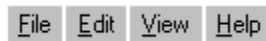
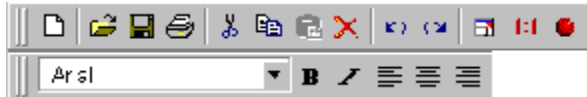


**Visual Reference** - Click elements for details

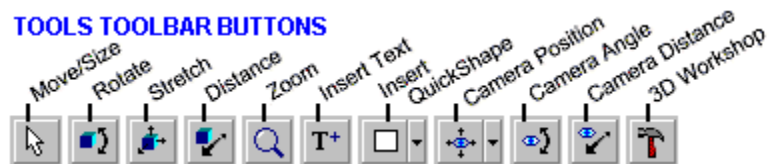


## MENUS

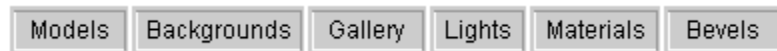
### STANDARD and TEXT TOOLBARS



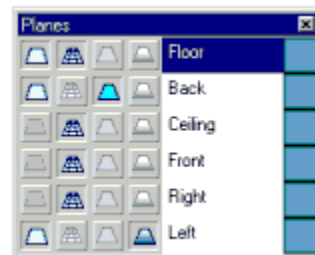
### TOOLS TOOLBAR BUTTONS



### STUDIO TABS



### PLANES TOOLBAR



### ANIMATION TOOLBAR



## Welcome to 3DPlus 3



Ready to add a new dimension to your Web graphics projects, presentations, or desktop publishing? **3DPlus 3.0** will take you there! And no special skills are required—whether you use Wizards to create instant 3D elements and animations for you, or construct your own 3D scenes. 3DPlus puts all the tools and resources you'll need within easy reach. To create, you just pick and choose, mix and match—customize to your heart's content. The professional-quality results will amaze you!

### What's New in 3DPlus 3...

Click the links below for details on each feature:

#### n **Create Your Own 3D Models**

With 3DPlus 3, you can now go beyond mere scene-building... step into the new [3D Workshop](#) and easily construct your own 3D objects using adjustable QuickShapes, simple drawing tools, or even imported clip art. The Workshop instantly converts your 2D figures to 3D shapes, with animated preview! Choose either extruded or lathed projection... control color, outline, and smoothness for infinite possibilities. Save your creations as separate files or in the Studio's Gallery. Absolutely worth the price of admission!

#### n **Major Animation Enhancements**

The Gallery now comes pre-loaded with dozens of exciting [animated effects](#) that you can apply to text and objects. Check out the animated [lighting schemes](#)... and create your own with ease. You can even animate the scene's camera view and add creeping fog!

#### n **Multiple Scene Planes**

The new [Planes toolbar](#) lets you carve out a multi-dimensional virtual space, complete with walls, floor, and ceiling. Switch from grid to solid rendering, apply flat or shaded colors and textures to individual planes. Create special lighting effects with cast shadows.

#### n **Character-Level Adjustments**

Now you can select [individual characters](#) within words... change their color, position, tilt, and other properties... and still move the whole word as an object or retype its text. Fantastic for animation—create spinning letters, exploding words, radical color shifts.

#### n **New Camera Angle Tool**

Now the camera can point at anything in the scene... not just into the center! Achieve tilts and swivels in all three dimensions with simple [XYZ adjustments](#). Even move the camera around without disturbing its custom angle.

#### n **Fog and Shadows**

Add depth and drama to your creations with these new background and lighting effects. Simply set the front and back extent for [fog](#)... switch [shadow-casting](#) on or off for individual lights.

#### n **3D Print Preview**

Check your scene from seven vantage points at once! 3DPlus quickly compiles a [multiple view](#) that you can review onscreen or print out for reference and comment.

#### n **Camera Light for All-Around Illumination**

Don't get left in the dark! Now every new scene includes a [light source](#) that points wherever the camera does... so you can even see round the back of scene objects. Switch it on or off as needed, while setting up your custom lighting scheme.

#### n **Export Advances for Animations and Stills**

Besides optimized animated GIF export for smaller file sizes, you can now save animations to the [Windows AVI video format](#), or automatically output a [series of still frames](#). And 3DPlus now supports the [PNG format](#), with an alpha channel to preserve transparency in your Web graphics and video titles.

### ...plus these established features...

#### n **3D Animation Capability**

[Make any 3D scene come alive!](#) Simply place key frames for the object properties you want to vary—let 3DPlus generate the in-between motion. Your objects can move, rotate, change size or color, and much more. The result: an animated GIF ready for your Web site or presentation.

#### n **Ease-of-Use**

You'll appreciate the [Wizard interface](#) that simplifies creating new designs and animations, and the convenient, tabbed [Studio bar](#) for tools and resources. Functions like [rotation](#) and [extrusion](#) are a snap to apply. And you can select multiple objects, [zoom in or out](#) with a single click, and use [WYSIWYG text entry](#) to preview fonts and formatting.

#### n **Extensive 3D Resources**

Use the handy branching menus to browse a large set of [3D models](#)—from basic geometric shapes to complex man-made objects. To customize your objects and scenes, choose from a collection of [background images](#), a [texture library](#), and a wide selection of [lighting schemes](#).

#### n **Powerful 3D Tools**

Try the [QuickShape tool](#) for adjustable instant objects! Choose from six [preset camera positions](#), or simply drag for freeform camera views and [object rotations](#). Experiment with [lighting types and controls](#) for brilliant effects. Easily rotate, resize, and move [bitmap textures](#) on any object.

n **Advanced Performance**

3DPlus incorporates its own sophisticated 3D model format, and you can apply your choice of textures, colors, and bevels to complex clipart objects, with [separate material controls](#) for front, sides, and back. Built-in DirectX™ support affords speedier 3D rendering—and five anti-aliasing quality levels let you pick one that's right for your system.

n **Customizability**

[Store your own](#) custom lighting schemes, materials, and bevels as Studio thumbnails, right there whenever you need them. [Import standard metafiles](#) as 3D models, then weave them into your scenes for a whole new range of design possibilities.

n **Direct Output Preview**

Forget the trial and error approach! The [Export dialog](#) features a built-in window so you can preview color depth, dithering, and palette settings in a single step, before conversion. And for top-quality Web GIFs, take advantage of transparency and background anti-aliasing. And of course, you can embed 3DPlus scenes directly in publications using [OLE](#). Who said great results were hard to come by?

## Help on Help

The 3DPlus online help system is designed to work for you...

- n To begin learning about 3DPlus tools and menus, just move the mouse pointer around the screen. Watch the **HintLine** at the bottom of the screen for capsule descriptions of each feature and useful feedback.
- n For introductory overviews of basic concepts, consult the How To topics [Basics of 3D objects and scenes](#) and [Using the 3DPlus interface](#).
- n For a quick summary of new and established PhotoPlus features, see the previous topic, **Welcome to 3DPlus 3**. You can click the links there to learn more about specific features of interest.

Whatever your background, you'll find it easy to navigate through online help...

- n Choose **3DPlus Help** from the Help menu (or press **F1**) to display the help window, which initially displays its Contents pane on the left, and the Visual Reference menu on the right. Click directly on Visual Reference graphics to browse interface features like menus and toolbars. Click the book icons in the Contents list to expand topics, and click a document icon to display a particular topic.
- n Click the **Index** tab to pop up the list of key terms, or the Search tab to look up specific terms using full-text search.
- n Click the << (Previous) and >> (Next) buttons at the top of the help window to step through the topic sequence.
- n And don't forget the **3DPlus Companion**, with guided tours to step you through the basics of using Wizards and creating both static and animated 3D scenes.

## Troubleshooting and Support

### Troubleshooting a problem

Don't panic! Remember that all technical problems, no matter how bizarre they may seem, have a cause and a solution. By patiently applying a logical approach, you can often identify the source of the problem and fix it yourself. In general, try simplifying your PC's setup until the problem is no longer present. Then, incrementally restore the original setup, testing to see which component makes the problem re-occur. Be careful!

Initially, try to establish:

- n Is the problem most likely arising within 3DPlus?
- n Is it a Windows problem?
- n Or is it a "hardware" problem having to do with your PC or its peripherals? See if switching to the "Software" driver setting (in **File/Preferences**) makes a difference.
- n Have you made any recent changes to your system configuration that might be responsible for the problem?

If it's a 3DPlus issue, perhaps there's a procedure you need to know more about. Check online Help for information on the specific task you're trying to accomplish.

For Windows or hardware issues, click the **Start** button and choose **Help** for troubleshooting information -- or check the specific manuals for the peripheral.

Printing problems with Windows are generally caused by using an incorrect or outdated printer driver, or a third-party printer driver. Make sure that you use the Windows printer driver designed specifically for your printer. To check printer drivers, click **Start**, choose **Settings > Printers**.

### Contacting Serif technical support

Our support mission is to provide fast, friendly technical advice and support from a team of on-call experts. Serif customers are entitled to free, unlimited telephone or e-mail technical support for the first 30 days following receipt of the product. After that time, pricing policies (per-call or per-year) go into effect.

To reach Serif Technical Support, use the following numbers. (And see below for additional Serif contact information.)

USA Technical Support	(603) 886-6642 e-mail: support@serif.com
Europe Technical Support	(0115) 914 9090 e-mail: support@serif.co.uk

On the **World Wide Web**, you can check up-to-date technical bulletins at  
<http://www.spc.com/techsupp/custmain.htm>

Please do not fax technical support queries.

### Additional Serif contact information

#### Main office (USA, Canada):

The Software Center, PO Box 803, Nashua NH 03061, USA

Main	(603) 889-8650
Registration	(800) 794-6876
Sales	(800) 55-SERIF or 557-3743
Customer Service	(800) 489-6720
General Fax	(603) 889-1127
Sales Fax	(603) 886-4919

#### European office (UK, Europe):

The Software Centre, PO Box 2000, Nottingham, NG11 7GW, UK

Main	(0115) 914 2000
Registration	(0500) 454 645
Sales	(0800) 376 4848
Customer Service	(0115) 914 9090
General Fax	(0115) 914 2020

### On-line product and company information

Internet

<http://www.serif.com>

**International enquiries**

Please contact our main or European office as appropriate.

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## File menu

Commands for opening, saving, exporting, and printing 3D scenes.

Shortcut: **Alt+F**

<b>New</b>	<p>Runs the <b>Startup Wizard</b>, which gives you five options: (1) <a href="#">Use 3D Design Wizard</a>; (2) <a href="#">Use 3D Text Wizard</a>; (3) <a href="#">Start from Scratch</a>; (4) <a href="#">Open a Saved Scene</a>; and (5) View Samples. (Click any option to link to its How To topic.)</p> <p><b>Note:</b> If <b>Use Startup Wizard</b> is unchecked in File/Preferences, choosing <b>New</b> starts a new scene from scratch, bypassing the Startup Wizard.</p> <p><b>Hint:</b> You can also click the <b>New</b> button on the Standard toolbar.</p>
<b>Open...</b>	<p>Displays a standard Windows dialog which allows you to open an existing 3DPlus 3.0 (*.3DD) or 2.0 (*.3D2) file. (See the How To topic <a href="#">Opening a saved scene</a>.)</p> <p><b>Hint:</b> You can also click the <b>Open</b> button on the Standard toolbar.</p>
<b>Save</b>	<p>Saves the current scene under its current name. If it's still unsaved ("Untitled"), the Save As... dialog automatically appears. (See the How To topic <a href="#">Saving a scene</a>.)</p> <p><b>Hint:</b> You can also click the <b>Save</b> button on the Standard toolbar.</p>
<b>Save As...</b>	<p>Displays a dialog prompting you to enter a directory and file name for the scene, then saves it under that name.</p>
<b>Export...</b>	<p>Saves a graphic file version of your scene, using the format you specify. A dialog lets you set custom options for each format. (See the How To topic <a href="#">Exporting</a>.)</p>
<b>Export Animation...</b>	<p>Displays a dialog that lets you export an <a href="#">animation</a> as a .GIF or .AVI file.</p>
<b>Export Animation Stills...</b>	<p>Displays a dialog that lets you export an animation as sequentially numbered still-image files, using any specified format.</p>
<b>Print...</b>	<p>Displays a dialog providing options for selecting a printer. Click the <b>Properties</b> button to display a standard Windows printer setup dialog. (See the How To topic <a href="#">Printing</a>.)</p> <p><b>Hint:</b> You can also click the <b>Print</b> button on the Standard toolbar.</p>
<b>Print Preview</b>	<p>Display the fully rendered scene as it will appear when printed. Click the <b>Close</b> button to return to the scene view.</p>
<b>3D Print Preview</b>	<p>Display multiple views of the scene (Front, Back, Below, Above, Left, Right, and Current) in a single window. Click the window's <b>Print</b> button to print out the multiple views for reference.</p>
<b>Scene Setup...</b>	<p>Displays a dialog that lets you set the scene's dimensions, using various units. Check "Set as default document size" to use the current size for new scenes.</p> <p><b>Hint:</b> You can also right-click in the scene window and choose <b>Scene Setup...</b>. Use the Zoom tool on the Tools toolbar, and the <b>Fit on Screen</b> and <b>Normal View</b> buttons on the Standard toolbar, to adjust the scene to a suitable on-screen size. (Those adjustments don't affect the scene's actual dimensions.)</p>
<b>Preferences...</b>	<p>Displays a dialog box for setting 3DPlus options, including:</p> <ul style="list-style-type: none"><li>• <b>Use Startup Wizard:</b> If checked (the default), the Startup Wizard will run each time you start up 3DPlus or create a new scene (using <b>File/New</b> or the <b>New</b> button). If unchecked, 3DPlus automatically starts a new scene from scratch instead of running the Startup Wizard.</li><li>• <b>Online Information:</b> 3DPlus will periodically display a special Web page with tips, resource, and update information. Customize the setting here.</li><li>• <b>Driver:</b> If you have a DirectX hardware driver, the default setting is "Hardware". Choose "Software" to correct problems that may arise from video display adapter incompatibilities. If</li></ul>



you don't have a hardware driver, the "Hardware" setting is grayed; ask your video card manufacturer if a driver is available.

- **Number of Undo's:** Depending on your system's resources, you may wish to raise or lower the default setting. Higher undo settings require additional memory.
- **Plane Properties:** Set properties for [planes](#) displayed in the scene. Change the **Grid Size** value to increase the size of squares for planes shown in Grid mode. Change the **Extent** setting to adjust the area of all planes.

**Recent Files**  
**List**

Lists the scenes most recently opened. To open a scene, select its file name.

**Exit**

Closes 3DPlus. You'll be prompted to save changes made since the last save.

## **Edit menu**

Commands for Undo and Clipboard (cut, copy, & paste) actions.

Shortcut: **Alt+E**

<b><u>U</u>ndo &lt;action&gt;</b>	Undoes the most recent change to the current scene. <b>Undo</b> is grayed out when not available. To set the number of levels of undo, use <b>File/Preferences....</b> <b>Hint:</b> You can also click the <b>Undo</b> button on the Standard toolbar, or press <b>Ctrl+Z</b> .
<b><u>R</u>edo &lt;action&gt;</b>	Reapplies a change which has just been undone. <b>Hint:</b> You can also click the <b>Redo</b> button on the Standard toolbar, or press <b>Ctrl+Y</b> .
<b><u>C</u>ut</b>	Removes the selected object from the scene AND places a copy on the Windows Clipboard. If no object is selected, all scene objects are cut. <b>Hint:</b> You can also click the <b>Cut</b> button on the Standard toolbar, or press <b>Ctrl+X</b> .
<b><u>C</u>opy</b>	Copies the selected object to the Windows Clipboard. If no object is selected, all scene objects are copied. <b>Hint:</b> You can also click the <b>Copy</b> button on the Standard toolbar or press <b>Ctrl+C</b> .
<b><u>P</u>aste</b>	Inserts a 3DPlus object or copied text from the Windows Clipboard into the scene. Text appears as a new 3D text object. <b>Hint:</b> You can also click the <b>Paste</b> button on the Standard toolbar or press <b>Ctrl+V</b> .
<b><u>D</u>elete</b>	Removes the selected object from the scene without placing a copy on the Windows Clipboard. <b>Hint:</b> You can also click the <b>Delete</b> button on the Standard toolbar, or press the <b>Delete</b> key.

## View menu

Commands for setting view and zoom options.

Shortcut: **Alt+V**

### Toolbars

Displays a submenu that lets you control which toolbars are displayed.

### Anti Alias

Displays a submenu for setting the desired quality of on-screen anti-aliasing. **Hint:** You can also right-click in the scene window and choose **Anti Alias**. To preview the scene at the "Best" setting (which is automatically applied when exporting), click the **Render Scene** button on the Standard toolbar.

