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**Thank You**

Thank You

# Introduction

## **You have made the right choice.**

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

Do you have any 3D objects that you cannot load? 3D Magic will load and save 23 different 3D file formats, allowing you to convert between all of them. And best of all, 3D Magic 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, 3D Magic is the 'must have' utility for today's 3D novice or professional.

# Hardware and Software Requirements

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

16 megabytes of RAM.

Windows version 3.11 or greater.

A hard disk drive.

## **Related Topics:**

[Memory Requirements](#)

## Memory Requirements

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.

## **Related Topics:**

[To set up 3D Magic on your computer:](#)

***To set up 3D Magic on your computer:***

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

1. In the Program Manager window, choose Run from the File menu.
2. In the Command Line box, type 'a:\setup'. If your floppy disk drive is not drive A, use the correct letter instead.
3. Click the OK button, or press ENTER.
4. Follow the instructions displayed on your screen.
5. From the 3D Magic Set Up screen you will be asked if you wish 3D Magic to be installed on a different drive or in a different directory. Enter this information or accept the default and then click OK.

# 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 3D Magic. You will see two of its fundamental capabilities, the very useful file conversion capability and the 3D object rendering capability.



# The 3D Magic screen

The top of 3D Magic 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 3D Magic 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.

## Related Topics:

[Undoing an action](#)

[Loading an object, scene or image](#)

[Viewer controls](#)

[Drawing or rendering an object](#)

[3D Magic modes](#)

[Saving an object](#)

[Automatic format conversion](#)

[Exiting 3D Magic](#)

## 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.

*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 3D Magic about memory while attempting to use Undo. If this happens, see Chapter 9: Specify Memory Allocations.*

### **Related Topics:**

To Undo the last action:

***To Undo the last action:***

1. Choose Edit Undo

## Loading an object, scene or image

There is no need to specify what type of file you wish to load, nor what the particular format is. *3D Magic* 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:

3D Magic will recognize and load any of the following file formats:

To load an object, scene or image:

As an example of loading an object:

To clear the screen:

***3D Magic 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
- 3D Magic
- PostScript (ASCII or Encapsulated)
- QuickDraw 3D (3DMF)
- Scenery Animator DEM
- Sculpt 3D and 4D
- TrueSpace (ASCII)
- TrueSpace (Binary)
- Turbo Silver
- VideoScape ASCII objects
- Vista pro DEM
- Wavefront

***To load an object, scene or image:***

1. Choose File Open
2. In the Open dialog select a drive, path and filename
3. Click OK

***As an example of loading an object:***

1. Open spaceshp.lwo in the 3D Magic Objects directory now. A wire frame drawing of a space ship will show in the viewing portion of the screen.

*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:***

1. Choose File New
2. Click YES from the warning dialog (unless work you want to save has not been saved previously)



## Viewer controls

3D Magic 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 Chapter 3: Viewing, moving and scaling objects.

### Related Topics:

To select an object:

To select an object using the mouse:

To move a selected object:

To rotate a selected object:

To return to the starting view position:

***To select an object:***

1. Load an object if one has not been loaded
2. Choose Mode Object Selection
3. In the Select Object dialog, click on the desired object
4. Click OK

This is another very quick way to select an object.

***To select an object using the mouse:***

1. Hold down the Shift Key
2. Click the left mouse button on an object to select
3. Click again to unselect

A selected object will have a light red wire frame. During movement of an object the wire frame 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 wire frame 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:***

1. Choose Mode, Object, Move
2. Position the mouse over the object
3. Hold down the left mouse button and move forward or backward to move the object IN or OUT of the screen
4. Hold down the left mouse button and move left or right to move the object LEFT or RIGHT on the screen
5. Hold down the right mouse button and move forward or backward to move the object UP or DOWN on the screen
6. 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:***

1. Choose Mode, Object, Rotate
2. Position the mouse over the object
3. Hold down the left mouse button and move forward or backward to change the PITCH of the object
4. Hold down the left mouse button and move left or right to change the HEADING of the object
5. Hold down the right mouse button and move forward or backward to change the PITCH of the object
6. 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:***

1. Choose View, Reset

## Drawing or rendering an object

An object is a 3D wire frame model with a surface applied to the polygons that make up the wire frame. Drawing an object simply draws it's wire frame. Rendering an object will fill in the polygons using the objects surface, giving an apparent 3D look.

For in depth information on 3D Magic's Drawing and Rendering capabilities see Chapter 4: Drawing and Rendering Objects

There are three different renderings available in 3D Magic: flat shading, Gouraud and Phong. The most realistic renderings take longer to complete. There are two drawing modes: wire frame and hidden line wire frame, both of which can be done using a color wire frame. At this point you may want to try drawing a hidden line wire frame model and one or more of the renderings for the space ship object.

### Related Topics:

[To draw a hidden line wire frame model:](#)

[To render an object using flat, Gouraud or Phong rendering:](#)

***To draw a hidden line wire frame model:***

1. Load an object if one is not already loaded
2. Choose Draw Hidden Wire Frame



***To render an object using flat, Gouraud or Phong rendering:***

1. Load an object if one is not already loaded
2. Choose Draw Flat Shading, -OR-
3. Choose Draw Gouraud Rendering, -OR-
4. Choose Draw Phong Rendering

## **3D Magic modes**

3D Magic is always in a mode. For example after selecting Mode, Camera, Move from the menu bar, 3D Magic 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.

## 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.

### Related Topics:

[Supported object formats for saving:](#)

[To perform automatic format conversion:](#)

***Supported object formats for saving:***

- 3D Professional
- 3D Studio (ASCII)
- DXF
- Digital Arts
- Draw 4D
- Draw 4D Pro
- Imagine
- LightWave Objects
- LightWave Scenes
- 3D Magic
- Sculpt 3D and 4D
- TrueSpace (ASCII)
- TrueSpace (Binary)
- Turbo Silver
- VideoScape (ASCII)
- VRML
- Wavefront

***To perform automatic format conversion:***

1. Load the file to convert
2. Choose File Save As...
3. In the Save dialog select:
  - The desired format
  - Single File Save
4. Click OK
5. In the Save Object dialog select: the drive, directory, filename, and the type of file format. *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.*
6. Click OK

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

## Exiting 3D Magic

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.

### Related Topics:

To exit from 3D Magic:

***To exit from 3D Magic:***

1. 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. 3D Magic 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](#)

[Loading an image](#)

[Loading an object](#)

[Loading PostScript files](#)

## Supported formats for loading

***3D Magic 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
- 3D Magic
- PostScript (ASCII or Encapsulated)
- QuickDraw 3D (3DMF)
- 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.

