QE4
Modified for
Heretic II

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Please remember that this is an unsupported program. If you mail us with a question, don't be upset if we take a while to get back to you, or don't get back at all. We'll always make an effort to get back to you, but

sometimes things slip by that are beyond our control. Just re-send your question if we accidentally don't respond! –Ed.

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What is Quake Ed?

Quake Ed is the software that is used to create levels for games utilizing the Quake and Quake 2 engine. Written by id Software, Quake Ed is similar to CAD programs in some respects and 3D modeling programs in others. Unlike CAD and modeling programs, Quake Ed has been simplified to allow only tools that are necessary to build levels for games.

For those of you who are already familiar with Quake Ed version 4 (QE4), you'll be pleased to see some of the custom modifications we've made at Raven Software. Some of these include the ability to list textures and entities used (and how many times they've been used), the ability to see the correct bounding boxes for rotated entities, and many more that will be discussed later. We've added some different surface flags and almost every entity has been changed in some way. Even old standbys such as Func_Door have been modified for our use. We hope you enjoy playing around with the new features and building some awesome Heretic II levels to share on the 'Net.

Hardware Requirements

While there are no steadfast requirements for the editor, at minimum you'll want whatever the requirements for the game are (in the case of Heretic II a Pentium 166 with 32 MB of RAM). Of course, we recommend the fastest machine you can get your hands on. Some of our designers are still working with PPRO 200's, but most have Pentium II 300's or higher with 128 MB of RAM. You may also want another machine for BSPing, but that's only if you're a diehard.
A 3-button mouse is also a necessary piece of equipment. Many of the features in QE4 are only available with the middle button. Although QE4 requires an Open GL driver to be present in the System32 directory of the Windows directory, the generic Microsoft driver works well in most cases.

Software Requirements

- Windows NT 4.0 or Windows 95. We have modified QE4 to work in a fairly stable state on the Win95 platform, but we make no guarantee that it won't crash!
- Heretic II of course! It should be with this if you got it off the CD. If not, shame on you! Go buy the game!

Starting QE4

Copy the directory **QE4** somewhere onto your hard drive. It should have the QE4 application, a Heretic2.qe4 file (which is the project file), qvis, qrad, and bsp. The Heretic2.qe4 file is configurable and is currently configured to point to the Heretic files in C:\program files\hereticII\base.

Upon starting the editor, it would be a good idea to load the project file under **File**, **Load Project** to ensure you are getting the Heretic II files. Next, you will need to go to **Misc**, **Set Max View Distance**. The default distance is 1024 pixels. You can enter whatever number you'd like, but keep in mind that a good number is from 2000 and up, based on the processing power of your machine. If you find that the editor is performing poorly, lower the Max View Distance. You'll be surprised how much this helps.

Now, you'll want to set up the screen in a way that's most comfortable for you. Take some time and experiment a little. We strongly recommend that you keep your camera view fairly small unless you have a fast machine, as that view uses a lot of system resources when textured (more about that later).

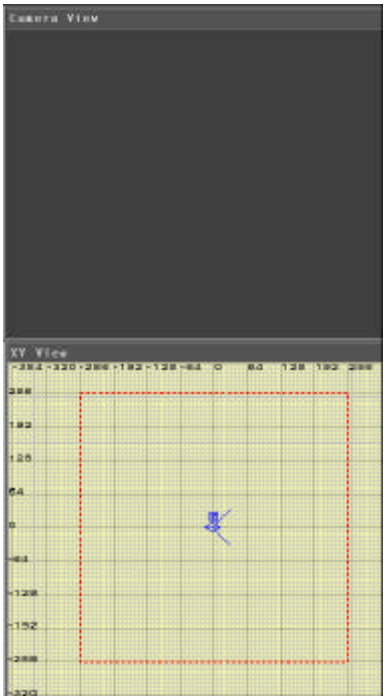
Getting Started

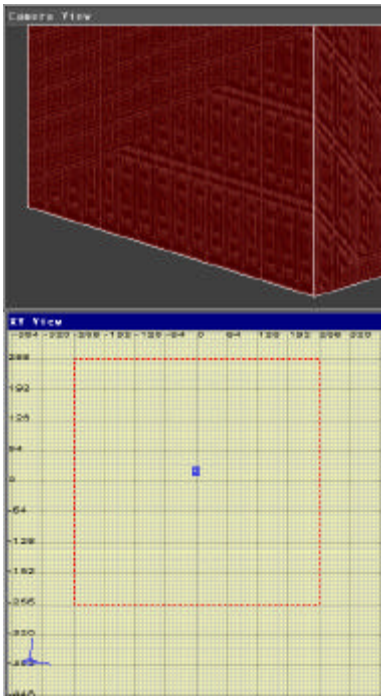
You're probably wondering, now what? How do I actually make a map? Here's a quick tutorial that will show you how to build a couple of rooms, place entities (such as lights), and BSP the map so you can look at it in the game.

Step 1:
Upon starting the editor for the first time, you'll immediately want to do two things. The first is to load a project. Select **Load Project** from the **File** menu. Select Heretic2.qe4. This loads in all the entities from Heretic II and allows access to the texture sets. Next, go to **Misc**, **Set Max View Distance**. Check the explanation of this on page 18.

Step 2:
Next, you'll want to select a texture set to use. From the menu, select **Texture**, **Silverspring**. These are the textures used in the first two levels of the game.

Step 3:
In the XY view (the window with the grid), simply left-click and drag to create a four sided brush. A cubic brush is the basis of all building in the editor. That doesn't mean it has to be a perfect square or rectangle, though. You can skew the brush or manipulate the vertices to make a parallelogram or trapezoid shape, cut it to make it have fewer sides, turn it into an n-sided brush, and many other things. Regardless, you always start by making a four-sided brush and manipulating it from there. To begin, let's make a room. Create a brush as big as you want your whole room to be. The brush in the diagram is 515x512x256.





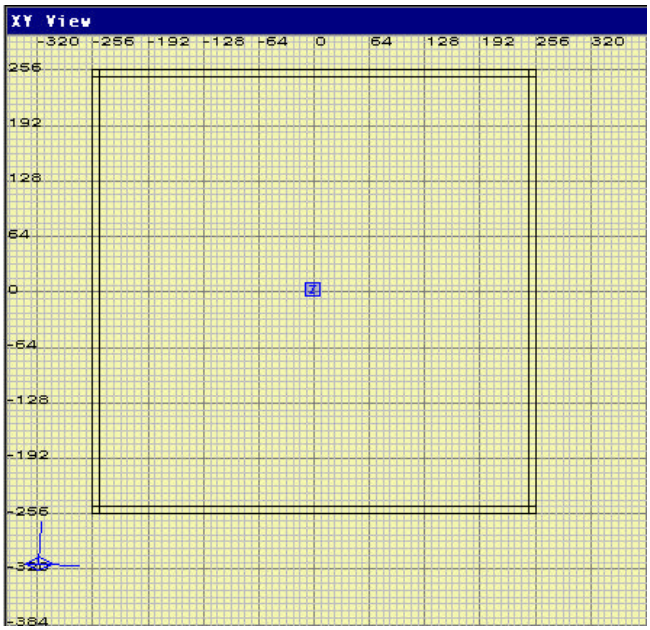
Step 4:
You'll notice in the camera view that you as you make the brush, you can see it growing. At some point, it may disappear from view. The reason might be that your camera is inside the brush. Each face of a brush is "one sided," meaning that when you are inside the brush there is no inside face to look at. To solve this dilemma, you must move your camera out of the brush. You can accomplish this in a couple of ways. First, you can simply use the arrow keys to move

the camera. Or you can hold ctrl-middle-click in the XY view to where you want to move it. Do this now to move the camera to the outside of the box.

Step 5:
Next, you'll want to figure out the height of your brush. There is a small window titled "Z", that is a pseudo side view. To check the height of a certain brush, shift-middle-click somewhere inside the brush. You'll notice a small blue box with a Z inside of it appear where you clicked. The little blue box is known as the "Z-Checker." The Z view will show the height of every brush that is occupying the same area as the Z-checker. You can use the Z window to adjust the height of any selected brush.

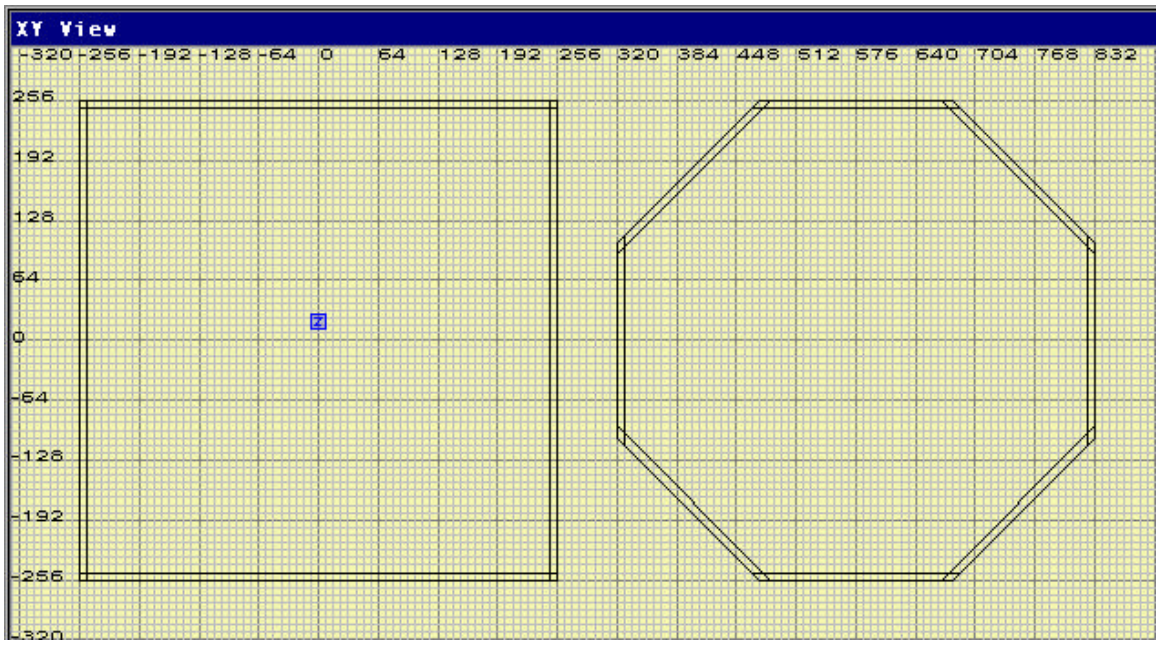
You can see from looking at the "Z" window that the brush that has just been made is 256 units tall. The blue box with the diamond on top represents the camera. The box is roughly the height of the player, and the diamond is where the "eyes" are. In Heretic II, the idea of the top representing the "eyes" is not as useful since it is a third person game. But in the editor, it still shows you where the actual camera is located.

Step 6:
Now that the brush is the appropriate size, we can turn it into the first room. Choose **Select**, **Make Hollow** or find the hollow button (it's one of the buttons on the toolbar) and click it. You should get a view that looks like this:



If you now move the camera inside the box with either the directional keys or ctrl-middle-click, you will see that the box is now hollow. The "walls" of the room are 8 units thick. If you change the grid size before you hollow the brush, the walls will be the thickness of the grid.

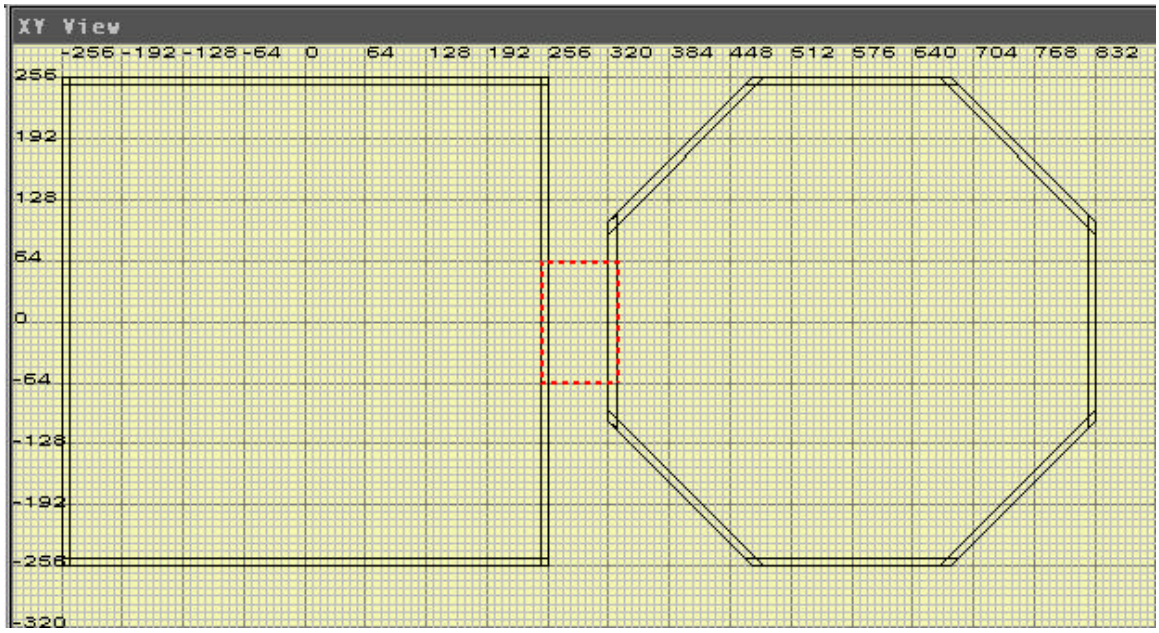
Step 7:
Let's build a second room and attach it with a hallway. First, you need to deselect the brushes you currently have selected. Simply hit Escape to deselect them. Now, make a brush the same size as the first over to the right. With the brush still selected, choose **Brush**, **8 sided snap** (ctrl-shift-8). You will have a large octagon shape next to your first room. Then, while the brush is still selected, hit the **Make Hollow** button to get an octagonal shaped room. Your view should now look like this:



Next, let's build a hall. There are a couple of ways to go about this. You can build a brush the size you want the hall to be, and subtract that from the other rooms, or you can build it manually out of the room's wall. Let's do both to show you the different ways that it can be done. Now would be a good time to save, also. We would hate to have something happen to our hard work! Go to **File**, **Save As**, and enter a filename.

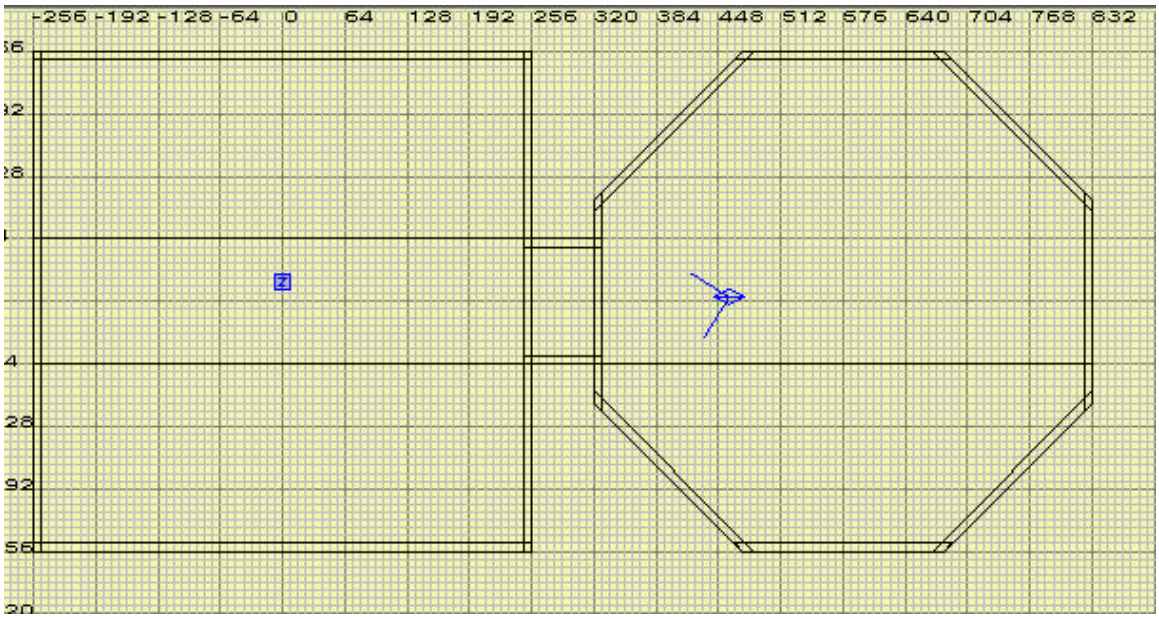
Step 8:

Deselect the brushes you have selected (**Escape**). Make a brush that touches the inner portions of the walls in the center of the view, and is 128 units high. It should look like this:



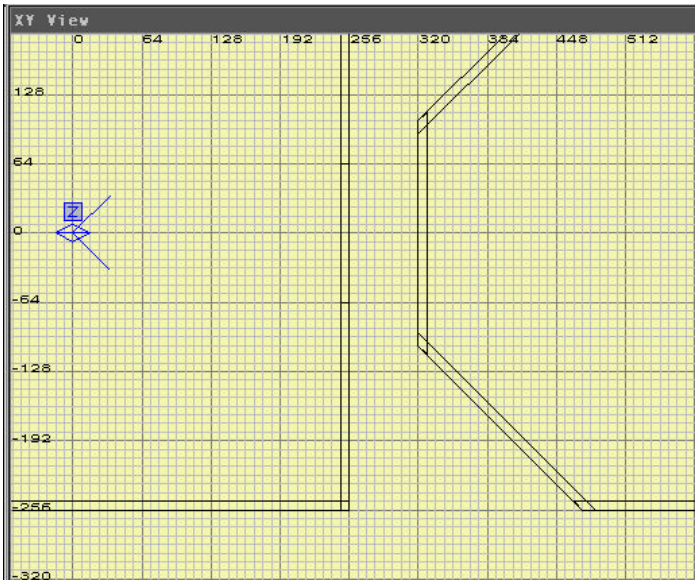
Now, go to **Select**, **CSG Subtract**, or hit the subtract button to cut a hole in the walls (which is one of those handy buttons on the toolbar.) Then hollow this brush and get rid of the two ends. One thing you may notice is that the subtraction made cuts all the way through the floor in the square room and part way through the octagon room. This is the big drawback of using subtract.

While it can come in very handy for some cases, it should be used carefully. Now let's do it the longer way.