### Zoom

Displays a submenu with two zoom settings. **Zoom to Fit** scales the scene window to fit within the main window area. **Normal View (1:1)** displays the scene window at its actual size as set in **File/Scene Setup...**

### Camera Lens

Displays a submenu where you can set the perspective or angle of view at which objects in the scene appear.

- **Telephoto:** Objects appear with flat perspective, as if at a distance.
- **Normal:** Objects appear as conventional to the eye.
- **Wide Angle:** Objects appear with steep perspective.
- **Fisheye:** Objects appear with exaggerated perspective, as if close-up.

### Object Draw Style

Displays a submenu that lets you choose one of three styles for the selected object: **Solid** (the normal setting), **Wireframe**, or **Points**.

## Help menu

Help, hints, tips, and options for learning 3DPlus.

Shortcut: **Alt+H**

### 3DPlus Help

Displays the 3DPlus Help Contents menu.

### Visit the 3DPlus Web Site

Connects to the World Wide Web and displays the 3DPlus Web site section in your Web browser. (By default, this feature activates periodically. To change the defaults, choose **Preferences...** from the File menu.)

**Hint:** You can also access the PhotoPlus Web site via the Startup Wizard's Online Resources option.

### Visit the Serif Web Site

Connects to the World Wide Web and displays the Serif Home Page in your Web browser.

**Hint:** You can also access the Serif Web site via the Startup Wizard's Online Resources option.

### Registration Wizard

Helps you to register your own personal copy of 3DPlus.

### About 3DPlus...

Displays version and copyright information.

## Standard and Text toolbars



### New

Click to run the **StartUp Wizard**, which gives you five options: (1) [Use 3D Design Wizard](#); (2) [Use 3D Text Wizard](#); (3) [Start from Scratch](#); (4) [Open a Saved Scene](#); and (5) View Samples. (Click any option to link to its How To topic.) Same as menu command **File/New** or **Ctrl+N**.

**Note:** If **StartUp Wizard** is unchecked on the View menu, choosing New starts a new scene from scratch, bypassing the StartUp Wizard.



### Open

Click to display a standard Windows dialog which allows you to open an existing 3DPlus scene (.3DD or .3D2) file. Same as menu command **File/Open** or **Ctrl+O**. (See the How To topic [Opening a saved scene](#).)



### Save

Click to save the current scene under its current name. If it's still unsaved ("Untitled"), the Save As... dialog automatically appears. Same as menu command **File/Save** or **Ctrl+S**. (See the How To topic [Saving a scene](#).)



### Print

Displays a dialog box providing options for selecting a printer. Click the **Properties** button to display a standard Windows printer setup dialog. Same as menu command **File/Print** or **Ctrl+P**. (See the How To topic [Printing](#).)



### Cut

Click to delete the selected object from the scene AND place a copy on the Windows Clipboard. Same as menu command **Edit/Cut** or **Ctrl+C**.



### Copy

Click to copy the selected object to the Windows Clipboard. Same as menu command **Edit/Copy** or **Ctrl+V**.



### Paste

Click to insert a 3DPlus object or copied text from the Windows Clipboard into the scene. Pasted text appears as a new 3D text object, or (if a 3D text object is currently selected) the pasted text replaces the selected text. Same as menu command **Edit/Paste** or **Ctrl+V**.



### Delete

Click to delete the selected object from the scene without placing a copy on the Windows Clipboard. Same as menu command **Edit/Delete** pressing the **Delete** key.



### Undo

Click to undo the most recent change to the current scene. **Undo** is grayed out when not available. Same as menu command **Edit/Undo** or **Ctrl+Z**. To set the number of levels of undo, use **File/Preferences....**



### Redo

Click to reapply a change which has just been undone. Same as menu command **Edit/Redo** or **Ctrl+Y**.



### Zoom to Fit

Click to adjust the scene window's size to fit within the main window area. Same as menu command **View/Zoom>Zoom to Fit**.



### Normal View (1:1)

Click to display the scene window at its actual size as set in **File/Scene Setup....** Same as menu command **View/Zoom> Normal View (1:1)**.



### Render Preview

Click to refresh the current scene once, using the "Best" quality anti-aliasing setting. This provides a preview of output quality. **Hint:** To set the display to refresh automatically at one of five quality settings, choose **Anti Alias** from the View menu.



### Font

Displays the font of the selected text object. To change the font, click a new font name in the drop-down list. You can also edit a text object by double-clicking it with any tool. (See the How To topic [Editing existing text](#).)

**Hint:** To quickly preview the effect of different fonts, click to open the drop-down list and step through it using the up- and down-arrow keys on the keyboard.



**Hint:** Dingbat and symbol fonts can be especially cool!

**Style**

"Down" buttons indicate font style properties of the selected text object (Bold or Italic). To apply or remove a style, click the appropriate button.



**Alignment**

The "down" button indicates the alignment of multi-line text in the current text object (left-, center-, or right-aligned). Click to change the alignment. The setting has no effect if there's only one line of text.

**Note:** To show and hide the Standard and/or Text toolbar, choose **Toolbars** from the View menu and check or uncheck the toolbar name on the submenu.

## Tools toolbar: Move/Size tool



Choose the **Move/Size tool** to move or resize one or more selected objects at a time, while maintaining a fixed distance from the camera.

**Hint:** You can also press **Ctrl+1** to choose the tool.

When resizing with the Move/Size tool, the object responds in all three dimensions. To adjust an object's size along one dimension at a time, use the [Stretch tool](#). Watch the HintLine for a readout of object position and size.

### To move one or more objects:

- 1 Click on an object with the Move/Size tool to select it. To select multiple objects, **Shift**-click on them in turn or drag out a marquee around the group.
- 2 Drag the selected object(s) to a new position.

### To resize one or more objects:

- 1 Click on an object to select it. To select multiple objects, **Shift**-click or drag out a marquee around the group.
- 2 Drag one of the red dots at the corner of the selection to resize the object(s). Dragging outward makes the object(s) larger; dragging inward makes them smaller.

### To undo a move or resize operation:

- n During the drag, press the **Esc** key before releasing the mouse button.

OR



- n Just after the drag, click the **Undo** button or choose **Undo** from the Edit menu.

**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.

## Tools toolbar: Rotate tool



Choose the **Rotate tool** to revolve a single object around any one of the scene axes.

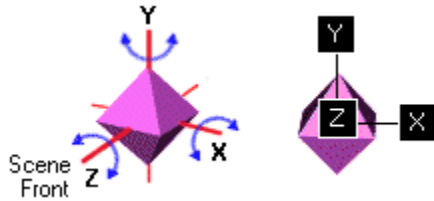
**Hint:** You can also press **Ctrl+2** to choose the tool.

Watch the HintLine for a readout of the object's angle.

### To rotate an object:

- Click on the object to select it. An XYZ plot (with intersecting, labeled lines) appears, representing the three axes or dimensions of the scene.

Remember that the X axis corresponds to width, the Y axis to height, and the Z axis to depth.




- To rotate the object around a particular axis with the Rotate tool, click on the axis label and drag. You'll see the object respond instantly, and the axis plot resets itself after each drag. You'll find that objects respond predictably to either up-and-down or side-to-side movements.
- To rotate the object freely, drag without first clicking on an axis label. Circular cursor motions let you "steer" an object into precise alignment, with a little practice.

### To restore the object's previous position:

- During the drag, press the **Esc** key before releasing the mouse button.

OR

- Just after the drag, click the  **Undo** button or choose **Undo** from the Edit menu.

**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.



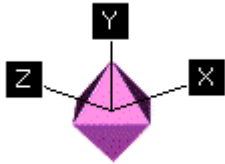
## Tools toolbar: Stretch tool



Choose the **Stretch tool** to adjust a single object's size along one dimension at a time—for example, to make it thicker or thinner without changing its height or width.

**Hint:** You can also press **Ctrl+3** to choose the tool. Watch the HintLine for a readout of object size.

### To change an object's size along one dimension at a time:



**1** Click on the object to select it. An XYZ plot (with intersecting, labeled lines) appears, representing the object's axes.

**Note:** Remember that the X axis represents the object's width, the Y axis its height, and the Z axis its depth.


**2** To resize the object along a particular axis using the Stretch tool, click on the axis label and drag. You'll see the object respond instantly. By convention, dragging down or to the left shrinks the object, while dragging up or right enlarges it.

**Note:** To resize an object proportionally—in all three dimensions—use the [Move/Size tool](#).

### To restore the object's previous size:

**n** During the drag, press the **Esc** key before releasing the mouse button.

OR

**n** Just after the drag, click the  **Undo** button or choose **Undo** from the Edit menu.

**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.

## Tools toolbar: Distance tool



Choose the **Distance tool** to adjust the distance of one or more objects from the camera viewpoint (along the Z axis). The objects grow larger or smaller.

**Hint:** You can also press **Ctrl+4** to choose the tool. Watch the HintLine for a readout of object position.

Each 3DPlus object appears to sit at a particular distance along an imaginary line from the camera viewpoint into the scene. When there's more than one object in the scene, where the objects intersect depends on their relative distances from the camera.

Use the Distance tool to bring objects toward the front of the scene or move them towards the back. Use the separate [Camera Distance](#) tool to adjust the distance from the camera to all the objects in the scene (as a group).


### To adjust the distance of one or more objects:

- 1 Click on the object to select it. To select multiple objects, **Shift**-click or drag out a marquee around the group.
- 2 To move the selected object(s) closer using the Distance tool, drag down or right on the selection. To move the object(s) further away, drag up or left.

### To restore the object's previous position:

- n During the drag, press the **Esc** key before releasing the mouse button.

OR

- n Just after the drag, click the  **Undo** button or choose **Undo** from the Edit menu.

**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.

## Tools toolbar: Zoom tool



Use the **Zoom tool** to change the size of the scene window relative to the main 3DPlus window.

- n To zoom in, choose the tool and left-click in the scene window.
- n Right-click to zoom out.

Zooming in or out lets you scale the scene to a comfortable working size without affecting the actual dimensions of the scene (as set in File/Scene Setup...). If the scene window extends beyond the main window, scrollbars appear. Watch the HintLine for a readout of current zoom.

### To restore the scene window to its actual size:

- n Hold down the **Ctrl** key and click with the Zoom tool.

OR



- n Click the **Normal View (1:1)** button on the Standard toolbar.

OR

- n Choose **Zoom** from the View menu and select **Normal View (1:1)** from the submenu.

### To adjust the scene window's size to fit within the main window area:



- n Click the **Zoom to Fit** button on the Standard toolbar.

OR

- n Choose **Zoom** from the View menu and select **Zoom to Fit** from the submenu.

**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.

## Tools toolbar: Insert Text tool



Use the **Insert Text tool** to create new 3D text objects in the scene.

### To create a new 3D text object:

- 1 Choose the Text tool and the 3DPlus Text window appears.
- 2 Type the text and set its font and style, then click **OK**. The new text appears in the scene.

**Note:** You can also create a new text object in the scene by pasting text from the Windows Clipboard.

### To edit an existing text object:

- Double-click on the object with any tool to open the 3DPlus Text window.

OR

- Use the controls on the Text toolbar.

For details on editing text, see the How To topic [Editing existing text](#).


**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.

## Tools toolbar: Insert QuickShape tool



Use the **QuickShape tool** to add a variety of adjustable 3D shapes to your scene. You can adjust the bevel (edge contours) of a QuickShape or apply colors independently to its front, back, and sides.

### To add a QuickShape to the scene:

- 1 Click the down arrow button to display a flyout menu of adjustable shapes.
- 2 Choose a shape from the flyout.
- 3 Drag out a shape in the scene window. To constrain the object's dimensions (for example, to draw a square or circle), hold down the **Ctrl** key while dragging.
- 4 Adjust the handles to fine-tune the object's properties.
- 5 When you're satisfied with the adjustments, click the  button to convert the shape to a 3D object, or

 to remove it.

The larger QuickShape button on the toolbar shows the most recently used shape. To draw another similar object, just click the large button.

### To apply front, back, and/or side colors independently:

- 1 Select the QuickShape.
- 2 Display the Studio's [Materials tab](#) and right-click a color swatch.
- 3 Choose **Apply to Front**, **Apply to Back**, or **Apply to Sides**. (Choosing **Apply to All** changes all the colors at the same time, just as if you had left-clicked the swatch.)

### To adjust the QuickShape's bevel (edge contours):

- 1 Select the QuickShape.
- 2 Display the Studio's [Gallery tab](#), choose the **Bevels** category, and apply a preset bevel.  
OR  
Use the [Bevels tab](#) to customize the current bevel setting.

**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.

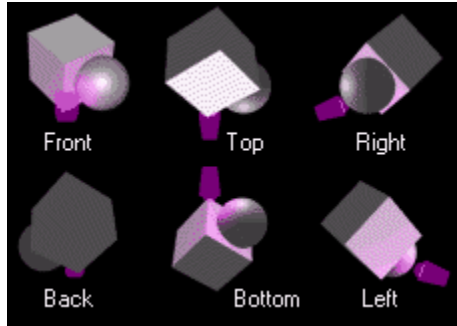
## Tools toolbar: Camera Position tool



Use the **Camera Position** tool to change your viewpoint on the scene. You can select from six preset camera positions and/or use the tool to move the camera freely to any viewpoint.

Watch the HintLine for a readout of the current camera position.

The camera normally points toward the center of the scene. (You can use the separate Camera Angle tool, covered in the next topic, to point it in other directions.) Changing camera position lets you check and fine-tune light positions, achieve animated "flyarounds" using a series of intermediate views, or simply get a new perspective on the scene objects. Here's what a simple scene looks like from each camera position (the purple object is a sample spotlight, by the way):



### To select a preset camera position:

- 1 Click the small down-arrow button to display a flyout menu of preset camera positions.
  - 2 Choose a viewpoint from the flyout. Check the HintLine readout to see the current camera position as a pair of numbers.
- Here are the various choices, with their corresponding HintLine values:



**Front**  
(0° 0°)



**Back**  
(180° 0°)



**Top**  
(0° 90°)



**Bottom**  
(0° -90°)



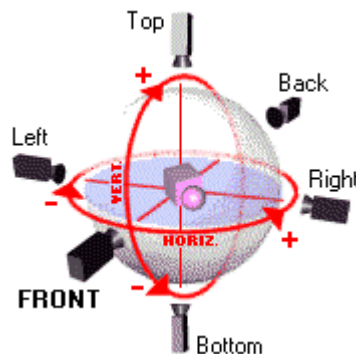
**Right**  
(90° 0°)



**Left**  
(-90° 0°)


The values represent the camera's deviation (in degrees) from its Front position, as measured in relation to horizontal and vertical paths, respectively.

For example, if the camera moves to the right from its Front position, the horizontal (first) value increases. If it moves upward from the starting position, the vertical (second) value increases, and so on.



**Free orbit** camera movement provides great flexibility—with up, down, and diagonal drags of the mouse you can maneuver the camera into just about any position. For example, if you move it horizontally around to the back, your view of the scene remains "right side up" as in the Back preset (180°, 0°). If you move vertically to the same position, however, your view will be "upside down" (0°, 180°). You'll find that the camera position values tell you not only where the camera is located, but how it got there!

### To move the camera freely:

- 1 Choose the **Camera Position** tool and drag in the scene window.
- 2 The button icon changes to the Free Orbit  icon to show you've selected an intermediate viewpoint.
- 3 To restore the previous free-orbit camera position setting (for example, after clicking one of the presets), click the Free Orbit button on the flyout.

**Note:** If you've used the Camera Angle tool (see the next topic) to adjust the direction in which the camera points, you can still move the camera freely while maintaining the custom camera angle. Click the Camera Position button (which now displays the Free Orbit icon), then hold down the **Shift** key while dragging in the scene window. If you release the **Shift** key, the camera angle will reset to point at the scene center. Use Undo if necessary to restore the previous setting.

### To view and/or print the scene from multiple camera positions:

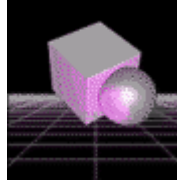
1 Choose **3D Print Preview** from the File menu.

3DPlus builds views of the scene from each of the six preset positions, plus the current view, and displays them in a single window.

2 To print the multiple view, click the window's **Print** button.

### Initial camera position

Each time you open a new blank scene, the camera is positioned at (0° 5°)—5 degrees above the Front position—thus giving a perspective view of the **Floor** plane that depicts the zero-vertical level. Note that this is a free-orbit position. If you switch to the Front, Back, Left, or Right camera positions, the Floor plane appears as a straight horizontal line.



The **Planes toolbar** lets you hide, show, and vary the properties of six different planes, which serve as visualization aids and/or part of the rendered scene. For details, see the Visual Reference topic [Planes toolbar](#).

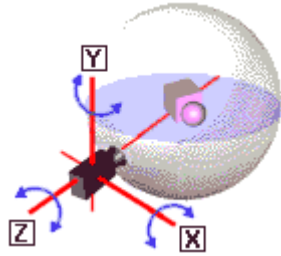
**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.