### Related Topics:

[To clear the screen:](#)

***To clear the screen:***

1. Choose File New
2. Click YES from the warning dialog

## Loading an image

3D Magic has the powerful ability to convert (Auto-Trace) 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 3D Magic. (See the one exception to this rule in: creating a new image below.)

When loading a bitmap image, 3D Magic will perform an automatic count of the number of pixels for each color. This is to help 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 confirm 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, 3D Magic will convert the bitmap into a flat 3D object made up of polygons.

After conversion of the bitmap a smoothing dialog will appear.

*It is highly recommended that you allow 3D Magic 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 perform smoothing again, use undo to restore the original starting characteristics, then smooth.*

### Related Topics:

To Auto-Trace an image:

### ***To Auto-Trace an image:***

1. Choose File, Auto-Trace Image
2. In the Open dialog select a drive, path and filename of a BMP bitmap file
3. Click OK
4. In the Select Bitmap Background Color dialog :
  - Click View to determine the background color
  - Click OK
  - Click on the color that is the background. *Note that the default color is automatically chosen by determining which image color has the greatest number of pixels.*
  - Click Convert
5. In the Smoothing Converted Bitmap Object dialog select one of the following :
  - Static Smoothing
  - Interactive Smoothing (allows changes to smoothing values to be seen immediately)
6. Click Smooth

*After conversion and smoothing of the bitmap, follow the easy steps below to create a 3D object. See Creating a 3D object from text or loaded image 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 or image:

***To load an object, scene or image:***

1. Choose File Open
2. In the Open dialog select a drive, path and filename
3. Click OK



## Loading PostScript files

3D Magic 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.

*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.

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

### Related Topics:

PostScript File Conversion dialog settings:

To set the PostScript font file directory:

To load a PostScript file:

### ***PostScript File Conversion dialog 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:***

1. Choose Options Specify Paths...
2. Click Specify PostScript Font Path...
3. Select:
  - Font filename
  - Directory
  - Drive
4. Click OK

***To load a PostScript file:***

1. Choose File Open
2. In the Open dialog select a drive, path and filename of the PostScript file
3. Click OK
4. In the PostScript File Conversion dialog Select:
  - Curve Resolution
  - Ignore Curve or Text options
  - Center or Offset Object
  - Inter Element and Inter Page steps
5. Click Convert

## Creating a new object from text

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

*To easily create a logo from scratch, use the Logo Wizard. See Creating a 3D object from text or loaded images.*

### **Related Topics:**

[Using Installed Screen Fonts](#)

[Using PostScript Fonts](#)

[Creating a 3D object from text or loaded images](#)

## Using Installed Screen Fonts

3D Magic easily converts text from a True Type font into a flat 3D wire frame. 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.

3D Magic also converts non-True Type fonts into flat 3D wire frames. 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.

*It is highly recommended that you allow 3D Magic to smooth out 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. **It should also be noted that the smoothing process can only be used once on converted non-True Type fonts.** To perform smoothing again, use undo to restore the original starting characteristics, then smooth*

### Related Topics:

To create a text object from installed screen fonts:

***To create a text object from installed screen fonts:***

1. Choose Modify, Text
2. Click Installed Screen Font
3. Click Specify Font...
4. In the Font dialog Select:
  - Font
  - Font Style
  - Point Size
  - Optional effects
  - Color
5. Click OK
6. Type in desired text
7. Click Build. After Build, if a non-True Type font was used, a smoothing dialog will appear. (See below)
8. In the Smoothing Converted Bitmap Object dialog select one of the following :
  - Static Smoothing
  - Interactive Smoothing (allows changes to smoothing values to be seen immediately)
9. 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.

### Related Topics:

To create a text object from PostScript fonts:



***To create a text object from PostScript fonts:***

1. Choose Modify Text
2. Click PostScript Font
3. Click Specify Font...
4. In the PostScript Font dialog Select:
  - PostScript Font filename
  - Drive
  - Directory where font file resides
5. Click OK
6. Type in desired text
7. Click Build
8. In the PostScript File Conversion dialog Select:
  - Curve Resolution
  - Ignore curve or text options
  - Center or Offset Object
  - Inter Element and Inter Page steps
9. Click Convert

## Creating a 3D object from text or loaded images

After creating a flat 3D wire frame 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 (or Logo Wizard).

### Related Topics:

To create a 3D object from a converted text or image:

To specify a color:

***To create a 3D object from a converted text or image:***

1. Click Modify Logo
2. Click on one of the following:
  - No Extrusion
  - Small Extrusion
  - Medium Extrusion
  - Large Extrusion
3. Click on one of the following:
  - No Bevel
  - Small Bevel
  - Medium Bevel
  - Large Bevel
4. Click on of the following:
  - Flat Bevel
  - Rounded Bevel
5. Click on Specify Color (see procedure for color below)
6. Click on Surface Type
7. Click Build

***To specify a color:***

1. Click on Specify Color...
2. Select a color by doing one of the following:
  - Clicking on a Color
  - Hold down the left mouse button and move around in the color palette letting up on the desired color (Click on Add to Custom Colors if desired)
3. Click OK

# Saving objects

Saving objects in 3D Magic 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:

Supported object formats for saving:

To save objects:

***Supported object formats for saving:***

- 3D Professional
- 3D Studio (ASCII)
- DXF
- Digital Arts
- Draw 4D
- Draw 4D Pro
- Imagine
- LightWave Objects
- LightWave Scenes
- 3D Magic
- Sculpt 3D and 4D
- TrueSpace (ASCII)
- TrueSpace (Binary)
- Turbo Silver
- VideoScape (ASCII)
- VRML
- Wavefront

***To save objects:***

1. Choose File Save As
2. Click on the Save combo box and choose the desired save format
3. Click one of the following:
  - All Objects
  - Selected Objects
4. Click one of the following:
  - Multiple File Save
  - Single File Save
5. If you wish to save objects from the foreground, click the Foreground Objects check box
6. If you wish to save objects from the background, click the Background Objects check box
7. Click OK
8. Select a drive, directory and filename or names
9. Click OK

## Saving an image

One of the most useful features of 3D Magic is it's ability to quickly render 3D objects and logos. Saving these rendered images can be accomplished using the Save Image dialog found under the File menu.

At any time, the current view can be saved as an image. It is important to note that when rendering in Phong mode, 3D Magic attempts to create a 24 bit (16 million color) image of what is being rendered. This is to assure the highest color quality possible, regardless of your current screen color settings. All other rendering modes do not use a 24 bit buffer.

When saving an image, you will be asked whether or not you wish to use the 24 bit buffer for the save. Note that this request is only made if you had already rendered in Phong mode at least once. It is recommended that if you are saving a rendering that was performed in Phong mode, that you save using the 24 bit buffer. But if the current view you wish to save is in another mode, other than Phong, keep in mind that though a 24 bit buffer exists, it is a snap shot of what had been rendered when you were in Phong mode. Therefore you should not use the 24 bit buffer.