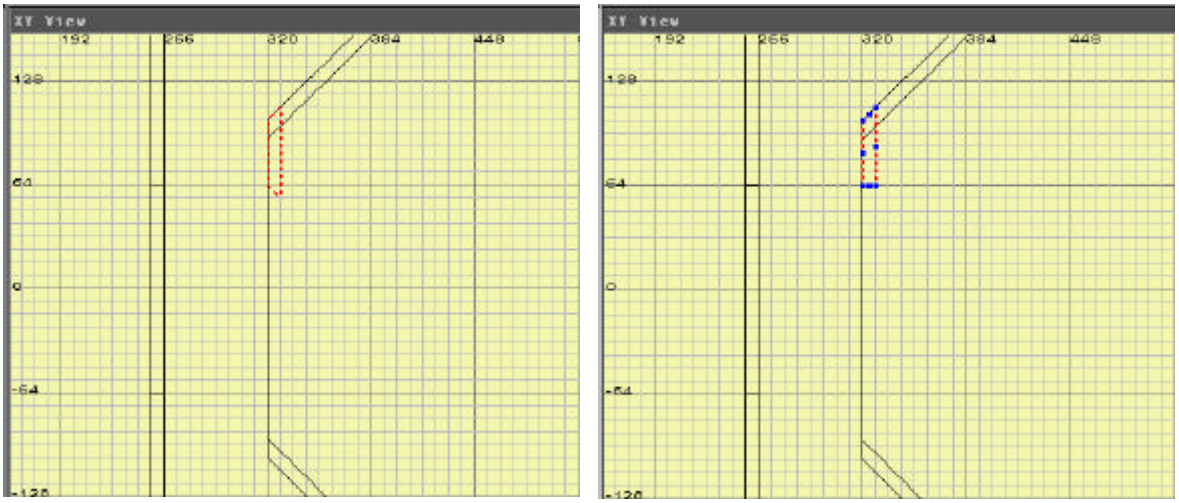


Step 9:

Reload the previous map by going to **File**, **Open** and choosing the map you saved. You can also just click on the map name under **File**, since it has been saved in Quake Ed's file history. You should have the two rooms ready for a hall. First move the camera into the square room and point the camera towards the octagon room. Now select the "wall" in front of you. To resize a brush move the cursor outside the brush, then left-click and drag the mouse towards or away from the brush to manipulate it. Think of a brush as a piece of clay that can be squashed and stretched into any size you want and you should have a good grasp on how sizing works. Resize the brush so that it is 192 units (or three large grid squares) long. Next, copy the brush by hitting Spacebar, and move the new brush opposite of the one you just resized. To move a brush, put the cursor inside of the brush while it is selected and simply left-click and drag the cursor. Then, deselect that brush and create a new brush that covers the hole you created but only stretches from the ceiling to 128 units above the bottom of the floor. Your view should now look like this:

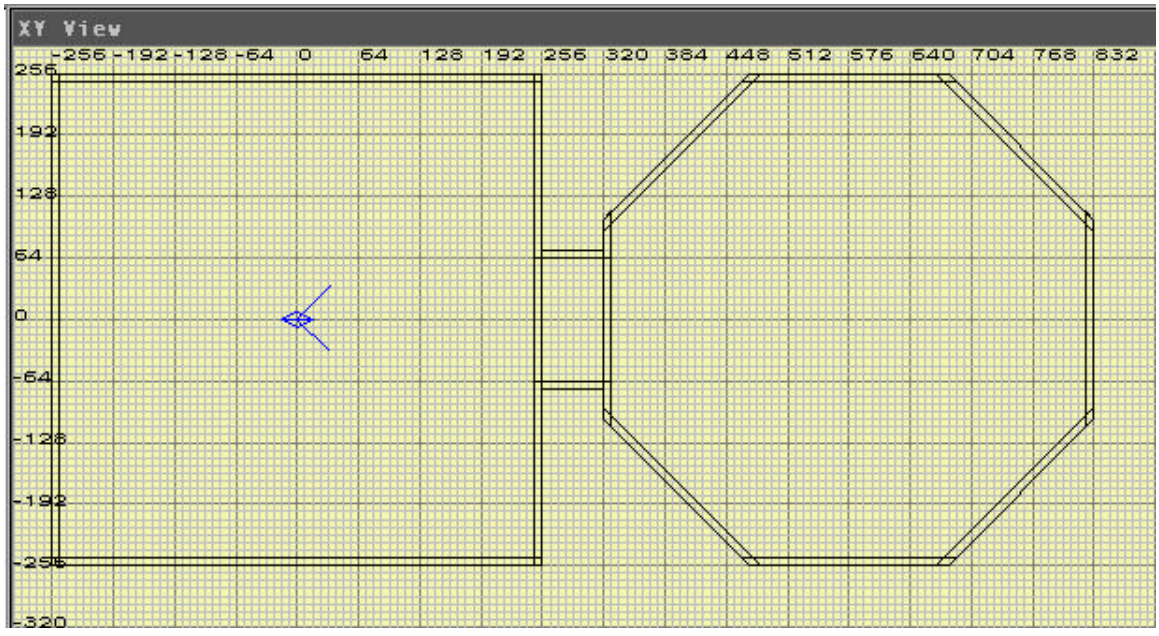


We'll want to do the same thing to the octagon room, but you'll notice that the ends of the "wall" brush are angled. Select the wall brush and resize it to approximately 48 units long. Next, hit "V" to bring up vertex manipulation. With this you can move a vertex so that your brush can be a different shape. Move the bottom right vertex up to be even with the one on the bottom left, like this:Now, copy the brush by hitting Spacebar, and hit the button **Y Flip** to flip the selected brush



along the Y-axis. Then move the brush down to create the other half of the wall. Finally, create a brush spanning the two that stretches from the ceiling to 128 units above the floor, or select the similar brush from the square room, copy it, and move it in position.

Try creating a hallway between the two rooms by either building the floor, walls and ceiling separately, or making a box, hollowing it out, and deleting the ends. The result should look like this:



You should save your work before we continue on to the next part. Better safe than sorry.

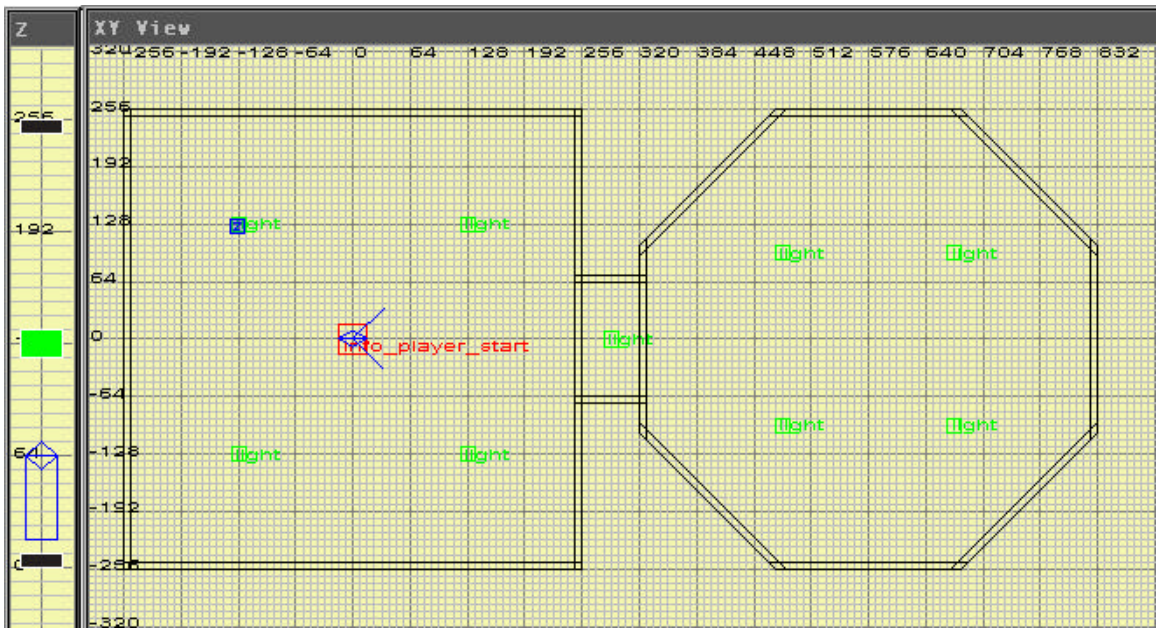
Step 10:

With two rooms created and a hallway linking the two, you probably want to see what the level is going to look like in the game. Before we can do that, we need to add a couple more things.

Let's start with the player's starting position. Create a small brush in the center of the square room. Keeping the brush selected, hit "n" to switch the console window to entity mode. Scroll down until you find "info_player_start". A good shortcut is to strike the first letter of the entity that you are looking for, in this case "i," and scroll from there. You will notice that it instantly takes you to all of the entities that start with "i." Double click on "info_player_start" and you'll see your selected brush change into a pre-sized box with the name of the entity next to it. If you deselect the entity, you'll see that it has a red line rather that a black line representing it. Entities are colored differently so you can tell them apart from other architecture and each other. Make sure the bottom of the entity is flush with the top of the floor before moving on. (Hint: Use your Z checker and Z view.)

Step 11:
We're close to having a finished level now! We just need lights and some textures for the architecture.

To add a light, create a brush and double-click on "light" in the entity menu just like you did for the Info_player_start. Lights should be place around the room to give it a nice value. They should also be placed in the middle of the room for now so that they can light both the floor and ceiling. Lights have a default value of 300 (expressed as the key value '**light**,') which represents the intensity and radius of the light. Changing the light value to a lower number gives it less range and makes it dimmer. For now, we'll stick with the defaults. Place lights around the room so that it looks similar to the picture below:



While this is not what I consider to be the best lighting scheme available, it is sufficient for giving an even light value so that you know what lights can do. Later, you can try deleting one or more, or moving them to see the effect that has on the look of the area.

Step 12:
If you look at the camera view in a textured mode (**Textures**, **Nearest** or **Textures**, **Linear**), you'll notice that so far all the architecture is one texture. Let's give everything a different texture.

First, we should change the walls to a nice wall texture. Since we have a very small level, and we have not yet changed the ceiling or floor, we can replace all the textures with a different one. There are a couple of ways to do this. Since this is a small level and all the textures are going to be the same to start, you can draw a brush around the whole level and go to **Selection**, **Select**

Complete Tall, then simply choose a new texture. The other way is a bit faster and is good for replacing a texture throughout the level with another. Middle-click in the camera view on a brush, and you'll notice that the texture view puts a red square around that texture, showing it's the selected one. Now, left-click on a new texture (in the example, I chose brick16). Then, choose **Misc**, **Replace texture**, and select **replace all**. All of the brushes now change to the new texture. Easy!

Of course, all you've really accomplished with this is a one-texture area, so you'll want to go ahead and texture the floor and ceiling. Choose an appropriate floor texture, (in the example, I chose cobble13) and move your cursor over the camera window. With the cursor over a floor brush, and not touching any others, ctrl-middle-click on the floor. It changes to the new texture. Proceed to texture the rest of the floor brushes, then choose a different texture and do the same to the ceiling. You'll notice that when you textured the ceiling of the hallway, it changed the texture of whole brush, but now the face that matches that of the wall is different from the wall itself. To solve this, middle-click on the wall texture, and then ctrl-shift-middle-click on the small side face. Only the face you clicked on changed texture, while the other five faces of that brush stayed the same. Do the same on the other side of the brush, and you'll be done texturing.

Step 13:

Now that you have a finished area, you'll probably want to see what it looks like in the game. Save your work, then choose **BSP**, **fastvis** from the menu. A fastvis will give you an idea of what the level looks like, but it is not optimized for game play. When you've finished a level, you can fullvis it. Run around the level in the game and get a feeling of how large the area is that you've made.

That's the basics of how to use Quake Ed. You've learned how to make a brush, select and deselect objects, copy brushes, flip brushes, manipulate vertices, place entities, texture an area, and bsp it. There are lots of other things you can do, but these basics will get you around fairly well. A complete list of keyboard and mouse commands starts on page 20.

Other things to try:

- Put a trim around the doorway.
- Change the color of a light (Select a light, make sure the entity window is active, and hit "k".)
- Change the intensity of a light.
- Place a model.
- Scale a texture.
- Add another room.
- Place a monster.

File Menu

New: Pretty self-explanatory. This is to start a new map.
Open: This opens a previously created map.
Save: This saves a map you are working on using the same filename.
Save As: This saves a map you are working on to a different file name than the one you opened.
Pointfile: When a map has a "leak," a pointfile is displayed. This will toggle the pointfile on and off.
Load Project: You can load different projects into QE4; ours is Heretic2.qe4.
Exit: Quits QE4.

Edit Menu

Undo: We have implemented a one level undo feature for QE4. It simply allows you to undelete the last thing you deleted (as long as you do no other actions), move an object back to a previous position or undo other functions you just completed. NOTE- Undo doesn't work on every function.
Redo, Copy, Paste: These functions are not implemented.

View Menu

Texture View (T): This will change your console window to the texture mode.
Console View (O): This will change your console window from texture or entity mode to console mode.
Entity View (N): This will change your console window from the other modes to entity mode.
Center (End): This will center your camera so that it is parallel with the XY plane.
Up Floor (PageUp): This will move the camera up"one floor". If you have two brushes atop each other, pressing this key will move you from the top of one brush to the top of the brush above it.
Down Floor (PageDown): This will move the camera down "one floor".
XY 100%: This will zoom the XY view to 100%.
XY Zoom In (Delete): This will zoom in within the XY view window.
XY Zoom Out (Insert): This will zoom out within the XY view window.
Show Names: All entities have a name, and if you have a lot of them grouped together, it can become difficult to read them. Also, for some people it's just plain annoying, so the will toggle the names on and off.
Show Blocks: This is defaulted to off. This splits the grid into blocks of 1024 x 1024 and numbers the quadrants. Other than that, we don't really know what it does. **(Yep, no clue- Ed.)**
Show Coordinates: Turn the grid coordinates on and off. Amaze your friends!
Show Entities: Are you trying to fix some architecture, yet have too many entities blocking your view? Get rid of those pesky things with this toggle!
Show Path: This will toggle the path corners on and off.
Show Lights: This will toggle any entity with "light_" on and off.
Show Water: This will toggle any water brush on and off- we hope.
Show Clip Brush: No apparent effect, even on clip brushes!

Show World: Toggle all architecture on and off. Handy for reaching those hard to find entities.
Show Detail (Ctrl-D): Toggles detail brushes on and off.
Show Buoy Only: Toggles everything but the buoys on and off.
Z 100%: This will zoom the Z view to 100%. Must have the Z view as your active window within the editor.
Z Zoom In (Ctrl-Delete): This will zoom the Z view in.
Z Zoom Out (Ctrl-Insert): This will zoom the Z view out.

Selection Menu

Drag Edges (E): This will allow you to move an edge of a selected brush around.
Drag Vertices (V): This allows you to mess with a selected brush's vertices. Very useful, however, it can have ill effects (Look at duplicate planes in the Troubleshooting section).
Clone (Space): Probably one of the most used commands, this allows you to copy a selected brush.
Deselect (Esc): Use this to deselect a brush or group of brushes.
Delete (Backspace): This will delete a selected brush or group of brushes.
Flip X: This will flip a selected brush along the x-axis. Think mirror image.
Flip Y: This will flip a selected brush along the y-axis.
Flip Z: This will flip a selected brush along the z-axis.
Rotate X: This will rotate a selected brush around the x-axis in 90-degree increments.
Rotate Y: This will rotate a selected brush around the y-axis in 90-degree increments.
Rotate Z: This will rotate a selected brush around the z-axis in 90-degree increments.
Arbitrary Rotation: This will bring up a dialog that allows you to rotate around any axis in any amount of degrees.
Make Hollow: This will make the selected brush hollow. Very handy for making quick rooms. (Hint: The thickness of the walls is based on the grid size.)
CSG Subtract: This will use the selected brush as a cutting tool that will cut the brushes it intersects. This is a very useful function, but use with caution. It can cause many little brushes to be made, as it will cut any brushes that it intersects with.
Select Complete Tall: To use this, create a brush around the area you want to select, then select this. It will select everything completely inside it in the x, y, and z.
Select Touching: To use this, create a brush touching the brushes you want to select, and select this. It will not get rid of the brush you created for selection purposes, so remember to delete them.
Select Partial Tall: This works much the same as complete tall, but it selects everything touching it as well as inside of it in the XY, and everything in the Z regardless of the height of the created brush.
Select Inside: This works much the same as Select Touching, but it only selects objects completely inside the created brush.
Connect Entities (Ctrl-K): When you want one entity to target another, select the first entity, then the second. Selecting this or hitting Ctrl-K will target the first object to the second. The second object remains highlighted so you can select a third object and target that.
Ungroup Entity: If you have made a brush into an entity such as func_door or func_train, this will change it back into a normal brush. However,

you will lose all scripting on that object. This is handy if you want to add a piece to a multiple brushed door or train.

Make Detail (Ctrl-M): This will make a brush into a detail brush. What's a detail brush you ask? A detail brush is a brush that doesn't break up the vis. It does still break up the bsp however. When the bsp is finished, it takes the detail brush's information and doesn't include them in the info sent to vis. Therefore, detail brushes will not block your view in any way. Because of this, you can never use a detail brush as an outside wall or you will get a leak. More on this in the "Tips and Tricks" and "Troubleshooting" sections.

Make Structural: This changes a brush made detail back into a regular brush.

Scale: Use this handy feature to change the size of a brush.

Tower (W): This is a new feature that Raven has added. If you make two brushes of different sizes but the same number of vertices, you can select both and select this, to make a tower-like object. The resulting object will not be textured, so remember to do so. Also, you don't need to have the two objects directly above one another, but they should be at the same rotational orientation.

BSP Menu

Before we go through what each of these are, you might be wondering what the heck a BSP is, (or a vis for that matter). A BSP (Binary Space Partition) takes all the architecture that is built in the editor and sorts it into a "tree". Areas that are not visible from one branch of the tree are not drawn when you are in that branch. This keeps face counts much lower than they would otherwise be. A "Vis" is where all the information from the BSP is optimized so that those areas are actually not drawn when in the base area. Qrad is the tool that does the light mapping for all the lights you place in the editor. These are overly simplified explanations of the processes. You can find books about BSP trees, and other such things in the programming section of bookstores.

Bsp_Fastvis (no qrad): A fastvis goes through the bsp process and a "quick and dirty" vis process that is not optimized. This one does not go through the qrad process.

Bsp_Fastvis (no water): This is much like a normal fastvis, but it doesn't consider water brushes, which are a special case.

Bsp_Fastvis: Fastvis is used for looking at a level with lighting, but where face count is not yet a concern. Use this a lot as it is fairly fast for looking at the work you've just done.

