo Silver, Sculpt or DXF formats. This function helps to optimize your objects before you save them in their new formats.

The Maximum Polygon Sides field determines the maximum number of sides a polygon can have.

Note:

Divide Polygons does not work well on polygons that have no width at any point. The same is true for crossed polygons, like a twisted square.   That is polygons whose vertices are not ordered in either a clockwise or counter-clockwise manner.

To divide polygons

Choose Modify Polygon...

Click either All Polygons -OR- Selected Polygons

Click Divide Polygons...

Enter the maximum number of polygon sides

Click Divide

Reduce polygons

The Reduce Polygons function reduces and rebuilds polygons. The algorithm searches for polygons that are co-planar (on the same plane), deletes them and rebuilds them as one larger polygon. For example, a cube built of   triangles consists of 12 polygons, pairs of which are co-planar on each face of the cube. Polygon Reduction rebuilds the cube with 6 square polygons.

Reduce Polygons searches for vertices that do not add to the definition of a polygon. A vertex exactly in the middle of one side of a square is considered redundant and is deleted.

Reduce polygon values

Angle Threshold represents the threshold below which two non-co-planar polygons will be considered as co-planar and therefore reduced. In other words, if the angle of difference in degrees is less than the threshold, then the two polygons are remade as one. The value of 0.05 is the default, although hand made objects may require higher values.

The Maximum Polygon Sides field determines how many sides PolyForm will allow on the largest polygon it will create. This field tries to create the most efficient polygon set possible. This is useful for specialized file format conversions where a specific number of sides are required, however this does not guarantee the size of the smallest polygon.

To reduce polygons

Choose Modify Polygon...

Click either All Polygons -OR- Selected Polygons

Click Reduce Polygons...

Enter Angle Threshold

Enter the maximum number of polygon sides

Click Reduce

Polygon orientation

PolyForm only renders polygons with a positive orientation.   This is a time saver since in objects with coherent polygon orientations, only positively oriented polygons would be visible anyway.   Orientation is determined by the ordering of the vertices of a polygon from the viewer's vantage point.   Not all file formats support polygon orientation or have coherent orientations and simply render all polygons.

Note:

You will know an object does not have a coherent polygon orientation pattern if holes appear in a rendered object.

PolyForm allows you to handle this in the two ways described below.

Auto flip polygons

The Auto Flip Polygons will intelligently attempt to flip or re-rotate polygons into a coherent orientation. This is a more elegant solution than that described in double polygons below, because only visible polygons will be rendered whereas if double polygons are used, every polygon will be rendered. However, it may not be possible for a given object to be adjusted to produce a coherent orientation. Objects that are not legal solids are examples of where this would be impossible.

Auto flip polygons is particularly useful when moving from triangle-based formats to multi-sided polygon formats

To auto flip polygons

Choose Modify Polygon...

Click either All Polygons -OR- Selected Polygons

Click on Auto Flip Polygons

Double polygons

Double Polygons creates a duplicate of every polygon in the current object.   These new polygons will have the opposite direction from the originals.   Therefore from any vantage point a polygon will have a positive orientation and so will be rendered.   This will eliminate any holes in a rendered object.   If polygon flipping has not solved rendering problems, try Double Polygons.

Note:

If you just wish to see your polygons render choose Draw, Double Polygons.

To double polygons

Choose Modify Polygon...

Click either All Polygons -OR- Selected Polygons

Click on Double Polygons

Reduce Vertexes

Reduce Vertices eliminates   redundant or nearly redundant points.   If two vertices are located at the same spot only one is necessary   to preserve the object's shape. Reduce Vertices detects this and deletes the extra point.

The distance threshold value in the Reduce Vertices dialog represents the distance at which two vertices will   be considered redundant and will therefore be reduced. Any vertices farther apart than the distance threshold   will be left alone.

Hint:

The   default value is 0.001.   If an object's dimensions are on the order of a single digit, perhaps use a threshold of 0.0001.   It is best to start smaller and then try a larger value if needed.

To reduce vertices

Choose Modify Polygon...

Click either All Polygons -OR- Selected Polygons

Click on Reduce Vertexes

Enter a Distance Threshold value

Click on Reduce

Applying a surface

Apply Surface is used to apply the surface of your choice to All polygons or selected polygons.

