

Z-Modeler User's Guide

2 - Z-Modeler Commands

In the last chapter, we covered the concepts that govern working in Z-Modeler, and we discovered what commands can be used, but we haven't learned what those commands do. This chapter will cover each and every command you'll need to use. Most of these concepts are not difficult, so much of this information is condensed into table format. I will provide more in-depth explanation where necessary.

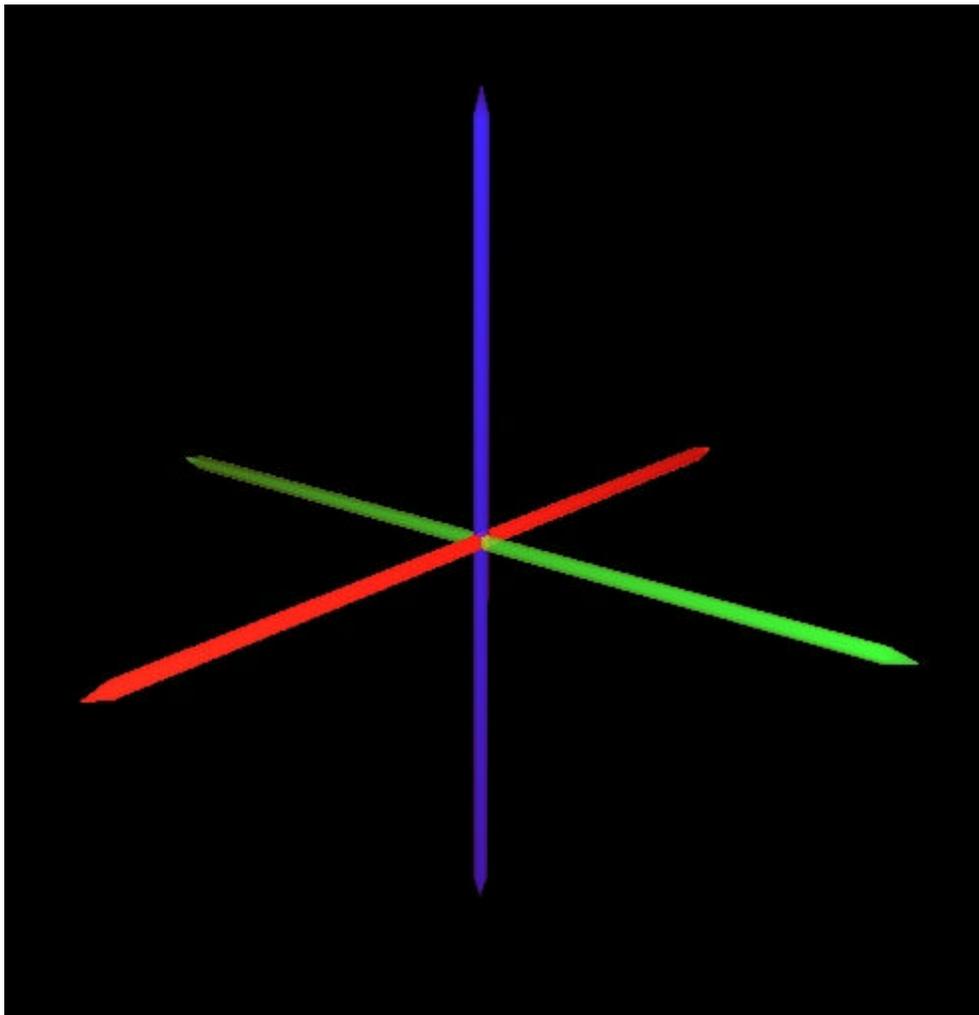
In this Chapter:

- *Axis Control*
- *Create Tools*
- *Modify Tools*
- *Selection Tools*
- *Other Tools*

Axis Control

We paint with a three-dimensional canvas. But we do so on a two dimensional monitor. Our input with the mouse is in two dimensions, and with the keyboard, is one-dimensional. So it takes a creative approach to geometry to learn how to manipulate a 3-Dimensional world, only using two. We have already discussed that the views allow us to see the mesh from different angles, but we also need a crash course in the Cartesian Coordinate system, straight out of classical geometry. This is so that we can understand the concept of axes in Z-Modeler.

All 3-dimensional work is done with a Cartesian coordinate system, which is basically just a set of 3 axes which measure distance from a center. These axes are called X, Y, and Z, respectively. If you remember from your Geometry, that the X axis is generally the horizontal one, the Y axis is the vertical one, and the Z axis is the one that controls depth, forward and backward. Any point in that coordinate system has three values, X, Y, and Z. These values correspond to the point's position on each respective axis. This picture represents the 3 axes, to give you a sense of how they are arranged.



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In all actuality, you can edit Objects along any of the three axes in any view pane in Z-Modeler. For this purpose, Z-Modeler has a *modification axis*. We select a modification axis, and this allows us to modify objects in that view *along that axis*. Recently, Z-Modeler's axis system was redesigned, and now there are two ways to edit along the axes. We will discuss both of these now.

