DISPLAY

Architectural Desktop 3 - Presentation Guide

PART 3

3D ORBIT

Contents:

1 3D Orbit - Access

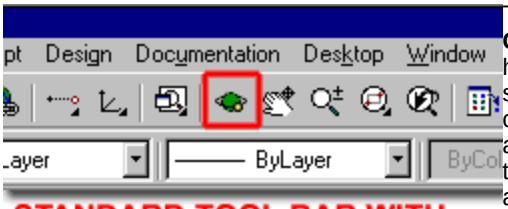
3D Orbit toolbar

How do I get this toolbar?

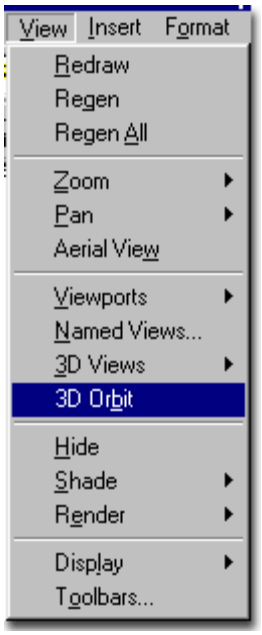
You can also acquire access to these commands from the **View** pull-down menu. From the **View** pull-down menu, pick **3D Orbit**.

3D Orbit pull-down menu

Illustrated to the right, is the **View** pull-down menu showing where to access the **3D Orbit** tool. You can also access this tool from the 3D Orbit button on the Standard toolbar - illustrated below, left.



The **3D Orbit** tool has its own set of commands and settings that can be accessed on the 3D Orbit toolbar or on the **3D Orbit right-click pop-up menu** (see illustration below, left). In my own use of this tool, I find that I tend to access all of the 3D Orbit commands and options through this right-click pop-up menu and rarely use the 3D Orbit toolbar.



The 3D Orbit tool is actually a tool that has come from Autodesk's 3D Studio and 3D Studio Viz rendering programs and users familiar with those programs will find the 3D Orbit tool a welcome friend. It is actually a Camera tool but Perspective is an option.

For Architectural Desktop users, this tool may play less of a role in final presentation renderings than for AutoCAD users who do not have the Perspectives toolbar and the AecCamera object to work with.

2 3D Orbit

3D Orbit tool - Overview

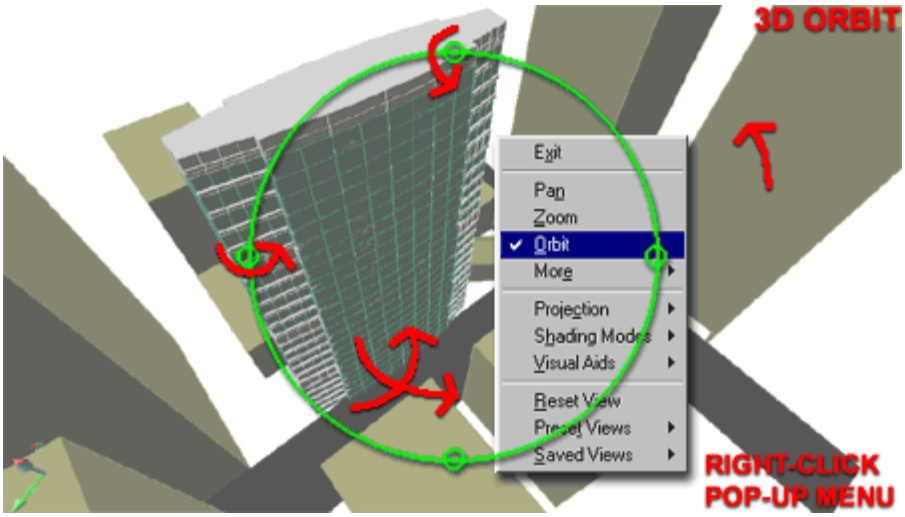
Menu	**View> 3D Orbit**
	
Keyboard	**3dOrbit**

Once the **3D Orbit command** has been executed the graphics of your screen will change into the current version of **Shademode**. If no Shademode setting is current, you will get the **2D Wireframe** setting by default. You should also notice that the **UCS icon**, if turned on, changes to the 3D Shaded version.

To avoid having too many objects or to limit specific objects from showing up while using 3D Orbit or the various other options, you can **select the objects** that you want to see **before activating** the **3D Orbit** command(s).

In the center of your screen, you should find the 3D Orbit **Arcball** with four smaller circles; one at each quadrant. The Arcball breaks the 3D Orbit work up into zones for different tasks. By holding the left (or pick) mouse button down and dragging in any of these zones you can affect the camera or viewpoint in ways that allow you to see your object(s) from a full spherical vantage point.

Inside the Arcball - holding the left mouse button down and dragging it **inside** the Arcball provides the greatest amount of freedom to move the camera or viewpoint around you object(s). To use effectively, think in terms of grabbing a corner or piece of your drawing and dragging it up, down, left, right or in any diagonal direction to see above, below, right, left or any other part of the object(s). You can repeat the steps as many times as you like resulting in what appears as full spherical spinning of the object(s).



Outside the Arcball - holding the left mouse button down and dragging it **outside** the Arcball provides only one type of camera or viewpoint control: rotation. No matter where you go outside the Arcball, the rotation option is the same and simply allows you to rotate the camera or view so you can reestablish a level horizon.