## Tools toolbar: Camera Angle tool



Choose the **Camera Angle** tool to tilt the camera with respect to any of the scene axes. Accordingly, all the objects in the scene shift position in the scene window.

### To change the camera angle:




- 1 Choose the Camera Angle tool. An XYZ plot with intersecting, labeled lines appears onscreen, representing the three axes or dimensions of the scene.


You can imagine the X, Y, and Z axes running through the camera, as shown in the illustration. The camera can tilt or swivel around any of the three axes.

- 2 To tilt the camera around a particular axis with the Camera Angle tool, click on the corresponding axis label and drag. Watch the HintLine for a readout of the current camera angle.

**Note:** When the camera tilts, the objects in front of it appear to change position, but the onscreen XYZ plot stays the same. Remember that it's actually the camera that's moving, not the objects. In other words, the scene's X, Y, and Z axes remain exactly as shown in the illustration above, while the camera can move to any position or angle.

As soon as you adjust the camera angle, the Camera Position button's icon changes to the Free Orbit  icon to show you've selected an intermediate viewpoint. If you select the Camera Position button at this point, and then hold down the **Shift** key while dragging, you can move the camera freely while preserving the custom camera angle. (For details on the Camera Position tool, see the previous topic.)

### To preserve a custom camera angle while moving the camera freely:

- 1 Click the Camera Position button on the Tools toolbar while it's displaying the  **Free Orbit** icon.

**Note:** Be sure to click the Free Orbit button on the toolbar, not on the flyout—the flyout button will reset the camera to its last free orbit position!

- 2 Hold down the **Shift** key while dragging in the scene. **Tip:** Keep the **Shift** key down until after you've released the mouse button. If you release the **Shift** key first, the camera angle resets to point at the scene center.

**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.



## Tools toolbar: Camera Distance tool



Choose the **Camera Distance tool** to adjust the distance of all the objects in the scene from the camera position. The entire group of objects grows larger or smaller.

Watch the HintLine for a readout of camera distance.

You can use the Camera Distance tool to remove unused space—or create extra space—around the edges of the scene. The tool is useful for achieving animated "zooms" using a series of intermediate views. Use the separate [Distance tool](#) to move one or more selected objects toward the front or back of the scene.

### To increase camera distance (move scene objects farther away):

- n With the Camera Distance tool, drag up or right anywhere in the scene.

### To decrease camera distance (move scene objects closer):

- n With the Camera Distance tool, drag down or left anywhere in the scene.

### To restore the objects' previous positions:

- n During the drag, press the **Esc** key before releasing the mouse button.

OR

- n Just after the drag, click the **Undo** button or choose **Undo** from the Edit menu.

**Note:** To show and hide the Tools toolbar, choose **Toolbars** from the View menu and check or uncheck **Tools** on the flyout submenu. You can also "float" the toolbar by dragging it from its default position, and then resize it by dragging from an edge.

## Animation toolbar

The **Animation toolbar** consists of a basic **Control Panel** for playing back animations and (when expanded) an **Edit Panel** which lets you edit existing animations or create new ones. Each panel is covered separately below. You can drag the toolbar outside the main window to increase the available workspace.

For details on working with animated scenes, see the How To topics [Controlling animation playback](#), [Creating animations](#), and [Editing animations](#).

### To hide or show the Animation toolbar:

- n Choose **Toolbars** from the View menu and check (or uncheck) **Animation** on the submenu.

The Studio's **Gallery tab** provides a selection of preset animations that you can apply to text or any other object. Since each animation effect has its own independent timeline, you can apply more than one to a given object.

### To apply a preset animation:

- 1 Click the **Gallery** tab.
- 2 Choose the **Animations** category and scroll up or down to preview the available effects as animated thumbnails.
- 3 Click an animation to apply it to the selected object, or drag and drop an animation onto any suitable object.

To edit the animation effect applied to a particular object, use the [Animation toolbar](#).

## Control Panel



### Play

Click to play the sequence using the current playback mode (see below). If the sequence is paused, it resumes from the pause point; if stopped, it plays from the beginning.



### Stop

Click to stop playback.



### Pause/Resume

Click to pause playback. Click again to resume.

Use these three buttons to set the playback mode:



### Single Run

Click to play the sequence once, stopping on the last frame.



### Ping Pong

Click to play the sequence indefinitely: first forward, then backward.



### Loop

Click to play the sequence indefinitely, repeating from the first frame each time.

## Edit Panel



### More/Less

Click to expand/collapse the toolbar and reveal/conceal the Edit Panel.



### Speed

Shows the playback rate in frames per second. To change the rate, type a new value and press **Enter**.



### Total Frames

Shows the number of frames in the sequence. To change the number of frames, first set an **interpolation** option (see below), then type a new value and press **Enter**. Frames are added to (or subtracted from) the end of the sequence.



### Interpolate Key Frames

Before adding or subtracting frames, decide what you want to happen to existing key frames, if any.

- Check the **Interpolate Key Frames** box to preserve the current "spread" of key frames between the first and last frames.
- Uncheck the box to leave existing key frames exactly where they are. For example, you may wish to add new frames so you can add more motion to a sequence. Note that if you choose this option when subtracting frames, key frames at the end of your sequence may be deleted.



### Current Frame

Shows the number of the current frame (anywhere from 1 to the value shown in the **Total Frames** box).

- To view a different frame, click the up/down arrows or drag the slider at right.
- To view a specific frame, type it into the box and press **Enter**.

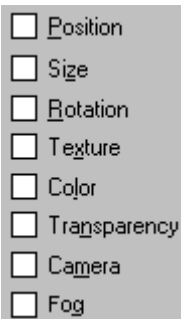
**Hint:** You can drag the slider back and forth to preview the animation "by hand", instead of using the Play button.

Use the controls in the lower group to define **key frames** for any of seven properties of the selected object(s). 3DPlus notes which properties you've included, uses the key frames you've defined, and automatically creates "in-between" frames to generate a continuous animation.

- n As a simple example, consider a 20-frame animation with just one object and one included property (Rotation). We'd select the object and check the "Rotation" property on the Edit Panel. Then we'd define key frames along the Rotation slider—for example frames 1, 8, 15, and 20. In frame 8 we rotate the object a third of the way round (120°); in frame 15 we set it to 240°; and in frame 20 it's rotated nearly to the starting position. 3DPlus "in-betweens" the rotation movement... and the result on playback? The object turns smoothly through 360 degrees. For a step-by-step mini-tutorial using this example, see the topic [Creating animations](#) or the 3DPlus Companion.

### Object Properties

Select an object and check one or more properties you want to include in the animation, then define key frames for each property. Manipulate the object or scene using these 3DPlus controls:



#### To vary...

Position  
Size  
Rotation  
Texture  
Color  
Transparency  
Camera

#### Use the...


Move/Size tool  
Move/Size tool, Stretch tool  
Rotate tool  
Materials tab  
Materials tab  
Materials tab  
Camera Position tool,  
Camera Angle tool,  
Camera Distance tool



### Key Frame Sliders & Markers

Each object property has a slider similar to the **Current Frame** slider. In a static scene with no key frames defined, all sliders are blank, with no markers.

#### To define a key frame:

- 1 Go to the frame, using the **Current Frame** controls.
- 2 Click the  button for each property you want to include in this key frame. A marker appear on the property's slider at the current frame position.



#### To go to a defined key frame:

- n Click on the key frame marker.

#### To move a key frame:

- n Drag the key frame marker, noting the frame position in the Current Frame box.

#### To delete a key frame:

- n Select it and click the  button. To delete all the key frames on a slider, hold down the **Ctrl** key and click the  button.

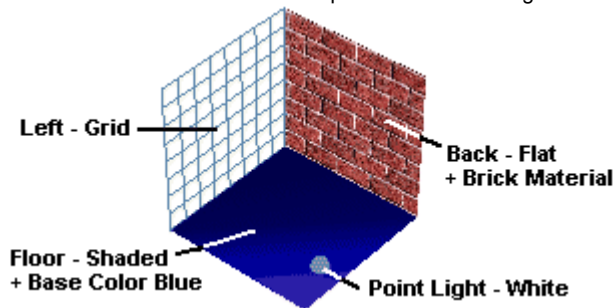
**Hint:** Once you've checked a property box, you can set key frames simply by going to a new frame and changing an object using the associated tool (see list above). 3DPlus automatically adds a marker to that property's slider.

## Planes toolbar

The **Planes toolbar** lists six **planes** that you can use as visualization aids and/or as part of the rendered scene. You can drag the toolbar outside the main window to increase the available workspace.

By default, each new scene you open has a visible **Floor** plane slicing through the scene center. The Floor plane plus the **Ceiling**, **Front**, **Back**, **Left**, and **Right** planes define a virtual "room" nested within the scene. Using the Studio, you can make objects cast shadows onto planes and apply textures like brick or water to any plane. You use the Planes toolbar to switch individual planes on or off as needed and define each plane's visual properties.

The illustration below shows three planes demonstrating several different modes and effects:




- The Left plane here uses the default Grid setting.
- The Back is set to Flat (unshaded) mode and has had a brick material applied from the Gallery.
- The Floor has been given a blue base color and uses the Shaded mode—notice how the white point light source subtly brightens the foreground.

### To hide or show the Planes toolbar:

- Choose **Toolbars** from the View menu and check (or uncheck) **Planes** on the submenu.

### To hide or show a specific plane:

- Click its  **Hide/Show** button on the Planes toolbar.  
Planes that are visible when you save or export will appear in the output scene.

Each plane can be set to any **base color** (blue by default), and can take one of three **visual modes** that determine how it appears and reflects light in the scene. You can set the dimensions of planes and grids, and apply materials to Flat or Shaded planes.

### To set a plane's base color:

- 1 Select the plane with the Move/Size tool, or by clicking its name on the toolbar.
- 2 On the Studio's [Materials tab](#), click a color swatch.

The plane takes on the color you selected. The base color also appears to the right of the plane's name on the toolbar.

**Note:** The plane's apparent color may vary depending on its visual mode (see below).

### To set a plane's visual mode:



Click the plane's **Grid** button to display it as a lattice, comparable to the Wireframe draw style used for objects. The plane's color is always its base color, and isn't affected by scene lighting. You can set the grid size (see below).



Click the plane's **Flat** button to display it as solid and non-reflective. The plane's color is always its base color, and isn't affected by scene lighting.



Click the plane's **Shaded** button to display it as solid and reflective. In this mode, the plane's apparent color is a product of both its base color and the scene lighting. For example, if all lights are off, you won't be able to see the plane. A gray base color under a bright blue light would appear dark blue, and so on. This is the way regular scene objects behave, and is technically known as Gouraud shading. For details on how base color interacts with scene lighting, see the Visual Reference topic on the [Materials tab](#).

### To change the plane and grid dimensions:

- 1 Choose **Preferences** from the File menu.
- 2 Under Plane Properties, adjust the **Extent** and/or **Grid Size** settings.  
The Extent setting determines the size of all scene planes. Grid Size determines the size of the mesh squares in Grid mode.


#### To apply a material to a plane:

- 1 Select the plane with the Move/Size tool, or by clicking its name on the toolbar.
- 2 Click the **Gallery** tab.
- 3 Choose the **Materials** category and a subcategory (Marble, Patterns, etc.), then scroll up or down to preview the available materials.
- 4 Click a material to apply it to the selected object(s), or drag and drop a material onto any object.

Experiment with material presets to obtain the right effect. To edit the components of a material, choose the [Materials tab](#).

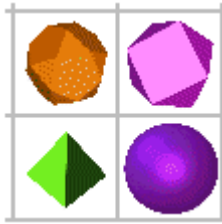
You can set individual lights so that objects they illuminate cast **shadows** onto Flat or Shaded plane surfaces (the shadows don't appear on Grid planes).

#### To make a light cast shadows:

- n On the Studio's [Lights tab](#), click the light's  **Shadows On/Off** button.

The Studio's [Gallery tab](#) provides preset **materials** that you can apply to any plane, for example to create instant brick walls or a seascape—or both! The [Materials tab](#) lets you edit material properties to achieve unique effects. For details, see the topics on each tab.

## Studio: Models tab



The Studio's **Models tab** provides a wide variety of 3D shapes, grouped into categories, that you can drag into your scene. It's a convenient starting point when you're creating a scene from scratch, or for customizing an existing scene.

For variety and fun, try combining 3D objects with different backgrounds, shapes, and text.

By default, some models are stored on the 3DPlus CD-ROMs to conserve hard disk space. (You'll be prompted if you need to insert the CD.)

### To add a 3D model to the scene:

- 1 Click the **Models** tab.
- 2 Choose a category.

Initially, you'll see the Basic Shapes category, with an assortment of geometric 3D shapes including cube, sphere, polyhedra, and more.

- 3 Drag any model into the scene window, and drop it into position. The new object appears at a default size.
- 4 Use specific tools to adjust the object's position, size, rotation, material properties, etc.

You can create your own models from scratch using the 3D Workshop, transfer them into the scene, and then store them for future use on the Studio's Models tab.

### To store a 3D Workshop object on the Models tab:

- 1 Right-click the object and choose **Save Model...**
- 2 Provide a name and click **OK**.

A thumbnail with a **T** symbol appears in the My Models category of the Models tab.

Many shapes from the Models tab (those with the **T** symbol in their thumbnail) are also editable in the Workshop. For details, see the How To topic [Creating an object from scratch](#).

### To edit a model in the 3D Workshop:

- 1 Drag it into the scene from the Models tab.
- 2 Double-click the object. If it's editable, double-clicking will launch the 3D Workshop.

Of course, you can use the same technique to continue editing any shape you've created in the Workshop and saved on the Models tab.

**Note:** To show and hide the Studio, choose **Toolbars** from the View menu and check or uncheck **Studio** on the submenu.

## Studio: Backgrounds tab



Each scene can have either a solid color or an image as a **background**. The Studio's **Backgrounds tab** lets you apply a specific color or image background to the scene, and store your own custom backgrounds.

Initially, each new blank scene begins with a solid black background.

### To change the scene background:

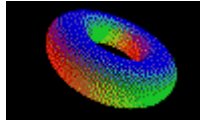
**1** Click the **Backgrounds** tab.

- 2**
- To set a solid color background, choose the **Colors** category and click a color swatch.
  - To add a diffuse, translucent background, choose the **Fog** category and click a color swatch. Set the extent of the "foggy" region by dragging the **Near Edge** and **Far Edge** sliders.
  - To set an image background, choose the **Images** category and a subcategory, then click a background to apply it to the scene.

### Notes

- <sup>n</sup> Image backgrounds are square bitmaps that stretch to fill the scene window. To avoid distortion, set your scene window to square dimensions (equal width and height values), using **File/Scene Setup...**
- <sup>n</sup> Custom backgrounds you've defined appear in the My Backgrounds category. To learn about adding your own backgrounds, see the How To topic [Defining custom backgrounds and effects](#).
- <sup>n</sup> To remove an image background from the scene, choose a solid color background instead.
- <sup>n</sup> You can animate Fog backgrounds using key frames to simulate objects emerging from or receding into a mist. For details, see the topic [Creating animations](#).
- <sup>n</sup> To show and hide the Studio, choose **Toolbars** from the View menu and check or uncheck **Studio** on the submenu.

## Studio: Gallery tab



The Studio's **Gallery tab** provides a selection of preset [animations](#), [bevels](#), [lighting schemes](#), and [materials](#), as well as a place to store your own custom effects.

Click the links above to jump to any subtopic.

You can save many custom effects in the My Gallery category. For details, see the How To topic [Defining custom backgrounds and effects](#).



### Animations

**Animation** presets store time-based sequences that vary one or more of an object's properties. You can apply the presets to text or any other object. For example, you can apply a Spin preset (Y Axis Rotation) to a model of the Earth to make it revolve continuously. Since each animation effect has its own independent timeline, you can apply more than one to a given object.

**Note:** Because individual characters as well as whole words are objects in 3DPlus, animation effects applied to text may vary character properties, word properties, or both. For details, see [Editing existing text](#).

Using the [Animation toolbar](#), you can customize animation presets and create your own—for details, see [Creating animations](#) and [Editing animations](#).

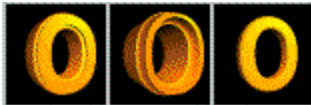
#### To apply an animation preset:

- 1 Click the **Gallery** tab.
  - 2 Choose the **Animations** category, select a subcategory, and preview the available effects as animated thumbnails.
  - 3 Click an animation to apply it to the selected object, or drag and drop an animation onto any suitable object.
- To see the effect of an applied animation preset, show the Animation toolbar (**View/Toolbars>Animation**) and click the **Play** button. For more on animation, see the topics [Creating animations](#), and [Editing animations](#).