Relative Modification

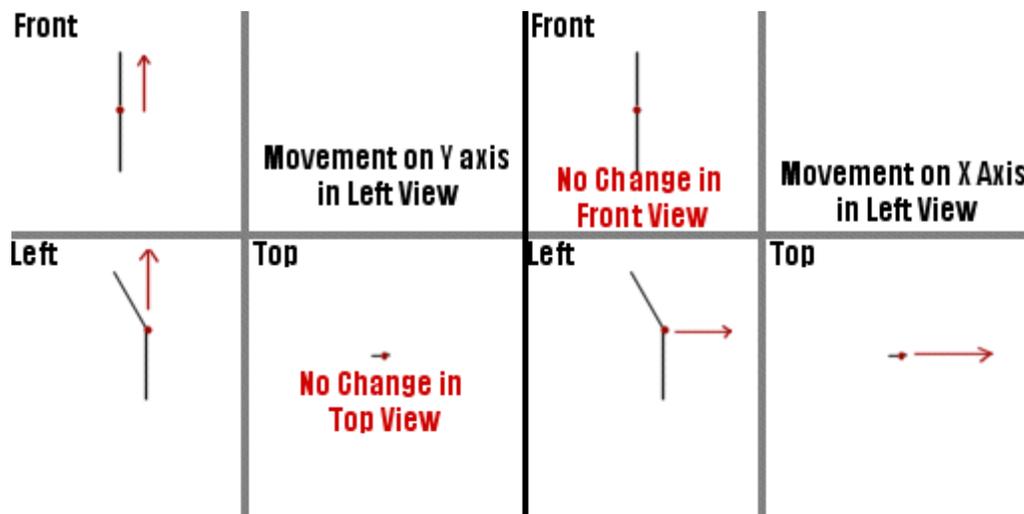
Within each viewport, such as the left, right, top, bottom, front, or back, we can modify elements in the mesh *relative to that view*. This is the most common form of modification. To represent control this, we have the modification axis control. This is a picture of that control, found on the main toolbar.



As you can see in this picture, both the "H" and the "V" buttons are depressed. You can really select 4 different options with this little bar:

- **H:** H stands for Horizontal. You can only modify elements in a horizontal manner in H mode.
- **V:** Like H, V stands for Vertical. Similarly, V mode limits editing to Vertical modification.
- **H + V:** Depressing the H and V buttons at the same time allows you to move unrestricted within the view. You can modify elements up, down, left, and right without restriction. This is the default setting on starting Z-Modeler.
- **D:** D is for depth, and this button allows you to modify elements along the 3D axis, bringing them closer to you or further away. You can't view the change you made in the current view, which makes it the hardest axis to use. Additionally, you can usually produce the same results by editing one of the other axes in a different view.

What may be hard to understand is that these modification axes are all relative to the particular view you're working in at the time. If you are working in the Front view and move something horizontally, in the Side view it will not appear to change at all. In the Top view, however, it will also move left or right. Or, if you move something vertically in the Front view, it will also move up or down in the Side view, but it will not appear to change in the top view. This is a very hard concept to put into words, so let me illustrate.



Absolute Modification

Along with changing the relative modification for version 1.06 and up, Oleg has introduced absolute modification. There is a subtle difference, so we will discuss it. When you click the button on the right of the "HVD Bar", it changes to the "XYZ Bar", as you can see here.



This bar also has three buttons, but you can only depress one of these buttons at a time. What do these buttons do? They simply modify along the X, Y, or Z axis, depending on what button you chose. This is used primarily for working within the User View. In the user view, you change the viewpoint of the camera almost constantly, so moving something horizontally, vertically, or depth-wise with respect to that view would be useless and quite frustrating. So instead, we use the absolute axis to move elements in the User View. Only rarely do we use absolute positioning in regular views, but it is invaluable in the user view. For example, let's say that you had a certain section that you thought needed to be brought forward (along the Z-Axis) but you couldn't really tell how much was enough in a normal view. Use a user view and the absolute Z-Axis to move it to the right degree.

I recommend that you perform some experiments with the sample meshes that are included in Z-Modeler in order to

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fully the difference between absolute and relative modification, and the different axes. A good tip when working with axes is to keep a finger on the TAB key. Instead of clicking the specific buttons that you need on the toolbar, you can scroll through the modification axes by hitting TAB, and you can watch the indicator on the main toolbar change.