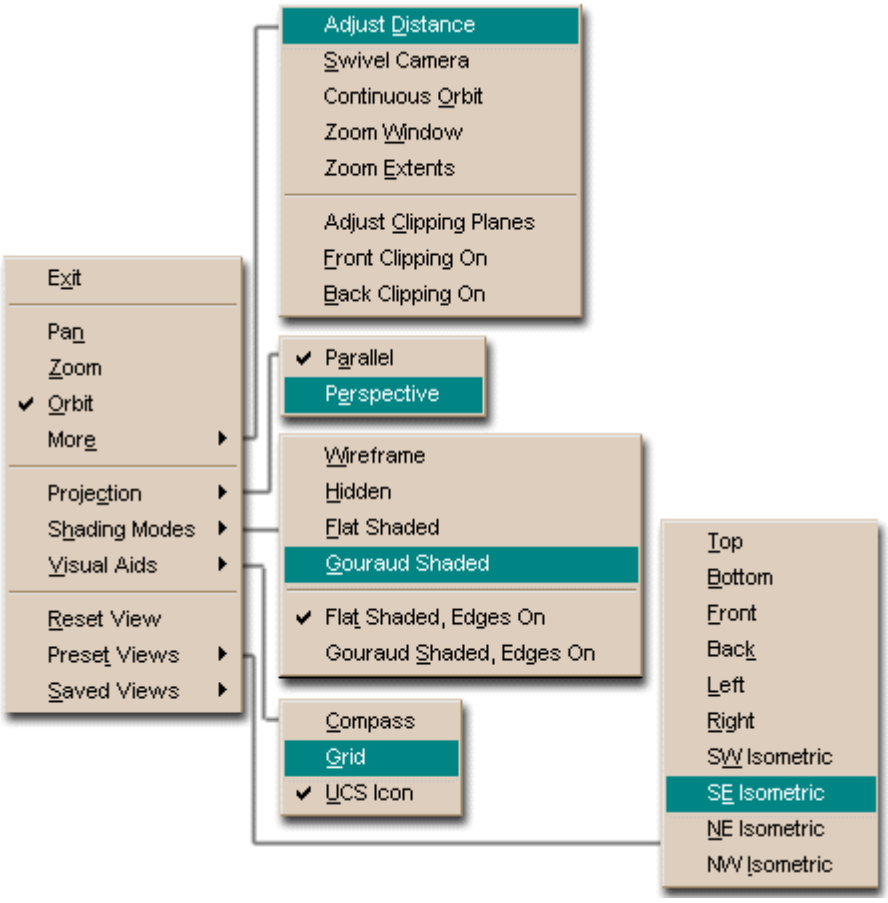
Top and Bottom Arcball Quadrants - holding the left mouse button down and dragging it while over the top or bottom quadrant circles provides you with the ability to rotate the camera or viewpoint through the X-axis of the Target Point. The effect is similar to moving a camera up or down on a tripod while remaining fixed to a specific target. Both Arcball Quadrants produce the same results.

Left and Right Arcball Quadrants - holding the left mouse button down and dragging it while over the left or right quadrant circles provides you with the ability to rotate the camera or viewpoint through the Y-axis of the Target Point. The effect is similar to moving a camera left or right on a tripod while remaining fixed to a specific target. Both Arcball Quadrants produce the same results.

Right-click - using the right-click on your mouse while the 3D Orbit Arcball is active brings up the 3D Orbit pop-up menu.

3D Orbit pop-up menu

Illustrated to the right is the **3D Orbit right-click pop-up menu** and all of its cascading sub-menus. There are more options available on this pop-up menu than you will find anywhere else so you must become familiar with this menu if you want to master this tool. Of the whole set, the most significant option for presentation work is the **Perspective** option acquired through the **Projection** menu item.



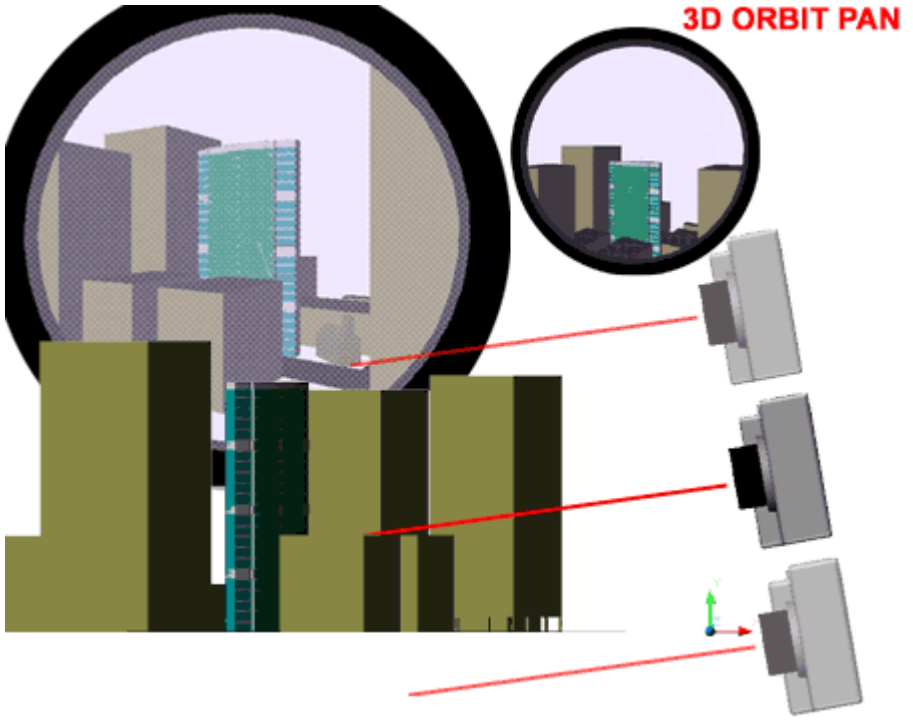
3 3D Orbit Options

Pan

Menu	**View> 3D Orbit** (right-click for **Pan** option)
	
Keyboard	**3dPan**

The **Pan** option for **3D Orbit** is not the same as the Pan tool in AutoCAD or Architectural Desktop and thus you cannot use the regular Pan command while in the 3D Orbit command.