Bsp_Fullvis (nodetail, qrad –extra): A fullvis goes through all the processes and optimizes them. "Nodetail", doesn't take into account whether a brush is detail or not, and qrad –extra does an extra pass on the lightmapping.

Bsp_Fullvis (qrad –extra): This is the ultimate in vising! This is what you use when your map is absolutely completely finished. It also takes the longest!

Bsp_Fullvis (noqrad): This will do the optimal bsp and vis processes, but it won't do lighting. This is good for checking face counts, but not framerate.

Bsp_Fullvis: This is another workhorse process. It doesn't do the optimal qrad, but this is what we use for "builds" or milestones. We don't use the qrad –extra process until the very end.

Bsp_VisRad (BSP ents only): This will re-vis the entities in your level. You can't change the shape or position of any of them, only their keyvalues.

Bsp_Entities:
Bsp_Novis: This one is only the bsp process. It is the fastest of the processes, and we mostly use it for checking for leaks.
Bsp_Relight_Qrad: This one only goes through the qrad process. This is used if you're tweaking lighting values, but not moving anything around.

Grid Menu

These are pretty self-explanatory. Pressing the number keys along the top of the keyboard will change the grid to one of these increments. The default is 8, and this is what we work in most of the time. "Grid 8 is great! Grid 1, no fun" –Eric Biessman to Glenn Smith after hours and hours of torment trying to fix a map made using grid 1.

Texture Menu

Show in Use (U): I think this is broken. **(Is it supposed to do something? –Ed.)**
Surface Inspector (S): The surface inspector is a tool you will use a lot. It is a dialog box that allows you to change the properties of a texture on a brush. See page # for details.
Wireframe: This will change your camera view to wireframe. Use this on slower machines or if you don't have a lot of architecture built.
Flat shade: This draws the camera view in untextured solid colored polys. This is useful when you're building but not concerned about texturing.
Nearest: This draws the camera view with textured polys. You may notice that the textures appeared very skewed. This is a good base view for most machines 200mhz and higher.
Nearest Mipmap: This view and linear view are almost identical. It's about the same as nearest but the textures aren't skewed. It's also quite a bit slower.
Linear: See previous.
Bilinear: You can see details in the middle distance sharpen if you switch to bilinear mode. You can also see your machine slow down a lot more.
Bilinear Mipmap: This view blurs the middle distance a bit, much like the mip mapping in the game. It's even slower.
Trilinear: This view is essentially the same as bilinear mipmap. On a Pentium II 400 with 128 MB of RAM it also takes 4 seconds to update a frame. This is with a regular 4MB 2D card, so only use this if you have a good 3D card and a fast machine.
Default Materials: This doesn't do anything. **(But it is sure fun to click- Ed.)**
Other texture sets: These are the texture sets for Heretic II plus a test set and a general set that has the clip texture, trigger, sky and some others.

Misc Menu

Benchmark: The Benchmark will give you an idea of how well your machine will do in one of the video modes for the camera view. It shrinks the camera view to a test size and rotates the camera 360

degrees. The output is displayed in the console and gives you a number in seconds. The lower the better.

Colors: This will let you set the color for your xy background, texture background, and minor and major grid lines.

Gamma: This will allow you to change the gamma setting for the editor. The default is 1.0.

Find Brush: This brings up a dialog that allows you to find a brush by number. If you get errors in BSP and it gives a brush number, use this dialog to find it.

Next leak spot: **(Care to describe this one? –Ed.)**(No. –Shifty)

Previous leak spot: **(Care to describe this one? –Ed.)**(No. –Shifty)

Print XY view: Print the XY view on your printer.

Select Entity Color: This is specifically for entities that can cast light and is for setting their color.

Replace Texture: This will allow you to change all of one texture on a level to a different one.

Set Max View Distance: The default distance is 1024. You can set any number, but a larger one will let you see more. Keeping it low however will work better on slower machines. If brushes seem to disappear, make sure to check your view distance. It may just be that the origin of the brush is more than 1024 pixels from your camera.

Default Textures: Don't have a clue. If you have read this far, we're really impressed.

Region Menu

Off: If you have region currently on, this turns it off.

Set XY: Sets a region to the size of your xy window.

Set Tall Brush: Create a brush, then select this to get a region the same size as your brush, but infinitely tall.

Set Brush: Create a brush, then select this to get a region the same size as your brush.

Set Selected Brushes: Select multiple brushes, then select this to hide everything else except the selected ones.

Brush Menu

These are all easy to understand. If you create a brush, then select one of these, it changes your brush into this n-sided version. There is no limit, but you should not go above 16.

Buttons

X/Y/Z Flip: This will cause a selected brush or set of brushes to flip along a world axis. Same as Select, Flip X/Y/Z.

X/Y/Z Rotate: This will cause a selected brush or set of brushes to rotate in 90-degree increments along a world axis. Same as Select, Rotate X/Y/Z.

Scale: This will bring up a dialog so that you can scale a selected brush. Same as Select, Scale.

Select: These are the same as Select Complete Tall, Touching, Partial Tall, and Inside, in that order.

CSG Subtract: This uses the selected brush to cut brushes it is touching. Same as **Select**, **CSG Subtract**.

Make Hollow: This makes the selected brush hollow. Same as **Select**, **Make Hollow**.

Texture: This changes the camera view to wireframe, flatshade, and linear draw modes in that order.

Undo: This is a Raven addition that lets you undo your last action. This does not work for all functions. Same as **Edit**, **Undo**.

List: This is a Raven addition that lists the textures or entities in the console window. These are handy for optimizing texture use in a level, or finding out how many of a certain type of entity you are using.

XY View

The XY view is an overhead representation of the map. It is also the view most of the work is done in. Following is a list of what you can accomplish in the XY view, and the commands to do it.

There are some commands that work in multiple windows, but they are presented in the window in which they work best. Pressing “S” at any time will bring up the Surface Inspector. The Surface Inspector will be explained with the texture window on page 23.

Mouse Commands

Left button - Make a brush – If nothing is selected left-click and drag in the window to create a brush.
Move a brush – Left-click inside a selected brush and drag to move the brush where you want it.
Resize a brush – Left-click outside a selected brush and drag to resize the brush.
Middle button - Move the camera target – middle-click anywhere to change the camera’s angle.
Right button - Pan – Right-click to pan the XY view to the desired area.

Mouse/Keyboard Commands

Left button - Select/Deselect a brush – Shift-left-click will select the top brush or deselect it. If you have rooms built, it will usually select the ceiling. You can also select entities with this, and if you select one it will grab that over architecture.
Skew a brush – Ctrl-left-click will skew a brush in the direction you drag.
Middle button - Move the Z checker – Shift-middle-click moves the Z checker to the area you click on.
Move the camera – Ctrl-middle-click to move the camera to the desired location.
Right button - Cut a brush – Ctrl-right-click outside of a brush, then drag to create a plane that will cut the selected brush.

Keyboard Commands

Zoom the xy view out – "Insert" key
Zoom the xy view in – "Delete" key
Create a tower brush – "W" key (must have two brushes selected)
Manipulate edges – "E" key
Manipulate vertices – "V" key
Show detail brushes – "Ctrl-D"
Make a detail brush – "Ctrl-M"
Link entity – "Ctrl-K" (must select source brush, then destination brush)
Clone a brush – "Space" with brush or brushes selected.
Deselect a brush – "Esc" key
Delete a brush – "Backspace" with brush selected.
Change grid size – "1-7" keys
N-sided brush - "Ctrl-3" through "Ctrl-9"
N-sided snap brush - "Ctrl-Shift-3" through "Ctrl-Shift-"9"

Z View

The Z View is a side view of your map; sort of. It only shows the view of the brushes under the Z Checker box in the XY view. If you are trying to set a brush on top of another brush or align two brushes, this is a very helpful window. Some of the XY commands work in this view as well, but they are easier to use in the XY view.

Mouse Commands

Right button - Pans the Z view up and down.

Mouse/Keyboard Commands

Left button - Select a brush – Shift-Left-click. This is not as accurate as selecting in the XY or camera view, because you never really know what you're going to select.
Move the camera – Ctrl-Left-click moves the camera up and down.
Middle button - Move the camera – This is the same as the movement with the left button.

Keyboard Commands

Move Up - "D" moves the camera up.
Move Down - "C" moves the camera down.
Up Floor - "Page Up" moves the camera up from the top of one brush up to the top of the next brush.

Down Floor - "Page Down" moves the camera from the top of one brush down to the top of the next brush.
Zoom In - Ctrl-Delete zooms the camera in.
Zoom Out - Ctrl-Delete zooms the camera out.

Camera View

The Camera View is a representation of what the level would look like in the game. It is not a true representation, as entities only appear as colored boxes, and there is no lighting to be seen. You can look at architecture in a wireframe, flatshade, or textured mode. There are numerous texture modes to choose from, but the lower on the menu, the slower they are.

Mouse Commands

Left button - If a brush is selected, you can move it around just like the XY view.

Middle button - Middle-clicking on a brush will make its texture the selected texture.

Right button - If you hold the right button down and move the cursor around the camera view, you'll see the view change. If you put the cursor at the top center of the view, the camera moves forward. At the bottom, it moves back, left is left, and right is right. It is confusing when you first try it, but with practice you should have no problem navigating the camera view.

Mouse/Keyboard Commands

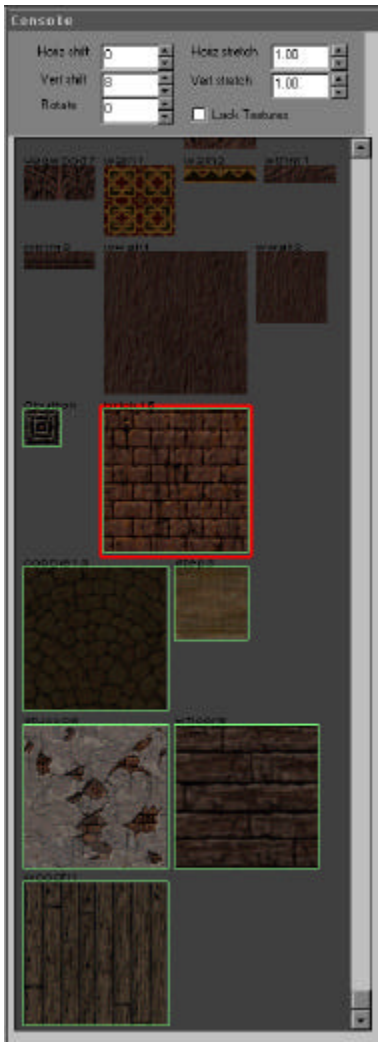
Left button - Skew a brush - Ctrl-left-click while a brush is selected will skew a brush.
Select a brush – Shift-left-click will select or deselect a brush.
Select a face – Ctrl-shift-Left-click will select a single face of a brush.
Middle button - Texture a brush – Ctrl-middle-click will texture the brush you have the cursor over.
Right button - Move the camera – Ctrl-right-click will move the camera up and down or left and right without changing its facing.

Keyboard Commands

Center - "End" centers the camera view so that it is parallel with the XY plane.
Up Floor - "Page Up" moves the camera up a floor just as it does in the Z Checker.
Down Floor - "Page Down" moves the camera down a floor just as it does in the Z Checker.
Move Up - "D" moves the camera up.
Move Down - "C" moves the camera down.
Look Up - "A" moves the camera target up.
Look Down - "Z" moves the camera target down.

Console (Texture Window)

Use "T" on the keyboard to bring up the texture window if it is not already active. The window consists of a dialog at the top with which you can shift textures on a brush, scale them to a different size, or rotate them. There is a check box for locking the texture on a brush should you need to move it after the textures have been aligned.



The horizontal and vertical shift work in increments of eight, but you can enter different numbers. Rotate is in increments of 45 degrees but again, you can enter different numbers.
The horizontal and vertical scale work in increments of .1. Entering a negative number will flip the texture. This is especially handy for textures with words or textures you need to mirror like doors.

Under the dialog is the textures themselves with the names above them. A red box around a texture means it's the currently selected texture. A green box means that the texture is used somewhere on the level. You can scroll through the window with the scroll bar, spinning the middle button on the mouse (if it supports that), or right-clicking and dragging in the window.

A separate but related window is the surface inspector. Press "S" to bring up this window.

Texture -	Shows, by name, the currently selected texture.
Horizontal /vertical shift -	Same as in the texture window.
Horizontal /vertical stretch -	Same as in the texture window.
Rotate -	Same as in the texture window.
Light/AnimSpeed -	Used if you use the surface flag "light". That causes a texture to radiate light in the predominant color of the texture. The value entered controls the distance it radiates. Animspeed is for changing the speed of animating textures, such as the mine conveyor belts. An animated texture cannot also radiate light.

Lighting -	(This is not used for the “light” surface flag). This is used is you give a brush the “tall wall” surface flag. A brush with that flag doesn’t readily accept light from other sources, so you must enter values for color and alpha. Tall wall is not actually used anymore, but we left the implementation in.
Material -	This is a property given to a texture so that stone sounds and acts like stone, wood acts like wood, etc.
Apply -	Applies any changes you have made.

Surface flags

Light -	Gives a surface the ability to cast light. Use with Value.
Slick -	Doesn’t currently do anything.
Sky -	Changes a texture into a sky.
Warp -	Causes a texture to warp. Use mostly on water brushes.
Trans33 -	Sets the transparency of a surface. More transparent than trans66.
Trans66 -	Sets the transparency of a surface. Less transparent than trans33.
Flowing -	Makes the texture appear to flow towards 0.
Nodraw -	Doesn’t draw a surface. Used on clip brushes triggers. Can also be used on invisible objects that cast light.
Hint -	Use this to cause a break in the BSP. Only one face of a brush should be hint, the rest should be skip.
Skip -	Doesn’t consider these faces. Use this when making hint brushes.
Tall Wall -	A Raven feature. Causes a brush to not break up as much in the BSP and doesn’t accept lightmaps. Used mostly for vertical walls in outdoor areas. Use the lighting entries to the left to make them appear lit. Not used in the final product.
Alpha Texture -	Not used.
Anim Speed -	With this flag checked, a value for anim speed can be entered. This only works on animated textures. Cannot be used with the light surface flag.
Undulate -	Used to set surface undulation on water. Can be used on lava and muck, but it’s not suggested.
4000, 8000, etc.	These flags are not used.

Content Flags

A note about Content Flags: While a brush can have multiple content flags on it, all faces must have the same flags. You cannot have water on one face and lava on another for instance. Content flags should never by put on brushes that touch the outside of the world.

Solid -	Makes brush solid. No real use for this.
Window -	Doesn’t draw the backfaces of a brush. Useful for glass and such, you won’t really see this in Heretic II.
Push/Pull -	If you look closely at this flag, you would think that it would allow Corvus to push and pull and items. Actually, it is a cleverly disguised flag for causing the brush to be noclip for cameras. Very useful for keeping the camera from being obstructed by architecture.
Lava -	If a player touches a lava brush, it acts like water, but also does damage.
Slime -	This flag is used on the muck in the swamp. As Corvus walks through it, he starts to sink. If Corvus’ head goes under, he dies.

Water -	Gives a brush the properties of water. It draws normal, but you can go into it. In Heretic II, Corvus changes to his swimming animation. Inside the brush, there is a palette shift. Stay inside it too long, and you'll drown.
Mist -	Allows Corvus to pass through as if it's not there.
80, 100, etc.	Not used.
Playerclip -	Does not draw. Acts solid to the player, but not to monsters.
Monsterclip	Does not draw. Acts solid to a monster, but not to the player.
Current_0 -	Pushes the player towards angle 0 in the world.
Current_90 -	Pushes the player towards angle 90 in the world.
Current_180 -	Pushes the player towards angle 180 in the world.
Current_270 -	Pushes the player towards angle 270 in the world.
Current_up -	Pushes the player towards angle –1 (up) in the world.
Current_dn -	Pushes the player towards angle –2 (down) in the world.
Origin -	The center of an origin brush becomes the origin point for an object it is attached to. For instance, a func_rotating_door is usually made up of the door and an origin brush.
Monster -	Currently does nothing.
Corpse -	Currently does nothing.
Detail -	Makes a brush into a detail brush. Same as Ctrl – M.
Translucent -	Currently does nothing.
Ladder -	Currently does nothing.
Camnoblock -	Can cause architecture to be ignored by the camera. Good for grates and such. Do not use on architecture that touches the outside of the world.

Console (Console Window)

Pressing "o" on the keyboard will change the texture or entity window into the console window. This window displays messages as commands in the editor are executed.

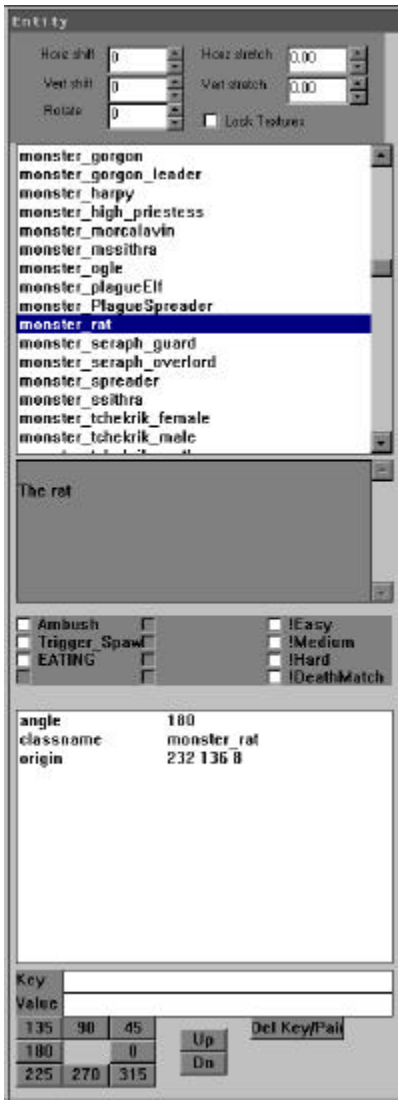
If you do something invalid, it will sometimes display what you need to do. For instance, if you have no brush selected, and Ctrl-middle-click, it will print, "Error: You must have a single brush selected."

This is also where the output of the list textures and list entities button is displayed. You can print the output in the console window, under **File**, **Print Console Window**.

Finally, the console window shows the output of a BSP process. If there are any errors in BSP, vis, or qrad, this is where it will be displayed.

Console (Entity Window)

Hitting "n" can bring up the Entity Window when either the texture or console window is showing. The purpose of this window is for the creating of entities, and scripting the entities that are in the world. An entity is anything that cannot be built directly by the designer or an object that must have a script associated with it.