Related Topics:

Surfaces

To apply a surface

Surfaces

Surfaces can be assigned to polygons.   Only one surface at a time can be assigned to a polygon. Usually a surface is assigned to a group of polygons, for example one surface might be assigned to the polygons making up the body of a car.   A surface is not only a color but also a set of attributes like gloss, metallicity and applied smoothing.

For more information on surfaces and creating or editing them see   **CH 7 Surfaces.**.

Apply Surface will re-assign the polygon to a new surface.   You must choose the surface from the list of currently loaded surfaces. The color attribute of each surface in the list will be displayed.   To see another attribute displayed click on the attribute combo box.

To apply a surface

Choose Modify Polygon...

Click either All Polygons -OR- Selected Polygons

Click on Apply Surface...

Click on a surface

Click on Apply

Surfaces

In PolyForm, a surface defines several attributes for polygons.   The primary one is color,   then highlight attributes and finally smoothing. Smoothing gives objects in your renderings a more natural, less-computerized look. For example, a rendering of the polygons of the surface of a human head would look more natural if they were smoothed, because people's faces consist of rounded surfaces.

The effects of surfaces are seen when rendering is performed.   Only Phong Rendering takes into account all the attributes of a surface including highlights.   Gourad Rendering uses color and smoothing attributes.   Flat Rendering uses only color.

A surface is assigned to a polygon or group of polygons, but a polygon can only be assigned one surface. For example if we have a wireframe model of a car, every polygon on the car would be assigned a surface. All the polygons making up the tires may be assigned a surface that is black and flat, while the polygons making up the body may be assigned a surface that is blue and glossy.

The Modify Surface dialog allows for the viewing of existing surfaces, the creation of new surfaces, the saving of existing surfaces, and the loading of surfaces.

Related Topics:

Attributes of a surface

Selecting surfaces

Editing surfaces

Creating a new surface

Saving   surfaces

Loading surfaces

Deleting surfaces

Cloning a surface

Merging surfaces

Painting with a surface

Attributes of a surface

This is a full list of all the surface attributes

NAME

COLOR

SMOOTHING ON/SMOOTHING OFF

ambient - The general ambient light amount for this surface - range of   0 to 1.

DIFFUSE - Chalkiness of the surface - range 0 to 1.

GLOSS - How focused highlights are - high gloss indicates high focus - range 0 to 100.

METALLICITY -   Degree that highlights take on the color of the object - range 0 to 1.

POLYGON COUNT - The number of polygons associated with this surface.

REFRACTION - Not used by PolyForm's renderer.

SPECULAR - Describes the degree that light is reflected - range 0 to 1.

TRANSPARENCY - Not used by PolyForm's renderer.

Related Topics:

Note:

To view   surfaces' attributes

Note:

It is recommended that smoothing be turned off on the front face of beveled objects.   Otherwise you may get a pillowed look.

To view   surfaces' attributes

Choose Modify Surface...

Click on Attribute combo box

Click on the desired attribute from list

Selecting surfaces

You must select surfaces before they can be edited.   These may be selected for editing either globally or individually.   Selected surfaces may also be cloned, merged, deleted or saved.

Related Topics:

Selecting surfaces from the Edit Surfaces dialog

To select surfaces from edit surfaces dialog

Selecting all surfaces

To select all surfaces

To unselect all surfaces

Selecting surfaces corresponding to selected polygons

To select surfaces corresponding to selected polygons

To unselect surfaces corresponding to selected polygons

Selecting polygons corresponding to a surface

To select polygons corresponding to a surface

To Unselect polygons corresponding to a surface

Selecting surfaces from the Edit Surfaces dialog

The Edit Surfaces dialog contains a list of surfaces currently in memory.

To select surfaces from edit surfaces dialog

Choose Modify Surface...

Hold the Ctrl Key and Click on the desired surfaces from the list

Selecting all surfaces

Selecting all surfaces in the Edit Surfaces dialog is very simple.

To select all surfaces

Choose Modify Surface...

Click on the Select All button in the dialog

To unselect all surfaces

Choose Modify Surface...

Click on the UnSelect All button in the dialog

Selecting surfaces corresponding to selected polygons

Sometimes you may want to see the surfaces that correspond to a group of polygons.   This option allows you to edit these.   To see how to select polygons see CH 6: <u>Selecting vertices and polygons</u>.