Since Orbiting is really about Camera work, the Pan command is really like Panning a Camera. This will appear like a regular Pan in **Parallel Projection** but just like a Camera Pan in **Perspective Projection**.



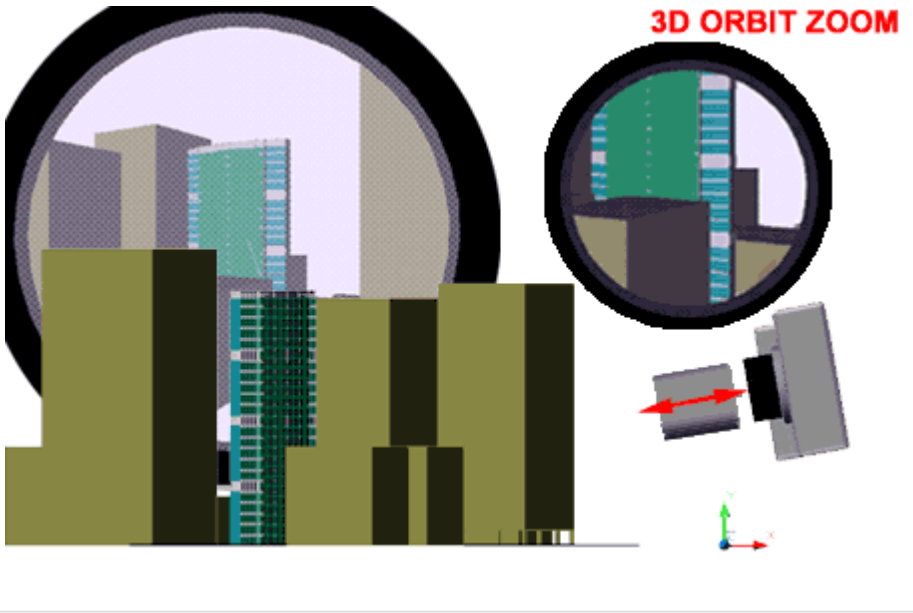
Zoom

Menu	**View> 3D Orbit** (right-click for **Zoom** option)
	
Keyboard	**3dZoom**

The **Zoom** option for **3D Orbit** is not the same as the Zoom tool in AutoCAD or Architectural Desktop and thus you cannot use the regular Zoom command while in the 3D Orbit command.

Since Orbiting is really about Camera work, the Zoom command is really like adjusting the Lens of a Camera. This will appear like a regular Zoom in **Parallel Projection** but just like a Camera Zoom in **Perspective Projection**.

In **Perspective Projection**, the **Zoom** option combined with the **Adjust Distance** option can be used to produce perspectives equivalent to **35mm** and **50mm** shots up close or far away from your buildings. Exaggerated perspectives are also possible.

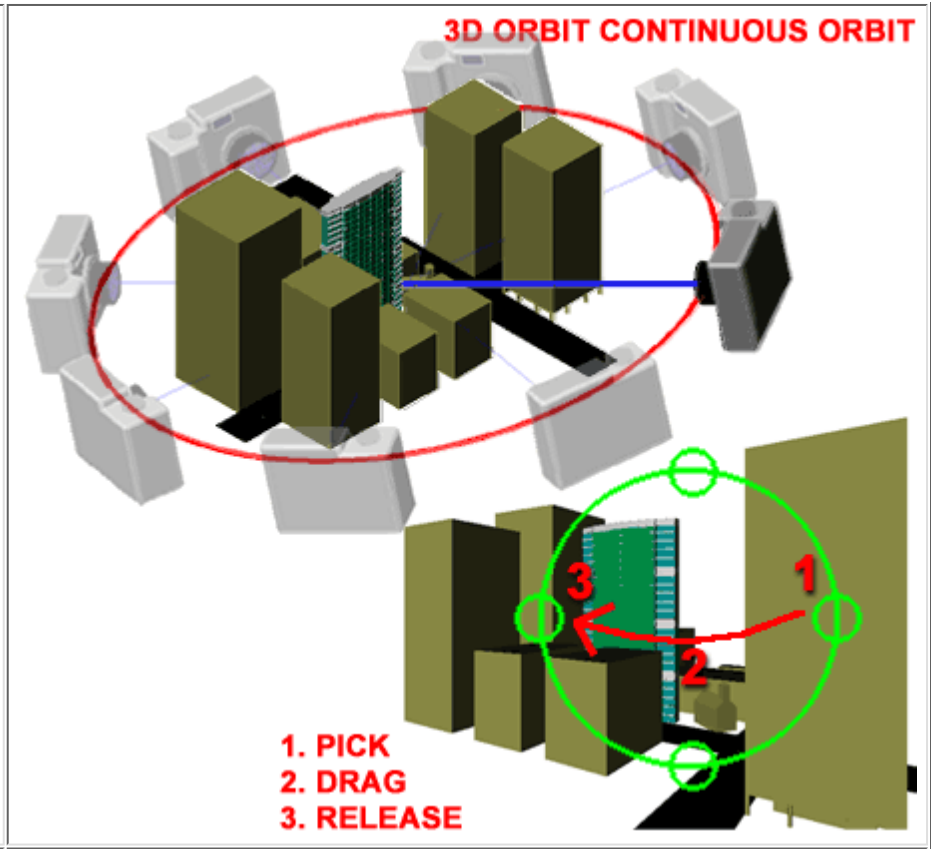


Continuous Orbit

Menu	**View> 3D Orbit** (right-click **More > Continuous Orbit**)
	
Keyboard	**3dCorbit**

The **Continuous Orbit** option allows you to create an **animated spin** around the object(s) on your screen. This is achieved by using the **right-click** mouse button, **holding** it down and **dragging** it in the direction you want the spin to occur in. The faster you drag and release the right-click button, the faster the animated spin.