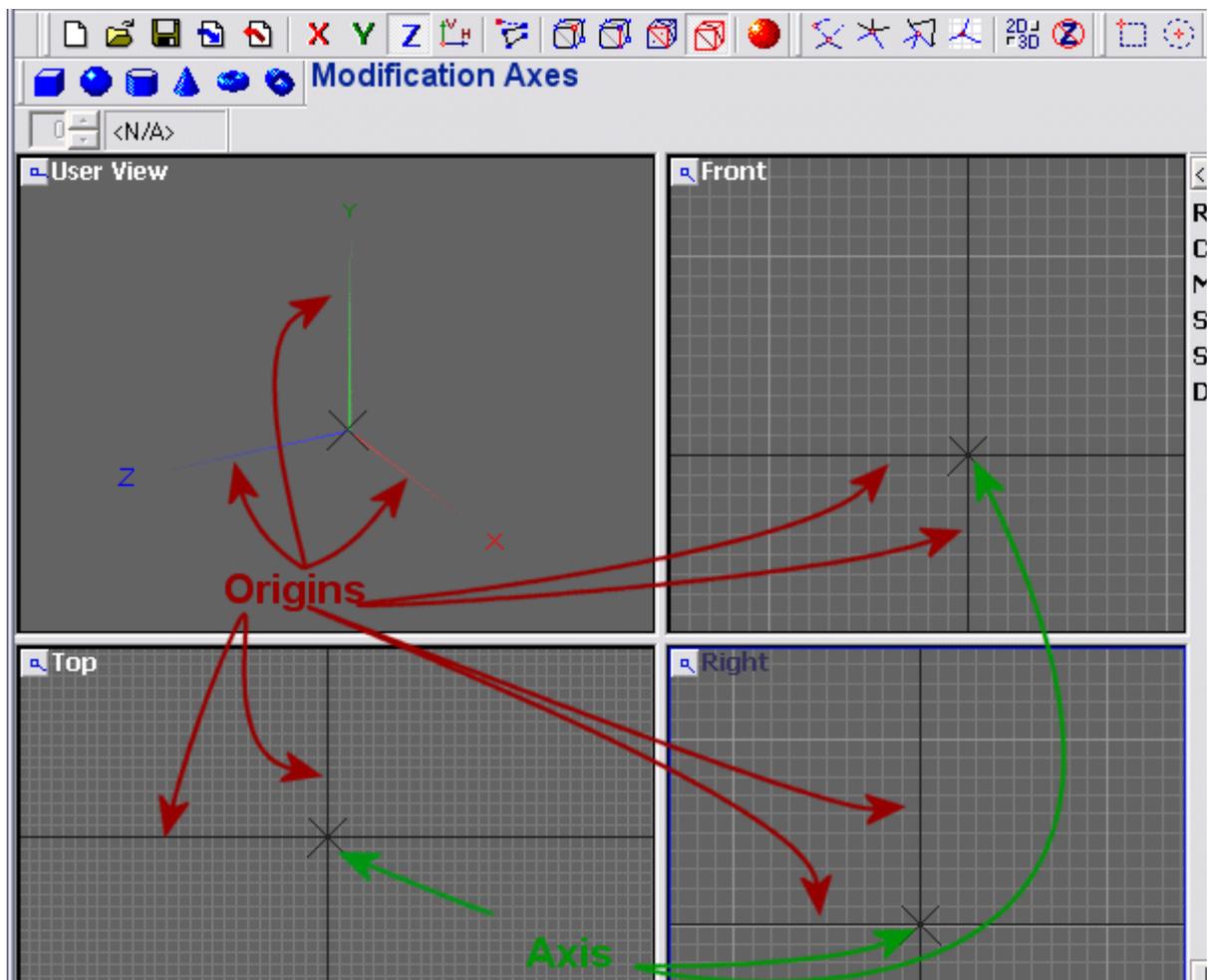
Other Axes

The term Axis is actually rather broad. There are two other components that are referred to as "axes" in Z-Modeler. We will discuss them now to avoid any confusion. We've been talking about Axes of Modification, but now let's introduce the "Origin Axes" and the just-plain "axis".

One thing you will notice in the views of Z-Modeler are the bolder lines running lengthwise and height-wise in each view. These represent the actual X, Y and Z axes discussed earlier. At these lines, the respective coordinate value of that axis is 0. If you moved your mouse over the vertical bold line in the Top view, and glanced at the "Y" coordinate indicator at the bottom-right of the screen, you would see that the number would approach 0. For this reason, we call these axes, the *Origins*. They are the center, or *origin* of each axis. This nomenclature will minimize confusion. Next, you'll see a small X at the intersection of the origins. This is yet another axis. Why so many axes? Because they serve different functions. The Origins serve to give your file a center point. The Axes of Modification aren't really axes at all but they govern how your selection moves along the origin axes. This "X" in the center of your model is also an axis, because it has a special function.

The Axis at the center of the model is really like a reference point. For many tools, this point is a reference governing how the tool affects the mesh. For example, the rotate tool uses the axis as the center of its rotation. All selected Objects rotate *around* that "axis". When you scale an object, you scale it with respect to the axis. So, as we learn about the different commands, keep an eye out to see if the tool is Axis-Dependant, like the two I described above. You can move the axis, and this gives you freedom to customize the tools that are dependent on it. You will use the Display-->Place Axis command to place it wherever you click, or you can hold down the period (.) key and move your mouse around to place the axis.

To keep all these axes and origins straight, let's look at them all in one sample Z-Modeler window. How can we keep all these axes and origins straight? Have a look here:



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With that under our belt, let's get started with Z-Modeler's commands. We'll start with the most important storage place of commands, the Main Toolbox. The commands are in different "drawers" labeled Create-->, Modify-->, Surface-->, Select-->, and Display-->.

Create Tools

The first drawer of our toolbox is labeled "Create" and obviously relates to us creating our own Verts, Faces, Edges and Objects. A word about creation of Objects from scratch: You have to start with an object. You can't start with no Objects and expect to be able to start adding Verts, or Faces. Keep that in mind. And one note: None of the Create Tools are Axis-Dependent.

Create-->Surfaces

This section focuses primarily on creating Objects using an element called *splines*. Refer to the appendix to learn about Splines, as there is no room to discuss them here. The only command we're interested in is Create-->Surfaces-->Flat.

This is the easiest way to create a new object in a completely blank workspace. Once you activate this tool, just drag a rectangle in any viewport to create a flat surface made up of polies. The box that appears when you release the button asks you for a name and two parameters called *horizontal steps* and *vertical steps*. These two are basically, how many polies you want to make up the surface. A setting of 0 for both will make just two polygons that are the size of the rectangle you drew. If you want to specify how many polies are in the surface, just think of it like creating a table in Microsoft Word. The only difference is, your rows are called horizontal steps and your columns are called vertical steps. One thing to remember is that, no matter how many columns and rows you want, subtract one from that number to get the value that you input in Z-Modeler. So, if you want 3 rows and 4 columns, you would put in 2 and 3 into the horizontal and vertical steps, respectively.

Create-->Objects

The Create Objects section is all about operations that involve existing Objects, and creating new Objects from those Objects. Let's look at each command in detail. The following table will be similar to all the other tables you will see in this chapter. First it will name the command, then it will tell you what the command does, and finally, it will tell you what element(s) it works on.

Command	Function	Works on:
Create-->Objects-->Copy	The Copy command creates an exact copy of an object. To use it, activate it, and click on an object. When you try and copy a selected group of Objects, you end up with one object that is a copy of all of them. When you click an object to copy it, Z-Modeler prompts you for a name. Name it and click OK to copy.	Objects
Create-->Objects-->Detach	The Detach command takes a face (or group of selected Faces) out of it's respective object and makes a new object out of it. When you activate it and click on a face or group of faces, it prompts you for a name for the new part. Name it and click OK to detach.	Faces
Create-->Objects-->UniteSelect	UniteSelect fuses several elements into one. You must select two or more Objects in order to use this command. Once you select your Objects, click anywhere, and in the box that follows, name the new object, and click OK to fuse them together. This tool can also be used on Verts, in order to close gaps in your mesh. To do this, switch to Verts mode in the desired object, and select a group of Verts. Proceed as normal.	Objects, Verts



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Create-->Faces

The Create Faces level allows the creation of our polies in different ways. The only thing we need to get started creating polies is an existing object. The easiest way to do this is with the Create-->Surfaces-->Flat command.