The window with the scroll bar is all the entities available for the project. These entities will differ from project to project.

The gray window contains notes, if any exist, pertaining to the selected entity.

The window with the check boxes contains flags that pertain to the selected entity. All entities contain the flags “!Easy”, “!Medium”, “!Hard”, and “!Deathmatch”. Most contain “!Co-op” . When these flags are checked that entity will NOT show up for the styles selected. **(Thanks to those wacky programmers! –Ed.)**

The bottom window contains the scripting pertaining to the selected entity. In the example at left, angle is the direction monster_rat is facing, and it is located at the x,y,z coordinates shown.

The “Key” line is where special key values are entered.

The “Value” line is where the value for a key is entered.

The button “Del Key/Pair” will delete a key value if you have a brush selected and that key value highlighted.

The remaining buttons are for setting the angle the object will either face, or move. Up has an angle of –1 while down is –2.

Following is a list of all the entities for Heretic II and their specific key values.

Generic Flags and Key Values:

Flags

!Easy	Sets an entity to not show up if easy difficulty is selected.
!Medium	Sets an entity to not show up if medium difficulty is selected.
!Hard	Sets an entity to not show up if hard difficulty is selected.
!Deathmatch	Sets an entity to not show up if deathmatch is selected.
!Co-op	Sets an entity to not show up if co-op is selected.

Key Values

Angle	Sets the angle that an entity is facing or the direction it will move.
Target	An entity with this key value targets another object.
Targetname	An entity with this key value is being targeted by another object.
_minlight 0 to 1.5	Used for brush entities. Gives the entity a specific light level.
abslight 0 to 255	Used for model entities. Gives the entity a specific light level, transparency, and color. The value for abslight is "# # # #" representing RGBA. While alpha can be set, it is very expensive and not really recommended.

Breakable Brush

Flags

Kill All	This flag will cause the breakable brush to kill other brush entities it is touching when it is triggered.
No Link	This flag will allow the brush to touch another brush with "Kill All" set and not be affected by it.
Ordered	This is left over from Hexen 2. It was a way that breakable brushes could be set, but it was replaced by targeting. In other words, it doesn't work.
Translucent	Doesn't work.
Invulnerable	The character cannot break the brush; it can only break by being triggered.
Invisible	The brush doesn't draw.
PushPull	Not used.
NotPlayerDamage	Players cannot damage this brush.

Key Values

Angle	No function really, as you don't rotate these like other entities.
Health	Setting this will let it take a number of HP in damage before being destroyed.
Materialtype	This is what type of chunks are spawned when the brush is broken. 0 = Stone 1 = Grey Stone (default) 2 = Cloth 3 = Metal 4 = Flesh 5 = Pottery 6 = Glass 7 = Leaf 8 = Wood

9 = Brown Stone
10 = None – just makes smoke

Character

Characters are like monsters, but they will not fight you. They are used for the fabulous in-game cinematics. The invisible flag will make them start not drawn. How do you change this? See the scripting section for details.

Character_corvus1 The Corvus model used in the dungeon level.
Character_corvus2 The Corvus model used in the sspalace level.
Character_corvus3 The Corvus model used in the hivepriestess level.
Character_corvus4 The Corvus model used in the canyon level.
Character_corvus5 The Corvus model used in the ssdocks level.
Character_corvus6 The Corvus model used in the dmireswamp level.
Character_corvus7 The Corvus model used in the cloudsanctum level.
Character_corvus8 The Corvus model used in the andhealer level.
Character_corvus9 The Corvus model used in the hive1 level.
Character_dranor Dranor is the elf found in the Silverspring Docks.
Character_elflord The Celestial Watcher in the Silverspring Palace.
Character_highpriestess The High Priestess used in the High Priestess level.
Character_highpriestess2 The Priestess part 2.
Character_morcalavin Morcalavin is the big guy used in the Inner Sanctum.
Character_sidhe_guard Not used
Character_siernan1 Siernan is a Ssithra found in the Andoria Healer's Tower.
Character_siernan2 Siernan, part2.
Character_ssithra_scout The Ssithra Scout is found in the Canyon.
Character_ssithra_victim The Ssithra Victim is found in the Dungeons.
Character_tome The one and only (actually there are 7) tome.

Choose_CDTrack

Changes the CD track during a level instead of in between. This is used in the Cloudsanctum level.

Flags
- No_Loop — The track will only play once.

Key Values
- Style — Which CD track to play.

Environmental

Environmental effects are items that would be classified as such in the real world. Fires, sun, water, and smoke are some of the environmental effects. All of these effects are client side.

Env_bubbler

A bubble spawner for use under water. The bubbles float up until they hit the surface of the water. Do not give this entity an angle.

Key Values
- Count — How many bubbles are spawned per minute.

Env_dust

Generates a puff of dust and falling rocks. This entity can be sized. Needs a trigger targeting it to work.

Key Values
- Count — How many rocks to generate per 28x28 square (default 1)

Env_fire

An awesome particle fire. The first three flags don't do anything.

Flags
- Fire_off — Start the fire off. Fire is triggerable.
- Moveable — If set, the fire will move at a set velocity.
- Light_On — If set, the fire will cast light.

Key Values

Scale	Make the fire bigger or smaller. (Default is campfire size; 1) (Max is 8)
Env_galaxy	**Not used. But if it were, it would be a galaxy-looking thing for high detail.**
Env_mist	Creates a small fog cloud that disappears as you get closer to it.
Key Values	
Scale	Make the mist bigger or smaller.
Env_muck	**Not used.**
Env_smoke	Generates a smoke cloud that moves up and eventually disappears. This effect is triggerable.
Flags	
Start_off	Make the smoke start off.
Key Values	
Scale	Make the cloud bigger or smaller. Default has it start about the size of the player and grow to about twice his size. Has a range of 0 to 8.
Wait	Time between puffs. Default is 5 seconds. Range 1-255.
Angle	Direction to move in. Defaults to up.
Speed	How quickly the puffs travel. Defaults to 100. Range 10–2500.
Distance	Distance the puffs move before they begin to dissipate. Default is 100. Range 1-255.
Env_sun1	Put this anywhere in a level, and when you look at the sky you'll get a double lens flare for Parthoris' two suns. Don't use at night!
Env_water_drip	Creates a drip that falls straight down and disappears when it hits the ground. If it hits water, it causes a ripple.
Flags	
Yellow	Make the drip yellow.
Key Values	
Count	Drips per minute. Defaults to 20.
Env_water_fountain	Creates a fountain that can be shot in any direction. Gravity does take its toll though.
Flags	
Red	Doesn't work.
Green	Doesn't work.
Blue	Doesn't work.
Dark	Doesn't work.
Darker	Doesn't work.
Start_off	Starts fountain off. This effect is triggerable.
Key Values	
Angles	This value needs to have three angles. They aren't really angles per se, but how far in a direction it will go. For example, 0 256 0 will travel towards 90 degrees in the XY view, but will travel 256 units in that direction. If you want a 45 degree angle give the X and Y values the same number, such as 128 128 0. The Z number will cause it to aim slightly up or down, but remember what I said about gravity.
Delay	This is the distance from the emitter to the surface it's hitting. 256 units is the maximum is should go.
Env_waterfall_base	A misting effect good for the bottom of waterfalls.
Key Values	
Angles	Give a x, y, and z value. In this case x is the x radius, y is the yaw, and z is the y radius of the effect.

Flamethrower Creates a flamethrower. Works just like the rope. Make a brush with an origin brush. Grab them both and make the entity. Give it an angle, and the flame will start at the origin and fire in the direction of the angle.

Flags
- Steam — Sprays steam instead of fire.

Key Values
- Dmg — Damage per frame [1/10 of a second] (Default 1)
- Wait — Amount of time between bursts Default is 2. –1 signifys toggled effect.
- Angles — Direction for the effect.
- Speed — Speed of the burst. Default is 400.

Function

Func_areaportal An areaportal is an entity that actually doesn't draw anything beyond it. If you are building a level with doors, this is an incredibly useful tool for cutting down poly counts. It is also very tricky to set up. Basically you build a door, build an areaportal inside the door but as wide and tall (or a bit more) and target the door to the areaportal. When the door opens, the areaportal disappears, and when the door closes, it reappears. The tricky part comes in having it actually work. Areaportals have to separate two distinct regions, and there can be no other openings between those two regions. There are many tutorials on the net for making areaportals work, but just remember that the regions have to be separate and distinct.

Func_button A button is just what it says, but it can also be used as a pressure plate type device. It moves in a direction, triggers something, waits a predetermined time, then moves back to its original position. Buttons need a trigger_playerpushbutton targeting them so that Corvus knows to use that set of animations.

Flags
- Touch — Allows the button to be fired without the trigger_playerpushbutton. Good for floor buttons.

Key Values
- Angle — The direction you want the button to move.
- Target — You must target another entity for this to have any real function to it.
- Speed — The speed at which the button will move to its destination. Default is 40.
- Wait — The amount of time the button waits before returning to its original position. Default is 1. A wait of –1 will cause the button to never return.
- Lip — A button moves a default distance of the width of the brush minus the lip. A negative lip will cause the button to move farther than its width. The default lip is 4.
- Health — Use health for shootable buttons. Once its health reaches 0, it triggers.
- Sounds — The sound to play as it moves. Default is 0.
  0) Silent
  1) Basic Button
  2) Clanky Button
  3) Steam Button

Func_door

A door is a multipurpose entity that can be used as a door in the normal sense or a platform of sorts. With multiple func_doors moving in opposite directions, an exciting visual entity can be created.

Flags

- Start Open — Starts in its final position. Sometimes it's easier to build a door where you want it to end.
- Crusher — A door without this flag will stop when it hits another entity. With this flag set, it will keep moving towards its destination, causing damage to it and eventually destroying it.
- No Monster — Monsters cannot use this door.
- Animated — An animated texture will work on the door with this flag.
- Toggle — When this flag is set, the door will wait in its start and end position until it's triggered again.
- Animated_fast — An animated texture works, but animates faster.

Key Values

- Message — Put a text message on the door. For example, when the player walks up to a door that hasn't been triggered, the door can print the message, "This door is locked." Messages are set by a number corresponding to a line in levelmsg.txt.
- Text_msg — If you don't want to modify our lovely levelmsg.txt (and you probably shouldn't) you can use this key value for short messages of your own.
- Angle — Sets the direction the door will move in.
- Targetname — If targetname is set, the door must be triggered to work.
- Health — If health is set, the door must be "killed" to work.
- Height — If the door has an angle of –1 or –2, this is the distance for the door to move.
- Speed — The speed the door moves to its destination. Default is 100.
- Wait — Amount of time the door waits in its destination position. Default is 3. If wait is set to –1, the door will not return. If the wait is set to –2, once triggered, it will constantly cycle from its start to its destination position.
- Lip — A door moves a default distance of the width of the brush minus the lip. A negative lip will cause it to move farther than its width. The default lip is 8.
- Dmg — The amount of damage the door does if it hits another entity. The default is 2.
- Team — If you have two touching doors that you want to open at the same time, make both doors have the "team" key value.
- Sounds — The sound to play when it moves.
  0) Silent (Default)
  1) Generic door
  2) Heavy stone door
  3) Swinging arm for palace
  4) Sliding bridge for palace
  5) Small/Medium wood door swinging
  6) Large/Huge wood door swinging
  7) Medium wood/stone door sliding
  8) Large wood/stone door sliding
  9) Medium metal door swinging
  10) Fast sliding door

11) Hive/ multipaneled sliding door
12) Huge stone door swinging
13) Medium/large elevator
14) Crane (warehouse level)
15) Hammerlike pump in Oglemine1
16) Sliding metal table in Cloudlabs
17) Lab Table which rotates up to the ceiling in cloudlab
18) Piston Sound
19) Short, sharp metal clang
20) Something going on under water

Func_door_rotating A rotating door is an entity that must have an origin brush associated with it to work. It can rotate on any of the axis, and can be used for objects other than doors.

Flags

Start Open	Starts in its final position. Sometimes it's easier to build a door where you want it to end.
Reverse	When you give a door a distance (angle) to rotate, reverse will make it go that many degrees in the opposite direction.
Crusher	A door without this flag will stop when it hits another entity. With this flag set, it will keep moving towards its destination, causing damage to it and eventually destroying it.
No Monster	Monsters cannot use this door.
Animated	An animated texture will work on the door with this flag.
Toggle	When this flag is set, the door will wait in its start and end position until it's triggered again.
X-Axis	Rotates about the x-axis instead of the z-axis.
Y-Axis	Rotates about the y-axis instead of the z-axis.
Swingaway	Door will always swing away from the player in the distance specified.

Key Values

Distance	This is actually the amount of rotation you want.
Speed	How fast it rotates. Default is 100.
Message	Attach a text string to the door.
Angle	No effect.
Targetname	If this is used, the door must be triggered to work.
Health	If this is used, the door must reach 0 HP before working.
Wait	The amount of time the door waits at its destination. Default is 3. Wait –1 causes it to never return. Wait –2 causes it to constantly cycle.
Dmg	The amount of damage the door does to an entity if blocked.
Sounds	The sound played when triggered or used. Same as func_door.

Func_door_secret Secret doors move in two directions, usually a short move back or to the side, then towards its angle.

Flags

Always Shoot	Door can be shot open, even if it is targeted by something.
1st Left	The door's first move is to the left of the angle.
1st Down	The door's first move is to towards angle –2.

Key Values

Angle	This is the second direction the door will move.

Dmg — This is the amount of damage the door does to an entity if blocked.

Wait — The amount of time the door waits at its destination. Default is 5. Wait –1 causes it to never return.

Lip — Distance minus the length of the brush to stick out, on its second move.

Sounds — Uses all the same sounds of func_door.

Func_group

This function is used if you want to group a bunch of brushes together to move them in the editor. It has no purpose in the game.

Func_monsterspawner

The monster spawner is used to have monsters either reappear in places you've already cleared, a level you might have to return to, or to have lots come out of a small area (like a rat hole).

Flags

On Death — A new monster will not spawn until the previous one is dead.

Randombuoy — The monster will be teleported to a random buoy not in the players view.

Peaceful — The monster is not spawned angry if this flag is checked. Monsters will spawn angry by default only if the player triggered the monster spawner.

Key Values

Count — The number of creatures this spawner will produce. Default is 1.

Distance — The radius at which the monster can spawn from the entity. It picks a random angle when spawning.

Style — The type of monster to spawn.

0) Nothing
1) Rat
2) Plague Elf
3) Plague Spreader
4) Gorgon
5) Chkroktk (Doesn't really exist)
6) T'chekrik Male (bug people)
7) T'chekrik Female
8) T'chekrik Mothers
9) High Priestess
10) Ogle
11) Seraph Overlord
12) Seraph Guard
13) Assassin
14) Morcalavin
15) Dranor
16) Sidhe Guard
17) Siernan
18) Ssithra Scout
19) Ssithra Victim
20) Mutant Ssithra
21) Harpy
22) Fish
23) Chicken
24) Plague Ssithra
25) Gkrokon (Beetle)

26) Giant Rat
27) Palace Plague Guard
28) Invisible Palace Plague Guard

Wait	The amount of time between spawns. Default is 10.
Mintel	How long the monster will chase you.
Melee_Range	How close the player is maximum for the monster to melee. 0 means the monster won't melee, and a negative number means the monster will try and keep a distance.
Missile_Range	Maximum distance the player can be and still let the monster use its ranged attack.
Min_Missile_Range	Minimum distance the player can be and still let the monster use its ranged attack.
Bypass_Missile_Chance	A percent chance that the monster won't use its ranged attack, but come in to melee instead.
Jump_Chance	A percent chance that the monster will jump. Use –1 for 0% chance.
Wakeup_Distance	How far away the player can be before the monster wakes up.

Func_object — If you make a brush into this entity, it can sit on top of other entities, and when they are removed, it falls to the ground. **(Sounds exciting… find any use for it? –Ed.)** This probably doesn't even work with our new physics system.

Flags

Trigger_sp	**Don't know**
Animated	Animated textures are usable on it.
Animated_fast	Animated textures animate faster.

Func_plat — A plat is much like a door that moves up and down, but it can have acceleration attached to it.

Flags

Plat_low_t	**Don't know**

Key Values

Targetname	If this is set, the plat must be triggered to work.
Speed	The speed at which the plat moves. Default is 150.
Accel	The acceleration to its intended speed. Default is 500.
Lip	A plat will move a distance equal to it's height minus the lip. A negative lip will cause it to move farther. Default is 8.
Height	A height value will override the default of the brush's height.
Sounds	The sound that is played when triggered. 0) Base fast 1) Chain Slow

Func_rotating — Much like a rotating door except it moves 360 degrees about an axis.

Flags

Start On	Will move immediately and keep moving.
Reverse	Will move in the opposite direction around the axis.
X-Axis	Will move around the x-axis instead of the z-axis.
Y-Axis	Will move around the y-axis instead of the z-axis
Touch Pain	

Stop	If the entity comes in contact with another entity, it will stop moving.
Animated	Animated textures work on it.
Animated_fast	Animated textures animate faster.
Crusher	Does just that when the player blocks it.
Key Values	
Speed	The speed at which the entity rotates. Default is 100.
Dmg	The amount of damage the entity does to another entity. Default is 2.
Sounds	The sound that is played when triggered. 0) Silent 1) Generic Rotate 2) Huge wheel in Cloudlabs 3) Rock Crusher in Oglemine2 4) Paddles in Gauntlet

Func_timer

A timer is used if you want an object to trigger at either a regular interval or a random interval. This is cool for broken objects as it gives them a sporadic feel. Timer's can not be touched.

Flags	
Start On	The timer is immediately active, and doesn't need to be triggered.
Key Values	
Wait	The amount of time between triggering. Default is 1.
Random	Used in conjunction with wait, the amount of time will vary. Default is 0. The range of time becomes wait+random to wait-random.
Delay	The amount of time before firing when first activated. Default is 0.
Pausetime	An additional delay for the first activation, this only works with the Start On flag checked.

Func_train

Trains are entities that move on a path predetermined by the designer. Used in conjunction with path corners, this is one of the most powerful entities in the game. It can be used as a platform that carries the player on a non-linear course, it can be used for objects that look to be falling, or it can be used for objects that look to be sliding across a surface. Trains can carry models also. Rotating trains must have an origin brush.

Flags	
Start On	The train is active at the start of the level.
Toggle	Waits at each path corner to be triggered again.
Block_Stop	If the train runs into another entity, it will stop.
Has Origin	Uses the origin brush rather than the lower left corner of the train.
No_clip	The train is no_clip. Used for moving cameras. (see misc_remote_camera for details.)
PushPull	With this flag selected, an object becomes pushable by Corvus. If you stand Corvus in front of it and hit his action key, he should go into a slight crouch. He can then push it, or pull it. **This is no longer used.**
Key Values	
Speed	The speed of the train. Default is 100. Path corners can be given speed also.