#### To store a custom animation in the Gallery:

- 1 Right-click the object and choose **Save Animation...**
- 2 In the dialog, enter a name for the effect (try to think of a helpful descriptor) and click **OK**.

A thumbnail appears for the effect in the Animations subcategory of the My Gallery category of the Gallery tab.



### Bevels

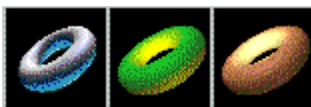
**Bevel** presets customize the edge contours of [text](#), [QuickShapes](#), and imported [metafiles](#).

#### To apply a bevel preset:

- 1 Click the **Gallery** tab.
  - 2 Choose the **Bevels** category and scroll up or down to preview the available effects.
  - 3 Click a bevel to apply it to the selected object, or drag and drop a bevel onto any suitable object.
- To edit the bevel effect applied to a particular object, choose the [Bevels tab](#).

#### To store a custom bevel in the Gallery:

- 1 Right-click the object and choose **Save Bevel**.
  - 2 In the dialog, enter a name for the effect (try to think of a helpful descriptor) and click **OK**.
- A thumbnail appears for the effect in the Bevels subcategory of the My Gallery category of the Gallery tab.



### Lights

**Light** presets are schemes that combine various light types, positions, and settings. Schemes are applied to the whole scene, but not to the background. Each new blank scene initially uses the "Basic White Light" scheme. Light sources in all presets point



forward by default. Some of the presets are animated, with one or more lights changing position or color over a series of frames.

**To apply a lighting scheme preset:**

- 1 Click the **Gallery** tab.
  - 2 Choose the **Lights** category and scroll up or down to preview the available schemes.
  - 3 Click any scheme to apply it to the scene.
- Keep clicking preset schemes until you find one you like. To see how each scheme translates into specific lights and settings, or edit the scheme, choose the [Lights tab](#).
- To see the effect of an animated lighting scheme you've applied, show the [Animation toolbar](#) (**View/Toolbars>Animation**) and click the **Play** button. For more on animations, see the topics [Creating animations](#), and [Editing animations](#).

**To store a custom lighting scheme in the Gallery:**

- 1 Right-click an empty part of the scene window and choose **Save Lights**.
  - 2 In the dialog, enter a name for the effect (try to think of a helpful descriptor) and click **OK**.
- A thumbnail appears for the effect in the Lights subcategory of the My Gallery category of the Gallery tab.



**Materials**

A **material** consists of a texture (a repeating bitmap pattern) plus settings for transparency, shininess, and base color. Materials are applied to individual objects in the scene, not to the scene as a whole. Objects in the "Basic Shapes" category of the Studio's Models tab initially have no texture, transparency, or shine, and a pure white base color. Models in other Studio categories generally have complex material definitions.

The Gallery's Animations category (see above) also includes a number of animated textures you can apply.

**To apply a material preset:**

- 1 Click the **Gallery** tab.
  - 2 Choose the **Materials** category and a subcategory (Marble, Patterns, etc.), then scroll up or down to preview the available materials.
  - 3 Click a material to apply it to the selected object(s), or drag and drop a material onto any object.
- Experiment with material presets to obtain the right effect. To edit the components of a material, choose the [Materials tab](#).

Objects with bevel properties—like text, QuickShapes, or imported metafiles—have front, back, and side material definitions. To define the materials independently, select the object, then right-click a swatch and choose **Apply to Front**, **Apply to Back**, or **Apply to Sides**. Choosing **Apply to All** changes all the regions at the same time, just as if you had left-clicked the swatch.

**To store a custom effect in the Gallery:**

- 1 Right-click the object and choose **Save Material**.
  - 2 In the dialog, enter a name for the effect (try to think of a helpful descriptor) and click **OK**.
- A thumbnail appears for the effect in the Materials subcategory of the My Gallery category of the Gallery tab.

**Note:** To show and hide the Studio, choose **Toolbars** from the View menu and check or uncheck **Studio** on the submenu.



## Studio: Lights tab

Each scene has a lighting scheme that consists of at least a base Camera Light and Floodlight setting, plus additional (optional) lights and settings. The Studio's [Gallery tab](#) provides lighting presets that let you instantly change the scheme. Some of the presets are animated, with one or more lights changing position or color over a series of frames. Displaying the Studio's **Lights tab** reveals the lights as objects in the scene. You can then add or delete lights, switch them on or off, move or rotate them like other scene objects, and adjust their properties to achieve more satisfactory lighting.

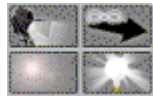
For an illustrated overview of the various 3DPlus lights, see the subtopic on [light sources](#) below. To learn about saving custom lighting schemes, see the topic [Defining custom backgrounds and effects](#). For details on editing animated lighting schemes, see the topics [Creating animations](#), and [Editing animations](#).

The **Lights panel** lets you add lights to the scene and select them for editing.



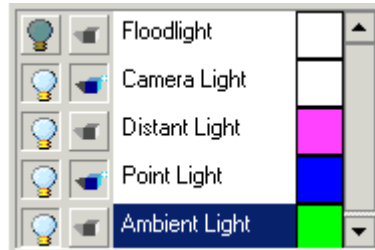
### View Gallery

Click to display the Lights category of the [Gallery tab](#), which lets you apply preset lighting schemes.



### Insert Light buttons

Click any of the four **Insert** buttons to add a new light to the scene. The various lights are detailed in the [Light Sources](#) section below.



### Lights list

Displays a list of the lights defined for the current scene. **Note:** Lights can be in the list but turned off, in which case they don't contribute to the lighting scheme.

- To select a light for editing, click its name in the list or click its object in the scene.
- Use the [Move/Size](#), [Rotate](#), and [Distance](#) tools to alter the position of the light object in the scene.
- Use the **Info panel** to adjust properties of individual lights.

- To turn an individual light on or off, click its **Light On/Off** button (white when the light is on, dark when it's off).

- To make a light cast shadows, click its **Shadows On/Off** button. When shadowing is switched on, each object the light illuminates will cast a shadow on plane(s) behind the object. Not all light sources cast shadows. (For details on scene planes, see the topic on the [Planes toolbar](#).)

The **Info panel** lets you set properties of individual lights.



### Intensity

Use the slider to vary the brightness of the selected light source.



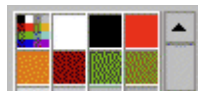
### Hotspot

Use the slider to vary the width of the cone-shaped central beam of a Spotlight.



### Falloff

Use the slider to set the total width of a Spotlight.



### Light color

The selected swatch indicates the color of the selected light source. To change the color, click a different swatch. To add a custom color, right-click any swatch and choose **Add Color...**

## Light sources

The **Camera Light** is included (on by default) in every new scene. There's only one Camera Light, placed at the camera's location and illuminating everything in front of the camera, from any position. Note that while the Camera Light is on, the scene lighting will change somewhat each time you move the camera. For this reason, consider switching the Camera Light off if you're employing other lights in the scene. You can use the Info panel to change its intensity or color. However, because it's always

exactly at your viewpoint (i.e. where the camera is), it can't cast visible shadows. And because its position and angle can't be changed, it doesn't appear as a separate object in the scene.

The **Floodlight** is a forward-pointing base light that's included (but off by default) in every new scene. There's only one Floodlight—to use it, turn it on and then adjust its intensity or color with the Info panel. Like the Camera Light, this is a virtual light whose position and angle can't be changed, so it doesn't appear as a scene object. However, the Floodlight can cast a shadow.



A **Spotlight** points in only one direction. You can turn the light off, vary its intensity, cast shadows, and use the Move/Size, Rotate, or Distance tools to adjust a spotlight object's position and direction in the scene. The spotlight beam radiates out from its source in a cone shape. In cross-section (shining on a flat surface, for example), the beam has a central circle of constant brightness and a surrounding region of diminishing brightness. You can adjust these beam regions using the Info panel:

- Use the **Hotspot** slider to vary the width of the cone-shaped central beam.
- Use the **Falloff** slider to set the total width of the light.

Obviously, the hotspot setting can't be wider than the falloff setting. The smaller the hotspot relative to the falloff point, the more diffuse the light's beam.



A **Distant Light**, like a spotlight, points in one direction. You can turn the light off, vary its intensity, cast shadows, and use the Rotate tool to adjust its direction. Unlike a spotlight, a distant light doesn't fade with distance and is not considered to have a starting or ending point, or a position. You can think of it as an infinite plane of light, unlike the spotlight's cone.

**Note:** You can also use the Move/Size tool to drag a distant light's object so it doesn't get in the way of the rest of the scene. But because this light source has no position as such, moving its object around won't actually affect the scene lighting.



An **Ambient Light** casts a uniform light across the whole scene. You can turn it off or vary its intensity, but because it has no position or direction it doesn't appear as an object in the scene, nor can it cast shadows. It's useful for overall lighting.



A **Point Light** works like a standard light bulb, radiating light outward in all directions. You can turn it off, vary its intensity, cast shadows, and use the Move/Size or Distance tools to adjust its position in the scene.

**Note:** To show and hide the Studio, choose **Toolbars** from the View menu and check or uncheck **Studio** on the submenu.

## Studio: Materials tab



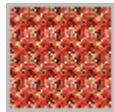
Every 3DPlus object has a **material**—a combination of surface properties like color, texture, transparency, and shininess. The Studio's [Gallery tab](#) provides preset materials that you can apply to any object or plane. The **Materials tab** lets you edit material properties to achieve unique effects.

**Color** is always part of the material definition, while **texture** (bitmap pattern) is optional—it can be switched off so the object's surface shows only continuous color. Material settings are saved for each object when the scene itself is saved. You can also store a specific object's changed settings in the Materials gallery for future use, or add your own custom colors to those in the Studio. (For details, see the topic [Defining custom backgrounds and effects](#)).



### View Gallery

Click to display the Materials category of the [Gallery tab](#), which lets you apply preset materials.



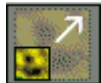
### Texture Preview

Shows one of the following: the selected object's texture; "Original Texture" if the object is a complex model with multiple textures; or "No Texture" if no texture has been applied.



### Move Texture

Click the button, then drag on the object to adjust the placement of the texture. **Note:** The Gallery's Animations category includes a number of animated texture presets that utilize texture movement.



### Scale Texture

Click the button, then drag on the object to adjust the relative size of the texture.



### Rotate Texture

Click the button, then drag on the object to adjust the orientation of the texture.



### Add Texture

Click to import a bitmap file and apply it as a texture to the selected object.



### Remove Texture

Click to remove the texture from the selected object.



### Transparency

Drag the slider to the right to increase the object's transparency, or left to decrease it.




### Shine

Drag the slider to the right to increase the object's shininess, or left to decrease it.



### Object base color

- Displays a selection of colors, with the standard Windows colors at the top. Scroll to see all the colors. The selected swatch indicates the base color of the selected object.
- Move the pointer over a color to see its unique RGB (red, green, blue) value as a tooltip.
  - To change the color, click a different swatch.
  - Click the  **Original Color** swatch to restore a model's starting base color(s).

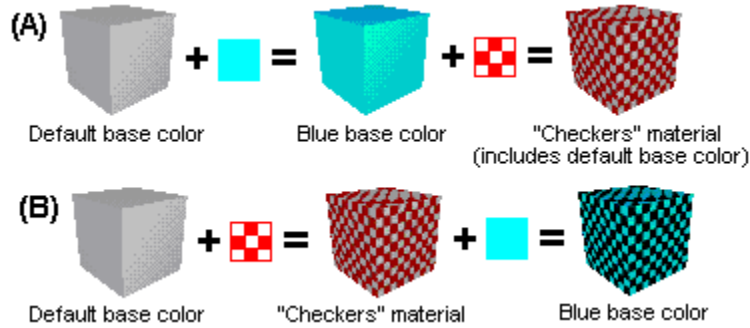
**Note:** If materials display incorrectly (or not at all) on your computer, try selecting the "Software" rather than the "Hardware" driver setting in **File/Preferences....**

## More on applying colors:

- The 3DPlus color table includes the standard Windows system colors (along the top two rows), with the remainder of colors distributed across the RGB spectrum. To achieve a particular effect, you may wish to mix your own custom colors and add them to the 3DPlus color table. To add a custom color, right-click any swatch and choose **Add Color**. Once you've added a custom color, you can edit it or delete it by right-clicking on its swatch.
- Objects with bevel properties—like text, QuickShapes, or imported metafiles—have front, back, and side color definitions. To define the colors independently, select the object, then right-click a swatch and choose **Apply to Front**, **Apply to Back**, or

**Apply to Sides.** Choosing **Apply to All** changes all the colors at the same time, just as if you had left-clicked the swatch.

- n Models from the Basic Shapes category of the Models tab initially use white as their default base color and have no texture. Models from other categories use much more complex material definitions. If you apply a new texture or color to these complex models using the Materials tab, the resulting object will lose its variations—for example, monochromatic coloration will result. If this isn't the effect you want, you can always click the "Original Color" swatch to restore the object's starting colors.
- n The order in which you apply material or base color makes a difference. Below, (A) shows how applying a "checkered" material (which happens to include the default white base color in its definition) replaces the cube's blue base color with the default. In (B), the material is applied first and THEN the base color is changed—producing a different color definition.



- n **Hint:** To lighten or darken a single object without changing its hues, apply a different shade of gray as the object's base color. As long as the R, G, and B values of the applied color are equal (check the tooltip), you'll only be changing the brightness.

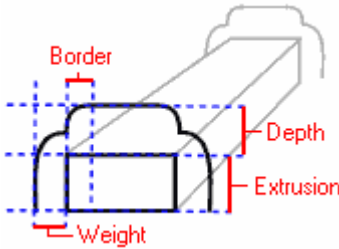
**Note:** To show and hide the Studio, choose **Toolbars** from the View menu and check or uncheck **Studio** on the submenu.

## Studio: Bevels tab

The Studio's **Bevels** tab let you customize the bevel region (edge contours) of [text](#), [QuickShapes](#), and imported [metafiles](#). Explore the Studio's [Gallery tab](#) for a large selection of preset bevels that you can apply to these objects.

The Bevels tab includes controls for each of the bevel region's properties.

In this illustration, the base object is a lower case L in the Arial font, seen from a bottom (end-on) view. The outer black line shows the bevel region's profile, consisting of upper and lower curves. Only the front face of the letter is shown here; in practice, the bevel is applied to both the front and back of the base object.



### Extrusion

Shows the thickness (on the Z axis) of the base object itself, not including its bevel region. To change the value, type a new number or click the up/down arrows.

**Note:** By contrast, adjustments with the [Stretch tool](#), affect the whole object, including its bevel region.



### Weight

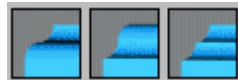
Shows the width of the lower curve of the object's bevel region, measured outward (on the X and Y axes) from the base object's edge. To change the value, type a new number or click the up/down arrows.

### Border

Shows the width of the upper curve of the object's bevel region, measured inward (on the X and Y axes) from the base object's edge. To change the value, type a new number or click the up/down arrows.

### Depth

Shows the extent (on the Z axis) of the bevel profile, measured outward (on the Z axis) from the base object's edge. To change the value, type a new number or click the up/down arrows.



### Bevel Type

Click a bevel button to select the basic type of bevel to apply to the selected object. Choices include: None, Round, Chiseled, Round Round, Round Chiseled, Chiseled Round, Chiseled Chiseled, Flat.

**Note:** In types with two-term names, the first term describes the bevel's upper curve and the second its lower curve. One-term types have a zero border—in effect, only one curve.

### To save a custom bevel setting:

- 1 Right-click the object and choose **Save Bevel...**
- 2 In the dialog, provide a name for the bevel and click **OK**. The bevel is stored for future use in the Gallery's My Gallery category.

Objects with bevel properties have separate front, back, and side color definitions. To define these colors independently, select the object, then right-click a swatch on the [Materials tab](#) and choose **Apply to Front**, **Apply to Back**, or **Apply to Sides**. (Choosing **Apply to All** changes all the colors at the same time, just as if you had left-clicked the swatch.)

**Note:** To show and hide the Studio, choose **Toolbars** from the View menu and check or uncheck **Studio** on the submenu.

## Using the 3DPlus Wizards

The first time you launch 3DPlus, you'll see the **Startup Wizard**, with a menu of choices. The first two, **Use 3D Design Wizard** and **Use 3D Text Wizard**, let you pick from dozens of exciting 3D objects, scenes, and animations. (You'll find hundreds more on the 3DPlus Resource CD-ROM!). Just follow each Wizard to choose and customize a static or animated 3D creation. It's a quick and easy way to preview what you can do with 3DPlus—and let 3DPlus do most of the work for you!

### To create a 3D scene using a Wizard:

- 1 Launch 3DPlus, or choose **New...** from the File menu. You'll see the **Startup Wizard** menu.
- 2 Select **Use 3D Design Wizard** or **Use 3D Text Wizard** and click **Next**. Choose a category and a preferred design.
- 3 Follow the Wizard steps, clicking **Next** to proceed. (Click **Previous** to retrace your steps if needed.)
- 4 When you're done, click **Finish** and let 3DPlus create an instant 3D scene for you!