<i>Command</i>	<i>Function</i>	<i>Works on:</i>
Create-->Faces-->Single	Allows you to create a single poly that can use up to three existing Verts, or you can create 3 new Verts. Just switch to vert mode in your object, click three places in the viewport, and your poly is created. You can create it using existing Verts if you put your mouse over the vert until it glows blue (active). Then you know that the poly will be connected to that vert. When you're done making polys, just click a different command.	Vert Level Only
Create-->Faces-->Strip	The strip command makes modeling a strip of polys just a little bit easier. You create the first poly using the normal 3-click method, but then your next poly uses two of the Verts from the first poly, and you just click one more time to make the new poly in line with that last one. When you're done with the strip command, you hold CTRL and click to stop. The key to using the Strip creation method, is to remember that the first vert of the first poly you create is the one vert that the next poly will not share with it. This is useful for creating long rows of polies through your mesh.	Vert Level Only
Create-->Faces-->Fan	This command also speeds up modeling a fan of polys by letting you create one poly like normal, and then using the first and last Verts of that triangle as two of the Verts for your next poly. In this way, each poly extends the fan. When you're finished creating using the fan command, hold down CTRL and click to stop.	Vert Level Only

I've created animations to show the action of the strip and fan methods of poly creation. You can view them here:

[Strip Method](#)
[Fan Method](#)

Create-->Splines

The Create Splines section will be covered in the Appendix dealing with Splines.

Modify Tools

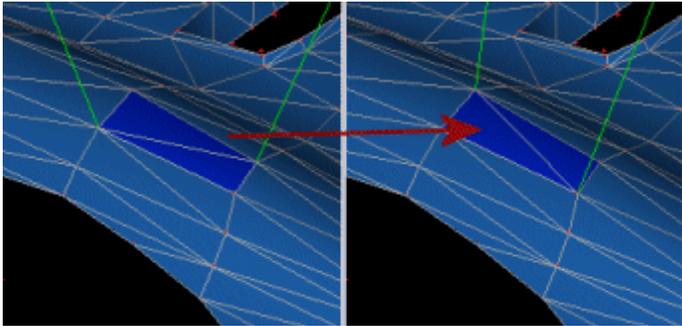
Modifying is the most important aspect of using Z-Modeler. Pay attention to these important tools. The table is on the following page.

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Command	Function	Works On:	Axis
Modify-->Move	Moves the active element, or a group of selected elements, along the selected modification Axis. It is dependent on your X, Y, XY, or Z selection.	Verts, Edges, Objects, Splines	No
Modify-->Rotate (Hold CTRL and Click for Precise Rotate)	<p>This tool, quite simply, rotates your mesh. However, it does so AROUND THE AXIS. This means that wherever you place the axis, will be the center of rotation. This tool also works on different modification axes in different ways. For example, if you want it to spin around in a circle in any view, then use the X settings. If you want it to rotate around the X Origin, then use the X settings. If you want it to spin around the Y Origin, pick Y, and so on. It is difficult to explain. I strongly recommend that you open Z-Modeler's sample meshes and play with the Rotation tool with different axis and modification axis settings.</p> <p>Additionally, you can scale a specific number of degrees on your specific modification axis with the Precision Rotate tool. Just hold CTRL and click once, and this will reveal the Precise Rotate dialog box. Enter your desired number of degrees (check the "-" box if you want it to scale in the opposite direction).</p>	Verts, Edges, Objects, Splines	Yes
Modify-->Scale (Hold Down Shift For 3D Scale) (Hold CTRL and Click for Precise Scale)	<p>Scale is another Axis-Dependent tool, which makes everything proportionally bigger. To use the Scale tool, click and hold on the element you want to scale, and move the mouse up or down.</p> <p>The axis, or center of your scaling, will cause you to have different effects when scaling. For example, if your axis is centered inside the object you want scaled, then it will grow without appearing to shift in place. If your axis is toward the back of the object, then the object will appear to shift forward.</p> <p>You can also scale along the separate origins, such as X, Y, XY, and Z. Obviously, scaling on X makes your object longer or shorter, on Y it makes your object shorter or taller, on Z it makes it shallower or deeper, and on XY it is a combination of X and Y. This is always with respect to the active view. So, if you scale an object on the XY origin in one view, it may not change at all in another view.</p> <p>In order to scale all three origins at a time, (therefore making the object bigger without distorting it), hold down shift while scaling. This is called 3D Scale.</p> <p>If you want to precisely scale your object to a certain percentage, hold CTRL and click the object. This brings up the Scale Factor dialog. Precise scale only scales in 3D mode, meaning you cannot scale along the X origin by 10%. You can only specify that the whole model should be 10% bigger.</p>	Verts, Edges, Objects. DO NOT USE ON SPLINES	Yes
Modify-->Mirror	This will flip the object or vertex to the other side of the axis, exactly the same distance from the axis as it was. The mirror tool works on the X, Y, and XY modes. In X mode it flips your object left-right in the view, and in Y mode it flips your object up-down in the view, and XY does both. After mirroring an object in either X or Y mode, you must reorient it, since it will be inside-out.	Verts, Edges, Objects	Yes

Continued on page 7 . . .