When saving an image, and you choose not to use the 24 bit buffer, or you are not asked, 3D Magic obtains the image for save directly from the screen. This means that the image saved will only have as much color resolution as your current screen settings. Again, Phong mode is the only mode that renders to a 24 bit buffer, and when saved, is oblivious to your current screen settings.

*The only rendering mode to create and use a 24 bit (16 million color) buffer is Phong. It is the highest quality rendering mode, and also the most memory intensive. When saving an image rendered in any other mode, the image is taken directly from the screen, and will equal the color resolution of your current screen settings.*

### Related Topics:

3D Magic will save in the following image formats:

Types of Image Sizing:



***3D Magic will save in the following image formats:***

- BMP Image
- GIF Image
- JPEG Image
- PPM/PGM Image
- Targa Image

When saving an image using the Save Image dialog, there are four types of image sizing available.

### ***Types of Image Sizing:***

- AUTOMATICALLY CLIP - Only the rendered portion of the image will be saved.
- FULL SCREEN - The image saved will be the size of the current viewing area.
- CUSTOM - Allows for the user to enter custom size values in the CUSTOM WIDTH and CUSTOM HEIGHT edit boxes. The area specified by the values will be from the center of the screen.
- PRE-DEFINED SIZES - Multiple pre-defined common sizes for everyday use and video work.

When saving in the GIF Image format mode, the TRANSPARENT BACKGROUND check box will become active. Checking this box will insure that the background color of the image to be saved will be automatically defined as a transparent color. This is an option of the GIF 89a format, and is not supported in any of the other image formats.

When working with custom image sizes or any of the pre-defines image sizes, it is possible to see where the saved image will be clipped by checking the SHOW IMAGE BOUNDARIES IN VIEWER check box. The boundaries will be shown by a thin red dotted line, visible in the main viewer.

# 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](#)

[Front, top and side viewing modes](#)

[Viewing objects in foreground or background](#)

[Rotating and moving the camera position](#)

[During Movement](#)

[Targeting the camera](#)

[Targeting Camera options](#)

## **Default view upon opening an object**

A newly loaded object will appear in perspective mode as a 3D wire frame 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 wire frame and vertices. These views can be helpful when editing an object. See Chapter 6: Selecting vertices and polygons. All objects currently in memory will be shown in this mode.

### Related Topics:

To view the front, top or side of objects:

***To view the front, top or side of objects:***

1. Choose one of the following:

- View Front
- View Top
- 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 Chapter 9: Putting objects in the foreground or background. Objects are placed in the foreground by default.

### Related Topics:

To view objects in the foreground:

To view objects in the background:

***To view objects in the foreground:***

1. Choose View Foreground



***To view objects in the background:***

1. 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.

## 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.

### Related Topics:

To move the camera:

To rotate the camera:

***To move the camera:***

1. Choose Mode Camera Move
2. Position the mouse on the screen
3. Hold Left mouse button down and move mouse left or right for LEFT or RIGHT camera movements
4. Hold Left mouse button down and move mouse forward or back for IN or OUT of screen movements
5. Hold Right mouse button down and move forward or back for UP or DOWN movements

***To rotate the camera:***

1. Choose Mode Camera Rotate
2. Position the mouse on the screen
3. Hold Left mouse button down and move mouse left or right for HEADING movements
4. Hold Left mouse button down and move mouse forward or back for PITCH movements
5. 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.

*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.*

### Related Topics:

To target the camera:

To remove camera targeting:

***To target the camera:***

1. Choose Draw Camera Targeting
2. Select an object for targeting
3. Click OK

***To remove camera targeting:***

1. Choose Draw Camera Targeting
2. Select none
3. 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.

### Related Topics:

To automatically target new objects:

To have camera targeting when camera rotate is selected:

***To automatically target new objects:***

1. Choose Options
2. Click on Target Camera to New Objects

***To have camera targeting when camera rotate is selected:***

1. Choose Options
2. 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](#)

[Selecting type of movement](#)

[Resetting the view](#)

[Restricting rotation, movement and scaling](#)

[Incremental rotation, movement and scaling](#)

[Locking camera and grid](#)

## 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.

### Related Topics:

To select single or multiple objects for movement:

To quickly select an object:

***To select single or multiple objects for movement:***

1. Choose Mode Object Selection
2. Select an object from the list
3. Click Select All
4. Click OK

***To quickly select an object:***

1. Hold down the Shift Key
2. Click the left mouse button on the desired object(s)
3. 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

### Related Topics:

To move an object:

To rotate an object:

To scale an object:



***To move an object:***

1. Choose Mode, Object, Move
2. Position the mouse in the viewer
3. Hold Left mouse button down and move mouse left or right to move the object LEFT or RIGHT
4. Hold Left mouse button down and move mouse forward or back to move the object IN or OUT of screen
5. Hold Right mouse button down and move forward or back to move the object UP or DOWN

***To rotate an object:***

1. Choose Mode, Object, Rotate
2. Position the mouse on the screen
3. Hold Left mouse button down and move mouse left or right for HEADING movements
4. Hold Left mouse button down and move mouse forward or back for PITCH movements
5. Hold Right mouse button down and move left or right for BANKING movements

***To scale an object:***

1. Choose Mode, Object, Scale
2. Position the mouse on the screen
3. 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 loaded objects.

### Related Topics:

To reset the view:

***To reset the view:***

1. 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:***

1. Choose Options Axes
2. Click on the axes check box
3. To remove any restrictions click on restricted axes check box
4. 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. Use the Control Key pressed at the same time to move at even smaller increments.

### **Related Topics:**

[To make small incremental movements:](#)



***To make small incremental movements:***

1. Follow the procedure above to select a movement type and to select an object
2. Press a direction key for one small movement
3. Hold down the Control Key for even smaller increments

## 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.

*If you have Options Target Camera to New Objects selected, locking the camera will preserve the camera position, but the camera will rotate to target a newly loaded object. Turn Options Target Camera to New Objects off to avoid this.*

### Related Topics:

To Lock the camera and grid:

***To Lock the camera and grid:***

1. Choose View
2. Click on Lock

# Drawing and rendering objects

This chapter covers the drawing and rendering modes available in 3D Magic. 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 Chapter 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 and the overall quality of the final image.

At any time, the view may be redrawn or updated by pressing the Enter key or by choosing the Draw Redraw menu option.