	Damage	The amount of damage the train does to another entity. Default is 2.
	Noise	The sound that is played while the train is moving.
	Rotate	The speed that the train should rotate at. The actual rotation of the train is based on the path corners.
	Wait	The amount of time to wait at each path corner. A wait of –1 will cause the train to wait at a path corner until it is triggered again. A wait of –3 will cause the train to explode, and should be only put on one path corner. A wait of –4 will cause a model attached to go through its frames of animation. Use in conjunction with count.
	Count	Number of frames in a model.
	File	The name of the file if you want to move a model. An example is models/objects/broom/tris.fm.
	Materialtype	What rubble to use if it explodes. Look at the breakable brush rubble.

Func_wall

A wall entity is one that simply acts as a normal wall, but it can blink into existence or remove itself. Useful for forcefields and such.

Flags

Trigger_spawn	Will come into existence when it is triggered. It will kill anything in its way when spawned.
Toggle	Use with trigger_spawn flag, it will allow the wall to be turned on and off.
Start On	Use with trigger_spawn flag, it will start the wall spawned at which point it may be removed.
Animated	Animated textures work on it.
Animated_fast	Animated textures animate faster.

Func_water

Func_water is a moveable water brush. It can only move up or down, but gives the illusion that a room is filling with water, or draining. It must be targeted to work and must use a water texture. Currently, the brush must also be non-transparent.

Flags

Start Open	Will start in its destination position.

Key Values

Angle	Direction to move. Must be angle –1 or –2.
Speed	The speed at which it will move. Default is 25.
Wait	The amount of time it will wait in its destination position. Default is –1, which is that it must be triggered to move back to its original position.
Lip	The water will move a distance equal to it's height minus the lip. A negative lip will cause it to move farther. Default is 0.
Sounds	The sound that is played as it moves. 0) No sound 1) Water 2) Lava

Info

Info_buoy

The buoy system is a Raven addition that is intended to improve the AI of monsters. While the concept is easy there is a lot to know about buoys. A special section is on page 51.

Flags

Jump	Will cause the monster to jump. Use with key values speed and height.
Activate	Will allow a monster to use an object. Must be used in conjunction with pathtarget and pathtargetname.
Turn	Will allow a monster to turn to the buoys angles.
Oneway	If a monster goes through this buoy, he cannot return the same way.

Key Values

Jumptarget	Tells the monster to jump to a buoy with a corresponding targetname. This doesn't actually make the monster jump, just lets it know it can. You also need the jump flag set.
Wait	Used in conjunction with "Activate", it sets a time before the monster can attempt another activate.
Delay	Used in conjunction with "Activate", it makes the monster wait for a time for the activated object to move.
Angles	XYZ value of buoy.
Pathtarget	Use this to have a buoy target an object.
Target	Use this to target a buoy to another buoy.
Target2	Use this to target the buoy to a completely different one.
Targetname	Every buoy must have a targetname and it must be unique.
Speed	Speed that monsters will jump if the jump flag is set.
Height	The height a monster will jump if the jump flag is set.

Info_notnull	Used as a target for misc_remote_camera.
Info_null	**Not used.**
Info_player_coop	A player start for a coop game. Heretic II supports four coop players per level. A startspot can have a targetname if a level has multiple startspots (hub).
Info_player_deathmatch	A player start for a deathmatch game.
Info_player_intermission	**Not used**.
Info_player_start	A player start for a single player game. A startspot can have a targetname if a level has multiple startspots (hub).

Items

Item_ammo_hellstaff	The ammo for the 3rd weapon, the hellstaff.
Item_ammo_phoenix	The ammo for the 7th weapon, the Phoenix bow.
Item_ammo_redrain	The ammo for the 5th weapon, the Storm bow.
Item_defense_meteorbarrier	The 2rd defensive spell, Meteor Barrier.
Item_defense_polymorph	The 3nd defensive spell, the Morph Ovum.
Item_defense_ringofrepulsion	The 1st defensive spell, the Ring of Repulsion.
Item_defense_shield	The 4th defensive spell, the Lightning Shield.

Item_defense_teleport	The 5th defensive spell, Teleport.
Item_health_full	A health icon, worth 30 points.
Item_health_half	A health icon, worth 10 points.
Item_mana_combo_half	A mana combo icon, worth 30 points.
Item_mana_defensive_full	A defensive mana icon, worth 40 points.
Item_mana_defensive_half	A defensive mana icon, worth 20 points.
Item_mana_offensive_full	An offensive mana icon, worth 40 points.
Item_mana_offensive_half	An offensive mana icon, worth 20 points.
Item_puzzle_canyonkey	
Item_puzzle_cloudkey	
Item_puzzle_cog	
Item_puzzle_crystal	
Item_puzzle_dungeonkey	
Item_puzzle_highpriestesskey	
Item_puzzle_highpriestesssymbol	
Item_puzzle_hive2amulet	
Item_puzzle_hive2gem	
Item_puzzle_hive2spear	
Item_puzzle_minecartwheel	
Item_puzzle_ore	
Item_puzzle_plazacontainer	
Item_puzzle_potion	
Item_puzzle_refinedore	
Item_puzzle_shield	
Item_puzzle_slumcontainer	
Item_puzzle_tavernkey	
Item_puzzle_tome	
Item_puzzle_townkey	

Item_spitter — Spits an item out. Should be targeted by an object like a chest.

- Flags
  - Noflash — No flash is created when the item spits out.
- Key Values
  - Target — Name of item to spit out. For example, “target, item_puzzle_townkey”.
  - Count — Number of items to spit out.
  - Radius — Distance from emitter to spit the item.
  - Spawnflags2 — Spawnflags to set for the item created.

Item_weapon_firewall — The 6th weapon, the Firewall.

Item_weapon_hellstaff — The 3rd weapon, the Hellstaff.

Item_weapon_maceballs — The 9th weapon, the Mace Balls.

Item_weapon_magicmissile — The 4th weapon, the Magic Missile.

Item_weapon_phoenixbow — The 7th weapon, the Phoenix Bow.

Item_weapon_redrain_bow — The 5th weapon, the Storm Bow.

Item_weapon_sphereofannihilation — The 8th weapon, the Sphere of Annihilation.

Light

Light — The workhorse of lighting. It doesn’t show up in the game, but you can see its effects.

- Flags
  - Start off — The light will start off and turn on when triggered.
- Key Values
  - Light — The value of the light. Default is 300.
  - Style — A dynamic light style. Default is 0; there are 11 styles.
  - Cone — Changes the cone of light. Default is 10. Use with spotlights, meaning the light targets an info_null.
  - Color — The RGB value of a light.

Light_buglight — A light for the hive levels.

- Additional Flags
  - No_Halo — Turns off the halo effect.

Light_chandelier1 — A big gold chandelier for the Palace.

Light_chandelier2 — An iron chandelier.

- Additional Flags
  - Animate — Causes flames to animate.

Light_chandelier3 — A smaller gold chandelier.

Light_floortorch — A torch holder that sits on the floor.

- Additional Flags
  - Animate — Sets a flame on top.

Light_gem2 — A gem light for Andoria.

- Additional Flags

No_Halo — Turns off the halo effect.

Additional Key Values

Style — Change the gem from yellow to green.
0) Yellow
1) Green

Light_lantern1 — A lantern on a wooden arm for Silverspring.

Additional Flags

No_Halo — Turns off the halo effect.

Light_lantern2 — A lantern on a long chain for Silverspring.

Additional Flags

No_Halo — Turns off the halo effect.

Light_lantern3 — A ceiling lantern for Silverspring.

Additional Flags

No_Halo — Turns off the halo effect.

Light_lantern4 — A wall lantern for the Mines.

Additional Flags

No_Halo — Turns off the halo effect.

Light_lantern5 — A lantern for tables and floors for the Mines.

Additional Flags

No_Halo — Turns off the halo effect.

Light_torch1 — A torch sconce with a gem for Andoria.

Additional Flags

No_Halo — Turns off the halo effect.

Light_walltorch — A torch sconce similar in style to floortorch.

Additional Flags

Animate — Places a flame in the torch.

Misc.

Misc_fire_sparker — Creates sparks.

Flags

Fireball — More like a fireball than sparks

Key Values

Delay — How long to stay (default is always).

Misc_flag — **Don't know.**

Misc_magic_portal — A glowing magic portal.

Flags

Start_off — Starts off.

Key Values

Angles — Change the facing.

Style — Change the color.
0) Blue
1) Red
2) Green

Count — Closes after a number of seconds. 0 means stay until triggered.

Misc_remote_camera — A camera that can look at other views besides the player. Used for showing effects to the world in other places, and for cinematics.

- Flags
  - Activating — Only the player who activated the camera will see the effects. (**Warning: Activating and scripted doesn't work together if the script has enable cinematics.)**
  - Scripted — This is a scripted camera, using external scripts.
  - No_delete — Doesn't delete the camera after using it.
- Key Values
  - Pathtarget — Use this if you want cameras to move. Create a func_train, and set up path corners so that it will move where you want the camera to move. Set the camera in the same place as the train, and give the train a targetname the same as the camera's pathtarget. When the camera is activated, activate the train also, and the camera will move.
  - Target — What the camera itself is looking at. The target can be an info_notnull for static cameras, or a func_train or func_door for moving targets.

Misc_teleporter — Used in conjunction with a teleporter_dest, a character stepping in the teleporter will be sent to the destination with a cool effect.

- Flags
  - No_model — Make the teleporter invisible, that is, don't show the effect.
  - Deathmatch_Random — Makes the teleporter go to a random deathmatch start spot.
  - Start_Off — Starts off.
  - Mult_Dest — Targeted at more than one destination.
- Key Values
  - Style — Number of destinations the teleporter has.

Misc_teleporter_dest — Used as the target for a teleporter.

Misc_update_spawner — Update the spawn point through the level for the teleport spell. This will stop the player from teleporting back to the start of the level.

Monster — Creatures in the game. Many Key Values are used for the monsters, so they are described here. Special key values for that monster are listed with them. Also the defaults for their values are listed with them.

- Generic Key Values
  - Homebuoy — Will head to this buoy when no enemy is around.
  - Wakeup_target — Will fire this target the first time it wakes up.
  - Pain_target — Will fire this target the first time it gets hurt.
  - Mintel — How long the monster will chase you.
  - Melee_Range — How close the player must be maximum for the monster to melee. 0 means the monster won't melee, and a negative number means the monster will try and keep a distance.
  - Missile_Range — Maximum distance the player can be and still let the monster use its ranged attack.

Min_Missile_Range — Minimum distance the player can be and still let the monster use its ranged attack.
Bypass_Missile_Chance — A percent chance that the monster won't use its ranged attack, but come in to melee instead.
Jump_Chance — A percent chance that the monster will jump. Use –1 for 0% chance
Wakeup_Distance — How far away the player can be before the monster wakes up.

Monster_assassin — Found throughout the entire guy. Quite a nasty fellow.

Flags

Ambush — Will only wakeup by sight not sound.
Asleep — Will not appear until triggered. Trigger them when the player can't see them.
Walking — **Not used.**
FwdJumpAmbush — Will jump in front of or behind player when triggered.
NoCloak — Will never cloak.
NoTeleport — Will never teleport.
Cinematic — **Not used.**
Fixed — Will stay in a fixed location and never move.
Wander — Will wander around the level following buoys.
Melee_Lead — Will try to cut you off from the front. Best used in groups.
Stalk — Will only try and attack from behind.
Coward — Will run away when player gets close.
TeleportAmbush — Invisible until triggered, appears to be teleporting in.
CloakAmbush — Starts cloaked and decloaks when woken up.
SideJumpAmbush — Will jump out to the left or right.
Teleport Dodge — Will use his teleport to dodge attacks.

Key Values

Mintel — **Default 64**.
Melee_Range — **Default 48**.
Missile_Range — **Default 1024**.
Min_Missile_Range — **Default 64**.
Bypass_Missile_Chance — **Default 10**.
Jump_Chance — **Default 100**.
Wakeup_Distance — **Default 1024**.

Monster_bee — **Not used.**
Monster_chicken — You know what this is. But doesn't work as a placeable monster.
Monster_chkroktk — **Not used.**
Monster_elflord — A boss in the Silverspring Palace.
Monster_fish — An underwater creature.

Key Values

Wakeup_target — Will fire this target the first time it wakes up.
Pain_target — Will fire this target the first time it gets hurt.

Monster_gkrokon — A beetle.

Flags

Ambush — Will only wakeup by sight not sound.
Asleep — Will not appear until triggered. Trigger them when the player can't see them.
Eating — Will look like it's eating something.
Fixed — Will stay in a fixed location and never move.
Wander — Will wander around the level following buoys.
Melee_Lead — Will try to cut you off from the front. Best used in groups.
Stalk — Will only try and attack from behind.
Coward — Will run away when player gets close.

Resting — Appears to be taking a break.

Key Values

Mintel — **Default 12**.
Melee_Range — **Default 0**.
Missile_Range — **Default 256**.
Min_Missile_Range — **Default 48**.
Bypass_Missile_Chance — **Default 0**.
Jump_Chance — **Default 100**.
Wakeup_Distance — **Default 1024**.

Monster_gorgon — A dinosaur.

Flags

Ambush — Will only wakeup by sight not sound.
Asleep — Will not appear until triggered. Trigger them when the player can't see them.
Eating — Will look like it's eating something. Changes wakeup_distance to 300.
Speedy — A fast gorgon.
Wander — Will wander around the level following buoys.
Melee_Lead — Will try to cut you off from the front. Best used in groups.
Stalk — Will only try and attack from behind.
Coward — Will run away when player gets close.

Key Values

Mintel — **Default 20**.
Melee_Range — **Default 48**.
Missile_Range — **Default 0**.
Min_Missile_Range — **Default 0**.
Bypass_Missile_Chance — **Default 0**.
Jump_Chance — **Default 80**.
Wakeup_Distance — **Default 1024**.

Monster_gorgon_leader — The leader of the gorgon's pack. **No longer used.**

Monster_harpy — A reptilian bird.

Flags

Ambush — Will only wakeup by sight not sound.
Asleep — Will not appear until triggered. Trigger them when the player can't see them.
Perching — Will watch the player until he gets too close.
Circling — Will circle in the air like vultures.

Monster_high_priestess — The boss in the Hive High Priestess level.

Monster_morcalavin — The main man.

Monster_mssithra — A big, ugly Ssithra… and then some!

Flags

Ambush — Will only wakeup by sight not sound.
Asleep — Will not appear until triggered. Trigger them when the player can't see them.
Fixed — Will stay in a fixed location and never move.
Wander — Will wander around the level following buoys.
Melee_Lead — Will try to cut you off from the front. Best used in groups.
Stalk — Will only try and attack from behind.
Coward — Will run away when player gets close.

Key Values

Mintel — **Default 16**.
Melee_Range — **Default 100**.
Missile_Range — **Default 400**.
Min_Missile_Range — **Default 100**.
Bypass_Missile_Chance — **Default 25**.
Jump_Chance — **Default 25**.

	Wakeup_Distance	**Default 1024**.
Monster_ogle		The small guys in the Mines. Don't hurt 'em!
Flags		
	Pushing	Will appear to be pushing something.
	Pick_up	Will start in frames using pick on walls.
	Pick_down	Will start in frames using pick on rocks.
	Chisel_up	Will start in frames using chisel on walls.
	Chisel_down	Will start in frames using chisel on floor.
	Hammer_up	Will start in frames using hammer on wall.
	Hammer_down	Will start in frames using hammer on floor.
	Singing	Will sing a song while working.
	Cinematic	Puts an ogle in cinematic mode.
Key Values		
	Mintel	**Default 16**.
	Melee_Range	**Default 48**.
	Missile_Range	**Default 0**.
	Min_Missile_Range	**Default 0**.
	Bypass_Missile_Chance	**Default 0**.
	Jump_Chance	**Default 10**.
	Wakeup_Distance	**Default 1024**.
Monster_palace_plague_guard		Special Sidhe guards for the palace.
Flags		
	Ambush	Will only wakeup by sight not sound.
	Asleep	Will not appear until triggered. Trigger them when the player can't see them.
	Walking	**Not used.**
	Cinematic	Puts a guard in cinematic mode.
	Missile	Will shoot a missile instead of melee.
	Fixed	Will stay in a fixed location and never move.
	Wander	Will wander around the level following buoys.
	Melee_Lead	Will try to cut you off from the front. Best used in groups.
	Stalk	Will only try and attack from behind.
	Coward	Will run away when player gets close.
Key Values		
	Mintel	**Default 16**.
	Melee_Range	**Default 0**.
	Missile_Range	**Default 512**.
	Min_Missile_Range	**Default 0**.
	Bypass_Missile_Chance	**Default 60**.
	Jump_Chance	**Default 50**.
	Wakeup_Distance	**Default 1024**.
Monster_palace_plague_guard_invis		Special Sidhe guards for the palace who are invisible unless attacking or moving.
Flags		
	Ambush	Will only wakeup by sight not sound.
	Asleep	Will not appear until triggered. Trigger them when the player can't see them.
	Walking	**Not used.**
	Cinematic	Puts a guard in cinematic mode.
	Missile	Will shoot a missile instead of melee.
	Fixed	Will stay in a fixed location and never move.
	Wander	Will wander around the level following buoys.
	Melee_Lead	Will try to cut you off from the front. Best used in groups.
	Stalk	Will only try and attack from behind.
	Coward	Will run away when player gets close.
	StartVisible	Starts visible, turns invisible when he stops moving.

Key Values

Mintel	**Default 16**.
Melee_Range	**Default 64**.
Missile_Range	**Default 512**.
Min_Missile_Range	**Default 30**.
Bypass_Missile_Chance	**Default 80**.
Jump_Chance	**Default 50**.
Wakeup_Distance	**Default 1024**.

Monster_plagueElf Inhabitants of Silverspring, now plagued.

Flags

Ambush	Will only wakeup by sight not sound.
Asleep	Will not appear until triggered. Trigger them when the player can't see them.
Walking	**Not used.**
Cinematic	Puts a guard in cinematic mode.
Missile	Will shoot a missile instead of melee.
Fixed	Will stay in a fixed location and never move.
Wander	Will wander around the level following buoys.
Melee_Lead	Will try to cut you off from the front. Best used in groups.
Stalk	Will only try and attack from behind.
Coward	Will run away when player gets close.