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Command	Function	Works On:	Axis:
Modify-->Break	<p>Break is an interesting, advanced tool that allows you to add detail after the fact.</p> <p>On Vert level, Breaking will split one vertex that has several Faces attached to it, into as many vertices as there are Faces attached to the first one. It kind of explodes the vert into it's respective Faces. It separates and disassociates them.</p> <p>On the Edge level, break is the most useful. Here, it inserts a vertex into an edge where it is needed. Wherever you click along the specific edge, is where it inserts the vert. This will add at most, 2 polies to your mesh.</p> <p>On the face level, the break tool inserts a vert into a face wherever you click, splitting one poly into three. You have to be careful with this tool because you can create a very bumpy surface very quickly.</p>	Verts, Edges, Faces	No
Modify-->Reorient	<p>Reorient works on Faces and Edges to flip the element inside out. It is used mainly in conjunction with the Modify-->Mirror command, since that tool flips your mesh inside out.</p> <p>When used with Edges, it becomes the single-most effective mesh optimizing tool in Z-Modeler. With Reorient on Edges, you can change the orientation of any edge, allowing you to change the flow of polygons. Notice the difference in this picture. The full benefits of this will be discussed when we look at Normals in more detail.</p>  <p>Another function of the Reorient is Normals Flip. Without getting into too much detail, normals flip basically flips the reflections of the car inside out. Sometimes when you reorient something, it's normals will be messed up. This can be fixed by doing a normals flip. Hold down CTRL and use the Reorient as usual.</p>	Edges, Faces, Objects	No
Modify-->Delete	<p>This should be fairly self-explanatory. It deletes things. Any kind of thing. One thing you may notice about Z-Modeler's delete function is that, when you delete some of the Faces of an object, it tends to remove those unused Verts that were connected to the Verts you deleted but that were now useless. If you want Z-Modeler to leave those Verts, just hold down CTRL while deleting.</p>	Verts, Edges, Faces, Objects, Splines	No

Surface Tools

Surface Tools contains commands related to UV Mapping and Normals calculation. To save you from confusion, and due to the importance of each of these topics, they will get their own chapters.

SEL Mode and Selection Tools

Here is one of those sections that is tough to fit into a tutorial. Part of me wanted to tell you right away so that all the stuff I just said has a double meaning. But part of me (the part that won) didn't want you to get too far ahead of yourself. So, now, you get to find out about the second use of most tools discussed so far. SEL (Short for SElected) Mode, quite simply, makes all your tools modify whatever element is *selected* instead of the one that you're highlighting. SEL Mode has no end of advantages, as we'll see on page 8.

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(Advantages of using SEL Mode)

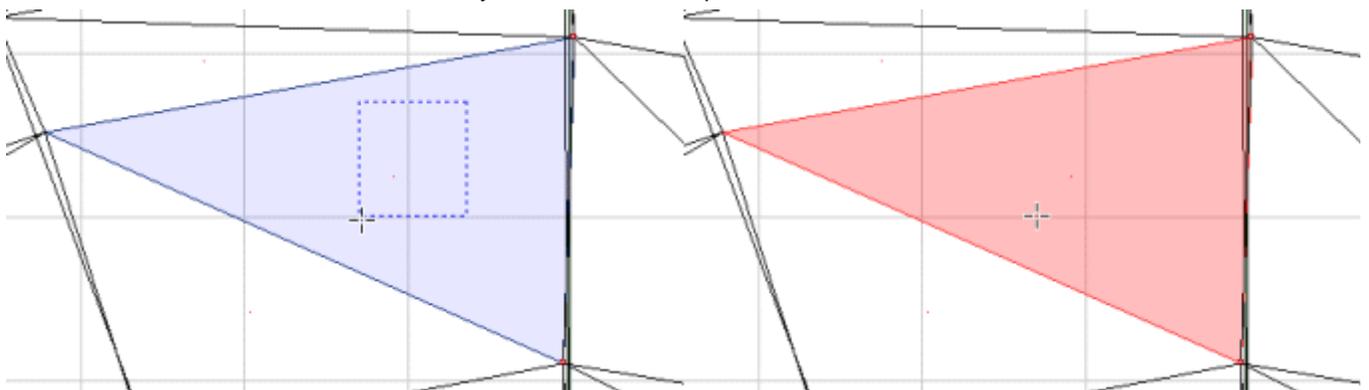
- Allows you to modify multiple Objects simultaneously. This allows you to move, scale, or rotate your Objects without messing up the alignment of them.
- SEL Mode virtually eliminates modifying the wrong elements. Select only the elements you want to modify.
- SEL Mode allows you to modify elements without actually clicking directly on them. Sometimes selecting an element will be easier than activating it, and this makes your workflow smoother and quicker.
- Modifying multiple Objects simultaneously allows you to make small tweaks to a mesh that is symmetrical without disturbing that symmetry.
- SEL Mode will actually allow you to modify lower-level elements (like Verts, Faces, and Edges) in multiple Objects at once. Say, for instance, you want to move the same corresponding vert in two identical Objects. Just select the two Objects, turn on SEL mode, switch to Vert Mode, and right click. You are now editing *both* Objects on the Vert level. Be careful though, with the Select-->Circle or the Select-->Quadr tools active, doing this can lead to elements getting randomly selected. Make sure you deselect all elements when you modify multiple Objects at once.

Overall, SEL mode is a huge efficiency and accuracy boost. Using SEL mode is easy. Just hit the SPACEBAR, or click the SEL Button on the bottom of the Main Toolbox. See a picture of that here.

Of course, to use SEL mode, you have to *select* elements. . . that's a given. Check out this table to see all the selection options. Note that all selection tools, unless otherwise noted, work on Verts, Edges, Faces, and Objects. Absolutely no selection tools work on Splines, and are Axis-Independent.