To select surfaces corresponding to selected polygons

Select the polygons first

Choose Modify Surface...

Click on Select Polygons' Surfaces

To unselect surfaces corresponding to selected polygons

Choose Modify Surface...

Click on UnSelect Polygons' Surfaces

Selecting polygons corresponding to a surface

This feature will allow you to see the polygons that correspond to the surfaces currently selected.

To select polygons corresponding to a surface

Choose Modify Surface...

Select the surface or surfaces whose polygons you want to select

Click on Select Surfaces' Polygons button

Click OK

To Unselect polygons corresponding to a surface

Choose Modify Surface

Click on UnSelect Surfaces' Polygons button

Click OK

Editing surfaces

There are two types of surface editing available: Individual and Global. Individual editing makes it possible to edit or change the surface attributes of a surface.   Global editing makes it possible to edit or change the surface attributes of more than one surface at a time.

Related Topics:

Editing surfaces individually

To edit an individual surface

Specifying Color

To specify color

Editing surfaces globally

To edit surfaces globally

Editing surfaces individually

Make any changes or edit: the color, highlight attributes and check smoothing on or off.   To cancel changes click Cancel button.

To edit an individual surface

Choose Modify Surface...

Click Edit Individually...

Select a surface to edit by:
Clicking on Surface to Edit combo box

 Click on the name of the surface to edit

Specify Color (see procedure below)

Click on Smooth check box

Enter values for attributes to change

Click OK to accept -OR- Cancel to reject changes

Click OK in the Edit Surface dialog to accept changes
or Cancel to reject changes

Specifying Color

Many of the procedures for editing or creating surfaces require you to specify a color.   This is the procedure to follow in these cases.

To specify color

Click on Specify Color...

Select a color by:
Clicking on a Color -OR-

Hold down the left mouse button and move around color palette
letting up on the desired color (Click on Add to Custom Colors if desired)

Click on OK to accept   -OR- Cancel to keep old color

Editing surfaces globally

You will need to indicate which attributes you wish to change for every selected surface and which not to change at all.

A checked box by CHANGE   "attribute name"   GLOBALLY means you want the change to affect all selected surfaces. If an attribute is to change globally, also specify the new value for the attribute.

To edit surfaces globally

Choose Modify Surface...

Select those surfaces to modify globally (see <u>Selecting surfaces</u> above)

Click Edit Globally...

To change color globally:
Click on Change Color Globally check box
Specify Color (see procedure above)

To change smoothing globally:
Click on Change Smoothing Globally check box
Click on Smooth check box

To change diffuse attribute globally:
Click on Change Diffuse Globally check box
Enter a value for Diffuse

Repeat the above step for each attribute

Click OK to accept global changes -OR- Cancel to reject

Click OK in the Edit Surface dialog to accept changes or Cancel to reject changes

Creating a new surface

You can create a new surface from scratch or by cloning a surface.   You can then apply the new surface to selected polygons.

Related Topics:

To create a new surface

To create a new surface

Choose Modify Surface...

Click on Create...

Click on either: Color Specifies Name -OR- User Specifies Name

If   User Specifies Name is selected, enter a name in the name field

Specify Color (see procedure above)

Click smooth check box

Enter values for each attribute: Diffuse, Specular.....Ambient
you can leave default values for any or all of the attributes

Click Create -OR- click Cancel to reject this surface

Click OK in the Edit Surface dialog to accept the new surface or Cancel to reject it

Saving   surfaces

To Save a surface or surfaces, select one or more surfaces in the Edit Surfaces dialog.

Related Topics:

Note:

To save surfaces

Note:

Saving surfaces saves only their attributes. It does not save an association with any polygons in an object.   See CH 8: <u>Saving objects</u>.

To save surfaces

Choose Modify Surface...

Select surfaces to save (see Selecting Surfaces above)

Click on Save Surfaces...
The number of surfaces to save will be displayed and you will
be asked if you want to save them

Click on Yes to save

Select a drive, directory and filename where the save surfaces will reside

Click OK

Loading surfaces

You will need to specify the name of a PolyForm surface file or an error message will be displayed.   You will also be asked if the surfaces in the file you are loading should replace the surfaces in memory of the same name.