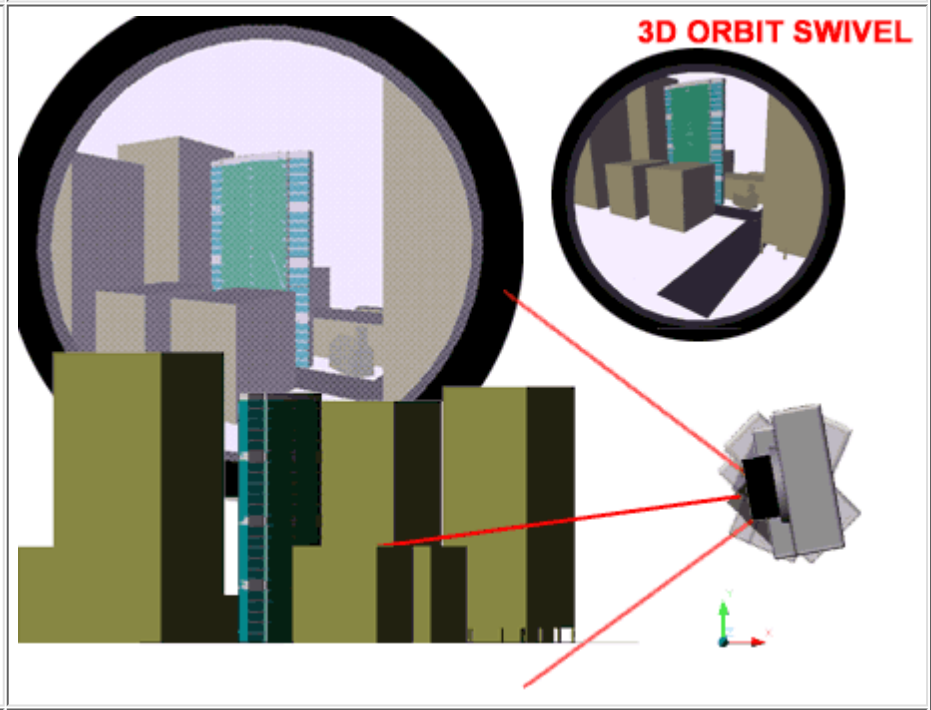
This option can be used in both **Parallel** and **Perspective Projections** and is thus one of my favorite ways to show and discuss design concepts.



Swivel Camera

Menu	**View> 3D Orbit** (right-click **More > Swivel Camera**)
	
Keyboard	**3dSwivel**

The Swivel option allows you to use the cursor as a Camera's viewfinder to change the target. The effect can be similar to Panning but in this case the Camera's angle is changing while the Camera is remaining fixed.



Adjust Distance

Menu	**View> 3D Orbit** (right-click **More > Adjust Distance**)
	
Keyboard	**3dDistance**

The **Adjust Distance** option was designed for use in **Perspective Projection** though it will produce results in Parallel Projection that appear identical to Zooming.

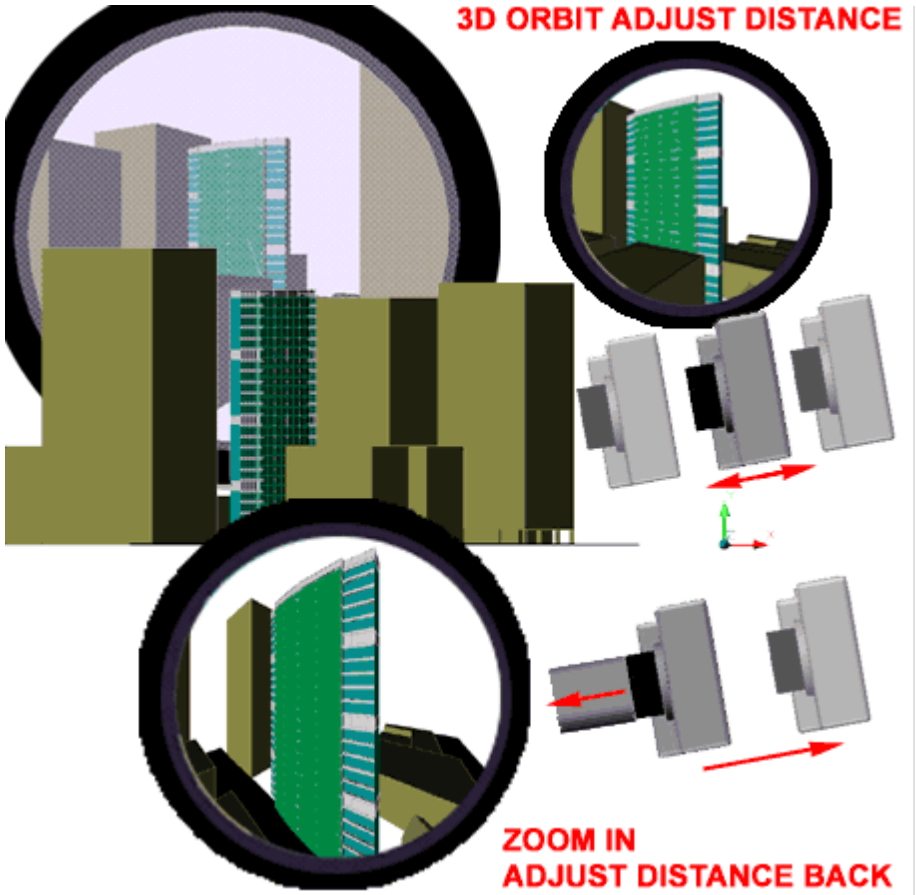
When working with the 3D Orbit tool in **Perspective**

Projection, the **Zoom** option works as the **Lens** control of a **Camera** and the **Adjust Distance** option works as its name states: a way to **move the Camera** closer or farther away from the target.