Tool	Description
Select-->Single	Selects a single element. Right-Click on any element (Vert, Edge, etc.) to select it. It will turn red.
Select-->Quadr	This selects a <i>Quadrant</i> , or rectangular area. Any elements within this area will be selected. Right-Click and drag from one corner around the desired area.
Select-->Circle	This selects an ellipse, not necessarily a perfect circle, of elements. You Right-Click and drag from the <i>center</i> of the desired ellipse.
Select-->Separated	Sometimes, mostly for Normals purposes, we detach certain Faces into a different object, then we fuse them back into the original object to conserve the number of Objects in our box. This tool selects those Faces (or Verts) which are separated from other Verts and Faces. This basically selects whatever is not contiguous in an object. It only works on Faces and Verts
Select-->All	Within the editing level, one right-click will select all the elements that are currently visible.
Select-->None	Right-Click once to deselect all elements.
Select-->Invert	This tool makes all the currently selected elements deselected and all the deselected ones selected. It just reverses the current selection.
Select-->By Material	This is a useful tool that selects all Faces in a current object (or Objects) that belong to a certain material. To use it, switch to Faces mode in any object or selection of Objects. Now click the Select-->By Material button. This will bring up a box that allows you to select the material you want. Note that selecting by material does NOT clear the previous selection. So, it selects a certain material <i>in addition</i> to whatever is selected right now.

Another important item on the subject of selecting are those dots in the center of Faces. If you've ever worked in Z-Modeler on the Faces level, you've seen those small dots on each of the Faces. Those represent the center of the face. When you select with either the Quadr or the Circle tool, you have to encompass the center of each face in order to select it.



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Display Tools

The next "drawer" of your toolbox contains the Display tools. This is a pretty straightforward section. From previous sections, you know what it means to be selected, enabled, hidden or unhidden. This is just a recap of those concepts, and the table provides a quick reference.

Tool	Description
Display-->Disable	This tool allows you to disable any Objects, Verts, or Faces, or a selection of those elements by left clicking on them.
Display-->Enable	This re-enables your disabled Objects. It's rather hard to do on the Vert and Face levels. The only way I got it to work was to turn on SEL mode, use Select-->All, and then left-click. All disabled Verts or Faces are re-enabled. With Objects it's rather easy, Z-Modeler brings up a dialog box showing disabled Objects and allowing you to re-enable them one at a time.
Display-->Hide	This hides Objects, Faces, Verts, or Edges. This tool is especially useful on the Vert and Face levels, when you want to view elements without all the stuff behind them, with regard to the view. For example, you need to modify some headlights, but all the Verts and/or Faces behind the headlights confuse you, so you hide them using SEL mode.
Display-->Unhide	This unhides all Verts, Faces, or Edges you had hidden, or it brings up a dialog boxes showing all hidden Objects and allows you to select which ones to unhide.
Display-->Place Axis	This quite useful tool is used to change the position of the axis within the current view. When activated, all left clicks in the view change the position of the axis. I recommend using the period (.) key instead of this, since using Display-->Place Axis is usually used in conjunction with Scale or Rotate, so using it deactivates those commands, and you have to go get them again.
Display-->Reset Axis	Equally as useful as Place Axis is Reset Axis. Instead of trying to put your axis back at the origin. by hand, just hit this button and it goes back. Unlike Place Axis, this tool does not deactivate any other left- or right-click tools you have activated.

Now that we've covered the Display tools, we're done with our Main Toolbox. But wait! There's another very important Float bar that is integral to working in Z-Modeler. That's the Objects Toolbox.

Objects Toolbox

The Objects toolbox is the main organizing and renaming center for the Objects of your mesh. It is the simplest way to see what parts are in your mesh, hide or show them, and it has the capability to enable, disable, select, delete, and copy Objects. These functions are compressed into a right-click menu and four buttons. Here's a reference picture:

As you can see, the first three options of the right-click menu refer to the state of the object you clicked on. The three are Hidden, Enabled, and Selected. The object you see here, is Unhidden, Enabled and not Selected. You could select it by clicking *Selected*, or Hide it by clicking *Hidden*.

Next we see an Order submenu. The order submenu moves Objects up or down the stack. The "Move Up" command moves the selected object up once in the stack of Objects. The "Move Down" command moves the object down once in the list. This is very useful for keeping Objects of the same type together, and also for games whose hierarchy demands a certain part order. Incidentally, this was my idea, which I suggested to Oleg. There's my small claim to fame.

Next we have the Vertices and Faces submenus. These are useful for UnHiding, Selecting, or Deselecting the Verts or Faces of those Objects. If Verts or Faces from that object are selected, you can also view and change the properties of those Verts or Faces. If, for example, you wanted to change the material assignment of the Faces of an object.

The next command is Rename, which brings up a dialog box which allows you to change it's name. Below that is Create Copy, which brings up a similar dialog box. The only difference is that the part you're naming, is the name of the copy you're making. After these is Delete, which, as you may have already guessed, deletes Objects. The Properties command brings up the same dialog box as the Attributes command from the Edit menu.

The four buttons below the list of Objects work only on whole Objects. The Hide all and Show all buttons do just that. They hide or show all your Objects. The Select All or Deselect buttons, again, select or deselect all Objects that are visible. It's a simple tool but it's indispensable. However, the Toolboxes aren't the only places that you can control Z-Modeler. There are more commands stored in the Toolbars.



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Toolbars

Z-Modeler has 5 Toolbars (Though one is grouped under the Float Bars), the Main Toolbar, the View Easy Tools Toolbar, the Snapping Tools Toolbar, the Views Toolbar, and the Numeric Toolbar. Many of the commands on the toolbars have already been discussed due to their fundamental nature. Therefore we will breeze over certain aspects.

Main ToolBar

The main toolbar holds those basic commands that are common to a lot of programs. These include New, Open, Save, Import, and Export. It also contains the Level selectors (Vert, Object, etc.), and the Modification Axis Indicators/Selectors (X, Y, XY, and Z). The only button we haven't discussed, is the Blue circle, which is another shortcut to the Material Editor. This can also be accessed by pressing the "e" button, or from the View menu.