Key Values

Mintel	**Default 16**.
Melee_Range	**Default 0**.
Missile_Range	**Default 512**.
Min_Missile_Range	**Default 30, 0 for missile plague elf.**
Bypass_Missile_Chance	**Default 80, 60 for missile plague elf.**
Jump_Chance	**Default 50**.
Wakeup_Distance	**Default 1024.**

Monster_rat All through the game.

Flags

Ambush	Will only wakeup by sight not sound.
Asleep	Will not appear until triggered. Trigger them when the player can't see them.
Eating	Will look like it's eating something.
Fixed	**Not used.**
Wander	Will wander aroung the level following buoys.
Melee_Lead	Will try to cut you off from the front. Best used in groups.

Monster_rat_giant In palace level.

Flags

Ambush	Will only wakeup by sight not sound.
Asleep	Will not appear until triggered. Trigger them when the player can't see them.
Eating	Will look like it's eating something. Changes wakeup_distance to 100.
Fixed	**Not used.**
Wander	Will wander aroung the level following buoys.
Melee_Lead	Will try to cut you off from the front. Best used in groups.

Monster_seraph_guard The big guards in the Cloud Fortress.

Flags

Ambush	Will only wakeup by sight not sound.
Asleep	Will not appear until triggered. Trigger them when the player can't see them.
Golem	The guards that come to life in Morcalavin's chamber.
Wander	Will wander around the level following buoys.

Melee_Lead Will try to cut you off from the front. Best used in groups.
Stalk Will only try and attack from behind.
Coward Will run away when player gets close.

Key Values
Mintel **Default 20**.
Melee_Range **Default 100**.
Missile_Range **Default 0**.
Min_Missile_Range **Default 0.**
Bypass_Missile_Chance **Default 0.**
Jump_Chance **Default 20**.
Wakeup_Distance **Default 1024.**

Monster_seraph_overlord The same race as the guards, in the Cloud and Mine levels.

Flags
Ambush Will only wakeup by sight not sound.
Asleep Will not appear until triggered. Trigger them when the player can't see them.
Wander Will wander around the level following buoys.
Melee_Lead Will try to cut you off from the front. Best used in groups.
Stalk Will only try and attack from behind.
Coward Will run away when player gets close.

Key Values
Mintel **Default 24**.
Melee_Range **Default 100**.
Missile_Range **Default 0**.
Min_Missile_Range **Default 0.**
Bypass_Missile_Chance **Default 0.**
Jump_Chance **Default 30**.
Wakeup_Distance **Default 1024.**

Monster_spreader The plague spreaders created by Morcalavin.

Flags
Ambush Will only wakeup by sight not sound.
Asleep Will not appear until triggered. Trigger them when the player can't see them.
Walking **Not used.**
Fixed Will stay in a fixed location and never move.
Wander Will wander around the level following buoys.
Melee_Lead Will try to cut you off from the front. Best used in groups.
Stalk Will only try and attack from behind.
Coward Will run away when player gets close.

Key Values
Mintel **Default 24**.
Melee_Range **Default 100**.
Missile_Range **Default 512**.
Min_Missile_Range **Default 200.**
Bypass_Missile_Chance **Default 50.**
Jump_Chance **Default 30**.
Wakeup_Distance **Default 1024.**

Monster_ssithra An aquatic race in Andoria.

Flags
Ambush Will only wakeup by sight not sound.
Asleep Will not appear until triggered. Trigger them when the player can't see them.
Namor Will go for water whenever possible.
Spin Not sure.
ToughGuy A bit tougher than a normal Ssithra.

Fixed — Will stay in a fixed location and never move.
Wander — Will wander around the level following buoys.
Melee_Lead — Will try to cut you off from the front. Best used in groups.
Stalk — Will only try and attack from behind.
Coward — Will run away when player gets close.

Key Values

Mintel — **Default 28**.
Melee_Range — **Default 48**.
Missile_Range — **Default 512**.
Min_Missile_Range — **Default 48.**
Bypass_Missile_Chance — **Default 25.**
Jump_Chance — **Default 100**.
Wakeup_Distance — **Default 1024.**

Monster_tchekrik_female — The female, spell-casting insects in the Hive.

Flags

Ambush — Will only wakeup by sight not sound.
Asleep — Will not appear until triggered. Trigger them when the player can't see them.
Walking — **Not used.**
Cinematic — **Not used.**
Alternate — Uses different projectile.
Fixed — Will stay in a fixed location and never move.
Wander — Will wander around the level following buoys.
Melee_Lead — Will try to cut you off from the front. Best used in groups.
Stalk — Will only try and attack from behind.
Coward — Will run away when player gets close.

Key Values

Mintel — **Default 32**.
Melee_Range — **Default 72**.
Missile_Range — **Default 512**.
Min_Missile_Range — **Default 48.**
Bypass_Missile_Chance — **Default 0.**
Jump_Chance — **Default 40**.
Wakeup_Distance — **Default 1024.**

Monster_tchekrik_male — The insects in the Hive.

Flags

Ambush — Will only wakeup by sight not sound.
Asleep — Will not appear until triggered. Trigger them when the player can't see them.
Walking — **Not used.**
Cinematic — Puts the tchekrik male in cinematic mode.
Beast_fodder — Runs away if the trial beast is in the same area.
Yellowjacket — Uses different skin and shoots different projectile.
Fixed — Will stay in a fixed location and never move.
Wander — Will wander around the level following buoys.
Lead — Will try to cut you off from the front. Best used in groups.
Stalk — Will only try and attack from behind.
Coward — Will run away when player gets close.

Key Values

Mintel — **Default 32**.
Melee_Range — **Default 30**.
Missile_Range — **Default 512**.
Min_Missile_Range — **Default 48.**
Bypass_Missile_Chance — **Default 30.**
Jump_Chance — **Default 40**.
Wakeup_Distance — **Default 1024.**

Monster_tchekrik_mother Insect breeders in the High Priestess level. They don't actually have any attacks or movement, they're just big and ugly.

Monster_trailblazer **Not used.**

Monster_trial_beast Gigantic pit beast in the hive.

Key Values

Mintel	**Default 100**.
Melee_Range	**Default 400(bite)**.
Missile_Range	**Default 1500(charge)**.
Min_Missile_Range	**Default 100.**
Bypass_Missile_Chance	**Default 77.**
Jump_Chance	**Default 100**.
Wakeup_Distance	**Default 3000.**

Object All objects have the flags Invulnerable, Animate, Explode, and No Push unless specially noted. All flags are not applicable for all models. Look at the notes in the editor to find out if an object can accept a particular flag.

Obj_andwallhanging
Obj_banner
Obj_banneronpole
Obj_barrel
Obj_barrel_explosive
Obj_barrel_metal
Obj_basket
Obj_bench
Obj_bigcrystal
Obj_biotank Set style to get a creature in the tanks.
0) empty
1) floating head
2) hairless critter
3) three fish
4) wasp

Obj_bloodsplat
Obj_bookclosed
Obj_bookopen
Obj_bottle1
Obj_broom
Obj_bucket
Obj_bush1
Obj_bush2
Obj_cactus The player takes one point of damage when touching this.

Obj_cactus3 The player takes one point of damage when touching this.

Obj_cactus4 A cactus that opens and closes if triggered.
Obj_cauldron
Obj_chair1
Obj_chair2
Obj_chair3
Obj_chest1 Trigger to have it open.
Obj_chest2
Obj_chest3
Obj_choppeddude
Obj_claybowl

Obj_clayjar
Obj_cocoon
Obj_cocoonopen
Obj_cog1
Obj_corpse_ogle Poor little ogles. Has key value style. Default is 0.
0) Damage skin
1) Normal skin.
Obj_corpse_ssithra Has key value style. Default is 0.
0) Damage skin
1) Not used
2) Normal skin
Obj_corpse1 Has key value style. Default is 0.
0) Both arms above head
1) On side
2) Arm over face
3) Arms out to side
4) Skewered
Obj_corpse2 Has key value style. Default is 0.
0) Both arms above head
1) On side
2) Arm over face
3) Arms out to side
4) Skewered
Obj_dying_elf "I'm not quite dead yet." Has key value style. Default is 0. Values of 0 or 1.
Obj_eggpan
Obj_eyeball_jar
Obj_firepot
Obj_fishhead1 Has flag Nodrip.
Obj_fishhead2 Has flag Nodrip.
Obj_fishtrap
Obj_flagonpole
Obj_floor_candelabrum
Obj_fountain_fish
Obj_gascan
Obj_gorgonbones
Obj_grass
Obj_hanging_ogle These guys just can't catch a break.
Obj_hangingdude
Obj_jawbone
Obj_jug1
Obj_kettle
Obj_lab_parts_container
Obj_lab_tray
Obj_larva
Obj_larvabrokenegg
Obj_larvaegg
Obj_lever1 Animates if triggered. Must be used with trigger_playeruselever. Target entities to be fired with the lever, not the trigger_playeruselever.
Obj_level2 Animates if triggered. Must be used with trigger_playeruselever. Target entities to be fired with the lever, not the trigger_playeruselever.
Obj_lever3 Animates if triggered. Must be used with trigger_playeruselever. Target entities to be fired with the lever, not the trigger_playeruselever.

Obj_metalchunk1
Obj_metalchunk2
Obj_metalchunk3
Obj_minecart
Obj_minecart2
Obj_minecart3
Obj_morcalavin_barrier
Obj_moss1
Obj_moss2
Obj_moss3
Obj_moss4
Obj_moss5
Obj_nest
Obj_pick
Obj_pipe1
Obj_pipe2
Obj_pipewheel
Obj_plant1
Obj_plant2
Obj_plant3
Obj_pot1
Obj_pot2
Obj_pottedplant
Obj_pushcart
Obj_queenchair
Obj_queenthrone
Obj_ring_plaque2
Obj_rocks1
Obj_rocks2

Obj_rope
Has flags Vine, Chain, and Tendril. Defaults to rope. To make a rope, create an origin brush at the top of a brush that is the length of the desired rope. Select both and create obj_rope.

Obj_ropechain
Has key value skinnum. 0 = rope, 1 = chain.

Obj_scroll
Obj_seasonglobe
Obj_shovel

Obj_shrine
The model for the shrines throughout the game.
Key Value, style determines the type of shrine.
0) heal
1) mana
2) lungs
3) light
4) powerup
5) armor
6) armor gold
7) random
8) reflection
9) staff
10) ghost

Obj_sign1
Has key value style. Default is 0.
0) sign with a dragon
1) sign with two steins
2) sign with a fish

Obj_sign4
Has key value style. Default is 0.

0) sign to Andoria
1) sign to K'Chekrik

Obj_skullpole
Obj_spellbook — If triggered, the book closes and the ray disappears.
Obj_statue_boulderfish
Obj_statue_corvus
Obj_statue_dolphin1
Obj_statue_dolphin2
Obj_statue_dolphin3
Obj_statue_dolphin4
Obj_statue_dragon — Has key value style. Default is 0.
0) dragon looking left
1) dragon looking right

Obj_statue_dragonhead
Obj_statue_duckbill1
Obj_statue_duckbill2
Obj_statue_guardian
Obj_statue_saraphbust
Obj_sariph
Obj_statue_sithraguard
Obj_statue_tchecktrik_bust
Obj_statue_techeckrikleft
Obj_statue_techeckrikright
Obj_statue_techeckriktomb
Obj_stein
Obj_swampflat_bottom
Obj_swampflat_top
Obj_table1
Obj_table2
Obj_tapper
Obj_throne
Obj_torture_bed
Obj_torture_ironmaiden
Obj_torture_rack
Obj_torture_table
Obj_torture_wallring
Obj_tree
Obj_tree2
Obj_tree3
Obj_treefallen
Obj_treestump
Obj_treetall
Obj_treetop
Obj_urn
Obj_venusflytrap
Obj_wallringplaque
Obj_web
Obj_wheelbarrow
Obj_wheelbarrowdamaged
Obj_woodpile

Path Corner — A path corner is used in association with func_train. It sets up waypoints for the train to travel to. Some key values between train and path corner are interchangeable.

Key Values

Target	Targets the next path corner
Pathtarget	Used when an entity that has this path corner targeted touches it.
Angles	Used to make the train rotate when it hits the path corner. The train must have an origin brush as part of it. Angles are cumulative, so if the first path corner has 0 40 0 and the second one has 0 50 0, then it will have rotated 90 degrees on the y-axis.
Wait	Amount of time the train waits at a path corner. Wait of –1 will make the train stop until it is retriggered, while –3 causes the train to explode upon reaching the path corner.
Noise	File to play when train hits path_corner.

Point Combat — Make a monster target this and he will go to it before attacking the activator.

Flags

Hold	The monster will stay at the destination.

Script Runner — Calls an external script to be run. Must be triggered.

Key Values

Script	Script to run. Example: silverspring/door.
Parm1-16	Parameters are part of the scripting language. They are values for a generic script that can be set on a per use basis.

Shrines

Shrines are a combination of entity and architecture that are placed throughout the levels. They give you an ability, heal you, or give you mana.

Shrine_armor
Shrine_armor_gold
Shrine_ghost
Shrine_heal
Shrine_light
Shrine_lung
Shrine_mana
Shrine_powerup
Shrine_random
Shrine_reflect
Shrine_speed
Shrine_staff

Sound

Ambient sounds for different sections of the game. Each set has different styles associated with them, but they all share some key values and flags.

Flags

Non_local	Plays throughout the level.
Start_off	Starts off, can be triggered on.

Key Values

Wait	Amount of seconds + or – 50% before spawing sound again. Default is 10.
Attenuation	The distance at which the sound plays from its origin. Default is 0. 0) Heard over entire level 1) Heard at large radius 2) Heard at medium radius

3) Diminishes very quickly.

Volume — The volume of the sound. Range of .1 to 1, default is .5.

Sound_ambient_andoria

Style — Which sound to play.
1 small fountain (constant loop)
2 large fountain (constant loop)
3 water running out of sewer (constant loop)
4 rushing waterway outside (constant loop)
5 wind chime

Sound_ambient_cloudfortress

Style — Which sound to play.
1 Cauldron bubbling (looping)
2 Wind, low, eerie (looping)
3 Wind, low, noisy (looping)
4 Wind, high, soft (looping)
5 Wind, low, soft (looping)
6 Wind, low, strong (looping)
7 Wind, high, strong (looping)
8 Wind, whistling, strong (looping)

Sound_ambient_hive

Style — Which sound to play.
1 Gong
2 Wind, low, eerie (looping)
3 Wind, low, noisy (looping)
4 Wind, high, soft (looping)
5 Wind, low, soft (looping)
6 Wind, low, strong (looping)
7 Wind, high, strong (looping)
8 Wind, whistling, strong (looping)

Sound_ambient_mine

Style — Which sound to play.
1 Mud pool bubbling (looping)
2 Rocks falling (3 sounds)
3 Wind, low, eerie (looping)
4 Wind, low, soft (looping)
5 Conveyor belt (looping)
6 Bucket conveyor belt (looping)
7 Creaking timbers (3 sounds)

Sound_ambient_silverspring

Style — Which sound to play.
1 fire (looping)
2 water lapping (looping)
3 seagulls (2 random)
4 ocean
5 birds (10 random)
6 crickets (3 random)
7 frogs (2 random)
8 distant women/children crying (4 total)
9 mosquitoes (2 random)
10 bubbles
11 bell tolling
12 footsteps (3 random)
13 moans/screams/coughing (5 random)
14 sewer drips (3 random)
15 water drips (3 random)
16 solid heavy drips (3 random)
17 Cauldron bubbling (looping)
18 Spit turning and creaking

Sound_ambient_swampcanyon

Style — Which sound to play.
1 Bird, quick, high pitch

2 Bird, low, medium pitch
3 Huge waterfall
4 Mud pool bubbling (looping)
5 Wind, low, eerie (looping)
6 Wind, low, noisy (looping)
7 Wind, high, soft (looping)
8 Wind, low, soft (looping)
9 Wind, low, strong (looping)
10 Wind, high, strong (looping)
11 Wind, whistling, strong (looping)

Target

Target_changelevel — Target this with a trigger_once or a trigger_multiple to change from one level to another.

Key Values
- Map — The map to load next. If you are going to a map with multiple single start spots, the syntax to follow is, "newmap$currentmap". The start spots in the new map should have a targetname of the current map. If a targetname is not given to the start spots, the changelevel will dump you at a random one.

Target_crosslevel_target — Used in conjunction with crosslevel_trigger. You can have a trigger in one level effect something in another level with these two entities. Set a combination of flags so that the trigger and target match.

Flags
- Trigger1-8 — Set up flags that match between the trigger and target.

Key Values
- Delay — Amount of time before targeted triggers goes off.
- Target — The target can target other entities.
- Killtarget — Kills entities that are targeted off this one.

Target_crosslevel_trigger — Used in conjunction with crosslevel_target, this triggers an event that happens in a different level. The event doesn't actually take place until you load the new level. It can trigger multiple targets, as long as they have matching flags.

Flags
- Trigger1-8 — Set the flags to match the corresponding target.

Key Values
- Message — Display a text line.
- Delay — Amount of time before target fires after level loads.
- Target — Can target other entities besides crosslevel_target
- Killtarget — Can kill other entities.

Target_lightramp — An entity that allows a light to change levels over a length of time. Must be triggered.

Flags
- Toggle — Can work in forward and reverse when triggered.

Key Values
- Speed — The amount of time it takes to change levels.
- Message — Two letters indicating the starting level and ending level. No space should be in-between the letters. The letters go from "a," the brightest, to "z," the darkest.

Target_splash — Creates a particle splash effect when used.

Key Values

Sounds	1) sparks 2) blue water 3) brown water 4) slime 5) lava 6) blood
Count	How many pixels in the splash
Dmg	The splash does a radius damage. Useful for lava.

Trigger

Trigger_Activate — Activates objects that are targeted by it. Used mostly for having other triggers inactive until triggered.

Flags

Monster	A monster can trigger this.
Not_player	The player cannot trigger this.
Triggered	Cannot be touched, must be triggered.
Any	Any entity can trigger this.

Key Values

Delay	Waits some time before firing after activation.
Wait	The amount of time between triggerings. Default is .2.
Message	Displays a text string.

Trigger_always — This trigger always fires. It starts when the level starts.

Trigger_counter — Much like a relay, but it counts down every time it is fired. When it gets to 0 it triggers its targets and removes itself.

Flags

Nomessage	If this flag is not set, the trigger will print, “one more to go”, etc. when fired.

Key Values

Count	Amount of time the counter will fire before removing itself. Default is 2.

Trigger_Damage — Does damage to an entity when it touches this trigger.

Flags

Start_Off	Must be triggered to work.
Toggle	Can be turned on and off.
Silent	Will not play a sound when triggered.
No_Protection	Nothing will stop the entity from taking damage.
Slow	Does one point of damage per second.