In **Perspective Projection**, use the **Zoom** option **to pull out** a bit from your object(s) and then use the **Adjust Distance** option **to get closer** to the objects. Repeat this step as much as you like to exaggerate the perspective and reverse the steps to normalize the perspective.

If your Perspective has gotten out of hand, use the Reset View option to reset the Zoom and Adjust Distance values back. If you have already exited the 3D Orbit tool and now cannot get the Perspective back to normal, exit the 3D Orbit command and use the following command steps:

Command:**DVIEW**
Select objects or <use DVIEWBLOCK>: **ALL**
Select objects or <use DVIEWBLOCK>: **<enter>**
Enter option
[CAmera/TArget/ Distance/ POints/ PAn/ Zoom/ TWist/ CLip/ Hide/ Off/Undo]: **Zoom**
Specify lens length <1.000mm>: **35**
Enter option
[CAmera/TArget/ Distance/ POints/ PAn/ Zoom/ TWist/ CLip/ Hide/ Off/ Undo]: **<enter>**

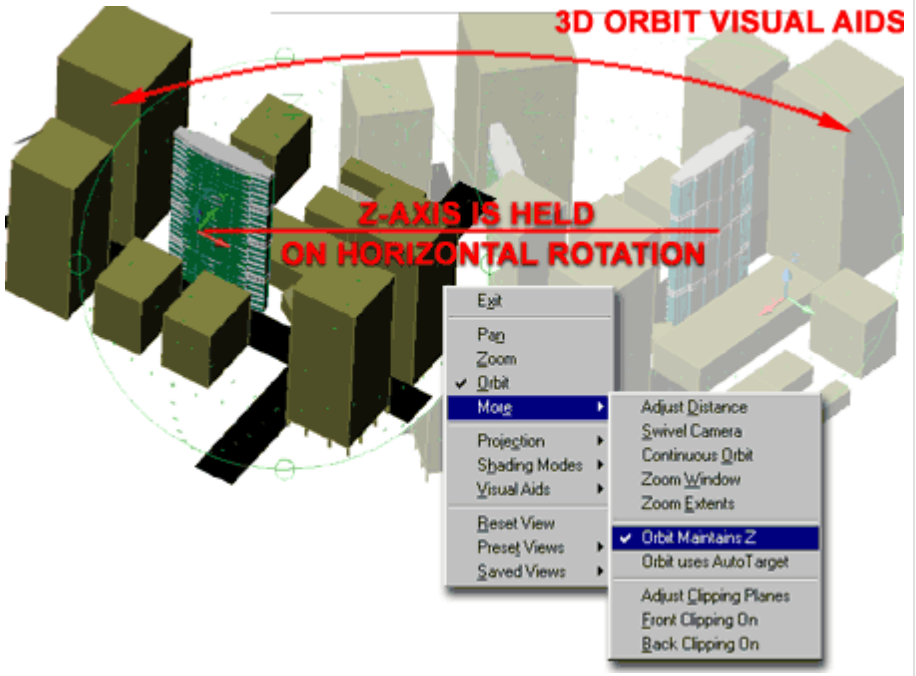


Orbit Maintains Z

Menu	**View> 3D Orbit** (right-click **More > Orbit Maintains Z**)
	
Keyboard	**3dOrbit** (right-click **More > Orbit Maintains Z**)

The **Orbit Maintains Z** option is a feature that Mario Guttman of HOK claims credit for after lots of complaining. This option locks the Z-axis when you rotate the view horizontally. The purpose of this tool is to make it easier to move around objects without flying overhead or falling underneath. I like to think of it as a little bit of gravity.

This option is a **toggle**; either **on** or **off** indicated by a checkmark on the cascading menu.



Orbit uses AutoTarget

Menu	**View> 3D Orbit** (right-click **More > Orbit uses AutoTarget**)
	
Keyboard	**3dOrbit** (right-click **More > Orbit uses AutoTarget**)

The **Orbit uses AutoTarget** option locks the target on the objects rather than the screen to help prevent rotations from moving the view completely out and away from the objects. You should check this option if you find that your objects suddenly appear to rotate out of the screen and off to the sides out of view.

Another great trick that I have for fixing the targeting problems of the 3D Orbit tool is to use the **Camera command** from the **View toolbar** to **OSNAP** a new **Target**. In this trick, I don't supply a **Camera Position** but simply allow the **default** values to remain.