View Easy Tools

This is the smallest toolbar, and possibly the least-used. It contains tools that allow you to select elements with the left mouse button instead of the right button. Since these override normal commands which are usually used with selection tools, I guess I could only recommend these tools to people with one-button mice. For normal use, I like to use the Select--> commands so that it doesn't disrupt my workflow.

Snapping Tools

This is a quite interesting toolbar. Snapping is where your mouse, and whatever the mouse is dragging, is sort of magnetically attracted to certain parts of the view, like other elements, or view grid lines. The commands in this toolbar are in-depth, so here comes another table:

Button	Description
	This is the Spline-Snapping tool. It makes your mouse, and whatever it is dragging, snap to the nearest Spline Vertex. This is useful for duplicating splines.
	This is the Vertex-Snapping tool. It makes the mouse, and whatever it's dragging, snap to the nearest Vertex.
	This is the Edge-Snapping tool. It makes the mouse, and whatever it's dragging, snap to the nearest Edge.
	This is the Grid-Snapping tool. This makes the mouse, and whatever it's dragging, snap to the nearest view grid-line.
	This is the 2D/3D Snapping toggle switch. Interestingly, Z-Modeler can snap, for example, vertices, to the nearest element (be it spline vert, vert, or edge) in three dimensions. In other words, if you snap to a vert that has a different depth in the current view than the element you are dragging, then Z-Modeler will change the depth of the object you're dragging to match the vert you snapped to. Sounds useful. So, 3D snapping (Objects being dragged are snapped along the Z origin as well), make sure this button is pushed in. If it is not pushed in, then only 2D snapping will be used.
	This is the No-Depth Snapping mode toggle. When Z-Modeler is snapping your elements around, it considers which element is nearest to the element you're dragging. It considers how far it is from your element both left and right, up and down, <i>and depth-wise</i> . Clicking this button will turn off the depth-wise consideration of what is "closer." According to Oleg, this is best used in 2D mode only. This makes sense, because if your Objects are being snapped along the Z origin, then you want Z-Modeler to consider what is closer to your Verts along that Z origin as well.

To tell you the truth, I have yet to use snapping on a regular basis. Oleg says that snapping should only be used when needed, and should be turned off for regular use. I would agree with this. One final little interesting tidbit, is this: snapping options can be turned on in combination. For example, you can turn on Spline AND Gridline snapping at the same time. So, if snapping's your thing, play around with different combinations to see what you like best.

View Tools

These tools are mainly used to change your views, by panning, zooming, and so forth. Personally I prefer the arrow keys and the + and - signs for panning and zooming. I find it doesn't disrupt my workflow as much as these "easy" tools. Though for beginners they might be helpful (I used to use them all the time). There are two interesting tools here though: the Autoscaler, and the Fit-to-view tool.

The Autoscaler is pretty cool if you have a large model you wish to browse through. The way it works is simple: when activated, you scroll the view that's active by moving the mouse toward any edge of that view. This is active overtop any other commands, so you can use it when modifying or creating meshes. Sometimes it gets in the way though.

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The Fit-To-View tool is really interesting. You use it by holding ALT, and left-clicking on an object to zoom to fit it, or right-clicking to zoom to fit your selection. It seems to be a really cool little tool.

The Numeric Bar

This is one of the most ingenious things I have seen in Z-Modeler so far. The Numeric Bar is the most versatile, time-saving device within Z-Modeler. When I first learned about it, I was in awe. Simply put, the numeric bar adjust settings for many different tools. It is a numerical input that you adjust with up and down buttons:



When you activate a tool, a vital setting for that tool may be configurable inside the numeric bar. Now, there are 3 numeric toolbars (They are found under the View/Float Bars menu for some reason) but only (#1) ever seems to get used. In general, the options controlled by the numeric bar will be self-explanatory. Still, there aren't that many of them, so I will briefly explain any adjustments that you can make to a tool with the numeric bar.

<i>Tool</i>	<i>Adjustment</i>
Create-->Splines-->NGon	You can specify how many sides your ngon should be.
Modify-->Rotate	You can adjust how many degrees you want to rotate your elements at a time. This is called Degree Snap. For example, you can rotate in increments of 72 degrees if you want to space 5 spokes evenly on a wheel.
Modify-->Scale	You can adjust how much the scale tool "obeys" snapping. If you have snapping on, then the amount of snapping that your scaling does will depend on what value (between 0 and 100) you enter here.
Modify-->Break	This is a really cool adjustment. You can specify how many Verts you want to insert into an edge when breaking Edges. If you choose to insert 3 points (By entering 3 on the numeric bar), Z-Modeler will insert 3 Verts into your edge, spaced evenly from the center of the edge.
Surfaces-->Normals-->Rotation	Like Modify-->Rotate, this allows you to specify Degree Snap for rotating normals as well.
Surfaces-->Normals-->Projection	You can specify "Applment" (which isn't really a word but it means application or "how much a tool is applied") from 0 to 100%. This is useful if you want partial normals projection.

That cleared up a lot of issues for me when I found out about it. I hope it's as enlightening for you as it was for me. That about does it for toolbars. Make sure you have them all enabled with the View/Toolbars menu. Speaking of menus, did Oleg just put those menus in there for filler? Apparently not. Let's check them out.

Menus

The menus, according to Oleg, contain "rare tools, settings dialog boxes, advanced tools and other stuff." Well let's go over those rarely used tools.

File

Like the file menu of almost every other program on the market, Z-Modeler's File menu contains the familiar New, Open, Save Exit, and Recent File list commands. There are three items of note here: Import, Export, and Merge. Import and Export allow you to save your mesh in formats that are compatible with different games, like Need For Speed, Racer, F1 2001, and so forth. The Merge command is like an Import for Z3d files. When you choose Merge, you are prompted to select another Z3d file. When you do, you can choose what parts you will import into your current file. All the related materials will be imported and the proper textures will be loaded.