Related Topics:

To load surfaces

To load surfaces

Choose Modify Surface...

Click on Load Surfaces...

Select a drive, directory and filename of a PolyForm surface file

Click OK

When asked: "Do you want to replace existing surfaces
                          with loaded surfaces that have the same   name?"
Click YES to replace like surfaces
Click NO to append all surfaces

Click OK in the edit surfaces dialog

Deleting surfaces

To delete a surface select a surface and click delete.

Related Topics:

To delete surfaces

To delete surfaces

Choose Modify Surface...

Select surfaces to delete (see selecting surfaces above)

Click Delete

Click OK in the Edit Surface dialog to accept deletions
or Cancel to reject deletions

Cloning a surface

Cloning will create an exact duplicate of any selected surface.   After cloning a surface you can assign polygons to it (see CH 6: Applying a surface) or you can paint with it.   You may clone each surface as many times as you wish.   Note that if you had a surface called "Red Bright" and   you cloned it (once), the new surface will have a name of "Red   Bright (2)" and the original surface that was cloned will now be called "Red Bright(I)".   You can then edit any cloned surface to change its name or other attributes.

Related Topics:

To clone a surface

To clone a surface

Choose Modify Surface...

Select surfaces to clone (see selecting surfaces above)

Click Clone

Click OK in the Edit Surface dialog to accept
or Cancel to reject cloning

Merging surfaces

Merging surfaces lets you re-assign the polygons assigned to one or more surfaces to a third surface. Merge merges ONLY polygons, not color or other attributes.

You can confirm the merge operation and its action by looking at the Polygon Count attribute of the surfaces you manipulated with the Merge operation. The surfaces that were merged FROM will now have no polygons. The surface that was merged TO will have inherited the polygon counts from the other surfaces.   You can choose to delete the surfaces that now have no polygons.

Related Topics:

To Merge surfaces

To Merge surfaces

Choose Modify Surface...

Select surfaces to merge FROM

Click Merge...

Select the Merge INTO surface

Click the Delete Empty Surfaces check box

Click Merge

Click OK in the Edit Surface dialog to accept
or Cancel to reject merging

Painting with a surface

During the painting process, painting applies the attributes of a surface to polygons selected with the mouse.

While in a painting mode you must select a surface with which to paint.   The object to paint must be in perspective view.

When you are painting, all other selections on the Modify menu will be ghosted except for Surface. This allows you to interactively manipulate surfaces.

Related Topics:

Selecting the paint mode

To select a paint mode

Selecting the painting surface

To select the painting surface

Painting the object

To paint the object

Selecting the paint mode

These are the five Painting modes:

STROKE SURFACE -   Any polygon you click on will take on the current surface specified in the paint surface dialog.

FLOOD SURFACE - Any polygon you click on, and those assigned to the same surface will take on the current surface specified in the paint surface dialog.

PICK SURFACE - This painting mode allows you to click on a polygon and make that polygon's surface the current paint surface.

SELECT POLYGONS -   This painting mode will select all of a polygon's vertices.

FLIP POLYGONS - Any polygon you click on will become flipped.   See CH 6: Polygon orientation and why to flip some polygons.

To select a paint mode

Choose Mode Paint

Click on desired Paint mode

You will now be in painting mode.

Selecting the painting surface

You are able to select any surface currently in memory as the painting surface.

To select the painting surface

Choose Mode Paint Surface...

Click on the desired surface
NOTE: you may change the viewing attribute in this window to
help in selecting the surface; Click on the attribute combo
      box
                                   Click on the attribute

Click OK

Painting the object

You are now ready to paint the object.   You may at any time, change the painting surface.

To paint the object

Select a painting mode (see above) if one not selected

Select a painting surface (see above) if one not selected

Position the mouse where the painting is to occur

Click on the desired polygons

When finished turn off painting mode (see above)

Objects

In this chapter manipulating objects will be discussed.   Besides selecting objects and editing   them there are powerful functions for creating a family tree of objects or creating one large object from subobjects. You will even be able to take a large object and break it up into smaller objects.   Finally you will be able to create, clone or delete objects.

You can perform all these operations from the Edit Objects dialog.