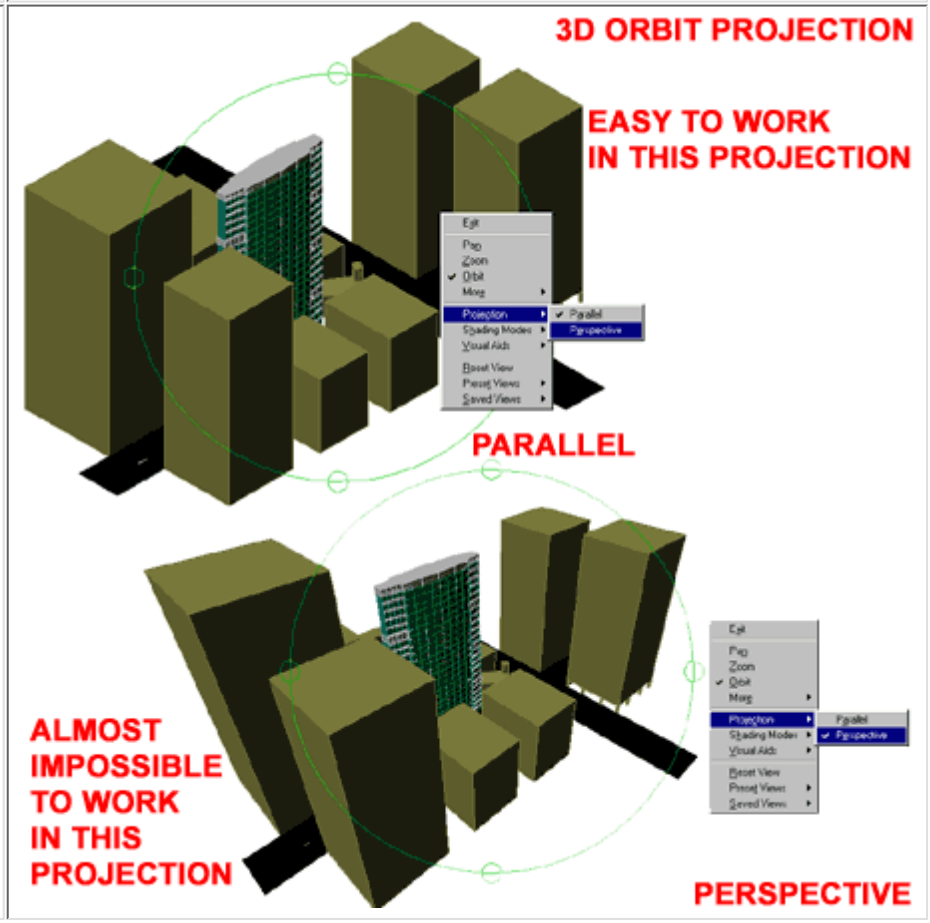
Projection - Parallel and Perspective

Menu	**View> 3D Orbit** (right-click **Projection > Parallel** or **Perspective**)
	
Keyboard	**Dview > Off** (parallel) or **Zoom** (perspective)
Links	Adjust Distance - for information illustration on how to create perspectives.

The **Parallel** and **Perspective** options allow you to switch between isometric-like views with no distortion and perspective views with vanishing points. Perspective Projection is based upon the last settings for the **3D Orbit Zoom** and **3D Orbit Adjust Distance** options.

You can use the 3D Orbit Zoom option to change the Lens (mm) setting while using the 3D Orbit Adjust Distance option to bring the camera closer are farther from the objects in your view.

The problem with Perspective Projection is that you cannot work in this mode very easily and selecting entities tends to be problematic as well. To avoid problems, switch back to Parallel Projection whenever you want to work on your project.



Shademodes

Menu	**View> 3D Orbit** (right-click **Shade Modes >**)
	View> (select type prior to using 3D Orbit)
	
Links	Part 2 - Shade - for information about the various shade options

The **Shademode** options allow you to choose any of the regular Shademode setting while in the 3D Orbit command so that you don't have to exit this tool to set Shademode.

Visual Aids - Compass, Grid and UCS Icon

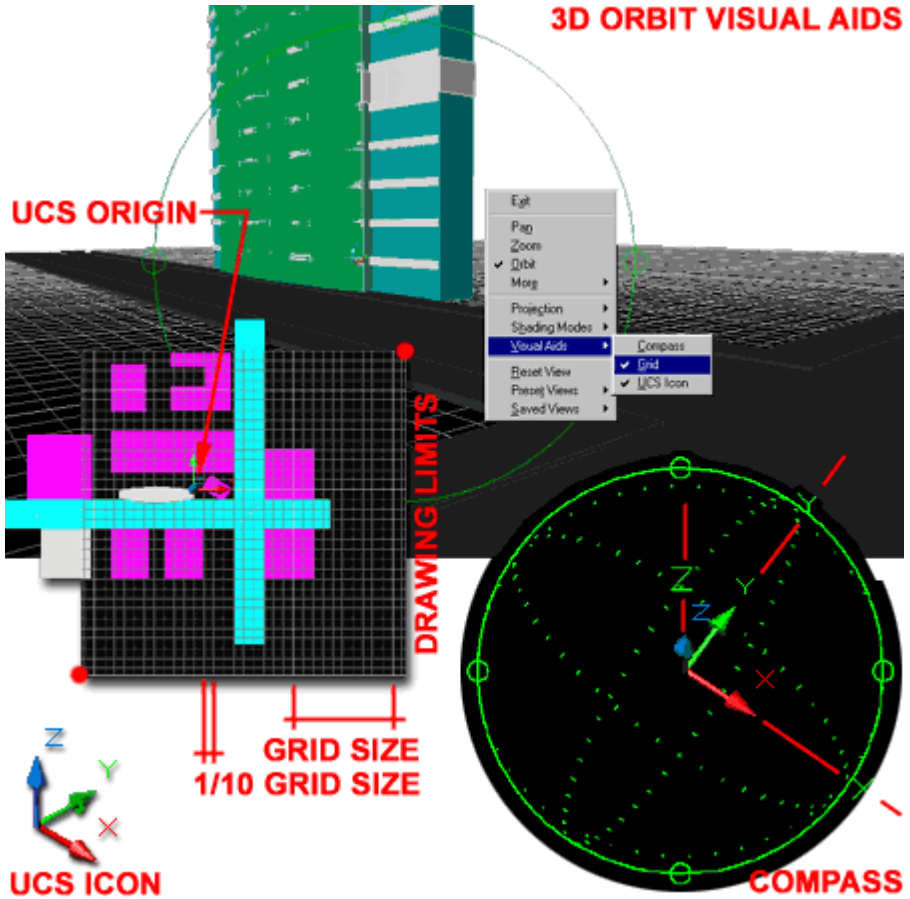
Menu	**View> 3D Orbit** (right-click **Visual Aids >**)
	
Keyboard	**Compass** (prior to using 3D Orbit)
	Grid (prior to using 3D Orbit)
	UcsIcon (prior to using 3D Orbit)

The **Visual Aid** tools really only offer one new tool that you may not have seen before: the Compass. The Grid and UCS icon options are just toggles for the Grid and UCS icon that you would normally see while in a shaded mode.