Key Values

Dmg	The amount of damage per second. Default is 5.

Trigger_Deactivate — This will deactivate other triggers. Useful if you want to have a conditional trigger.

Flags

Monster	A monster can trigger this.
Not_player	The player cannot trigger this.
Triggered	Cannot be touched, must be triggered.
Any	Any entity can trigger this.

Key Values

Delay	Waits some time before firing after activation.
Wait	The amount of time between triggerings. Default is .2.

Message	Displays a text string.

Trigger_effect — Makes an effect when style is set.

Key Values

Style	0) no effect 1) teleport effect

Trigger_elevator — An entity that is never visible in the world, use this in conjunction with func_train, path corners, and a button or trigger to make an elevator type system. We left this entity in, but it is not used in Heretic II.

Trigger_endgame — Used to end the game and go to the outro.smk file.

Trigger_farclip — Changes the console variable r_farclipdist. If the current value is default, it sets it to the trigger's key value. If set to the trigger's key value, it sets it back to default. Do not have teleport points, or start spots of any kind inside or inbetween this trigger.

Key Values

Scale	Amount to set distance to. Default is 4096.

Trigger_fogdensity — Changes the density of fog as you progress through a level. Doesn't work in software.

Key Values

Target	A number between .01 and .0001 that changes the density.
Color	Not implemented, as it won't work on Voodoo1 or software.

Trigger_goto_buoy — A monster that touches this trigger or is targeted by it will go to a buoy named.

Flags

Touch	Allows the monster to touch it.
IgnoreEnemy	Will totally ignore player to get to its buoy.
TeleportSafe	Will teleport monster to the buoy if the player can't see the monster, and the buoy is clear.
TeleportUnsafe	Will teleport monster to the buoy, but doesn't care if the player can see. Used for assassin, since it teleports anyways.
Fixed	Monster will become fixed when it gets to the target buoy.
Stand	Monster will forget enemies when it gets to buoy and return to idle state.
Wander	Monster will wander around when it gets to the target buoy.

Key Values

Pathtarget	Targetname of buoy the monster should go to.
Delay	Waits some time before firing after activation.
Wait	The amount of time between triggerings.

Trigger_Gravity — Changes the gravity of a level when this is triggered.

Key Values

Gravity	Change gravity value for a level. Default is 1.0.

Trigger_lightning

Flags

Monster	Only a monster can trigger it.
Not_player	Can't be triggered by the player.
Triggered	Starts deactivated
Any	Anything can trigger it.

Keys

Origin	Starting point of lightning. Doesn't have to be within trigger.
Target	End point entity. Target an info_notnull.
Delay	Duration of lightning. Default is 0.
Materialtype	0 = blue. 1 = red.
Style	Width of bolt. Red Rain is 6 which is the default.
Wait	The amount of time between triggerings. Default is 10.

Trigger_mappercentage Used for single player to update the map in the Tome.

Key Values

Count	Amount of level completed.

Trigger_mission_give Gives an objective to the player in the objectives part of the menu.

Key Values

Message	Number of line from levelmsg.txt

Trigger_mission_take Takes an objective from the menu. Only two objectives can be active at a time, so you can either take the first or second one.

Flags

Take1	Take the first objective.
Take2	Take the second objective.

Trigger_MonsterJump A monster that walks into this trigger will jump in the direction of the angle.

Key Values

Angle	The direction the monster will jump when he hits the trigger.
Speed	The speed the monster is thrown forward at. Default is 200.
Height	The height the monster is thrown up. Default is 200.

Trigger_multiple A workhorse of scripting. Can be made to any size. Works only if it targets something.

Flags

Monster	A monster can trigger this.
Not_player	The player cannot trigger this.
Triggered	Cannot be touched, must be triggered.
Any	Any entity can trigger this.

Key Values

Delay	Waits some time before firing after activation.
Wait	The amount of time between triggerings. Default is .2.
Message	Displays a text string.
Sounds	The sounds played when triggered. 1 Secret 2 Beep beep 3 Large switch

Trigger_once — Similar to trigger_multiple, but only fires once before removing itself.

Flags
- Monster — A monster can trigger this.
- Not_player — The player cannot trigger this.
- Triggered — Cannot be touched, must be triggered.
- Any — Any entity can trigger this.

Key Values
- Message — Displays a text string.
- Sounds
  1 Secret
  2 Beep beep
  3 Large Switch

Trigger_playerpushbutton — Lets player entity know he is near a button, so if the action key is used, he goes into push animation. This trigger must target the button.

Trigger_playerpushlever — Lets player entity know he is near a lever, so if the action key is used, he goes into lever animation. This trigger must target the lever, which then targets the entities to use.

Trigger_playerusepuzzle — Lets player entity know he is near a puzzle destination and the puzzle inventory is displayed.

Trigger_push — Pushes the player in a direction.

Flags
- Force_Once — Pushes the player one time then removes itself.

Key Values
- Speed — The speed the player is pushed at. Default is 500.
- Angle — The angle the player is pushed in the XY plane.
- Zangle — The direction in Z to push the player. 0 is straight up, 180 is straight down. Default is 0, so zangle must be set to 90 if only XY movement is desired.

Trigger_puzzle — Works much like a trigger_once, but only works if a puzzle piece is used.

Flags
- No_text — No text is displayed indicating a piece is needed.
- No_take — Checks for a puzzle piece but doesn't remove it.

Key Values
- Item — Specify which puzzle piece to look for.

Trigger_quake — Creates a camera shake that looks like an earthquake.

Flags
- Monster — A monster can trigger this.
- Not_player — The player cannot trigger this.
- Triggered — Cannot be touched, must be triggered.
- Any — Any entity can trigger this.

Key Values
- Wait — Amount of time until it can be triggered again. Default is 10, -1 makes it go away after one use.
- Count — Number of pixels to shake the screen. Default is 20.
- Time — Duration of quake. Default is 2.
- Style — Direction of quake.
  1) shake_lateral

2) shake_vertical
4) shake_depth
7) shake_all_dir (default)

Trigger_you've_read_this_far? I can't believe that you have actually read this far… amazing! Keep going, wait until the great plot twist and finale.

Trigger_quit_to_menu Player triggers this to return to the menu. It is used in the tutorial level.

Trigger_relay A trigger that never shows in the world, it is used as a midpoint between two events, such as trigger_multiple, and func_door. It is most often used when a trigger is going to control multiple events.

Worldspawn This is not actually an entity, but it is any scripting associated with the world itself. It will know which CD track to play and which sky to use.

Flags

Nobodies — In DM, no bodies will stay when they die.

Key Values

Sounds — The CD track to play.

Sky — The sky to use.
Andoria – Sky for andoria levels.
Desert – Sky for Canyon level.
Hive – Sky for Hive levels.
Sky1 – Sky for Silverspring docks.
Storm – Sky for Cloud Fortress.
Swamp – Sky for Swamp and Andslums
Town – Sky for Silverspring levels.

Skyaxis — Rotates the sky about an axis

Skyrotate — Speed of rotation of the sky. Measured in degrees per second, and used with skyaxis.

Gravity — The gravity of a level. The default is 800.

Message — Text that prints in the console upon loading the level.

Skinnum — Plague skin for Corvus in single player. 0 is normal, 1 is plagued, and 2 is really plagued.

Cooptimeout — Sets a wait in seconds to allow all co-op players to join. This is useful if a cinematic is at the beginning of the level.

Offensive — Starting weapons for co-op. Add together for combinations of weapons.

1	Swordstaff
2	Fireball
4	Hellstaff
8	Magic Missile
16	Storm Bow
32	Sphere of Annihilation
64	Phoenix Bow
128	Mace Ball
256	Firewall

Example: for the first four weapons in the game the value is 15.

Defensive — Starting defensive spells for co-op. Add together for combinations.

1	Ring of Repulsion
2	Lightning Shield
4	Teleport
8	Morph Ovum
16	Meteor Barrier

How to use Buoys

The buoy system is used so that monsters can find their way around a level without running into things. While it is not infallible (it was made by a programmer), it makes the monsters look and act a lot smarter.

The way to go about using them is to first set up the buoys in the locations that you want. A buoy must always be able to see another buoy. Hallways that dogleg, or go in multiple directions are good spots for buoys as is difficult to navigate areas, such as a pile of rubble in an open room or hallway. Open rooms themselves don't need buoys as monsters don't have trouble getting around in them. Buoys must also be within 1024 units of each other to work.

Now, start with one buoy and connect it to the next buoy. Keep targeting buoys until they are all connected in a web. If the path is linear, there is no problem, target them like anything else. But if you get to intersections you can give the buoy a key value "target2" and target a second buoy. It is important to know that each buoy must have a unique targetname. Also, a buoy can target two other buoys, but only have one targetname itself. Therefore, it can have three possible paths off of it. The pathways on buoys do not act like other targets in scripting however. Even though a first buoy targets a second one, the second one can send info back to the first.

Once the web of buoys is finished you may want to flag certain buoys so that monsters will look like they are doing something. For instance, you can have buoys on each side of a door. When the monster comes up to the first buoy, an activate flag on the buoy will cause the monster to activate the door. The buoy must have a "pathtarget" key value, and the door must have a corresponding "pathtargetname". The door will open, and the monster will wait for it instead of running into it until it's clear. They can also activate triggers, plats, and other objects.

That's about all there is to buoys. It's a little difficult to get the grasp of them but once you do, they can be very helpful.

How to Use Scripting

So you want to know how some of that cool stuff you see in the levels is done? One of Raven's esteemed programmers, Rick Johnson, has created an external scripting language that empowers the designers to create anything their devious little minds can think up. Well, not entirely. **(How much did Rick pay you to throw that one in there, and who said that we had little minds? -Ed.)** In the first couple of weeks of implementation, we found lots of things we couldn't do but Rick kindly added features for us. The version of the language that is in Heretic II is fairly complete, however Rick is adding additional features for other games being produced at Raven. **(Like Soldier of Fortune, coming soon! –Ed.)**

The basics of using an external script in the editor are this. Create a trigger once or multiple and target it to a script runner. In the script runner, declare a key value of the name of the script and any parameters you might be using. If the script is specific to an area, make sure there are entities in the world with corresponding targetnames to the targetnames in the script itself. That's it. The script runner doesn't need to target anything. If there is a "suspend" command in the script and you want the script to run again later, the same script runner entity must be targeted.

An external script is made as follows. Create the script using a text editor, and save it with the extension, ".ds". Run the utility ds.exe and the script you want to compile. For example, "ds door.ds". The output directory declared in the script is where the compiled ".os" file is saved. In the case of the Heretic II scripts it is base/ds/subfolder, with subfolder designated as a specific hub.

For knowing the syntax to use in the script refer to Appendix A: Scripting Documention. All syntax for within the script is given here. Like Quake Ed itself, the scripting language is unsupported, so if you run into trouble, you'll probably have to figure it out on your own.

Troubleshooting

So you know how to make a map, texture it, and put the entities in that are necessary to make it run. But for some reason it just won't compile. There are numerous errors that could have come up as you were working and it can be very difficult to track some of them down. Following is a list of common errors (and some not so common). Take care when building, as some of these errors can really wreck the playability of a level.

General Errors

There are some errors that have to do with circumstances outside of the editor. Sometimes a map gets corrupted and sometimes… well, check the space on your hard drive.

Can't write mapname
Usually HD is full.

Parsing Brush
The map is somehow corrupt. Sometimes, this can be fixed in a text editor. Find the brush that is causing the problem, and delete it.

ParseEntity: {not found
The map has a corrupt entity. Try fixing in a text editor.

ParseEntity: EOF without closing brace
The map has a corrupt entity. Try fixing in a text editor.

BSP Errors

Leaked
The most common error. A map must be completely enclosed from the void that makes up the world. Completely enclosed means that at no time can a line be drawn from an entity to the void. This occurs often from moving brushes around and rebuilding areas forgetting to take some things into account. The nice thing is that the editor draws a pointfile showing which entity is seeing out of the world, and where the leak is.

Mixed Face Contents
This refers to surface properties of textures. A brush may have different textures on each face, and each face can have different *surface* properties, but not different *content* properties. Thus, a brush cannot have a lava content flag on one face and have a water content flag on a different face. The error looks like this:

BRUSH- Mixed face contents: Entity #0

(0.0000,0.0000,0)||
Brush#1 min=(0.0000,0.0000,0.0000)
Max=(0.0000,0.0000,0.0000)||

The way to fix this is to go to Misc, Find Brush and type in the number of the brush, (in the example above it is 1), and then retexture the brush so the content flags are the same.

Duplicate Plane

When you start moving vertices on a brush, you can run into this problem. It occurs when you take a four-sided brush and move one vertex until it looks like a triangle. That vertex disappears in the editor, but it is really still there. What happens then is that two sides of the four-sided brush share the same plane. The error looks like this:

BRUSH- Duplicate Plane: Entity #0
(0.0000,0.0000,0)||
Brush #0 min=(0.0000,0.0000,0.0000)
Max=(0.0000,0.0000,0.0000)||

The way to fix this is to find the brush using Misc, Find Brush, and isolate it. Remake the brush by using Brush, 3-sided, or 3-sided snap. Then delete the original.

Over max values

There are limits to what you can do with the engine. Everything has some kind of max number associated with it.

The following is a list of Heretic II's max values:
Max_Map_Areas 256
Max_Map_Brushes 10240
Max_Map_Brushsides 65536
Max_Map_Edges 128000
Max_Map_Entities 2048
Max_Map_Faces 65536
Max_Map_Leafs 65536
Max_Map_Leafbrushes 65536
Max_Map_Leaffaces 65536
Max_Map_Models 1024
Max_Map_Nodes 65536
Max_Map_Planes 65536
Max_Map_Surfedges 256000
Max_Superverts 512
Max_Switched_lights 32
Max_Map_Textures 1024
Max_Map_Verts 65536

The following is a corresponding list of errors:
Max_Map_Areas
Nummapbrushes == Max_Map_Brushes
Max_Map_Brushsides
Numedges == Max_Map_Edges
Num_entities == Max_Map_Entities
Max_Map_Faces

Max_Map_Leafs
Max_Map_Leafbrushes
Max_Map_Leaffaces
Max_Map_Models
Max_Map_Nodes
Max_Map_Planes
Max_Map_Surfedges
Max_Superverts
stylenum == Max_Switched_Lights
Max_Map_Textures
Numvertexes == Max_Map_Verts

To fix any of these problems, you must simply make the map smaller or simplify it. If you are really hitting these numbers, you may want to make it into two smaller levels.

Origin not part of entity

Whenever you have an origin brush in the world, it must be part of an entity. Otherwise, you get the following error:

BRUSH- Origin Brushes Error.: Entity#0
(0.0000,0.0000,0)||
Brush#0
Min=(-24.0000,-48.0000,120.0000)
Max=(0.0000,0.0000,0.0000)||
||
**********ERROR**********
Origin brushes not allowed in world||

Find the brush and either make it part of an entity or delete it.

Areaportal Error

When you make an areaportal, it must be made up of only one brush. Otherwise, you get the following error:

**********ERROR**********||
Entity 1: func_areaportal can only be a single brush||

Find the entity and delete parts so it is only one brush, or remake it from scratch.

Outside of World

The grid only goes to +/-4096 for a reason. The world has limits. If a brush goes out of the world you get the following error:

BRUSH- Bounds out of range: Entity#0
(0.0000,0.0000,0)|
Brush #0
Min=(4128.0000,72.0000,0.0000)
Max=(0.0000,0.0000,0.0000)||

To fix this error, make sure all brushes are inside the world grid.

Normal Error

A face only has one side. If you are inside a brush and can see out of it, that is because you are on the side that has no normal. Normals always face the outside of the brush and are the side that is visible. The error, “Plane with no normal” occurs when a brush is cut and there is a resulting piece that is so small that a face is dropped.

The original error used to read, “FloatPlane: bad normal”, but that error should not show up anymore. Instead, the error should read:
Plane with no normal
Brush #0

BSP Options

If you run qbsp without a valid option, you could get one of the following errors. If you run the preset options, they should work OK. Most of these errors occur if you run BSP from a command line.

Unknown Option	Check the options you set.
Tried to invoke command line that wasn’t valid.	Check the options you set.
Usage: qbsp3 [options] mapfile	Specify which map to compile.

Misc Errors

There are a variety of other errors that could occur in the BSP, but they never should. Basically, if you ever get one of these errors, there may be a bug in qbsp3. While we cannot promise that the error will be fixed by us, you can mail us a copy of the map with the specific error and we will try to look into it.

Tried Parent
PSIDE_FACING with splits
SubdivideFace: didn’t split the polygon
Portal_EntityFlood: not a leaf
AddPortalToNode: allready included
RemovePortalFromNode: portal not in leaf
RemovePortalFromNode: portal not bounding leaf
CutNodePortals_r: mislinked portal
Node->faces seperating CONTENTS_SOLID
!node->faces with children
PruneNodes: node->brushlist
Bad leafface
WriteDrawNodes_r: odd planenum

Vis Errors

Load Portal Errors

A Load Portal error occurs when it the .prt file made by bsp is either corrupted, missing, or invalid. The reason a .prt file would be missing is almost always due to a leak in the map. This is a way to stop the map from processing so that you can fix the leak. An invalid .prt file may occur if the map is too complex. Following is a list of various Load Portal errors.

LoadPortals: couldn't read
LoadPortals: failed to read header
LoadPortals: not a portal file
LoadPortals: reading portal
LoadPortals: portal has too many points

Leaf Portal Warning

There is really only one warning in vis, and even though the map still compiles, the warning needs to be fixed. The warning is called "Leaf portals saw into leaf #x leafnum". The tough part is finding where the error occurred as there is no way to find a leafnum in the editor. However, you may want to go back to an earlier version of the map and make sure that it doesn't happen there. This error is caused when two leafs (the ends of the BSP tree) overlap each other. Since a leaf is supposed to be the end of the tree, there shouldn't be an overlap. You can try simplifying areas of the map, going back to an older version, or cutting areas of the map.

Vis Options

If you run any of the BSP options preset in the editor, you shouldn't have vis option errors. Most errors occur if you run vis from the command line and input an invalid one. "Unknown option" is the most common error. If you go to a command line, switch to the directory qvis3 resides in, and type "qvis3" it will return an error and show the options. They usage is as follows:

Vis [-threads #] [-level 0-4] [-fast] [-v] bspfile

Complexity Errors

There are some errors, just like in qbsp3 that occur due to limits. Cut the map down or simplify some areas.