## Related Topics:

[Wire Frame](#)

[Hidden Wire Frame](#)

[Flat Shading](#)

[Gouraud Rendering](#)

[Phong Rendering](#)

[Anti-Aliasing](#)

[Light Position](#)

[Light Levels](#)

[Color Wire Frame](#)

[Options for special problem avoidance](#)

[Double polygons](#)

[Threshold smoothing](#)

[Realtime Full Redraw](#)

[Quick Wire Frame Redraw](#)

[Specify Interface Colors](#)

[Showing points](#)

[Showing the grid](#)

[Show Background Image](#)

[Specify Background Image](#)

## Wire Frame

Wire Frame will create a wire frame 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:***

1. Choose Draw 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:***

1. Choose Draw 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:***

1. Choose Draw Flat Shading

## Gouraud Rendering

Gouraud 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 Gouraud Rendering:

***To render using Gouraud Rendering:***

1. Choose Draw Gouraud 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. Only Phong rendering makes use of Anti-Aliasing.

### Related Topics:

To render using Phong Rendering:

***To render using Phong Rendering:***

1. Choose Draw Phong Rendering

## Anti-Aliasing

Anti-Aliasing is the process of blending the edges of an image together so that the aliasing pixels, or jaggies, are blurred together. This process can greatly increase the quality of your rendered images. However, with higher quality comes a price, speed. Anti-Aliasing is at best a slow process, which involves the re-rendering of key pieces of the image to be anti-aliased.

One way to speed up the anti-aliasing process is to turn off the Show Anti-Aliasing Progress menu option found on the Draw Anti-Aliasing menu. Upon starting 3D Magic, the default setting for Anti-Aliasing is Low Anti-Aliasing. Also note that Anti-Aliasing is only applied during Phong Rendering.

### Related Topics:

[To render using Anti-Aliasing:](#)

***To render using Anti-Aliasing:***

1. Choose Draw Anti-Aliasing Low Anti-Aliasing



## Light Position

The Light Position menu option allows you to specify from which direction the light in rendered scenes come from.

### Related Topics:

[To change the Light Position:](#)

***To change the Light Position:***

1. Choose Draw Light Position Top

## Light Levels

The Light Levels menu option allows you to specify the general Light and Ambient Intensity values. The Light Intensity is the brightness of the lamp that shines on viewed objects. The Ambient Intensity is the general brightness of the entire scene.

### Related Topics:

To change the Light Intensity:

***To change the Light Intensity:***

1. Choose Draw Light Levels Increase Light Intensity

## 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:***

1. Choose Draw Color Wire Frame

## **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.

## Double polygons

In loading objects from some formats there will be orientation problems with the polygons. 3D Magic 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 3D Magic 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 Chapter 6: Auto flip polygons.

### Related Topics:

To use the double polygons option:



***To use the double polygons option:***

1. Choose Draw Double Polygons

## 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.

### Related Topics:

To apply Threshold Smoothing:

***To apply Threshold Smoothing:***

1. Choose Draw Threshold Smoothing

## Realtime Full Redraw

With this option selected, 3D Magic will fully redraw all objects when in realtime mode. The default is a bounding box representation. This feature applies to both wire frame and flat shading rendering modes. However, when in Gouraud or Phong rendering modes, the default is wire.

### Related Topics:

To use the Realtime Full Redraw option:

***To use the Realtime Full Redraw option:***

1. Choose Draw Realtime Full Redraw

## Quick Wire Frame Redraw

With this option selected, 3D Magic will attempt to draw only a portion of each object's wire frame outline. This is accomplished by 3D Magic only drawing every other segment of an object's polygons. This feature will not effect the actual objects in memory, and is merely a speed optimization post effect.

### Related Topics:

To use the Quick Wire Frame Redraw option:

***To use the Quick Wire Frame Redraw option:***

1. Choose Draw Quick Wire Frame Redraw

## Specify Interface Colors

This menu option allows you to specify many of the main 3D Magic viewer colors. You may reset all viewer colors to the 3D Magic default colors by choosing the Default Colors menu option. Note that the File Specify Background Color menu option is the same as the Draw Specify Interface Colors Background menu option.

### Related Topics:

To change the background color:



***To change the background color:***

1. Choose Draw Specify Interface Colors Background

## Showing points

With this option selected, 3D Magic highlights the vertices of the polygons.

### Related Topics:

To Show Points:

***To Show Points:***

1. Choose Draw Show Points

## Showing the grid

You can show or hide the gridded plane.

### Related Topics:

To show the grid:

***To show the grid:***

1. Choose Draw Show Grid

## Show Background Image

With this option selected, 3D Magic will display and integrate into your renderings the background image of your choice. Background images are only displayed in Phong renderings. 3D Magic will center the background image in the viewer and will not size or stretch the image.

### Related Topics:

To use the Show Background Image option:

***To use the Show Background Image option:***

1. Choose Draw Show Background Background

## Specify Background Image

This option will allow you to specify which image should be displayed as the background image during Phong Rendering. Only BMP files are supported for background images.

### Related Topics:

[To specify the background image:](#)



***To specify the background image:***

1. Choose Draw Specify Background Image

# Converting images to 3D objects

One of the most powerful features of 3D Magic 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 full 3D wire frame models.

## Related Topics:

[Smoothing](#)

[Static smoothing](#)

[Interactive smoothing](#)

[Extruding converted images](#)

[Extruding all polygons or selected polygons](#)

[Static or interactive extrusion](#)

[Beveling](#)

[Beveling all polygons or selected polygons](#)

[Beveling in or out](#)

[Beveling values](#)

[Static and interactive beveling](#)

[Using a Router Bit Bevel](#)

## **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. It is recommended that if you wish to smooth again, you click Undo and then smooth.

## 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.

### Related Topics:

To perform static smoothing:

***To perform static smoothing:***

1. Choose Modify Smooth
2. Click Static smoothing
3. 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.

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

### Related Topics:

[Smoothing parameters:](#)

[To perform interactive smoothing:](#)

### ***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.
- **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:***

1. Choose Modify Smooth
2. Click Interactive Smoothing
3. Select Values for:
  - Detail Elimination
  - Segment Elimination
  - Hort/Vert Elimination
4. Select Spline Fitting and values for:
  - Spline coverage
  - Spline vertex spacing
5. Repeat steps 3 and 4 until desired results
6. 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.

*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**

3D Magic allows you to extrude the entire converted bitmap or only a selection of its polygons. To select only some polygons for extrusion see Chapter 6: Selecting vertices and polygons.

*Extruding can be applied to any loaded object or polygon, it does not have to be used solely with converted bitmaps.*

## Static or interactive extrusion

Static extrusion will perform an extrusion with the default distance value. The distance value is 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.