The 3D scene appears in a new scene window. Now you're free to use the entire range of 3DPlus tools and resources to fine-tune your creation. Use the [Visual Reference](#) and the Help Contents list as your guide to the possibilities. If you're just getting started, you'll probably want to begin by reviewing [Basics of 3D objects and scenes](#).

**Note:** If you choose **File/New** and the Startup Wizard fails to appear, choose **Preferences...** from the File menu and make sure **Use Startup Wizard** is checked—then try again.

## Starting a new scene from scratch

The first time you launch 3DPlus, you'll see the **Startup Wizard**, with a menu of choices including **Start from Scratch**.

### To start a new scene from scratch using the Startup Wizard:

- 1 Launch 3DPlus, or choose **New...** from the File menu. You'll see the **Startup Wizard** menu.
- 2 Select the **Start from Scratch** option and click **Finish**.

The new scene opens with an empty scene window.

**Note:** If you click **Cancel** from the Startup Wizard, a new scene opens with an empty scene window.

### To start a new scene during your 3DPlus session:

- 1 Choose **New...** from the File menu.

OR



Click the **New** button on the Standard toolbar.

You'll be prompted to save changes to the current scene, if any.

- 2 If the Startup Wizard is turned on, choose **Start from Scratch**, then click **Finish**.
- 3 If the Startup Wizard is turned off, a new scene opens with an empty scene window.

If you turn off the Startup Wizard, you'll get a new scene from scratch each time you choose **File/New**.

### To turn off the Startup Wizard:

- 1 Choose **Preferences...** from the File menu and uncheck **Use Startup Wizard**.

**Note:** You'll have to turn the Startup Wizard back on to be able to access the Instant 3D Wizards.

The Scene Setup command lets you specify the scene's actual size—that is, its width and height—the size at which it will be exported.

### To set the actual scene size:

- 1 Choose **Scene Setup...** from the File menu.

OR

Right-click on an empty part of the scene window and choose **Scene Setup...**

- 2 Select a unit of measurement and enter the width and height. To record these values as the default dimensions for new scenes, check "Set as default document size".
- 3 Click **OK**.



## Opening a saved scene

If you want to work on a 3DPlus 3.0 (.3DD) or 2.0 scene you previously saved, you can do so either from the **Startup Wizard** when you launch 3DPlus 3.0, or from the File menu later in your session.


### To open a saved scene using the Startup Wizard:

- 1 Launch 3DPlus. If the Startup Wizard is turned on, you'll see the **Startup Wizard** menu. If not, use the File menu to open your scene, as explained below.
  - 2 Select the **Open a Saved Scene** option.
  - 3 In the Open dialog, select the folder and file name and click the **Open** button.
- The saved scene appears in the scene window.

### To open an existing scene during your 3DPlus session:

- 1 Choose **Open...** from the File menu.

OR

Click the  **Open** button on the Standard toolbar.

You'll be prompted to save changes to the current scene, if any.

- 2 In the Open dialog, select the folder and file name and click the **Open** button.
- The saved scene opens in the scene window.

**Note:** 3DPlus 3.0 can open files in the 3DPlus 2.0 (.3D2) file format, but does not support the 3DPlus 1.0 (.3DP) format.

## Saving a scene


### To save your work:

n To save the scene under its current name, choose **Save...** from the File menu.

OR

To save under a different name, or if the scene is still Untitled, choose **Save As...** from the File menu.

OR

Click the  **Save** button on the Standard toolbar.

Saving animations takes longer than saving static scenes, as 3DPlus must build an animated preview image you can view later when browsing files.

**Note:** Saving stores your scene as a 3DPlus 3.0 (.3DD) file. To save in a different format such as .GIF or .BMP, you'll need to export to that format. For details, see the topic on [Exporting](#).

## Closing 3DPlus

### To close 3DPlus:

- n Choose **Exit** from the File menu.

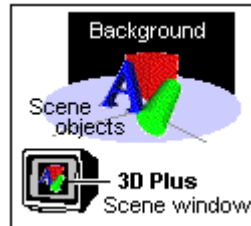
You'll be prompted to save changes made since the last save.

## Basics of 3D objects and scenes

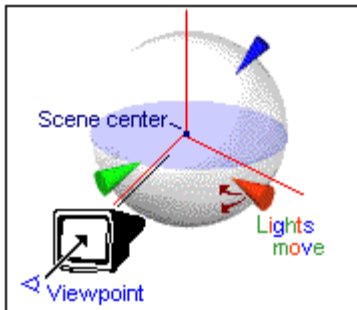
The best part of using 3DPlus is that you can create terrific effects without having to master all sorts of spatial concepts and computer jargon. If you can grasp height, width, and depth, you're halfway home! But learning any new program does involve a bit of trial and error. This topic and the next will provide some basic pointers to help minimize the "error" part. We'll begin with 3DPlus **scene window**—the workspace—which (if you've tried one of the Wizards) quickly fills up with 3D objects.

### Welcome to the scene...

Imagine you're behind a video camera, looking at a "set" with one or more **objects** positioned against a **background**. The 3DPlus scene window is what you'd see through the camera's viewfinder. As you'd expect, there are tools to let you rearrange the objects, substitute a different background image, or change the studio lighting for different effects. But that's not all. With 3DPlus, you can instantly change an object's colors and dimensions, rotate it in space, apply cool surface textures, create your own mini-universes of text and shapes... even make the object move!



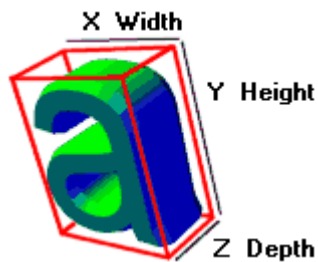
### It's a 3D world...



New objects appear at the **scene center**. From the camera's **viewpoint**, looking through the scene window, you see the objects in perspective. You can reposition objects to be nearer or farther away (their sizes will change accordingly), or move the camera itself with respect to the scene.

You can also place **lights** of various types around the scene, and vary their color and intensity for different effects.

Each three-dimensional object takes up space in three directions, known as the **X, Y, and Z axes**.



Think of the X axis as defining the object's **width** or left-to-right dimension, and the Y axis as defining its **height** or top-to-bottom dimension.

For example, the X and Y axes define the black character "a" in this text object.

The Z axis defines the object's **depth** or front-to-back dimension. It's this extra dimension that gives us "3D".

To learn about working with the 3DPlus scene window, click the Next (>>) button above to go on to the next topic.

## Using the 3DPlus interface

Armed with the basic concepts of 3D objects and scenes covered in the previous topic, you're ready to use 3DPlus to create and customize scenes of your own. This extended topic will provide an overview of the 3DPlus environment.

Click a subtopic to jump to that section:

- 1 [The scene and its window](#)
- 2 [The Tools toolbar](#)
- 3 [The Planes toolbar](#)
- 4 [The Studio and Animation toolbars](#)

### The scene and its window




The main 3DPlus window consists of a **frame** (with titlebar, menus, etc.) enclosing a **scene window**. You can adjust the size of the scene window by zooming in or out for a comfortable working view. The Scene Setup command lets you specify the actual scene size—that is, its width and height. Note that your screen resolution setting (800x600, for example) will affect the actual size of the scene when it's printed.

#### To set the actual scene size:

- 1 Choose **Scene Setup...** from the File menu.  
OR  
Right-click on an empty part of the scene window and choose **Scene Setup....**
- 2 Select a unit of measurement and enter the width and height. To record these values as the default dimensions for new scenes, check "Set as default document size".
- 3 Click **OK**.

At **normal view** level (1:1 or 100%), the size of the scene window you see equals the size you've specified in Scene Setup. 3DPlus gives you several ways of adjusting your working view without affecting the actual scene size...

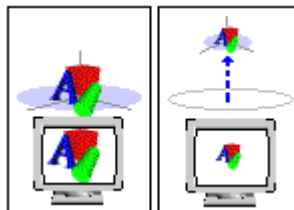
#### To set the working view:

- a To zoom in or out, choose the  **Zoom** tool on the Tools toolbar, then left-click on the scene window to zoom in, or right-click to zoom out.
- a To adjust the scene window's size to fit within the main window area, click the  **Zoom to Fit** button on the Standard toolbar, or choose **Zoom** from the View menu (or the scene's right-click menu) and select **Zoom to Fit**.
- a To restore the scene window to its actual size, click the  **Normal View (1:1)** button on the Standard toolbar, or choose **Zoom** from the View menu (or the scene's right-click menu) and select **Normal View (1:1)**.

**Hint:** To gain more free space at the edges of the scene, you can use the [Camera Distance tool](#). This effectively moves all scene objects (as a group) further away.

Of course, you can also use it to bring objects closer, for less edge space.

Either technique is useful prior to printing or exporting your scene.



Another view option, **anti-aliasing**, smoothes object edges and provides a better onscreen approximation of the scene as it will eventually be exported. 3DPlus provides a choice of five anti-aliasing quality levels—ranging from "None" to "Best". Because higher quality requires additional processing cycles (running in the background as your computer idles), only experience will determine the optimum setting for your particular system. You may wish to leave the setting at "None" during most of your work, occasionally clicking the **Render Preview** button for a fully rendered preview of the final scene.

#### To set the level of onscreen anti-aliasing:

- a Choose **Anti Alias** from the View menu and select one of the five submenu options.
- OR
- a Right-click on an empty part of the scene window and choose **Anti Alias**, then select one of the options.

#### To preview the fully rendered scene:











- n Click the  **Render Preview** button on the Standard toolbar.

**Tip:** Different video adapters and drivers provide widely varying degrees of support for DirectX, the display technology utilized by 3DPlus. If your system's hardware seems to be experiencing difficulties rendering 3D scenes, try switching to a software driver. Choose **File/Preferences...** and select the "Software" driver option.



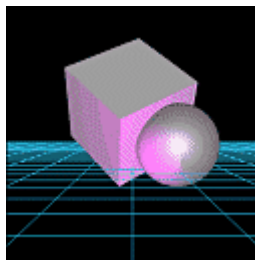
## The Tools toolbar

The **Tools toolbar** includes a set of buttons to access the ten 3DPlus tools. Some tools operate on individual objects, and some affect the scene as a whole. To choose a tool, click its button on the Tools tab. Here's a summary of what each tool does. Click a tool's name to display its Visual Reference entry, including sample animation. (To access the Visual Reference menu, click the VisRef button above.)

<u>Use this tool...</u>	<u>To...</u>
 <a href="#"><u>Move/Size</u></a>	Move or resize one or more selected objects at a time <b>Shortcut:</b> Ctrl+1
 <a href="#"><u>Rotate</u></a>	Revolve a single object around any one of the scene's axes <b>Shortcut:</b> Ctrl+2
 <a href="#"><u>Stretch</u></a>	Adjust a single object's size along one dimension at a time <b>Shortcut:</b> Ctrl+3
 <a href="#"><u>Distance</u></a>	Adjust the apparent distance of one or more objects from the camera viewpoint <b>Shortcut:</b> Ctrl+4
 <a href="#"><u>Zoom</u></a>	Change the size of the scene window relative to the main 3DPlus window
 <a href="#"><u>Insert Text</u></a>	Create new 3D text objects in the scene
 <a href="#"><u>Insert QuickShape</u></a>	Add a variety of adjustable 3D shapes to your scene
 <a href="#"><u>Camera Position</u></a>	Change your viewpoint on the scene
 <a href="#"><u>Camera Angle</u></a>	Tilt the camera with respect to any of the scene axes
 <a href="#"><u>Camera Distance</u></a>	Adjust the distance of all the objects in the scene (as a group) from the camera viewpoint



## The Planes toolbar




Floor Plane

3DPlus provides representations of six **planes** that you can use as visualization aids and/or part of the rendered scene. By default, the **Floor** plane (shown at left) appears in the scene window each time you open a new scene. The Floor plane plus the **Ceiling**, **Front**, **Back**, **Left**, and **Right** planes define a virtual "room" nested within the scene. You use the **Planes toolbar**, which lists all six planes, to switch individual planes on or off as needed and define each plane's visual properties.

**To hide or show the Planes toolbar:**

- n Choose **Toolbars** from the View menu and check (or uncheck) **Planes** on the submenu.

**To hide or show a specific plane:**

n Click its  **Hide/Show** button on the Planes toolbar.  
Planes that are visible when you save or export will appear in the output scene.

Each plane has its own **base color** (blue by default), and can take one of three **visual modes** mode (Grid, Flat, or Shaded) that determine how it appears and reflects light in the scene. For details, see the Visual Reference topic [Planes toolbar](#).

You can also use the Studio to make objects cast [shadows](#) onto planes, and apply [textures](#) like brick or water to any plane. Click the links for details.



## The Studio and Animation toolbars

Nested on the right side of the main scene window is the **Studio**, a repository of resources and editing tools grouped into six convenient tabs. Here's a summary of what each tab does. Click a feature's name to display its Visual Reference entry. (To access the Visual Reference menu, click the VisRef button above.)

<u>Click this tab...</u>	<u>To...</u>
<a href="#">Models</a>	Access a selection of basic 3D shapes, grouped into categories, that you can drag into your scene
<a href="#">Backgrounds</a>	Apply a specific color or image background to the scene, and store your own custom backgrounds
<a href="#">Gallery</a>	Access a selection of preset animations, bevels, lighting schemes, and materials, and store your own custom effects
<a href="#">Lights</a>	Add or delete lights, switch them on or off, turn shadows on or off, move or rotate lights like other scene objects, and adjust their properties
<a href="#">Materials</a>	Edit object color, texture, transparency, and shininess
<a href="#">Bevels</a>	Edit the edge contours of text and other 3D objects

And finally, there's the **Animation toolbar**—a separate, two-part window that's indispensable if you're working with animations. (Choose **Toolbars** from the View menu to show or hide this or any toolbar.)

<a href="#">Animation toolbar</a>	Control animation playback and create or edit animated scenes
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## Adding a new object

3DPlus gives you five basic ways of adding new objects to a scene. Click the links to jump to details:

- n Drag simple or complex preset objects from the [Models tab](#)
- n Create a [QuickShape](#)
- n Create a [text object](#)
- n Insert a [metafile](#)
- n Create an object from scratch in the [3D Workshop](#)

### The Models tab

The Studio's Models tab provides a selection of basic 3D shapes, grouped into categories, that you can drag into your scene. It's a convenient starting point when you're creating a scene from scratch, or for customizing an existing scene.

#### To add a 3D model to the scene:

- 1 Click the Studio's **Models** tab.
- 2 Choose a category.

Initially, you'll see the Basic Shapes category, with an assortment of geometric 3D shapes including cube, sphere, polyhedra, and more.


- 3 Simply click any model to add it at the scene center.

OR

Drag a model into the scene window and drop it into position.


The new object appears at a default size.

- 4 Use specific tools to adjust the object's position, size, rotation, material properties, etc.

**Note:** Thumbnails marked with a  symbol denote objects originally created in the 3DPlus **3D Workshop**. You can use the Workshop to customize any of these objects—simply bring the model into the scene window, then double-click it. You can also use the 3D Workshop to create new models from scratch (for details, see the next topic), and optionally store them in the My Models category for later use.

#### To store a 3D Workshop object on the Models tab:



- 1 Right-click the object and choose **Save Model....**
- 2 Provide a name and click **OK**.

A thumbnail with a  symbol appears in the My Models category of the Models tab.

### QuickShapes

You can use the **QuickShape tool** to add a variety of adjustable 3D shapes to your scene. You can also employ QuickShapes when creating objects from scratch in the 3D Workshop (see the next topic).

#### To add a QuickShape to the scene:

- 1 Click the down arrow button of the  **Insert QuickShape** tool (on the Tools toolbar) to display a flyout menu of adjustable shapes.
- 2 Choose a shape from the flyout.
- 3 Drag out a shape in the scene window. To constrain the object's dimensions (for example, to draw a square or circle), hold down the **Ctrl** key while dragging.
- 4 Adjust the handles to fine-tune the object's properties.
- 5 When you're satisfied with the adjustments, click the  button to convert the shape to a 3D object, or



to remove it.

The larger QuickShape button on the toolbar shows the most recently used shape. To draw another similar object, just click the large button.


For more on QuickShapes, see the Visual Reference topic on the [QuickShape tool](#).

### Text objects

Use the **Insert Text tool** to create new multi-character 3D text objects in the scene. You can also use the 3D Workshop (see the next topic) to create single-character text objects.



#### To create a new 3D text object:



- 1 Choose the  **Insert Text** tool and the 3DPlus Text window appears.
  - 2 Type the text and set its font and style, then click **OK**. The new text appears in the scene.
- You can also create a new text object in the scene by pasting text from the Windows Clipboard.