Related Topics:

Attributes of an object

Selecting objects

Editing objects

Transforming an object

Putting objects in the foreground or background

Creating parent and child objects

Merging and breaking apart objects

Creating a new object

Deleting objects

Cloning objects

Assigning polygons to an object

Saving objects

Attributes of an object

An object is a collection of polygons and their vertices along with the surfaces assigned to the polygons. You can view the attributes of an object from the Edit Objects dialog.   The attributes are:

FILE FORMAT

FILENAME

POLYGON COUNT

SURFACE COUNT

VERTEX COUNT

Related Topics:

To view loaded objects' attributes

To view loaded objects' attributes

Choose Modify Object...

Click on the Attribute combo box

From the display list click on your choice

Selecting objects

You must select objects before they can be edited.

Related Topics:

Selecting objects from the Edit Objects dialog

The Edit Objects dialog contains a list of currently loaded objects.   Any object you load will automatically be listed in the Edit Objects dialog.

To select objects from edit objects dialog

Choose Modify Object...

Hold the Ctrl Key and Click on the desired objects from the list

Selecting all objects

Selecting all objects in the Edit Objects dialog is very simple.

To select all objects

Choose Modify Object...

Click on the Select All button in the dialog

To unselect all objects

Choose Modify Object...

Click on the UnSelect All button in the dialog

Selecting objects by family

Objects can be related to each other.   You can specify an object be a parent to one or more child objects.   These child objects can in turn have child objects.   Therefore, it can be very useful to be able to select all related objects.

To select objects by family

Choose Modify Object...

Click on Select by Family check box

From now on any object selected will automatically select its family members.

Selecting and unselecting objects corresponding to polygons

This operation can be useful if there are many objects on a screen and you need to find out to which object a group of polygons belong.   You can select this operation from the Operator combo box in the Edit Objects dialog, and then execute it.

To select objects corresponding to selected polygons

Select the polygons first

Choose Modify Object...

Click on the Operator combo box

Click on Select Polygons' Objects

Click Execute

Click OK in the Edit Object dialog to accept the operation -OR- Cancel to reject changes

To unselect objects corresponding to selected polygons

Choose Modify Object...

Click on the Operator combo box

Click on UnSelect Polygons' Objects

Click Execute

Click OK in the Edit Object dialog to accept the operation -OR- Cancel to reject changes

Selecting and unselecting polygons corresponding to an object

You can select this operation from the Operator combo box in the Edit Objects dialog, and then execute it.

To select polygons corresponding to a object

Choose Modify Object...

Select the object or objects whose polygons you want to select

Click on the Operator combo box

Click on Select Objects' Polygons

Click Execute

Click OK in the Edit Object dialog to accept the operation -OR- Cancel to reject changes

To Unselect polygons corresponding to a object

Choose Modify Object

Select the object or objects whose polygons you want to unselect

Click on the Operator combo box

Click on UnSelect Objects' Polygons

Click Execute

Click OK in the Edit Object dialog to accept the operation -OR- Cancel to reject changes

Editing objects

There are two types of object editing available: Individual and Global.   Global editing makes it possible to edit the position or scaling of more than one object at a time.

Related Topics:

Editing object values

Note:

Editing objects individually

To edit an individual object

Editing objects globally

To edit objects globally

Editing object values

The values available for editing are:

the position of the object relative to its local coordinate system,

the rotation of the object relative to its local coordinate system

the scaling relative to its local coordinate system

After changing these values, the object will automatically be viewed with these values in effect.

Note:

To permanently change an object's   location, orientation and scaling in world coordinates, you need to TRANSFORM the object.   See Transforming an object below.

POSITION X

POSITION Y

POSITION Z

ROTATION HEADING

ROTATION PITCH

ROTATION BANK

SCALE X

SCALE Y

SCALE Z

Editing objects individually

Edit individually allows you to change an individual object's values.   To cancel changes click Cancel
button.

To edit an individual object

Choose Modify Object...

Select object to edit

Click Edit Individually...

Edit any or all of the values described above

Click OK to accept -OR- Cancel to reject changes

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Editing objects globally

You will need to indicate which values you wish to change for every selected object and which not to change at all.   Click the Change "value name"   Globally check box for the change to affect all selected objects.   If a value is to change globally, also specify the new value for the value.

To edit objects globally

Choose Modify Object...

Select those objects to modify globally

Click Edit Globally...