### Related Topics:

To extrude a converted image, object or polygon:

***To extrude a converted image, object or polygon:***

1. Choose Modify Extrude
2. Click one of the following:
  - All Polygons
  - Selected Polygons
3. Click one of the following:
  - Static
  - Interactive
4. If Static is selected, Click Extrude
5. If Interactive is selected, Click interactively to increase or decrease the extrusion distance until the desired result is produced
6. Click Extrude

## **Beveling**

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

## **Beveling all polygons or selected polygons**

3D Magic allows you to bevel the entire converted bitmap or only a selection of its polygons. To select only some polygons for beveling see Chapter 6: Selecting vertices and polygons.

*Beveling can be applied to any loaded object or polygon, it does not have to be used solely with converted bitmaps.*

## Beveling in or out

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

*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 allows 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 work shop 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). 3D Magic finds the upper-right and lower-right most points and follows the path between those points as the shape for the router bit.

*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 Chapter 6: Polygon orientation - for a discussion of orientation (clockwise or counter clockwise).*

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

### Related Topics:

To bevel a converted image, object or polygon:

***To bevel a converted image, object or polygon:***

1. Choose Modify Bevel
2. Click one of the following:
  - All polygons
  - Selected polygons for beveling
3. Click one of the following:
  - Bevel In
  - Bevel Out
4. Click one of the following:
  - Regular Bevel
  - Router Bit Bevel
5. If Router Bit Bevel, specify a router bit
6. Click one of the following:
  - Static
  - Interactive
7. If Static is selected:
  - Enter values for width, depth and extrusion
8. If Interactive is selected:
  - Click interactively to increase or decrease the bevel values of width, depth, and extrusion until the desired result is produced
9. Click Bevel

# Modifying 3D wire frame models

This chapter describes editing of the polygons and vertices that make up objects. This editing capability is one of the strengths of 3D Magic.

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](#)

[Select Linked Vertices](#)

[Swap Vertex Selection](#)

[Selecting / Unselecting All Vertices](#)

[Deleting vertices and polygons](#)

[Moving vertices](#)

[Subdividing edges](#)

## 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 wire frame mode. After vertices have been selected they will appear light red in color.

### Related Topics:

[To select vertices and polygons:](#)

***To select vertices and polygons:***

1. Choose Mode, Edit, Select
2. Select all the vertices of the desired polygons by performing one of the following actions:
  - Clicking on the vertices
  - 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.

### Related Topics:

To select linked vertices:

***To select linked vertices:***

1. Select one or more vertices from the group of linked vertices
2. 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.

### Related Topics:

[To swap vertex selection:](#)

***To swap vertex selection:***

1. Select a group of vertices
2. Choose Edit
3. 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.

### Related Topics:

To select all vertices:

To unselect all vertices:

***To select all vertices:***

1. Choose Edit
2. Click on Select All Vertexes

***To unselect all vertices:***

1. Choose Edit
2. 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 all of a polygon's vertices were not selected the polygon will not be deleted.

### Related Topics:

To delete vertices:

To delete polygons:

***To delete vertices:***

1. Select vertices for deletion
2. Choose Edit
3. Click on Delete Selected Vertices

***To delete polygons:***

1. Select all vertices corresponding to the polygons to be deleted
2. Choose Edit
3. Click on Delete Selected Polygons



## Moving vertices

You can move one or more points.

### Related Topics:

[To move vertices:](#)

***To move vertices:***

1. Select one or more vertices
2. Hold down the Right mouse button
3. Move the mouse to move the selected vertices
4. Let up on the mouse button at the desired location

*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 vertices of the selected edges.

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

### Related Topics:

To subdivide edges:

***To subdivide edges:***

1. Select the vertices of the edges to subdivide
2. Choose Edit
3. Click on Subdivide Selected Edges

# Adding Geometric Shapes

From the Edit menu, seven different basic geometric shapes can be added to the 3D Magic viewer. These shapes are Circle, Cone, Cube, Cylinder, Sphere, Square, and Torus. When adding shapes to 3D Magic, you may choose between low resolution, medium resolution or high resolution. These different resolutions refer to how many points and polygons will make up the resultant shape.

## Related Topics:

[To add a geometric shape:](#)

***To add a geometric shape:***

1. Choose Edit Low Res Shape Circle

# Using the Modify Polygons dialog

The Modify Polygons dialog contains all of the functions described below to allow you to change the polygon and vertex database of objects in memory.

An assortment of powerful object optimization algorithms include 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 Polygons values:](#)

[Divide polygons](#)

[Reduce polygons](#)

[Polygon orientation](#)

[Auto flip polygons](#)

[Double polygons](#)

[Reduce Vertexes](#)

[Applying a surface](#)

***Modify Polygons values:***

- VERTEXES represents the number of vertices in the database depending on whether All or Selected has been chosen. (Note: It is proper to say vertexes or vertices)
- 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 , DXF or VRML formats. This function helps to optimize your objects before you save them in their new formats.

### Related Topics:

[Divide Polygons values:](#)

[To divide polygons:](#)

***Divide Polygons values:***

- The MAXIMUM POLYGON SIDES field determines the maximum number of sides a polygon can have.

*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. This is true also for polygons whose vertices are not ordered in either a clockwise or counter-clockwise manner.*

***To divide polygons:***

1. Choose Modify Polygon
2. Click one of the following:
  - All Polygons
  - Selected Polygons
3. Click Divide Polygons
4. Enter the maximum number of polygon sides
5. 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 would consist of 12 polygons, pairs of which are co-planar on each face of the cube. Polygon Reduction would rebuild the cube into 6 square polygons.

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

### Related Topics:

Reduce polygon values:

To reduce polygons:

***Reduce polygon values:***

- The 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 3D Magic 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 the maximum number of polygon sides must be recognized, however this does not guarantee the size of the smallest polygon.

***To reduce polygons:***

1. Choose Modify Polygon
2. Click one of the following:
  - All Polygons
  - Selected Polygons
3. Click Reduce Polygons
4. Enter Angle Threshold
5. Enter the maximum number of polygon sides
6. Click Reduce

## Polygon orientation

3D Magic 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.

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

3D Magic 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

### Related Topics:

[To auto flip polygons:](#)



***To auto flip polygons:***

1. Choose Modify Polygon
2. Click one of the following:
3. All Polygons
4. Selected Polygons
5. 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.

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

### Related Topics:

To double polygons:

***To double polygons:***

1. Choose Modify Polygon
2. Click one of the following:
  - All Polygons
  - Selected Polygons
3. 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.

### Related Topics:

Reduce Vertexes values:

To reduce vertices:

**Reduce Vertexes values:**

- 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 ignored.