For more information on text objects, see the topic [Editing existing text](#).

#### Metafiles


3DPlus lets you import vector-based Windows Metafiles (\*.wmf) or Enhanced Windows Metafiles (\*.emf) into your scenes via the 3D Workshop. The basic procedure is outlined below; for details on using the Workshop, see the next topic.

#### To insert a metafile:

- 1 Click the  **3D Workshop** button.
  - 2 In the 3D Workshop, click the  **Insert Metafile** button.
  - 3 Using the file selection dialog, locate the file to import, then click **OK**.
- 3DPlus converts the file to polygons using default values for extrusion, bevel, and so on. You can then use the 3D Workshop and standard scene tools to manipulate the object like any other model.

## Creating an object from scratch

The **3D Workshop** lets you create your own 3D models and save them as separate files that you can bring into any 3DPlus


scene. You can also use the Workshop to customize any object with a  symbol in its thumbnail on the Studio's [Models tab](#)—simply bring the model into the scene window, then double-click it.

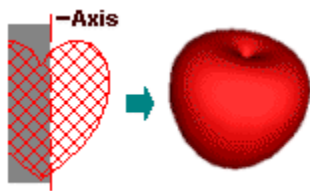
The Workshop generates 3D objects from 2D shapes and provides an animated preview of the 3D object. It provides four basic ways of creating the 2D shapes, and two modes of projecting a 2D shape into three dimensions:


- n To create a 2D shape, you can draw an outline figure and then edit its curves; start with a QuickShape and adjust its properties; create a single-character text object; or import an existing metafile (.WMF or .EMF).
- n To project the shape into 3D, you can choose either Extruded mode or Lathed mode. **Extruded** mode basically pulls the shape outward along the Z-axis to give it depth. **Lathed** mode turns the shape around a central axis so that convex and concave edges become symmetrical contours.



### To create an object from scratch:

- 1 Click the  **3D Workshop** button on the Tools toolbar. The window changes into the 3D Workshop, with its own toolbars, drawing region, preview region, and controls.
- 2 In the 3D Object region at the right, select either **Extruded** or **Lathed**. In Lathe mode only, a dashed line appears at the left of the drawing region, representing the longitudinal axis; any part of the figure extending beyond this dashed line will be ignored in the 3D projection, as shown below:



- 3 To draw a 2D figure, choose the  **Freehand**,



**Line**, or



**Curve** tool and drag in the drawing region. Click and drag again, using any combination of the tools, to connect additional segments into an outline. Continue until you've connected the outline back to the initial node, creating a closed shape.


OR

To insert a QuickShape, click the



**Insert QuickShape** button. Choose a shape from the flyout and drag out a shape in the scene window. Adjust the shape's handles to fine-tune its properties.

OR

To create a text object, click the  **Create Text** button. Type your text into the window and click **OK**. (**Note:** You can type multiple characters into the text creation window, but in the drawing region each one becomes a separate object.)

OR

To insert a metafile, click the



**Insert Metafile** button. Locate the file to insert and click **OK**.

- 4 If you wish, you can create a composite object using multiple shapes of any kind; these will be treated as a single object when transferred into the scene.

- Use the  **Cut**,



**Copy**, and




**Paste** buttons (or keyboard shortcuts **Ctrl+X**, **Ctrl+C**, and **Ctrl+V**) to assist you.

- As a shortcut, you can **Ctrl-drag** an object to duplicate it.

5 To turn on a point grid as a drawing aid, click the  **Snapping** button. With the grid turned on, nodes you draw "snap" to the nearest grid point—especially useful when drawing straight-edged figures. To adjust the grid color and spacing, click the



**Preferences** button. You can also set the background color of the drawing region using the Preferences dialog.

6 To adjust the working view, click the  **Zoom In**,



**Zoom Out**, and/or




**Zoom to Fit** buttons.

As soon as you've completed a closed shape, its 3D projection starts to animate in the Preview region at the right.

7 Click the **Stop** button to freeze playback, and the **Start** button to resume. To realign the 3D shape with the 2D figure, click **Reset**. To limit animation to specific axes, check or uncheck the **X**, **Y**, or **Z** boxes.

8 Now you can adjust the object's properties as described in detail below.

9 When you're done editing:

- To save the object as a separate file using the .3DW format, click the  **Save** or




**Save As** button.

- To transfer the object into the scene window, click **OK**.
- To return to the scene without transferring the object, click **Cancel**.

From the scene window, you can store Workshop-created objects on the Studio's Models tab for future use.

#### To store a 3D Workshop object on the Models tab:

- 1 Right-click the object and choose **Save Model....**
- 2 Provide a name and click **OK**.

A thumbnail with a  symbol appears in the My Models category of the Models tab. To bring one of your stored models into the scene, click its thumbnail.

#### Editing object properties

The Workshop provides a variety of controls that let you fine-tune an object's mode, position, size, color, lighting, and shape before saving it and/or transferring it to the scene.


##### To change the mode:

- n Select **Extruded** or **Lathed**.

**Note:** In Lathe mode, the default projection consists of a full 360° turn around the axis. For a partial turn, creating a notched or wedge-shaped effect, adjust the **Degrees** slider downwards. You can also vary the **Smoothness** slider to alter the complexity of the projection, with lower settings producing a multi-faceted effect, as shown below:



##### To adjust an object's size:

- n Choose the  **Edit** tool and drag the drawn figure's corner handles.

##### To adjust an object's position:

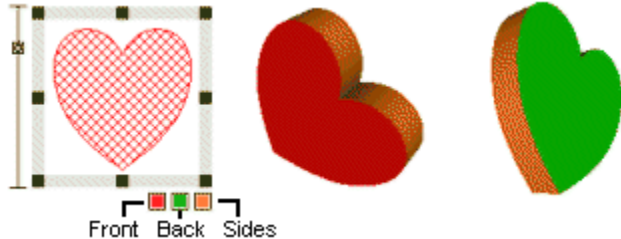
- n Choose the Edit tool and drag the drawn figure from the center.

**Note:** In Lathe mode, the placement of the figure with respect to the axis line affects the resulting 3D projection. Anything to the left of the axis (that is, outside the drawing region) is ignored.

You can apply one or more **base colors** to an object. In Extruded mode, the object's front, back, and side faces can take separate colors.

##### To adjust an object's base color(s):

- 1 Select the drawn figure with the Edit tool.
- 2 To set a single base color for the entire object, click a gallery color sample, or right-click the sample and choose **Apply to All**.
- 3 In Extruded mode only, three color handles appear as small boxes at the lower right of the figure (see illustration below), representing the Front, Back, and Side colors respectively. To change the base color of a given face, drag from a gallery sample onto the corresponding color handle, or right-click the sample and choose **Apply to Front**, **Apply to Back**, or **Apply to Sides**.



**Note:** You can add new colors to the gallery. Right-click any gallery sample and choose **Add Color**.

You can also control separate Red, Green, and Blue omnidirectional **light sources** that add to an object's base colors.

#### To adjust the lighting:

- Drag the **R** (Red), **G** (Green), and/or **B** (Blue) sliders.

**Note:** As long as an object is in the Workshop, you can adjust its base color and lighting settings separately. However, once you transfer the object into the scene, all color applied in the Workshop becomes simply the object's base color. The scene window has its own lighting controls, unrelated to those in the Workshop. (For details, see the Visual Reference topics on the Studio's [Lights tab](#) and [Materials tab](#).)


You can **edit the shape** of any figure.

#### To adjust a QuickShape:

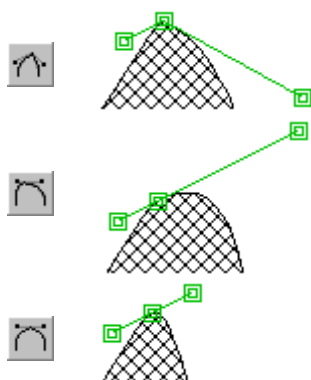
- Select it and drag its handles with the Edit tool, as you would with QuickShapes in the regular scene window (see the Visual Reference topic on the [QuickShape tool](#)).

The advantage of creating QuickShapes in the Workshop is that they remain editable as long as the Workshop is open—here there's no "Accept" button on the QuickShape—so you can switch to another tool, then back to the shape for more adjustments.

#### To reshape a drawn figure:

- 1 Click the  **Show/Hide Nodes** button if necessary to reveal the nodes.
- 2 Using the Edit tool, drag any curved outline segment to reshape it.
- 3 As detailed below, you can also use the Edit tool to drag and adjust nodes, or use the buttons on the **Node Edit toolbar** to change the type of node that joins any two segments.

When you select a node with the Edit tool, **attractor handles** appear to each side of the node, and the buttons on the Node Edit toolbar become available. Nodes can be **sharp**, **smooth**, or **symmetric**.





**Sharp** (the default type) means that the segments on either side of the node are completely independent, so they can be adjusted separately.

**Smooth** means that the slope of the segments is the same on both sides of the node, but their depth can differ.

**Symmetric** nodes join segments with the same slope and depth on both sides of the node.

- To change the shape of a line segment where it adjoins a node, adjust the attractor handle on that side of the node.
- To change a node to a specific type, simply click the corresponding node button.
- To move a node, drag it with the Edit tool.

- n To delete a node, select it and click the  **Delete Node** button. The adjacent node becomes selected, so you can delete a series of nodes in succession if you wish. **Note:** You cannot add nodes to Workshop objects once they're closed, so as a rule draw the initial figure with at least as many nodes as necessary.
- n To make a line segment straight, select the leading node of the line segment (the node nearer the start of the line) and click the  **Straighten Line** button. Note that nodes on either side of a straight line have only one attractor handle. (To make a segment curved, click **Sharp**, **Smooth**, or **Symmetric**.)
- n Occasionally two nodes can look like one node. If in doubt, zoom in and/or move a node slightly to make sure it's not doubled.

## Adding a preset background

Each scene can have either a solid color or an image as a background. The Studio's **Backgrounds** tab lets you apply a specific color or image background to the scene, and store your own custom backgrounds. Initially, each new blank scene begins with a solid black background.

### To change the scene background:

- 1 Click the Backgrounds tab.
- 2
  - To set a solid color background, choose the **Colors** category and click a color swatch.
  - To add a diffuse, translucent background, choose the **Fog** category and click a color swatch. Set the extent of the "foggy" region by dragging the **Near Edge** and **Far Edge** sliders.
  - To set an image background, choose the **Images** category and a subcategory, then click a background to apply it to the scene.

### Notes

- n Image backgrounds are square bitmaps that stretch to fill the scene window. To avoid distortion, set your scene window to square dimensions (equal width and height values), using **File/Scene Setup...**
- n Custom backgrounds you've defined appear in the My Backgrounds category. To learn about adding your own backgrounds, see [Defining custom backgrounds and effects](#).
- n To remove an image background from the scene, choose a solid color background instead.
- n You can animate Fog backgrounds using key frames to simulate objects emerging from or receding into a mist. For details, see [Creating animations](#).
- n To show and hide the Studio, choose **Toolbars** from the View menu and check or uncheck **Studio** on the submenu.

## Copying, pasting, cutting, and deleting objects

### To copy an object to the Windows Clipboard:

- n Right-click on the object and choose **Copy**.

OR

- n Select the object and press **Ctrl+C**, choose **Copy** from the Edit menu, or click the  **Copy** button on the Standard toolbar.

**Note:** If no object is selected, all scene objects are copied.

### To paste an object from the Clipboard:

- n Right-click on the scene and choose **Paste**.

OR

- n Press **Ctrl+V**.

OR

- n Choose **Paste** from the Edit menu.

OR

- n Click the  **Paste** button on the Standard toolbar.

You can copy text from the Windows Clipboard into the scene. Pasted text appears as a new 3D text object. If the Clipboard text has multiple lines, only the first line (up to the first carriage return/line feed) is pasted; the rest is ignored.

### To cut an object from the scene to the Clipboard:

- n Right-click on the object and choose **Cut**.

OR

- n Select the object and press **Ctrl+X**, choose **Cut** from the Edit menu, or click the  **Cut** button on the Standard toolbar.

The object is deleted from the scene and a copy is placed on the Windows Clipboard.

**Note:** If no object is selected, all scene objects are cut.


### To delete an object from the scene:

- n Right-click on the object and choose **Delete**.

OR

- n Select the object and press the **Delete** key or click the  **Delete** button on the Standard toolbar.

No copy is placed on the Windows Clipboard.

**Note:** To undo a Copy, Paste, Cut, or Delete operation, choose **Undo** from the Edit menu or click the  **Undo** button.

## Moving and resizing objects

### Moving objects



Choose the **Move/Size tool** to move one or more objects up, down, or around (along the X and Y axes) while maintaining a fixed distance from the camera.

For details, see the Visual Reference topic [Tools toolbar: Move/Size tool](#).



Choose the **Distance tool** to adjust the distance of one or more objects from the camera viewpoint (along the Z axis). The objects grow larger or smaller.

For details, see the Visual Reference topic [Tools toolbar: Distance tool](#).

**Hint:** Watch the HintLine for a readout of the selected object's position.

### Resizing objects



Choose the **Move/Size tool** to resize one or more objects in all three dimensions.

For details, see the Visual Reference topic [Tools toolbar: Move/Size tool](#).



Choose the **Stretch tool** to adjust a single object's size along one dimension at a time—for example, to make it thicker or thinner without changing its height or width.

For details, see the Visual Reference topic [Tools toolbar: Stretch tool](#).

**Hint:** Watch the HintLine for a readout of the selected object's size.



## Rotating objects



Choose the **Rotate tool** on the Tools toolbar to revolve a single object around any one of the scene axes.

For details, see the Visual Reference topic [Tools toolbar: Rotate tool](#).

**Hint:** Watch the HintLine for a readout of the selected object's angle.

## Changing camera position, angle, and distance



Use the **Camera Position tool** to change your viewpoint on the scene. You can select from six preset camera positions and/or use the tool to move the camera freely to any viewpoint.

For details, see the Visual Reference topic [Tools toolbar: Camera Position tool](#).



Choose the **Camera Angle tool** to tilt the camera with respect to any of the scene axes. Accordingly, all the objects in the scene shift position in the scene window.

For details, see the Visual Reference topic [Tools toolbar: Camera Angle tool](#).



Choose the **Camera Distance tool** to adjust the distance of all the objects in the scene from the camera position. The entire group of objects grows larger or smaller.

For details, see the Visual Reference topic [Tools toolbar: Camera Distance tool](#).

**Hint:** Watch the HintLine for a readout of camera position, angle, and distance.

You can also change the Camera Lens setting to vary the perspective or angle of view at which objects in the scene appear.

### To change the camera lens setting:

- n Choose **Camera Lens** from the View menu and select an option from the submenu:
  - **Telephoto:** Objects appear with flat perspective, as if at a distance
  - **Normal:** Objects appear as conventional to the eye
  - **Wide Angle:** Objects appear with steep perspective
  - **Fisheye:** Objects appear with exaggerated perspective, as if close-up


## Entering new text

3DPlus provides three basic ways to create a new text object:

- n Use the **Insert Text** button
- n Paste text from the Windows Clipboard
- n Use the 3D Workshop, which lets you create extruded and lathed objects from scratch. For details, see the topic [Creating an object from scratch](#).

For details on formatting text objects, see the next topic.

### To create a new 3D text object:

- 1 Choose the  **Insert Text** tool and click in the scene window. The 3DPlus Text window appears.
- 2 Enter the text and set its font and style, then press **OK**.

### To paste text from the Clipboard:

- n Right-click on the scene and choose **Paste**.

OR

- n Press **Ctrl+V**.

OR

- n Choose **Paste** from the Edit menu.

OR

- n Click the  **Paste** button on the Standard toolbar.

Pasted text appears as a new 3D text object. If the Clipboard text has multiple lines, only the first line (up to the first carriage return/line feed) is pasted; the rest is ignored.

## Editing existing text

You can edit text objects either at the word level or the character level—that is, as **word objects** or **character objects**. The first click on a text object selects the word object, while subsequent clicks select individual character objects for editing. It's easy to adjust the word's font, style, and alignment—or alter the text itself. For either word or character objects, you can alter properties like position, size, and rotation, change the object's bevel (edge contours), or apply materials (color and texture) independently to the front, back, and/or sides of the object.



The ability to vary individual character properties gives rise to some amazing [animation possibilities](#)! The Studio's [Gallery tab](#) includes a large assortment of preset effects you can easily apply to existing text.

### To edit a text object:

- 1 Click on an unselected text object to select the word.
- 2 To select a character, click it after first selecting the word.
- 3 Use the [Move/Size tool](#), [Rotate tool](#), [Stretch tool](#), [Distance tool](#), or [Zoom tool](#) to adjust word or character properties.