To change position X   globally:
Click on Change position X Globally check box
Enter a value for position X

Repeat the above step for each value

Click OK to accept global changes -OR- Cancel to reject

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Transforming an object

Use TRANSFORM when you want to permanently alter the position, orientation and scaling of an object. For example, if you have created a logo that is too large for its position among a group of objects, you could permanently scale the logo down using Transform.

Related Topics:

To transform an object

To transform an object

Load the object

Choose Modify Object...

Select the object

Edit the objects position, rotation and scaling values if needed

Click Transform

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Putting objects in the foreground or background

You may put objects into the foreground or the background. The default is that new objects are put into the foreground.   You can choose to view objects in either the fore or background.

Related Topics:

To put objects in the foreground

To put objects in the background

To put objects in the foreground

Choose Modify Objects...

Select objects to be put in the foreground

Click Put in Foreground

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

To put objects in the background

Choose Modify Objects...

Select objects to be put in the background

Click Put in background

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Creating parent and child objects

If a parent is specified for one or more child objects, they will be linked in the following ways:

the child will inherit the parents position, rotation and scale,

moving the parent will move child objects but not vice   versa.

Parent - child relationships are shown in the list of currently loaded objects.   Child objects' names are indented from the parent object and an angled arrow connects the parent to the child object.

Related Topics:

Effects on position, rotation and scale

To create parent - child relationship

Making an object an orphan

To make an object an orphan

Effects on position, rotation and scale

Child objects inherit parent positions, rotations and scalings. Thus, if a child object is also given a rotation or scaling it will in effect get two rotations and scalings - the parent's and its own.

To create parent - child relationship

Choose Modify Object...

Select objects (these will be children)

Click on Specify Parent...

Click on the Parent combo box

Click on the object to be parent

Click OK

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Making an object an orphan

You may no longer want to have a parent - child relationship set up between objects.   This function allows you to break it.

To make an object an orphan

Choose Modify Object...

Select objects (who are children to be made orphans)

Click on Make Orphan

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Merging and breaking apart objects

If you have an object with a collection of things in it you may want to break it into its constituent parts, or vice versa.

Related Topics:

Breaking apart

The break apart option allows you to break apart selected objects or polygons. Broken off parts may be automatically declared to be children of the original, or you can have the original deleted.   Broken off parts will be named for the original with Sub #   added; where the # stands for the number of the broken off part.

To break an object apart

If only selected polygons are to be broken off select them

Choose Modify Object...

Select object to break up

Click on Break Apart...

Click on either: All polygons in selected objects   -OR-
                        Selected polygons in selected objects

Click Make New Objects Children of Origin check box to select

Click Delete Origin Objects check box to select

Click Break

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Merging Objects

The merge function allows you to merge selected objects into one single object.   In addition the selected object's orientation can be preserved or not.

To merge objects

Choose Modify Object...

Select objects   to merge

Click on Merge...

Click on either: Transform, position and merge -OR-
                         Simple Merge

Delete Origin Objects check box to select

Click on Merge Into combo box

Click on object to merge into

Click Merge

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Creating a new object

This function allows you to create an object.   The object however, will not have any polygons.   From here you could select polygons from another object and assign them to this shell.   See Assigning polygons to an object below.

Related Topics:

To create a new object

To create a new object

Choose Modify Object...

Click   Create...

Enter a name for the object

Enter position, rotation and scaling values

Click on Create

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Deleting objects

Deleting objects will delete the polygons and surfaces of the objects from memory.

Related Topics:

To delete objects

To delete objects

Choose Modify Object

Select object to delete

Click Delete

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Cloning objects

Cloning an object will create an exact duplicate of an object including duplicates of its surfaces and polygons.

Related Topics:

To clone an object

To clone an object

Choose Modify Object...

Select an object or objects to clone

Click on Clone

Click OK in the Edit Object dialog to accept changes
or Cancel to reject changes

Assigning polygons to an object

You can select polygons from one object and assign them to another object.

Related Topics:

To assign polygons to an object

To assign polygons to an object

Select polygons to be assigned

Load the object   where the polygons will be assigned or you can create a new object in the Edit Objects dialog

Choose Modify Objects...

If the object to get polygons is to be created, create it now   (see Creating an object above)

Click on the Operator combo box

Click on Assign polygons to...