The **Compass** is an odd tool that provides you with a spherical image and X, Y and Z letters to help maintain your orientation. The Compass, once activated, will remain on for all but the **2D Wireframe Shademode**, so you may find it as irritating a tool as I do.

The **Grid** toggle is a necessary feature since you cannot access the Grid button or type in the command while in the 3D Orbit command. What many do not know about the Grid though is that you can control the size and location of the Grid. I find that the Grid is a very useful tool in orientating myself and, at times, for presentation. It cannot be printed, but you can capture it with the **Print + Scrn** button on your keyboard. This puts the whole screen image on the **clipboard** so you can paste it into a "bitmap friendly" program. The **Grid size** is set by the **Grid command** and is automatically divided into **increments of 10** so you should think about large grid units. The **origin of the grid line** can be controlled by setting a **USC Origin** to a specific point. The overall **size of the Grid Plane** can be set with the **Limits command** (set a lower left corner and then an upper right corner).

The **UCS icon** toggle is a necessary feature since you cannot access the UcsIcon command to turn it off while in the 3D Orbit command.



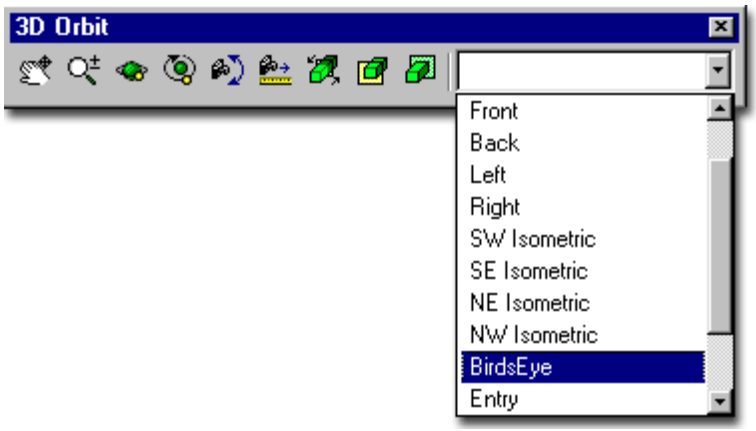
Views - Reset, Preset and Saved

Menu	**View> 3D Orbit** (right-click **Reset View >** , **Preset Views>** or **Saved Views>**)
	
Keyboard	**View** (prior to using 3D Orbit)
Links	Part 1 - View - for information on how use Views to save and restore perspective shots.

The **View** tools allow you to access any of the predefined views that come in AutoCAD and Architectural Desktop (**Top**, **Right**, **Left**, **SE Isometric**, etc.) and any Views that you may have **Saved by Name** from previous work done with the 3D Orbit tool. The **Reset** option only works while in the current session of the 3D Orbit command so if you **Exit** with an odd View and want to reset upon return to the 3D Orbit command, this is not possible.

On the **3D Orbit toolbar**, you can use the Views drop-down list while using the 3D Orbit tool to access all of the **Preset** and **Saved Views**.

Saving Views while in 3D Orbit is not possible. To save a great shot, **Exit** the **3D Orbit** tool and activate the **View** dialogue box to create a New View. This works for Parallel and Perspective Projections.



4 3D Orbit Clipping Planes

Adjust Clipping Planes Window

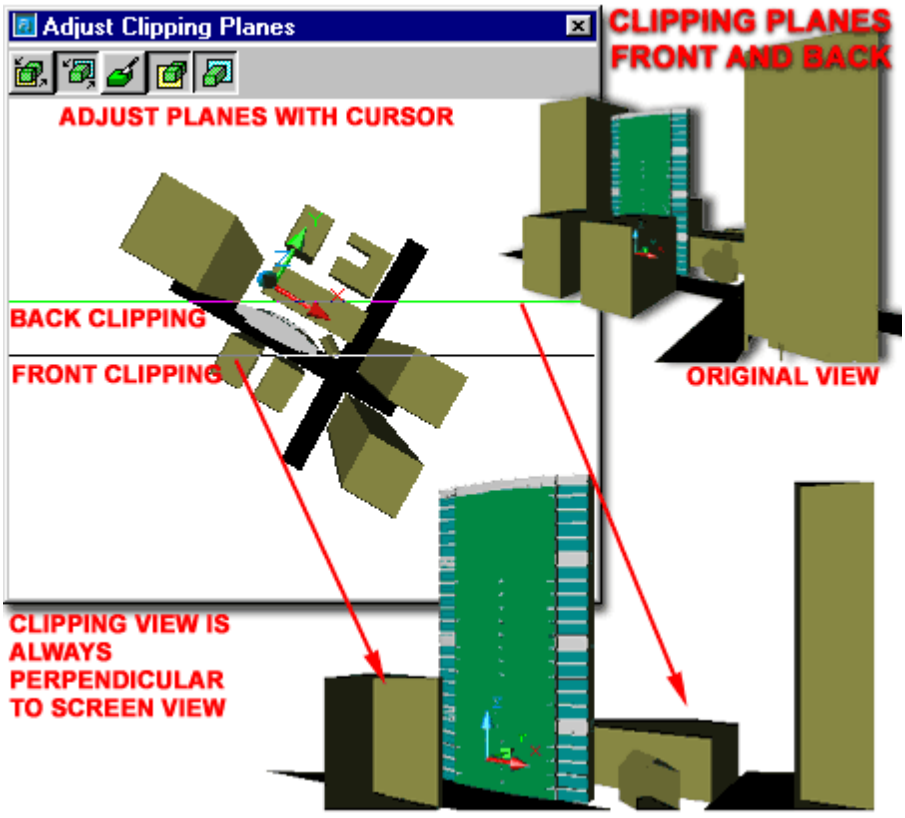
Menu	**View> 3D Orbit** (right-click **More > Adjust Clipping Planes**)
	