### To adjust a word object's font, style, and/or alignment:

- n Use the Font, Style, and Alignment controls on the Text toolbar.

OR

- n Double-click on the word object with any tool to open the 3DPlus Text window, and use the Font, Style, and Alignment controls there.



#### Font

Displays the font of the selected text object. To change the font, click a new font name in the drop-down list.

**Hint:** To quickly preview the effect of different fonts, click to open the drop-down list and step through it using the up- and down-arrow keys on the keyboard.

**Hint:** Dingbat and symbol fonts can be especially cool!



#### Style

"Down" buttons indicate font style properties of the selected text object (Bold or Italic). To apply or remove a style, click the appropriate button.



#### Alignment

The "down" button indicates the alignment of multi-line text in the current text object (left-, center-, or right-aligned). Click to change the alignment. The setting has no effect if there's only one line of text.

### To alter the text of a word object:

- 1 Double-click on the object with any tool to open the 3DPlus Text window.
- 2 Re-enter the text, then click **OK**.

**Note:** You can only delete individual characters via the Text window.

### To change a text object's bevel (edge contours):

- 1 Select the word or character object.
- 2 Display the Studio's [Gallery tab](#), choose the **Bevel** category, and apply a preset bevel.  
OR  
Use the [Bevels tab](#) to customize the current bevel setting.

### To apply color or texture independently to a text object's front, back, and/or sides:

- 1 Select the word or character object.
- 2 To apply a color, display the [Materials tab](#), and right-click a color swatch.

OR

To apply a texture, display the Materials category of the Gallery tab and right-click a texture swatch.

3 Choose **Apply to Front**, **Apply to Back**, or **Apply to Sides**.

**Note:** Choosing **Apply to All** changes the entire object, just as if you had left-clicked the swatch.

### **Repetitive formatting**

Character formatting repeats if you add new characters to the word. That is, the first new character takes the formatting of the first old character, the second follows the second, and so on. In this example, we formatted the characters in "ABC" and then used the Text window to add the letters "DEF":



You can save color and texture variations within a word (but not position information) as a **material definition**, as discussed in [Defining custom backgrounds and effects](#). Simply select the whole word when saving the material. You're actually saving the sequence of materials used in the sequence of characters. For example, you could start with any two-letter word, set the first letter red and the second one white, then select the whole word and save its material. This would give you an alternating red letter/white letter sequence you could apply to a word of any length.

See also the previous topic, **Entering new text**.

## Changing scene lighting

Each scene has a **lighting scheme**. If you [start from scratch](#) with a new blank scene, it will use the "Basic White Light" scheme—which includes the Camera Light (on) and Floodlight (off). Scenes created with a [3DPlus Wizard](#) are likely to use more complex combinations of lights. The actual appearance of objects in the scene depends on how the overall lighting scheme interacts with each object's [material properties](#), such as color, texture, and transparency.

3DPlus provides two basic ways of changing the overall scene lighting:

- n The Studio's **Gallery tab** provides lighting presets combining various lights and properties, some including animation effects where one or more lights vary over time. Simply click a preset to change the scheme instantly.  
For complete details, see the Visual Reference topic on the [Gallery tab](#).
- n Displaying the Studio's **Lights tab** reveals the lights as objects in the scene. You can then add or delete individual lights, switch them on or off, turn shadows on or off, move or rotate them like other scene objects, and adjust their properties (such as color and intensity) to achieve a more satisfactory lighting scheme.  
For complete details, see the Visual Reference topic on the [Lights tab](#), which explains the various controls and includes an illustrated overview of the various [light sources](#).

### To change the color of a selected light:

- n Click a color swatch on the Lights tab.

### To change the intensity of a selected light:

- n Drag the **Intensity** slider on the Lights tab.

The lighting scheme is saved along with the scene when the scene itself is saved. You can also store a specific lighting scheme in the Gallery for future use. For details, see [Defining custom backgrounds and effects](#).

**Hint:** The default single Camera Light in a new scene points where the camera points, so it lets you see objects from all angles even when no other lights are present. As long as the Camera Light is on, however, the scene lighting will change somewhat each time you move the camera with the [Camera Position tool](#). For this reason, consider switching the Camera Light off if you're employing other lights in the scene and want a fixed lighting scheme.

## Changing the background

Each scene can have either a solid color or an image as a **background**. Initially, each new blank scene begins with a solid black background. The Studio's **Backgrounds** tab lets you apply a specific color or image background to the scene, and store your own custom backgrounds.



"Fog" background effect

### To change the scene background:

- 1 Click the **Backgrounds** tab.
- 2
  - To set a solid color background, choose the **Colors** category and click a color swatch.
  - To add a diffuse, translucent background, choose the **Fog** category and click a color swatch. Set the extent of the "foggy" region by dragging the **Near Edge** and **Far Edge** sliders.
  - To set an image background, choose the **Images** category and a subcategory, then click a background to apply it to the scene.

### Notes

- n Image backgrounds are square bitmaps that stretch to fill the scene window. To avoid distortion, set your scene window to square dimensions (equal width and height values), using **File/Scene Setup...**
- n Custom backgrounds you've defined appear in the My Backgrounds category. To learn about adding your own backgrounds, see the topic [Defining custom backgrounds and effects](#).
- n To remove an image background from the scene, choose a solid color background instead.
- n You can animate Fog backgrounds using key frames to simulate objects emerging from or receding into a mist. For details, see [Creating animations](#).
- n If your scene has a solid color background, 3DPlus gives you the option of exporting GIFs with or without a transparent background. You have the additional option of turning off anti-aliasing. To ensure blending at the edges, match your scene's background color to the color of the background where you expect to using the GIF. (For even better anti-aliasing with variable transparency, consider exporting to the PNG format.) For details, see the [Exporting](#) topic.

## Changing an object's material properties

Every 3DPlus object has a **material**—a combination of surface properties like color, texture, transparency, and shininess. **Color** is always part of the material definition, while **texture** (bitmap pattern) is optional—it can be switched off so the object's surface shows only continuous color. The actual appearance of objects in the scene depends on how the each object's material properties interact with the overall [lighting scheme](#).

3DPlus provides two basic ways of changing an object's material properties:

- n The Studio's **Gallery tab** provides preset materials that you can apply to any object. Simply click a preset to change the material instantly. For details, see the Visual Reference topic on the [Gallery tab](#).
- n The **Materials tab** lets you edit material properties to achieve unique effects. You can remove a texture, add (import) a bitmap file as a texture, and adjust the placement of texture on an object. There's also a color swatch panel so you can change the object's base color, and sliders for transparency and shine. For details and a special section on applying colors, see the Visual Reference topic on the [Materials tab](#).

Material settings are saved for each object when the scene itself is saved. You can also store a specific object's changed settings in the Materials gallery for future use, or add your own custom colors to those in the Studio. For details, see the topic [Defining custom backgrounds and effects](#).



## Changing an object's draw style

When objects are created, they are normally **solid**—that is, they appear as filled objects with continuous surfaces. You can design unusual effects by changing the **draw style** of one or more objects to either **wireframe** or **points**.



**To change a selected object's draw style:**

- 1 Choose **Object Draw Style** from the View menu.
- 2 On the submenu, check the desired draw style.

## Defining custom backgrounds and effects

3DPlus not only provides a wide assortment of preset effects and built-in options—it lets you save customized settings and properties so that you can use them again. In this topic, we'll explain how to:

- n Import external bitmap files to serve as [scene backgrounds](#) or as [textures](#) on individual objects
- n Save your own custom effects, including [lighting schemes](#), [material definitions](#), [bevels](#), and [animations](#) for future use
- n Define custom colors for use as [scene backgrounds](#) or as [base colors](#) on individual objects

For detailed information on the tools and procedures related to these concepts, click the links above.

### Custom backgrounds and textures

You can import a bitmap from any standard format, such as .BMP, .GIF, .JPG, .TGA, or .TIF, and use it as a background for the scene, or a texture on an object.

#### To apply a background from an external bitmap file:

- 1 Right-click on an empty part of the scene window, or on an existing background thumbnail on the Backgrounds tab.
- 2 Choose **Add Background** from the menu.
- 3 Use the dialog to locate the external bitmap file, and click **Open**.
- 4 In the dialog, enter a name for the effect and click **OK**.


The background is applied to the scene and added to the My Backgrounds category of the Backgrounds tab.

**Note:** Because the bitmap is stretched to fit the scene's aspect ratio, you may wish to crop the bitmap to a suitable aspect ratio (using a bitmap editor) before importing it. Or you can adjust the scene's width and height using **File/Scene Setup....**

#### To rename or delete a custom background:

- n Right-click its thumbnail on the Backgrounds tab and choose **Rename Background** or **Delete Background**.

#### To apply a texture from an external bitmap file:

- 1 Select the object.
- 2 Click the  **Add Texture** button on the Studio's Materials tab.
- 3 Use the dialog to locate the external bitmap file, and click **Open**.

You can save the object's material definition for future use (see below).

### Custom lighting schemes, animations, bevels, and material definitions

It's easy to save specific scene or object effects you've spent time designing. The My Gallery category of the Gallery tab is set up to store your custom effects in one of four subcategories: [Animations](#), [Bevels](#), [Lights](#), and [Materials](#). The procedure for saving effects is similar for all these effect types.

#### To store a custom effect in the Gallery:

- 1 To save a lighting scheme, right-click an empty part of the scene window and choose **Save Lights**.  
OR  
To save an animation, bevel, or material definition, right-click the object and choose **Save Animation....**, **Save Bevel....**, or **Save Material....**
- 2 In the dialog, enter a name for the effect (try to think of a helpful descriptor) and click **OK**.

A thumbnail appears for the effect in the appropriate subcategory of the My Gallery category of the Gallery tab.

**Note:** As discussed in the topic [Editing existing text](#), each character in a word can have its own material. You can save the material definition for either a single character object or a word object, depending which object you select and right-click. (The first click selects the word, and each subsequent click selects a character.) Suppose the characters in a word use different materials and you save the whole word's definition. You're actually saving the sequence of materials used in the sequence of characters. This may prove useful for creating patterns that repeat along a string of letters. For example, you could start with any two-letter word, set the first letter red and the second one white, then select the whole word and save its material. This would give you an alternating red letter/white letter sequence you could apply to a word of any length.

#### To rename or delete a custom material:

- n Click its thumbnail on the Gallery tab and choose either the **Rename** or **Delete** item.

### Custom colors

The 3DPlus color table, as shown on both the Backgrounds and Materials tabs, includes the standard Windows system colors (along the top two rows), with the remainder of colors distributed across the spectrum. To achieve a particular effect, you may

wish to mix your own custom colors and add them to the 3DPlus color table.

**To add a custom color to the table:**

**1** Right-click any swatch and choose **Add Color**.

**2** Use the dialog to define a new color mix, using the color wheel or entering specific RGB or HSL values.

Once you've added a custom color, you can adjust it or delete it by right-clicking on its swatch. (You can't adjust colors in the original 3DPlus set.)




## Controlling animation playback

Using the [Animation toolbar](#), you can play back 3DPlus animations and set playback properties such as speed and mode. To learn how to create new animations, or edit Wizard or Gallery animations, see the next two topics.




### To hide and show the Animation toolbar:

- n Choose **Toolbars** from the View menu and check (or uncheck) **Animation** on the submenu.

### To play back an animation:

- n Click the  **Play** button to play the sequence using the current playback mode (see below). If the sequence is paused, it resumes from the pause point; if stopped, it plays from the beginning.
- n Click the  **Stop** button stop playback.
- n Click the  **Pause/Resume** button to pause playback. Click again to resume.

### To set the playback mode:

- n Click the  **Single Run** button to play the sequence once, stopping on the last frame.
- n Click the  **Ping Pong** button to play the sequence indefinitely: first forward, then backward.
- n Click the  **Loop** button to play the sequence indefinitely, repeating from the first frame each time.

### To change the playback rate:

- 1 Click the **More** button to expand the toolbar and reveal the Edit Panel. The current playback rate is shown in the Speed box.
- 2 Enter a new value in the box and press **Enter**.

For a description of other Edit Panel controls, see the next two topics.

For details on the .GIF export format for animation, see the [Exporting](#) topic.

## Creating animations

The Animation toolbar's Edit Panel lets you create and edit animations. For detailed coverage of each toolbar control, see the Visual Reference topic on the [Animation toolbar](#). Rather than repeat that information here, we'll provide a brief overview, plus a simple step-by-step walkthrough.

For advice on editing animations, see the next topic.

**Using and saving animation presets.** Before you spend time creating an animation from scratch, check in the Animations category of the Studio's [Gallery tab](#) for a collection of "canned" animation sequences or **presets** that you can simply click to apply to any selected object. (Some of the presets in the Lights category feature animation where lights change colors or position.) You can even apply multiple presets for more complex effects. If you do create or customize your own animation effects, you can store them in the My Gallery category for future use, as explained below.

**How animation works.** Consider a basic 3D scene with several objects. Instead of pointing a still camera at the scene, imagine we're using a movie camera that lets us expose one frame at a time. Between each exposure, we can adjust one or more of the scene objects in various ways. Besides **standard objects**, you can animate **text objects**, **lights**, **an applied texture**, or even the **camera** itself.

```
{mci REPEAT  
  EXTERNAL  
  NOMENU,BALL2.a  
  vi}
```

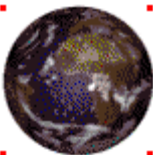
We might change an object's position, so that it appeared to move from one side of the scene to the other. Or we might change its rotation, so that a sphere representing the Earth appeared to spin on its axis. Once we've recorded a series of frames, we can play them back rapidly and see the motion unfold. The sequence at left was created with just three 3DPlus frames, using "Ping Pong" (forward and backward) playback. Click the Play button to view the sequence.

**Using key frames.** Creating animation in 3DPlus is a fast and flexible process. In general, you first decide how many frames you want in the sequence. Then you issue instructions to the scene objects, telling them how to behave during the sequence. Naturally, each object that will change needs its own set of instructions. For each such object, you'll specify which properties need to vary, and define several **key frames** that show the object exactly the way you want it to appear at that point in the sequence. 3DPlus takes care of the rest: it examines the key frames and automatically generates "in-between" frames that take care of the transformations. The result is a seamless animation.

**Including properties.** For each object, you can set key frames for Position, Size, Rotation, Texture, Color, and Transparency. For the scene as a whole, you can set key frames for the Camera properties (Position, Angle, and Distance), as well as for the background property Fog. You can include just one property or many—as needed to achieve the desired effect. Take a moment to think about the movements that could result from varying each property. Zooms and pans, pinwheels, flying planes, planetary orbits, appearing and disappearing shapes, leaping lizards emerging from the fog, shifting lights and shadows, exploding text...! To get started, try the following mini-lesson.

### Around the world in 20 frames

Follow along with this step-by-step example and create a rotating globe!

- 1 Choose **New** from the File menu (choose the "Start from Scratch" Wizard option) to start with a new, blank scene. If any planes are visible, turn them off using the Planes toolbar.
  - 2 Click the Studio's **Models** tab and choose the **Planets** category. Click the "Earth" model's thumbnail and a globe object will appear in the center of the scene, complete with seas and continents.
- 
- 3 Show the Animation toolbar (using **View/Toolbars**) if it's not already visible. Click the **More** button if necessary to reveal the extended Edit Panel.


In the upper Frames group, note that the **Total** box is showing there are 20 frames in the sequence (the default value). The **Current** box shows we're looking at frame 1, and so the adjacent **Current Frame** slider is set to its far left position. Looking at the lower Key Frames group, you'll see an assortment of various check boxes with associated sliders and buttons. These will all be much less mysterious in a moment.

- 4 With the Move/Size tool, deselect the Earth by clicking in an empty part of the scene window, and now in the Key Frames group you'll see that only the **Camera** and **Fog** properties are enabled. That's because they apply to the scene as a whole, regardless of what's selected.
- 5 Now select the Earth object, and all the check boxes for object-specific properties become available.

Let's create the key frames that will tell the Earth how to rotate. In order to generate a convincing full-cycle rotation, 3DPlus needs us to provide several snapshots of what the Earth should look like at key positions in the cycle. So let's proceed to define our key frames: a starting and ending view, and a couple of intermediate views.

- 6 The only property we need to include in the animation is rotation, so check the **Rotation** box. ☒ **Rotation**

- 7 Click the  button at the right of the **Rotation Key Frame** slider. A key frame marker appears at the far left of the slider (frame 1).

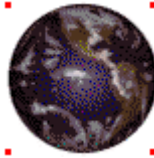
 This records the object's starting position.

- 8 Click about a third of the way along the **Current Frame** slider (or drag it), for frame 8.



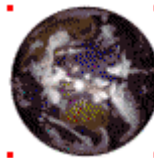
We'll create a key frame for the first intermediate view here.