Click Execute

Click on the Object combo box

Click on the object to receive the polygons

Click OK

Click OK in the Edit Object dialog to accept the operation -OR- Cancel to reject changes

Saving objects

Saving objects in PolyForm is very flexible.   You can save one or more objects into single or multiple files.   You can also select the format in which   to save the objects.   You can also save foreground or background objects separately.

Related Topics:

To save objects

To save objects

Choose File Save As...

Click on the Save combo box

Click on the desired save format

Click on either: All Objects   -OR-
                              Selected Objects

Click on either: Multiple File Save   -OR- Single File Save

Click foreground objects check box to select

Click background objects check box to select

Click OK

Select a drive, directory and filename or names

Click OK

Options

Selecting axes of permitted movement

If movements or scaling are to be restricted to one direction or axes, it may be difficult to do so by controlling mouse movements.   The Axes dialog will allow you to disable movements, rotations and scaling along chosen axes.

Related Topics:

To restrict motions, rotations and scaling

To restrict motions, rotations and scaling

Choose Options Axes...

Click on the axes check box

To remove any restrictions click on restricted axes check box

Click OK

Specify Memory Allocations

You are able to specify both start up memory for PolyForm and current memory.

Related Topics:

Allocation of start up memory

Note:

Allocation of current memory

To change the start up memory / current memory allocation

Allocation of start up memory

This is the amount of memory you wish to allocate each time you start PolyForm. The amount of memory is expressed in megabytes.

Note:

Each time PolyForm runs, it tries to allocate sufficient RAM for its Undo buffer and this RAM is not counted in the start up memory value.

Allocation of current memory

Note that sometimes there appears to be enough memory for a

reallocation, but because not enough contiguous memory could   be found, the reallocation fails.

To change the start up memory / current memory allocation

Choose Options Memory...

Click on the left arrows to decrease memory
Click on the right arrows to increase memory

Configure Paths

When loading some file formats, PolyForm will need directory information in order to find fonts that might be in the files or   to be able to load scenes correctly.

Related Topics:

Specifying LightWave paths

To set the LightWave path

Specifying font paths for AutoCAD and PostScript

To set the PostScript or AutoCAD font file directory

Specifying LightWave paths

PolyForm needs the LightWave program file name and path to be able to load scenes correctly.

To set the LightWave path

Choose Options Configure Paths...

Click Specify LightWave 3D Path...

Specify:
> Program file
> Directory
> Drive

Click OK

Specifying font paths for AutoCAD and PostScript

These paths are needed to be able to find fonts.

To set the PostScript or AutoCAD font file directory

Choose Options Configure Paths...

Click Specify PostScript Font Path...
-OR- Specify AutoCAD Font Path...

Specify:
          Font filename
          Directory
          Drive

Click OK

Selecting automatic features

There are five automatic features. You may select any or all of the five at a time.   A feature has been enabled if there is a check mark by it.   To select or deselect a feature simply Click on the feature to add or remove the check mark.

Related Topics:

Edge List wire frame drawing

Target camera to new objects

Remove target for camera rotate mode

Reset view during new function

Off-Screen interface rendering

To select any of the five automatic features

To unselect any of the five automatic features

Edge List wire frame drawing

Edge Wire Draw invokes a short computational phase before a wireframe is drawn.   However, it performs the actual drawing   faster.

Target camera to new objects

Auto Camera Target allows you to specify whether or not PolyForm automatically targets the camera on newly loaded objects.

Remove target for camera rotate mode

The camera when targeted cannot be rotated.   This option allows you to automatically turn off camera targeting if camera rotate mode is selected.

Reset view during new function

This option when enabled will load new objects in wireframe mode, not in any currently selected rendering mode.

Off-Screen interface rendering

Off-Screen interface rendering will perform all real-time rendering off screen and will produce smoother real-time movements.   Disable this option to save memory.

To select any of the five automatic features

Choose Options

If feature is not checked then click on feature to check

To unselect any of the five automatic features

Choose Options

If feature is checked then click on feature to remove check

About PolyForm

This project, and the vision to accomplish what most said could not be done, was through the tireless and steady efforts of   Scott Thede (AKA Pixel Boy) whose personal sacrifices and programming may not have been acknowledged as often as they should have been.   We at Vivid Technologies can only say Thank you.

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