	
	
Keyboard	**3dClip**

Illustrated to the right and below is the **Adjust Clipping Planes Window** that you can use to **remove geometry** from your view; both Parallel and Perspective. Though the tools for clipping are relatively simple, getting a good clip is another matter. The Clipping tool will automatically use a view perpendicular to the current view on your screen so if the current view is not well suited for the angle of the clipping lines, you will either have to adjust the viewing angle or the geometry. In other words, as illustrated to the right, the clipping planes will always cut parallel to the view as view-planes. If you clip a common cube in an isometric view it will be clipped at 45 degrees.

Front and Back Clip adjustment - use to set which Clipping Line you want to move. These are automatically selected if you use the adjust cursor to select an existing Front or Back Clipping Line (Green or Black).

Front and Back Clip on/off - toggles which are also on the 3D Orbit toolbar

Slice - locks the Front and Back Clipping Lines so you can move them together as a slice through the geometry.



5 Dview

Dynamic View - a relic from the past

Menu	Not Available
Button	Not Available
Keyboard	**Dview**

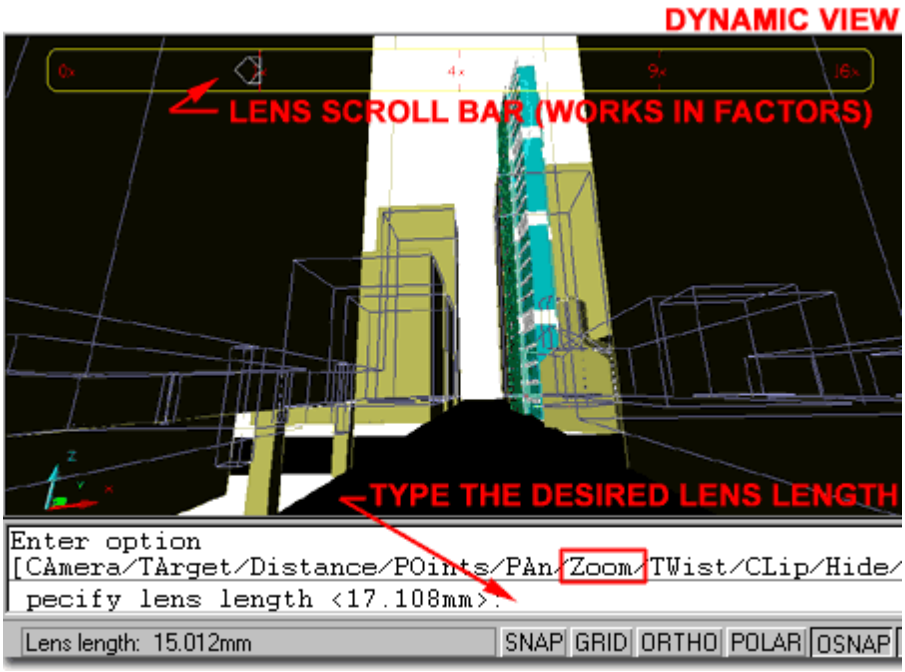
The **Dview** command was AutoCAD's first tool for creating perspectives. It has removed from all menus and toolbars but can still be accessed through the typed "Dview" command. Though it has been put behind the scenes, so to speak, it is in fact a major component of most of the features found in the 3D Orbit tool.

There are two significant reasons that I have decided to briefly discuss this command: one has to do with the ability to specify the **Lens Length**, in millimeters, of the Camera and the other has to do with being a power user.

Command:**DVIEW**
Select objects or <use DVIEWBLOCK>: **ALL**
Select objects or <use DVIEWBLOCK>: **<enter>**
Enter option
[CAmera/TArget/ Distance/ POints/ PAn/ Zoom/ TWist/ CLip/ Hide/ Off/Undo]: **Zoom**
Specify lens length <1.000mm>: **35**
Enter option
[CAmera/TArget/ Distance/ POints/ PAn/ Zoom/ TWist/ CLip/ Hide/ Off/ Undo]: **<enter>**

Many of the options offered within the **Dview** command are identical to those available within the 3D Orbit tool and tend to work a lot faster and more gracefully in the 3D Orbit tool. There are neat tricks that you can use from the Dview options, however.

The **Dview** command can be used to **turn** the **Perspective Projection on** and **off** very quickly without having to bring up the 3D Orbit tool. To test this feature, use the 3D Orbit



tool to set up a good Perspective shot and then Exit. Activate the **Dview** command and use the **Off** option. Activate the **Dview** command and use the **Zoom** option to bring the Perspective Projection back.	
6 Customizing and Tricks	**6-3 3D ORBIT**

spell checked on Jan. 20, 2002