Edit

Currently this contains the Undo and the Redo, plus the Attributes dialog box. The attributes dialog box allows a lot of control over your mesh. When you have part of it selected, you can go into the attributes dialog to see what material it has been assigned to, change that assignment, and do other things like set faces' flags, and so forth.

View

This is a major contributor to how your user interface looks. You can turn the status bar on and off, you can activate the materials editor, and you can display or hide toolbars and toolboxes. Also, there is a Textures Management submenu.

The Textures Management section allows you to do three things. You can control what texture images are loaded in conjunction with your Z3d file, change where Z-Modeler looks for them, and reload all the textures at once. The Textures browser is an important tool, because, even if an image is not currently being used (for example, a tracing image you aren't using anymore), it is still being loaded with Z-Modeler. This can cause performance lags bigtime. So you want to periodically clean out unnecessary textures. This will keep your Z3d file from taking too long to load up. The Search Paths box also allows you to alter the location of specified textures. This can solve some problems with textures not loading. Finally, reloading all textures is useful for

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when you're changing your texture and want to see the results on the mesh. You don't have to re load your entire mesh, just the textures.

Options

This menu allows you to alter Z-Modeler's program options.

3D View

This submenu allows you to adjust global settings to Z-Modeler's 3D engine. You can enable or disable Specular Highlights, Dithering, Z-Buffering, Fog, or Per-Face Rendering on this menu. You can also switch to software mode with the "Force Software" option. If you have more than one 3D Accelerator, and want to specify which one to use, click on Select Device... and you can do just that. The 3D View also contains the Build Time submenu. The settings in here affect when the changes you make in the views show up in the 3D View. The default setting, "While Action" (which basically means Real Time), means that exactly as you modify elements in the editing views, the changes will be made in the 3d view. The other option is "After Action", meaning that the 3D view won't be updated until you finish your modification. I recommend this option only for those with extremely slow computers.

Normals

This submenu allows you to enable automatic recalculation of normals when you modify a mesh ("Automatic Update") and allows you to specify whether the whole mesh's normals should be recalculated when you edit ("Extended Mode"). If you are working with a very specific set of normals, I suggest you turn these both off.

Editing Views/Always Active

In this mode, Z-Modeler will allow you to pan and rotate the 3D view camera without making your last editing view inactive, so you can go right back to working in that view.

Settings...

The settings dialog allows you to customize many things. Let's look at the different tabs in the box.

Tab	Section	Description
About		General info about the program, like install date, whether it's registered, or not.
Path		This tab is the same as the View/Textures Management/Search Paths command.
Colors		This tab allows you to specify custom colors for different aspects of Z-Modeler including, Mesh lines, Active Mesh lines, Selected Mesh lines, Active and Selected Mesh lines, Disabled Mesh lines, grid lines, axis lines, interface colors, vert color, normals color, dots color, and more. To change a color, you can set it to one of your windows defaults, or you can choose a custom color by clicking on <CUSTOM...> and choosing a color.
Highlight	General	This allows you to edit whether or not Verts, Normals, Active, Selected, or Active+Selected elements are highlighted within the 3d view(s). You have to play with it in order to understand.
	Custom Parameters	Here, you can set how visible the elements are, and what color they are. If you want Active meshes to glow green instead of blue, here is where you could make that happen.
Open/ Save	Store:	This area lets you select whether or not to save extra data with your mesh. You can have Z-Modeler save your view layouts, your splines, any extra data, and you can make Z-Modeler compress it's Z3d files. I recommend you do not let it save splines unless you know what you're doing. Sometimes a Z3 file will not want to open if it has Splines saved in it.
	AutoSave	This is the lifesaving feature of Z-Modeler. It creates a file named autosave.z3d in Zmod's main folder. You can have it save as often as every 3 minutes to this file (I wish we could have every minute) and has saved my meshes to be sure. If you did something stupid (not that you would) or if Z-Modeler crashed on you (not that it would), you could open your file back up to the last place you saved it, or you could open up Autosave.z3d to see if it has a more recent version of the file and which one is more correct.
Direct3D	Lighting	This allows you to control how much shading is put into your meshes. If your normals make certain parts of your mesh dark and you don't want to fix them right now, you can make Z-Modeler display less shading to see the details of your mesh better. For full shading, drag the Shading (shadows) slider all the way to the right.
	Fog	This allows you to match the color of Z-Modeler's fog to the background of the 3D View, and to change how dense the fog is. The rule is, the farther your object is from the camera, the thicker the fog will be. With the slider all the way to the left, there is no fog. You can also disable fog from the View/3D View menu.
	Custom	This allows you to specify what color the default material should be. It also allows you to adjust how "see-thru" those semi-transparent Faces are.
Hot Keys		This tab lets you assign hot keys to different commands. You can also disable specific hot keys.

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Tools

When you register, a lot of cool tools get added here. But if you're not registered, the only thing in here is the Insane 4x4 VHX bar, which I suppose allows you to specify Insane-specific settings to the mesh.

Plugins

This toolbar contains a shortcut to the Hot Keys menu, which is also available in the Options/Settings command, under the hot keys tab. It also has (currently) FCE and C3d custom settings boxes that give you filter-specific control over your meshes.

Help

I think we all know what's in here. :) Oleg's help is quite *helpful*. Check it out for some specific questions.

Well, that wraps up menus, and for that matter, this whole chapter. I hope you were able to follow my Z-Modeler roadmap, so to speak, and that you can "become one with the machine." I say this because after a while you will come to view Z-Modeler like an extension of your fingers and will be quite fluid when working with it. Now, let's move on to some *really* interesting topics: Getting Started With Your Mesh, Chapter 3!