- 9 Choose the Rotate tool. Click on the "Y" axis label and drag down to rotate the Earth until the east coast of South America is just disappearing over the horizon (on the HintLine "object angle" readout, a Y value of about  $-105^\circ$ ). When you release the button after dragging, 3DPlus inserts an automatic key frame marker at frame 8 at on the **Rotation Key Frame** slider.



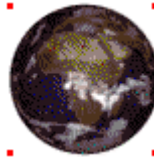
**Note:** 3DPlus "intelligently" defines a new key frame each time you adjust one of the object properties included in the animation—that is, a property you've checked in the Key Frames group.


- 10 Using the **Current Frame** slider, select frame 15. To create the second intermediate view, drag down on the Y axis until Australia is centered in the view (Y value of about  $130^\circ$  on the HintLine). Again, a key frame marker appears.



- 11 For the end frame of the sequence, the Earth should be rotated nearly all the way around, just short of its starting position. To get to the end frame, type "20" into the Current Frame box, or click the far right end of the **Current Frame** slider. The scene will still look as it did in frame 15.

- 12 Drag down on the Y axis to continue the Earth's rotation. Watch the HintLine and stop rotating when the Y value is about  $10^\circ$ . A fourth key frame marker appears at the far right of the **Rotation Key Frame** slider.



- 13 Now click the  **Play** button and you'll see the Earth rotate. To make it rotate continuously, click the



**Loop** button.

**And now for a shortcut!** Completing the above sequence will give you a valuable first-hand feel for animating an object from scratch... but in this case there's an easier way to get an object to rotate. Start with a new globe object, then simply look on the Studio's Gallery tab, locate the Spins subcategory of the Animations category, and apply the "Y Axis Rotated Counter-Clockwise" effect to the globe! In many situations, you'll be able to find a Gallery preset to meet your animation needs. However, if you do spend time designing custom animation effects, it's easy to store them in the Gallery for future use.

#### To store an animation effect in the Gallery:

- 1 Right-click the object and choose **Save Animation...**
  - 2 In the dialog, enter a name for the effect (try to think of a helpful descriptor) and click **OK**.
- A thumbnail appears for the effect in the Animations subcategory of the My Gallery category of the Gallery tab.

#### To remove the animation effect from an object:

- n If you've just applied the effect, use Undo.
- n Otherwise, uncheck all the property boxes on the Animation toolbar.

#### Exporting animated scenes

You can export animations either as regular animations (using the .GIF or .AVI format) or as sequences of separate still-image files. Choose the second option if you need to use a format other than .GIF or .AVI, and plan to continue editing the animation in a program that can import a series of stills—for example, if you wanted to use the .PNG format to retain variable transparency in the animation.

#### To export an animated scene:

- n To export as a .GIF or .AVI movie, choose **Export Animation...** from the File menu.

OR

<sup>n</sup> To export as sequentially numbered still-image files, choose **Export Animation Stills...** from the File menu. For details on export settings, see the [Exporting](#) topic.

## Editing animations

If you've just completed the mini-lesson in the preceding topic, or have created an animation using a Wizard, Gallery preset, or custom design, the Edit Panel on the Animation toolbar will show the key frames defined for each object in the scene. If there's more than one object, you'll need to click each one individually to see its key frames. Note that animations will often include static objects that don't move at all during the sequence.


It's easy to edit animations by adding new objects to the scene (with or without movement), replacing Wizard text with your own, and so on. Here are some additional pointers on working with the Animation toolbar:


- n The easiest way to remove animation from an object is simply to select the object, then uncheck all the property boxes on the Animation toolbar. Of course, if you've just applied the effect as a preset, you can simply use Undo.
- n You can click on any key frame marker to jump to that frame.
- n For a rapid preview, drag the **Current Frame** slider.

- n If a particular object transformation appears jerky, first determine which property and key frame seem to be the source of the problem. Then go to that key frame and either:


- Adjust the object property itself or
- Move the key frame marker slightly (e.g. drag it left or right a frame at a time).

Moving two key frames closer together has the effect of speeding up the transformation between them; moving them apart slows things down.

- n  To change the overall playback speed, type a new value into the **Speed** box and press **Enter**. Bear in mind that playback in 3DPlus may not match the frame-per-second rate shown in the box. That value, will, however, be used when the animation is exported. To determine an optimal rate setting, always preview the exported .GIF file in a browser or GIF editing program.

- n  To change the sequence length, simply type a new value into the **Total** box and press **Enter** (but see the next point). Frames are added or subtracted at the end of the sequence. In general, the final .GIF file will be more compact if it has fewer frames. There's nothing fixed about the default length of 20 frames. Many convincing animations can be accomplished in 10 frames or less.

- n Be careful if adding or subtracting frames after you've defined key frames. Obviously, the resulting sequence won't have the same number of frames—and there's no Undo for this action—so decide beforehand what you want 3DPlus to do with the existing key frames.

- To preserve the current "spread" of key frames between the first and last frames, keep the  **Interpolate Key Frames** box checked. For example, if you had a 12-frame sequence with key frames on 1, 6, and 12, and increased the total frames to 20 with interpolation, the resulting key frames would be on 1, 10, and 20.
- Uncheck the box to leave existing key frames exactly where they are. With no interpolation, the key frames in our 12-to-20-frame example would remain at 1, 6, and 12. This would be useful if you planned to add add more motion to the end of the existing sequence. **Note:** If you subtract frames with no interpolation, key frames at the end of your sequence may be deleted.

- n When working with animated presets from the Studio, don't expect them to work immediately in a static scene; click the **Play** button first. If you've applied a preset but don't see any properties checked on the Animation toolbar, it's because the key frames have been set for specific objects—so you'll first need to select those object(s). For example, certain text effects involve individual character objects within words. Or, in the case of animated lighting schemes, first click the Lights tab and then select individual lights. Once you've selected an object, you can see which key frame properties have been set for it.



## Exporting

**Exporting** means converting a 3DPlus scene to an external file format, as opposed to saving it in the native .3DD format. It's one of the three primary ways of using a 3DPlus image in a publication or other graphic context; the others are [OLE](#) and [printing](#).

When you export, the entire scene window gets converted to a bitmap graphic. If you plan to fine-tune the graphic later in a paint editing program like Serif PhotoPlus, you don't have to worry if there's extra background showing around the scene objects; you can crop it away. But make sure you're satisfied with the composition, lighting, and colors in the scene before you export—it's much more difficult to change these later.

Remember that the scene will be exported at its actual size, as specified in the **File/Scene Setup** dialog. If you're using a separate paint program, you can always downsize the image later on.

### To export a static scene:

- 1 Choose **Export...** from the File menu.
- 2 Use the **Save as Type** pull-down menu to specify the export file format. Provide a file name and folder location, and click **Save**.
- 3 In the Export dialog, set any options available for the particular image and file format (see below).
- 4 Click **OK**.

### To export an animation as a .GIF or .AVI movie:

- 1 Choose **Export Animation...** from the File menu.
- 2 In the Export dialog, set options for the .GIF or .AVI format (see [Animation formats](#) below).
- 3 Click **OK**.

You can also export animations as sequences of separate still-image files. Choose this option if you need to use a format other than .GIF or .AVI, and plan to continue editing the animation in a program that can import a series of stills. Using this method, for example, you could use the .PNG format (see below) to retain variable transparency in the animation.

### To export an animation as a sequence of stills:

- 1 Choose **Export Animation Stills...** from the File menu.
- 2 Use the **Save as Type** pull-down menu to specify the export file format. Provide a file name and folder location, and click **Save**.

3DPlus automatically generates the numbering sequence, from 1 up to the number of frames.

## Setting export options

The Export dialog lets you specify the settings for exported images in each of the supported formats; its appearance changes somewhat depending on the format. One standard feature is the Image Preview window, which provides an accurate rendering of how your scene will look using the current combination of settings. You can zoom in and out, drag the scene to center it in the window, and experiment with different export options until the results are satisfactory.

Here's some reference information on the various terms you'll encounter in the Export dialog...

### Bit Depth

Bit depth relates to the number of colors in the exported image. For example, a bit depth of 4 bits per pixel can store 16 values; 8 bits per pixel, 256, and so on. 16-bit images have roughly "thousands" of values to describe each pixel's color, and 24-bit images have "millions." Of course, images with higher bit depth take up more disk space.

Choose the bit depth that corresponds to the number of colors in the exported image. For 256-color images, you have the option of applying either an **Optimized** or a **Web-safe** palette.

### Palette

A color palette (no relation to a "floating" palette) is a table of color values that gets stored with any image having 8 bits (256 colors) or less. This could mean a .BMP, .GIF, .PCX, or .WMF image—plus quite a few more. Computer users with high-color monitors may not give it much thought, but in the realm of 256-color displays, palettes can make a great deal of difference. Windows itself reserves "slots" for its own "system" colors, and each application must "declare" a palette while the graphics system tries to ensure peaceful coexistence. When several colorful applications are in use, and you switch from one to another, you sometimes see the ghastly result of palettes clashing as neither application wants to relinquish its hold on a scarce system resource.

- The default **Optimized** setting lets the 3DPlus export filter determine the best colors to apply. This generally results in smooth color gradations and quite acceptable appearance when viewed on a High Color (16-bit) or better color display.
- Choose **Web-safe** to reduce the colors to only those found in the 216-color palette used by Web browsers on limited-color systems. This will ensure that an image you place on a Web page won't change its appearance when viewed on such systems.

## Dithering

Dithering comes into play with images being reduced to 8 bits (256 colors) or less. It's a method of approximating colors outside the actual image palette—for example, by alternating pixels of red and blue from within the palette to produce the visual impression of a purple color that's not in the palette. While dithering can degrade solid-color areas, with 3D images it's usually more important to preserve subtle gradations of color.

- To preserve gradations of color and/or an image background, dithering is clearly the best choice. You can choose either Ordered or Error Diffusion dithering. The former produces a discernably patterned effect, while the latter tends to average away the patterns for a more natural result.
- To minimize file size, or if you happen to have an image with few colors, you can opt for no dithering—and the export filter will pick "nearest-match" color values from the palette being applied. You may see some color shifting, but the solid color areas will be preserved.

## GIF Options

GIF files support transparency—one reason they're commonly used over backgrounds on Web pages. If your scene has a solid color background, 3DPlus gives you the option of exporting GIFs with or without a transparent background. To preserve shades of transparency in Web graphics, consider the .PNG format (see below).

- If you check the box to select transparency, you have the additional option of turning off anti-aliasing (which 3DPlus routinely applies to exported images). Anti-aliasing is recommended. To ensure blending at the edges, match your scene's background color to the color of the background where you expect to using the GIF. For a sharper-edged (but less pretty) graphic that can be placed over any background—or if it's a sharp-edged effect you want—you can turn anti-aliasing off.
- If you uncheck the box to turn transparency off, anti-aliasing is automatically applied (as it is for all other export formats).

## Compression

Compression schemes, which apply different algorithms to encode the image information with fewer total bits and bytes, are used in many formats. With some, 3DPlus gives you a choice of compression scheme. In general, use the default setting unless you know for a fact that some other scheme is called for.

The .JPG format, widely used for photographs, is unusual in that you can set the level of quality desired using a slider. As you might expect, the highest-quality setting uses least compression, with no loss of image quality but the largest file size. The lowest-quality setting applies maximum compression for smallest size, but yields rather poor quality.

## The .PNG format

For Web graphics, the increasingly popular **.PNG** (Portable Network Graphics, pronounced "ping") format has a number of advantages over .GIF—the main ones, from an artist's perspective, being "lossless" 24-bit images and support for variable transparency. Whereas .GIF supports simple binary ("on-off") transparency, .PNG allows up to 254 levels of partial transparency for normal images. Select the **32-bit** export option and check **Transparency**. The extra 8 bits serve as an "alpha channel" that directs pixels in the foreground image to merge with those in a background image. This seamless anti-aliasing creates the illusion of smooth curves by varying pixel colors—for rounded images that look good against any background, not just against a specific color. It's especially useful for the small graphics commonly used on Web pages, such as bullets and fancy text.

## Animation formats

The **.GIF** format is what makes Web animation possible, for a couple of reasons. First, it's universally supported by Web browsers. Second, it's a multi-part format, capable of encoding not just one image but multiple images in the same file. A .GIF animation player or Web browser can display these images in sequence, in accordance with certain settings (looping, frame delay, etc.) included in the file. The result—it moves!

The **.AVI** (Audio-Video Interleaved) format is commonly used on the Windows platform to encode image sequences in sync with a mono or stereo sound track. 3DPlus can export to the uncompressed .AVI format using 24-bit color, or to various compressed formats, depending on which codecs (compression/decompression schemes) are present on your machine. 3DPlus doesn't ship with specific codecs; however, several are shipped with Windows itself, and you can easily obtain others on the Web. To ensure successful export, check the codec's documentation for supported bit depth setting(s); when in doubt, use the 8-bit setting. Finally, note that .AVIs don't internally support certain playback properties of the animated .GIF format, such as "Loop" and "Ping Pong." Depending on which program you'll be using to play back the .AVI, however, you may be able to achieve these effects.

## Linking and embedding

Exporting 3DPlus files (see the previous topic) as bitmap graphics is appropriate when you're working with an application that requires images in a specific format (such as .JPG or .GIF for a Web page editor), or if you need to edit the graphic using a paint program. The drawback of exporting is that you lose the ability to edit the scene itself in 3DPlus.

Many applications—for example, Serif's desktop publishing program PagePlus—allow you to insert a 3DPlus scene as an **OLE object**. This means you can still use 3DPlus to modify the scene later, if necessary. For example, you can change the text in a text object or alter the color scheme without having to start from scratch.

Following are general guidelines for working with 3DPlus OLE objects in a client application. (Bear in mind that actual procedures may differ depending on the application and operating system version.)

### To insert a 3DPlus object into a host application:

- n Choose the application's **Insert Object...** command, usually found on its Edit menu, and select "Serif 3DPlus 3.0" from the list of object types.
- n To insert a saved 3DPlus (.3DD) file, choose the **Create from File** option and locate the file name. Check the **Link** box to link the object or leave the box unchecked to embed the object (see below).

OR

- n To create a new 3DPlus object, choose the **Create New** option. 3DPlus opens with the Startup Wizard (or a blank scene window if the Wizard is turned off). When you've created the scene, choose **Update** from the File menu to insert the scene as an object (or update the image already there) without closing 3DPlus.

**Note:** **Linking** inserts a picture of the scene into the document. This picture is linked to the actual 3DPlus file so that any changes you later make to the file (using 3DPlus) will be automatically reflected in your document. If using linked files in a publication, be sure to include the linked files along with the master document if the publication is moved or copied. **Embedding** means the object in the host application is now independent from the original file. You can still edit the embedded object using 3DPlus, but only from within the host application. 3DPlus objects you create using the **Create New** option are embedded, not linked.

### To edit a 3DPlus object in another application:

- n Double-click the object.

OR

- n Select the object and choose the application's **Edit Object** command.

In PagePlus, either action will launch 3DPlus, displaying the scene ready for editing. In some applications, including PagePlus, resizing the object will also trigger 3DPlus to regenerate the bitmap data.

When you use OLE to create a 3DPlus object in a client application such as Serif PagePlus or Microsoft Word, the object's **resolution**—its quality when viewed or printed from the client application—depends on the ratio of its dimensions in 3DPlus to its dimensions in the application. For example, suppose you have set the dimensions of a 3DPlus object to 300x300 pixels using the Scene Setup dialog. If the object occupies a 2-inch (5cm) square on the client application's page, its resolution will be 150 pixels to the inch (300 divided by 2). If you resize the object to a 1-inch square in the client application, its resolution will increase to 300 pixels to the inch. Conversely, if you increase the object's size, its resolution will decrease.

### To adjust the quality of a 3DPlus object from a client application:

- 1 Double-click on the 3DPlus object to activate it.
- 2 Choose **Scene Setup...** from the File menu and adjust the scene's dimensions.

**Note:** Using OLE, it's not possible to obtain a transparent background. For this effect, use the GIF export option (see the previous topic).

## Printing

### To view and/or print the scene from multiple camera positions:

- 1 Choose **3D Print Preview** from the File menu.

3DPlus builds views of the scene from each of the six preset positions, plus the current view, and displays them in a single window.

- 2 To print the multiple view, click the window's **Print** button.

### To preview the scene as it will appear when printed:

- 1 Choose **Print Preview** from the File menu.
- 2 The Print Preview window appears, and the rendered scene appears in the page area.
- 3 Click **Zoom In** to examine a portion of the scene, and **Zoom Out** to restore full view.
- 4 Click **Close** to return to the main window.

### To print the scene:

- 1 Choose **Print...** from the File menu.

You can select whether you want to **Print Actual Size** or **Scale to Fit Paper**. 3DPlus first renders the scene at the highest possible quality (screen size), then scales the image to the print specifications.

{ewl RoboEx32.dll, WinHelp2000, }