*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:***

1. Choose Modify Polygon
2. Click one of the following:
  - All Polygons
  - Selected Polygons
3. Click on Reduce Vertexes
4. Enter a Distance Threshold value
5. Click on Reduce

## Applying a surface

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

### Related Topics:

[To apply a surface:](#)

***To apply a surface:***

1. Choose Modify Polygon
2. Click one of the following:
  - All Polygons
  - Selected Polygons
3. Click on Apply Surface
4. Click on a surface
5. Click on Apply



# Surfaces

In 3D Magic, 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. Gouraud 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 wire frame 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 Edit 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](#)

[Selecting surfaces corresponding to selected polygons](#)

[Selecting polygons corresponding to a surface](#)

[Editing surfaces](#)

[Specifying Color](#)

[Editing surfaces globally](#)

[Creating a new surface](#)

[Saving surfaces](#)

[Loading surfaces](#)

[Deleting surfaces](#)

[Cloning a surface](#)

[Merging surfaces](#)

[Painting with a surface](#)

[Selecting the paint mode](#)

[Selecting the painting surface](#)

[Painting the object](#)

## **Attributes of a surface**

Surface attribute values:

To view surfaces' attributes:

**Surface attribute values:**

- NAME - The name of the surface
- COLOR - The color of the surface
- COLOR TEXTURE - A built in 3D Magic color effect.
- SMOOTHING ON/SMOOTHING OFF - Whether or not this surface is smoothed
- AMBIENT - The general ambient light amount for this surface - range of 0 to 100
- DIFFUSE - Chalkiness of the surface - range 0 to 100
- GLOSS - How focused highlights are, a high gloss indicates high focus - range 0 to 100.
- METALLICITY - Degree that highlights take on the color of the object - range 0 to 100.
- NORMAL TEXTURE - A built in 3D Magic texture which modifies the normals of polygons. Producing mainly different bump effects.
- POLYGON COUNT - The number of polygons associated with this surface.
- POST TEXTURE - A built in 3D Magic color effect that is applied in addition to any other texture effects.
- REFRACTION - Not used by 3D Magic's renderer.
- SPECULAR - Describes the degree that light is reflected - range 0 to 1.
- TRANSPARENCY - Not used by 3D Magic's renderer.
- COLOR IMAGE MAP - A BMP image file that is mapped to any polygons associated with this surface.
- BUMP IMAGE MAP - A BMP image file that is used as a guide for modifying the normals of any polygons associated with this surface. An image based way of creating bumps on polygons.

*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:***

1. Choose Modify Surface
2. Click on the Attribute combo box
3. Click on the desired attribute from list

## Selecting surfaces

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

### Related Topics:

[To select a surface:](#)

[To select all surfaces:](#)

[To unselect all surfaces:](#)

***To select a surface:***

1. Choose Modify Surface
2. Click one of the following:
  - While holding down the Control Key, click on a desired surface, repeat until all desired surfaces are selected.
  - While holding down the Shift Key, click on a desired surface, then click on another surface to select all in between.

***To select all surfaces:***

1. Choose Modify Surface
2. Click the Select All button

***To unselect all surfaces:***

1. Choose Modify Surface
2. Click on the UnSelect All button



## 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 Chapter 6: Selecting vertices and polygons.

### Related Topics:

[To select surfaces corresponding to selected polygons:](#)

[To unselect surfaces corresponding to selected polygons:](#)

***To select surfaces corresponding to selected polygons:***

1. Select the polygons first
2. Choose Modify Surface
3. Click on Select Polygons' Surfaces

***To unselect surfaces corresponding to selected polygons:***

1. Choose Modify Surface
2. 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.

### Related Topics:

[To select polygons corresponding to a surface:](#)

[To unselect polygons corresponding to a surface:](#)

***To select polygons corresponding to a surface:***

1. Choose Modify Surface
2. Select the surface or surfaces whose polygons you want to select
3. Click on Select Surfaces' Polygons button

***To unselect polygons corresponding to a surface:***

1. Choose Modify Surface
2. Select the surface or surfaces whose polygons you want to unselect
3. Click on UnSelect Surfaces' Polygons button

## 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:

To edit an individual surface:

***To edit an individual surface:***

1. Choose Modify Surface
2. Click on the desired surface from the list
3. Click Edit Individually
4. Click on Specify Color to change the surfaces color (see procedure below)
5. Click on the Smooth check box to make this surface smooth
6. Enter or change any other attribute values



## 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.

### Related Topics:

[To specify a color:](#)

***To specify a color:***

1. Click on Specify Color...
2. Select a color by doing one of the following:
  - Clicking on a Color
  - Hold down the left mouse button and move around in the color palette letting up on the desired color (Click on Add to Custom Colors if desired)
3. Click OK

## 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.

### Related Topics:

[To edit surfaces globally:](#)

***To edit surfaces globally:***

1. Choose Modify Surface
2. Click on the desired surfaces from the list
3. Click Edit Globally
4. Click the Change "attribute name" Globally check box of your choice
5. Enter or change any attribute values

## 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:***

1. Choose Modify Surface
2. Click on Create
3. Click one of the following:
  - Color Specifies Name
  - User Specifies Name
4. If User Specifies Name is selected, enter a name in the name field
5. Enter or change any attribute values

## **Saving surfaces**

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

*Saving surfaces saves only their attributes. It does not save an association with any polygons in an object. See Chapter 8: Saving objects.*

### **Related Topics:**

To save surfaces:

***To save surfaces:***

1. Choose Modify Surface
2. Click on the desired surfaces from the list
3. Click on Save Surfaces
4. The number of surfaces to save will be displayed and you will
5. be asked if you want to save them, click Yes to save.
6. Select a drive, directory and filename where the save surfaces will reside
7. Click OK



## Loading surfaces

You will need to specify the name of a 3D Magic 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:***

1. Choose Modify Surface
2. Click on Load Surfaces
3. Select a drive, directory and filename of a 3D Magic surface file
4. Click OK
5. When asked if you want to replace existing surfaces with loaded surfaces that have the same name, click one of the following:
  - Click YES to replace like surfaces
  - Click NO to append new surfaces

## Deleting surfaces

Deleting a surface will remove a surface from the surface list. Any polygons that reference a surface that is deleted will be redirected to reference the Default surface.

### Related Topics:

[To delete surfaces:](#)

***To delete surfaces:***

1. Choose Modify Surface
2. Click on the desired surfaces from the list
3. Click Delete

## Cloning a surface

Cloning will create an exact duplicate of any selected surface. After cloning a surface you can assign polygons to it (see Chapter 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(1)". You can then edit any cloned surface to change its name or other attributes.

### Related Topics:

To clone a surface:

***To clone a surface:***

1. Choose Modify Surface
2. Click on the desired surfaces from the list to clone
3. Click Clone

## 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:***

1. Choose Modify Surface
2. Click on the desired surfaces to merge from
3. Click Merge
4. Select the Merge Into surface
5. Click the Delete Empty Surfaces check box is you wish to delete the from surfaces



## **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.

Note that best results are achieved when painting if your current rendering mode is Gouraud. Painting in other modes is allowed, but the depth ordering of the polygons is not preserved (the Z-buffer), so updates may look incorrect.

## Selecting the paint mode

The five Painting modes:

To select a paint mode:

***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 Chapter 6: Polygon orientation and why to flip some polygons.

***To select a paint mode:***

1. Choose Mode Paint
2. Click on desired Paint mode
3. 3D Magic will now be in painting mode

## Selecting the painting surface

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

### Related Topics:

To select the painting surface:

***To select the painting surface:***

1. Choose Mode Paint Surface.
2. Click on the desired surface from the list
3. Click OK

## Painting the object

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

### Related Topics:

To paint the object :

***To paint the object :***

1. Select a painting mode (see above) if one not selected
2. Select a painting surface (see above) if one not selected
3. Position the mouse where the painting is to occur
4. Click on the desired polygons
5. When finished turn off painting mode (see above)

*At any time, you may press the Return key to redraw the display.*



# Image Mapping

Each surface within 3D Magic has the ability to have an image map of two different kinds associated with it. The first kind is a Color Image Map. This is a normal BMP image that may be applied to the polygons associated with the surface. The second is a Bump Image Map. This is usually a gray scale BMP image that defines peaks and valleys of bumps by its gray scale intensities.

Access to the Image Mapping dialog is provided through the Edit Individually dialog available from the Surfaces dialog.

## **Related Topics:**

[Edit Image Map Type](#)

[Specifying an Image Map File](#)

[Wrapping Method](#)

[Image Map Axis Alignment](#)

[Image Map Repeat and Pixel Blending](#)

[Image Map Scaling](#)

[Image Map Color Filter](#)

[Image Map Bump Scale](#)

[Image Map Transparent Color](#)

## Edit Image Map Type

This feature of the Image Mapping dialog allows you to specify whether to edit the Color Map or Bump Map attributes of the current surface.

### Related Topics:

[To change the Edit Image Map Type:](#)

***To change the Edit Image Map Type:***

1. Choose Modify Surface
2. Click on the desired surface from the list
3. Click on Edit Individually
4. Click on Image Mapping
5. Choose one of the following from the Edit Image Map Type combo box:
  - Color
  - Bump

## Specifying an Image Map File

To specify the file to be used as an image map, use the Specify File button.

### Related Topics:

[To specify a surface's Image Map File:](#)

***To specify a surface's Image Map File:***

1. Choose Modify Surface
2. Click on the desired surface from the list
3. Click on Edit Individually
4. Click on Image Mapping
5. Click on Specify Image File and choose a BMP image.

## Wrapping Method

The wrapping method is how 3D Magic will wrap your 2D image file to the 3D polygons that are associated with the surface you are editing. There are four different methods of image mapping, they are Flat, Horizontal Cylinder, Vertical Cylinder, and Sphere. Choose a wrapping method based on what basic shape your surface's polygons best represent. For example, if you had an egg shape you would choose the Sphere image mapping method. But a Roman column might be best wrapped with the Vertical Cylinder wrapping method. The face of a logo might look best with the Flat wrapping method.

### Related Topics:

To specify a surface's Image Map Wrapping Method:

***To specify a surface's Image Map Wrapping Method:***

1. Choose Modify Surface
2. Click on the desired surface from the list
3. Click on Edit Individually
4. Click on Image Mapping
5. Choose one of the following from the Wrapping Method combo box:
  - Flat
  - Horizontal Cylinder
  - Vertical Cylinder
  - Sphere

## Image Map Axis Alignment

Three different axis of alignment are available for image maps. These are useful for choosing what direction an image map will be projected.

### Related Topics:

[To specify a surface's Image Map Axis Alignment:](#)



***To specify a surface's Image Map Axis Alignment:***

1. Choose Modify Surface
2. Click on the desired surface from the list
3. Click on Edit Individually
4. Click on Image Mapping
5. Choose one of the following:
  - Align on X-Axis
  - Align on Y-Axis
  - Align on Z-Axis

## **Image Map Repeat and Pixel Blending**

Image Map Repeat when set will tile an image map across the associated surface's polygons. This is useful if the image map has been scaled smaller than the polygons that the image map is covering.

Pixel Blending when set will blur the areas between the pixels of an image map. This is useful in making the image map look smoother and more integrated.

## Image Map Scaling

Image Map Scaling will allow you to scale both the X and Y sizes of an image map. U Scale controls the X size of the image map. V Scale controls the Y size of the image map. Note that to make an image map appear smaller on a surface's polygons, you should *increase* the amount of scaling.

## **Image Map Color Filter**

The Image Map Color Filter value allows for the integration of the surface's original color and color texture attributes. The value should be fall between the values of 0 and 1. For example, if the surface's color was red, and the Color Filter value was set to .5, the image map would render as normal, but would have a pink tinge. Note that this value is only used for Color Maps.

## **Image Map Bump Scale**

The Image Map Bump Scale value controls how large the rendered bumps from the Bump Map appear. The larger the value, that larger the bumps will appear to be. Note that this value is only used for Bump Maps.

The radio buttons Dark-Lowest to Light-Highest and Light-Lowest to Dark-Highest control what shades of the Bump Map will define the peaks and valleys of the rendered bumps.

## **Image Map Transparent Color**

The Image Map Transparent Color check box and values are not currently used by 3D Magic, but have been included for future compatibility.

# 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 sub objects. 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](#)

[Selecting objects by family](#)

[Selecting and unselecting objects corresponding to polygons](#)

[Selecting and unselecting polygons corresponding to an object](#)

[Editing objects](#)

[Editing objects individually](#)

[Editing objects globally](#)

[Transforming an object](#)

[Putting objects in the foreground or background](#)

[Creating parent and child objects](#)

[Making an object an orphan](#)

[Breaking apart objects](#)

[Merging Objects](#)

[Creating a new object](#)

[Deleting objects](#)

[Cloning objects](#)

[Assigning polygons to an object](#)

## 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.

### Related Topics:

[Object attribute values:](#)

[To view loaded objects' attributes:](#)



***Object attribute values:***

- FILE FORMAT
- FILENAME
- POLYGON COUNT
- SURFACE COUNT
- VERTEX COUNT

***To view loaded objects' attributes:***

1. Choose Modify Object
2. Click on the Attribute combo box
3. Click on the desired attribute

## Selecting objects

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

### Related Topics:

[To select an object:](#)

[To select all objects:](#)

[To unselect all objects:](#)

***To select an object:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.

***To select all objects:***

1. Choose Modify Object
2. Click on the Select All button

***To unselect all objects:***

1. Choose Modify Object
2. Click on the UnSelect All button

## 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.

### Related Topics:

To select objects by family:

***To select objects by family:***

1. Choose Modify Object
2. 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.

### Related Topics:

To select objects corresponding to selected polygons:

To unselect objects corresponding to selected polygons:

***To select objects corresponding to selected polygons:***

1. Choose Modify Object
2. Click on the Operator combo box
3. Click on Select Polygons' Objects
4. Click Execute

***To unselect objects corresponding to selected polygons:***

1. Choose Modify Object
2. Click on the Operator combo box
3. Click on UnSelect Polygons' Objects
4. Click Execute

## 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.

### Related Topics:

[To select polygons corresponding to a object:](#)

[To unselect polygons corresponding to an object:](#)

***To select polygons corresponding to a object:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click on the Operator combo box
4. Click on Select Objects' Polygons
5. Click Execute

***To unselect polygons corresponding to an object:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click on the Operator combo box
4. Click on UnSelect Objects' Polygons
5. Click Execute

## 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:

[Edit Object dialog values:](#)

***Edit Object dialog values:***

- POSITION X, POSITION Y, POSITION Z - position of the object relative to its local coordinate system.
- ROTATION HEADING, ROTATION PITCH, ROTATION BANK - rotation of the object relative to its local coordinate system
- SCALE X, SCALE Y, SCALE Z - scaling relative to its local coordinate system

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



## Editing objects individually

Edit individually allows you to change an individual object's values.

### Related Topics:

[To edit an individual object:](#)

***To edit an individual object:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click Edit Individually
4. Edit any or all of the values described above

## 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.

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

### Related Topics:

[To edit objects globally:](#)

***To edit objects globally:***

1. Choose Modify Object
2. Click on the desired objects from the list
3. Click Edit Globally
4. Click the Change "attribute name" Globally check box of your choice
5. Enter or change any attribute values

## 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:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Edit the objects position, rotation and scaling values if needed
4. Click Transform

## 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:***

1. Choose Modify Objects
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click Put in Foreground



***To put objects in the background:***

1. Choose Modify Objects
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click Put in Background

## Creating parent and child objects

Parent - child relationships are shown in the Edit Objects dialog's display list. Child objects' names are indented from the parent object and an angled arrow connects the parent to the child object.

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, additionally, changes made to the parent will effect the child objects, but not vice versa.

### Related Topics:

[To create a parent - child relationship:](#)

***To create a parent - child relationship:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click on Specify Parent
4. Click on the Parent combo box
5. Click on the object to be parent

## 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.

### Related Topics:

[To make an object an orphan:](#)

***To make an object an orphan:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click on Make Orphan

## Breaking apart objects

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 # as the suffix; where the # stands for the number of the broken off part.

### Related Topics:

To break an object apart:

***To break an object apart:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click on Break Apart
4. Click one of the following:
  - All Polygons in Selected Objects
  - Selected Polygons in Selected Objects
5. If you wish to make the new objects the children of the origin, Click the Make New Objects Children of Origin check box
6. If you wish to delete the origin object, Click Delete the Origin Objects check box

## 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.

### Related Topics:

[To merge objects:](#)



***To merge objects:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click on Merge
4. Click one of the following:
  - Transform, position and merge
  - Simple Merge
5. If you wish to delete the origin objects, click the Delete Origin Objects check box
6. Click on the Merge Into combo box and choose the object to merge into.

## 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:***

1. Choose Modify Object
2. Click Create
3. Enter a name for the object
4. Enter position, rotation and scaling values

## Deleting objects

Deleting will delete the polygons and surfaces of an object from memory.

### Related Topics:

To delete an object:

***To delete an object:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click Delete

## 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:***

1. Choose Modify Object
2. Click one of the following:
  - While holding down the Control Key, click on a desired object, repeat until all desired objects are selected.
  - While holding down the Shift Key, click on a desired object, then click on another object to select all in between.
3. Click on Clone

## 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:***

1. Chose Modify Objects
2. Click on the Operator combo box
3. Click on Assign polygons To
4. Click Execute
5. Click on the Object combo box and choose the object to receive the polygons

# Options

The options portion of 3D Magic includes various setting for many of the different functions within 3D Magic.

## **Related Topics:**

[Selecting axes of permitted movement](#)

[Memory Allocations](#)

[Configure Paths](#)

[Selecting automatic features](#)

[Hidden Line wire frame drawing](#)

[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](#)

## 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:***

1. Choose Options Axes
2. Click on any of the check boxes that correspond to the movement, rotation or scaling that you wish to restrict.

## Memory Allocations

You are able to specify both start up memory for 3D Magic and current memory.

The Allocation of start up memory is the amount of memory you wish to allocate each time you start 3D Magic. The amount of memory is expressed in megabytes.

The Allocation of current memory is the amount of currently allocated memory.

*Each time 3D Magic runs, it tries to allocate sufficient RAM for its Undo buffer and this RAM is not counted in the start up memory value.*

*Sometimes there appears to be enough memory for a reallocation, but because not enough contiguous memory could be found, the reallocation fails.*

### Related Topics:

To change the start up memory / current memory allocation:

***To change the start up memory / current memory allocation:***

1. Choose Options Memory
2. Move the slider to indicate how much memory your require

## Configure Paths

When loading some file formats, 3D Magic will need directory information in order to find fonts that might be in a file or to be able to load scenes correctly.

*3D Magic needs the LightWave 3D program file name and path to be able to load scenes correctly. If you cannot choose the LightWave 3D program file, choose any file in the directory you wish to specify.*

*Specifying font paths for AutoCAD and PostScript are required to be able to find font files.*

### Related Topics:

To set the LightWave 3D path:

To set the PostScript or AutoCAD font file directory:

***To set the LightWave 3D path:***

1. Choose Options Configure Paths
2. Click Specify LightWave 3D Path
3. Specify the program file, directory and drive
4. Click OK



***To set the PostScript or AutoCAD font file directory:***

1. Choose Options Configure Paths
2. Click one of the following:
  - Specify PostScript Font Path
  - Specify AutoCAD Font Path
3. Specify the a font file, directory and drive
4. 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.

## **Hidden Line wire frame drawing**

Hidden Line wire frame drawing will draw only those polygons that face the camera.

## **Edge List wire frame drawing**

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

## **Target camera to new objects**

Auto Camera Target allows you to specify whether or not 3D Magic 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 will reset the view to wire frame mode any time NEW is selected.

## **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.



# Thank You

Thank you for choosing 3D Magic! We've worked hard to make this product the very best we could, and we truly appreciate your support!

To all of the people that helped to make this tremendous project possible, thank you!

*This software and manual is dedicated to Loa Thede and Cheshire 'Kitty'.*

Scott Thede