AllocStackWinding: failed (map is too complex)
NewWinding x points (x is a number) (exceeds
max_points_on_winding which is 64)
Vismap expansion overflow (map is too complex)
Leaf with too many portals (max_portals_in_leaf is 128)

Misc Errors

There are a variety of other errors that could occur in the vis, but they never should. Basically, if you ever get one of these errors, there may be a bug in qvis3. While we cannot promise that the error will be fixed by, you can mail us a copy of the map with the specific error and we will try to look into it.

CheckStack: leaf recursion
CheckStack: late leaf recursion
FreeStackWinding: allready free
Portal not done
Bad bit in PVS

QRad Errors

Max Patches

This is the most common error in qrad3. Qrad3 breaks up all faces that are larger than 64 by 64 to that size so it can light the level. The max number of patches there

can be is 65000. The error that results is either, “num_patches ==MAX_PATCHES” or, “MAX_PATCHES”. There are two ways to fix this. The recommended way is to cut down the map as it is too complex, and there are probably going to be other errors with the map. Another way is to change the “-chop” option in qrad. It is set to 64, but it can be raised to a maximum of 256. This will increase the size of the patches, thus reducing the number.

Qrad Options

If BSP is run with the options preset in the editor, there shouldn’t be qrad errors. Most errors occur if qrad is run from the command line and an invalid option was input. “Unknown option” is the most common error. From a command line, switch to the directory qrad3 resides in, and type “qrad3”. It will return an error and show the options. The usage is as follows:

Qrad [-v] [-chop num<64>] [-scale num<1>] [-direct num<1>] [-entity num<1>] [-ambient num<0>] [-maxlight num<1.5>] [-threads num] [-bounce num<8>] [-extra] [-dump] mapname.bsp

Surface too large

There are two errors that can occur when there is either a face with a texture scaled too small or a really large face with a normal scale texture. The errors are as follows:

Surface too large to map
MAX_MAP_LIGHTING

The way to fix these is to increase the scale of the texture or decrease the size of the face the texture is on.

Surface too complex

There are rare instances where qrad3 cannot figure out what to do with a certain face. There are a few errors associated with this.

Trian->numedges > MAX_TRI_EDGES-2
Trian->numtris >= MAX_TRI_TRIS
Trian->numpoints == MAX_TRI_POINTS

It may be difficult to track down the face that causes the problem, but it needs to be broken up or removed.

Invalid faces

Occasionally, a face with no points pops up and qvis3 can’t figure out how to light it, so the following error occurs:

SampleTriangulation: no points

Qbsp3 or Qvis3 should have caught the face already, so there may be significant problems with the map. Go back to previous saved maps to get a map without the error, and work forward until the offending brush is

found. It may be necessary to fix this error with a text editor.

Couldn't open map — The error, "Couldn't open mapname" means that the .bsp file is missing or corrupted.

Memory allocation failure — Qrad3 is a very memory intensive program, which is why most companies use servers to bsp maps. A "memory allocation failure" occurs when the system runs out of RAM. Try increasing the swap file on the computer, or cut the map down.

Tips and Tricks

This section contains tips from Raven's designers on using QE4. Some of the tips may not work for all users and they are only intended as ideas, not steadfast rules.

1. Save often and under different file names. This cannot be emphasized enough, as errors crop up fairly often while building a map. (Eric Biessman)
2. Get used to the quick keys. Having to continually hunt and peck for buttons really slows down the map making process, and can really kill a good creative train of thought. (Eric Biessman)
3. The only thing that I would suggest is that if you are making a complicated archway or some really complicated architecture that will be used over and over again in a level, you should use the func_group and the texture lock in tandem to make it easier to grab and move around without having to go through the trouble of selecting everything brush by brush. (Kenn Hoekstra). (Authors note: If you texture lock a group, rotating it can crash your editor, so it's not a good idea to rotate, only move.)
4. This is longer than all the papers I wrote in college combined.

Appendix A: Scripting Documentation

(Created by Rick “Superfly” Johnson)

Scripting Documentation V1.20

General Syntax

// signifies a comment and is not run by the script. If there is a problem with a line of code use “//” to comment it out.
/* To comment out a whole section of code, use this at the beginning.
*/ Use this at the end of a section of code to be commented out.

Compiler Directives

These commands do not generate any object code, but help you change various options with the compiler

#include “directory name”
Includes another files code for use in the script. All scripts should include the header file from common. Example: (#include "../common/header.ds")

output “directory name”
The generated file will be placed in the directory specified. You must use forward slashes (/) when specifying the path. Example: (output “c:heretic2/base/ds/common”)

Declarations

These commands define the variables that you will use through out your script. There are three classes of variables: parameters, globals, and locals.

Parameters take on values that you place inside of the editor. For example, if you had a script that turned on / off a light, you could create a parameter that would accept the target name of the light. This way, you don’t need to make a script specific to each light that has a button associated with it. When you place the script object in the editor, you just specify a key name of “parm1” and a value of the target name of the light

Global variables are variables that can be referenced by different scripts. One script could change the value of a global, and a different script could act upon it. These are useful for counting up total actions throughout a map. Global variables always remain in memory.

Local variables are stored strictly within a script, and can only be referenced within that script. Once the script finishes, local variables are no longer available.

<parameter global local> <int float vector entity> <x> [= <value>]

Constant values can be defined as:

Integer:	#	10, 42, etc
Float:	#.#	9.4, 10.0, etc
Vector:	[#.#, #.#, #.#]	[0, 0, 0], [100.5, -43.3, 3], etc
String:	“text”	“t1”, “monster”, etc

<field> <int float vector entity> “text”

Fields are used to set specific properties of entities. The following fields may be used:

Name	Type
origin	**vector** The current location of the entity in world space
movetype	**int** Specifies the physics move type. The movetypes are as follows: PHYSICSTYPE_NONE PHYSICSTYPE_STATIC PHYSICSTYPE_NOCLIP PHYSICSTYPE_FLY PHYSICSTYPE_STEP PHYSICSTYPE_PUSH PHYSICSTYPE_STOP MOVETYPE_FLYMISSILE PHYSICSTYPE_SCRIPT_ANGULAR NUM_PHYSICSTYPES
start_origin	**vector** Specifies the start_origin (or offset) for certain move / rotational operations
distance	**float** Specifies the distance (or radius) for certain move / rotational operations
owner	**entity** Specifies who owns this entity
wait	**float** The current wait duration for this entity
velocity	**vector** Specifies the velocity of the entity
angle_velocity	**vector** Specifies the rotational angular velocity of the entity
yaw_speed	**float** The amount per frame the yaw can change for the entity
modelindex	**int** The index to the entities current model
count	**int** Holds various values depending on the entity
solid	**int** The indicator of entities state, SOLID_SOLID, SOLID_NOT, SOLID_TRIGGER
angles	**vector** The yaw, roll, and pitch of entity model

To use a field, use the "." operator. For example, to set the velocity of an entity with a variable name of "test", do the following:

```
[…declaration section…]
        field vector "velocity"

        local entity test

[…code section…]
        test.velocity = [10, 20, 30]
```

Functions

These commands are used when assign values to variables.

<entity> = find entity with targetname <string>

This function with find the first entity having a target name of the one specified on the command.

<entity> = find entity with scripttarget <string>

This function with find the first entity having a script target name of the one specified on the command.

<float> sin <float>

Returns the sin of the angle specified

<float> cos <float>

Returns the sin of the angle specified

<entity> spawn entity with fields "<field>" = <value> [, "<field>" = <value>] ...

Spawns a new entity into the world. Use the same field names that quake-ed refers to. You must have atleast one field, called "classname", as that tells how the item should be spawned.

<entity> get entity other

Returns the "other" entity that triggered the script. This usually refers to a trigger.

<entity> get entity activator

Returns the "activator" entity that triggered the script. This usually refers to the client that hit the trigger.

Code

These commands define the general construct of the language and its capabilities. These commands control program flow, mathematics, and other logic

<variable> [= += -= *= /=] <variable / value> [< + - * / > <variable / value>]

This is the general math routine for assigning values. If an operator falls before the equals sign, then the operation is applied to the variable on the left hand side.

Examples:

Position = 10	Position is set to 10
Position += 10	10 is added to Position
Position *= 10	Position is multiplied by 10
Position += x + y	The sum of x + y is added to Position

label "text"

Sets a reference point inside of the code

goto "text"

Execution of the script jumps to the label indicated by "text"

if <variable / value> [= != < <= > >=] <variable / value>
[else]
endif

Tests a condition of two values. If the condition is true, then the statements following this command are executed. If the condition is false, then the option else clause will be executed.

while <variable / value> [= != < <= > >=] <variable / value>
endwhile

Executes the statements following this command as long as the condition is true

exit

Script is terminated and will no longer function

suspend

Script execution is halted, though it will resume at the next statement when the script is targeted or executed

wait <value> seconds

Script execution is paused for specified amount of time

wait for any [clearing] <variable> [, <variable> [...]]

Script execution is paused until any one of the variables is signaled. If the script specifies the option clearing argument, then all variables are reset after the wait operation is complete.

wait for all [clearing] <variable> [, <variable> [...]]

Script execution is paused until all of the variables are signaled. If the script specifies the option clearing argument, then all variables are reset after the wait operation is complete.

debug
[variables]
[< enable / disable > < [move] [rotate] [time] >]

If the variables argument is specified, prints out all of the variables in memory and their current value. Otherwise, this will enable or disable the specified debugging features. If move is enabled, anytime an entity is moved, exact info about it will be displayed. If rotate is enabled, anytime an entity is rotated, exact info about it will be printed. If time is enabled, each time the script is being executed, the time of its execution will be displayed.

General Operations

These are general commands

print <text / number (Heretic II only)>
[centered to entity <entity>]
[to entity <entity>]
[at level <#>]
[captioned]

This command will print text out on the players screen. If no entity is specified, then the text is displayed on all players. If you wanted the text centered, you must provide the player's entity with the command. The default level is of HIGH importance. The number will access a line in the levelmsg.txt file for HERETIC II only. If captioned is specified, then it will appear at the bottom of the screen.

Example of captioned text: **print 28 captioned to entity player1**

Play sound <text>
[for entity <entity>]
[on channel <int>] (Note: If you are attaching a sound to doors, trains, breakable brushes, use channel 10.)

[at volume <float>]
[at attenuation <int>]
[after <float> seconds]

This command will play a sound. The sound can be attached to an entity. The specific channel for which the sound is play on can be specified, along with the volume and attenuation. An optional delay for when the sound is played may also be specified.

Example of play sound: **play sound "objects/piston.wav" for entity door on channel 10.**

<enable/disable> ambient sounds

This command will either enable or disable all ambient sounds.

<enable/disable> cinematics

This command will either enable or disable the in-game cinematic mode.

cache sound <text>

Pre-loads a sound prior to playing. Helps make synchronized animation smoother.

Entity Operations

These commands allow the script to manipulate the quake entities

move entity <variable> <to / by> <vector>
[over <variable / value> seconds]
[at <variable / value> speed]
[signaling <variable>]

This command will move the specified entity. The script can move an entity to a specific location, or it can adjust the entity's position by the specified amount. You can specify a duration that the entity should move, or a given rate. If you specify both a duration and rate, then the location specified is recomputed based upon the distance of duration * speed. If you specify a signaling variable, then that variable will be signaled once the operation is completed.

rotate entity <variable> <to / by> <vector>
[over <variable / value> seconds]
[at <variable / value> speed]
[signaling <variable>]]

This command will rotate the specified entity. The script can rotate an entity to a specific angle, or it can adjust the entity's angles by the specified amount. You can specify a duration that the entity should rotate, or a given rate. If you specify both a duration and rate, then the angle specified is recomputed based upon the distance of duration * speed. If you specify a signaling variable, then that variable will be signaled once the operation is completed.

use entity <variable>

This command will execute the specified entity's use function

<enable/disable> trigger entity <variable>

This command will either enable or disable an entity that is a trigger

animate entity <variable> performing action <variable / value>
[by turning <variable / value>]
[by moving <variable / value>]
[repeating [for <variable / value> times]]
[signaling <variable>]

This command will tell an entity to begin an animation sequence. You can tell the entity to turn and/or move during the sequence. You can also indicate if it should continuously repeat or only repeat a given amount of times. If you specify a source entity, then vital information needed to run the animation is grabbed from this entity. If you specify a signaling variable, then that variable will be signaled once the sequence has completed.

copy player attributes from entity <player> to entity <other>

This command copies some of the player attributes (armor, weapon, etc) to the other entity, so that the in-game cinematics are consistent with how the player is currently equipped.

Example of copy attributes: **copy player attributes from entity player1 to entity corvus**

set view angles of entity <player> to <vector>

This command will properly set up the view angles of the specified player.

set cache size to <integer>

This command will indicate the number of cache statements that will issued. This is used to indicate how many steps are needed for the progress bar.

Common Pitfalls

This section is to help explain some of the inner workings of the scripting language.

Signals

When an operation is completed, and there is a signal variable associated with that object, the variable is signaled, no matter if the script is in a wait state. The following code demonstrates a pitfall you may fall into:

```
local int sig1

move entity ent1 by [100,100,100] over 3 seconds signaling sig1
move entity ent2 by [100,100,100] over 3 seconds signaling sig1
wait for all clearing sig1
debug variables
move entity ent3 by [100,100,100] over 3 seconds signaling sig1
wait for all clearing sig1
```

Both ent1 and ent2 are set in motion at the same time. Even though in theory, both entities will finish at the same time, everything does still happen in order. With that, ent1 may finish first, it tells the script that it is done, thus sig1 is signaled. This causes the script to realize that the wait condition is satisfied, it clears sig1, then executes the next statements. It will display sig1 as being 0, start moving ent3, and again wait for sig1 to be signaled. Ent2 then finishes in the same instance, thus causing sig1 to be signaled. This immediately satisfies the 2nd wait statement, and the script ends without waiting for ent3 to finish. To correct the situation, change your code to:

```
local int sig1
local int sig2

move entity ent1 by [100,100,100] over 3 seconds signaling sig1
move entity ent2 by [100,100,100] over 3 seconds signaling sig2
wait for all clearing sig1, sig2
debug variables
move entity ent3 by [100,100,100] over 3 seconds signaling sig1
wait for all clearing sig1
```

Parameters
When you use parameters, you don't have to give them the same name in the script as they are referred to in the script_runner entity. It is solely the order in which they are defined in the script that is important. For example, if you have a script running with the following fields:

```
parm1           20
parm2           big_door
parm3           5.2
```

In your script, they could be named:

```
parameter int distance        // parm1
parameter entity door         // parm2
parameter float duration      // parm3
```

Special Examples

This section is to help explain some specific setups used commonly in scripts.

Switching the player entity with a cinematic entity.

[…declaration section…]
local entity corvus
(corvus is the targetname of character_corvus place on the map.)
local entity player1
(player1 is the player who activates the script runner.)

[…code section…]

copy player attributes from entity player1 to entity corvus
(This copies the attributes from player1 to the model corvus so they look the same.)
corvus.modelindex = corvus.count
(This set the model index of the corvus entity to equal the count of the entity. This is different for each model.)
corvus.solid = SOLID_SOLID
(This is not making the corvus entity solid and effectively in the world.)
corvus.movetype = PHYSICSTYPE_PUSH
(This is setting his movetype to interact with the world.)

Switching the cinematic entity back to the player entity.

[…declaration section…]
local entity corvus
(corvus is the targetname of character_corvus place on the map)
local entity player1
(player1 is the player who activates the script runner)

[…code section…]

player1.origin = corvus.origin
(This sets the origin for player1 to the location of corvus.)
player1.p_origin = corvus.origin
(This sets the origin for player1 to the location of corvus.)
set view angles of entity player1 to corvus.angles
(This sets the angles for player1 to the angles of corvus.)
corvus.modelindex = 0
(This makes corvus invisible as he is no longer needed.)

corvus.solid = SOLID_NOT
(This makes corvus non-solid so he has no interaction with the world. He is now effectively removed.)

Appendix B: Cinematic Actions

(compiled by Bob Love)

Cinematic Character Animations

Plague Elf	Description	anims	frames	move	repeat
ATTACK1	running, single handed swipe	runatk	1 to 8	Y	N
ATTACK2	standing, single handed swipe	attckA	1 to 7	N	Y
ATTACK3	standing, two handed swipe	attckB	1 to 9	N	Y
ATTACK4	missile attack			N	Y
DEATH1	fall over backwards	death	1 to 13	N	Y
DEATH2	fall over backwards, roll onto side	deathb	1 to 13	N	Y
DEATH3	fall over backwards,arm over face	deathc	1 to 13	N	Y
DEATH4	fall over backwards, both hands above head	deathd	1 to 13	N	Y
GIB1	he explodes			N	Y
IDLE1	standing there shaking	shake	1 to 25	N	Y
IDLE2	pushing away from wall	lean	1 to 25	N	Y
IDLE3	pound against wall	fist	1 to 6	N	Y
PAIN1	he's in pain	death	3 to 1	N	Y
RUN1	running	runa	1 to 8	Y	N
THINKAGAIN	turns off cinematic thinking, puts in idle mode	shake	1 to 25	N/A	N/A
WALK1	walking leaning far over	walka	1 to 12	Y	N
WALK2	walking leaning over	walka	1 to 12	Y	N

Corvus	Torture Victim	anims	frames	move	repeat
ACTION1	grabbing wheel	wheelA	1 to 4	N	Y
ACTION2	turning wheel	wheelB	1 to 22	N	Y
ACTION3	leaning to the left	idleA1	1 to 10	N	Y
ACTION4	coughing/plagued	plagued	1 to 40	N	Y
IDLE1	Standing there	breath	1 to 23	N	Y
IDLE2	Standing there leaning to the left	idleB	1 to 20	N	Y
PIVOTLEFTGO	Start pivoting to the left	Lpivot	1 to 2	N	Y
PIVOTLEFT	Pivot to the right	Lpivot	3 to 4	Y	N
PIVOTLEFTSTOP	Stop pivoting	Lpivot	4	N	Y
PIVOTRIGHTGO	Start pivoting to the right	Lpivot	4 to 3	N	Y
PIVOTRIGHT	Pivot to the right	Lpivot	2 to 1	Y	N
PIVOTRIGHTSTOP	Stop pivoting	Lpivot	1	N	Y
WALK1	walking (normal game jog/walk)	jog	1 to 8	Y	N
WALK2	slow walk	Cinewalk	1 to 16	Y	N
WALKSTART	Starts off the walking cycle	gorun	2 to 3	N	Y
WALKSTOP1	Stopping, from right foot extended	jog	1 to 2	N	Y

WALKSTOP2	Stopping, from left foot extended	jog	5 to 6	N	Y

Corvus 2	Celestial Watcher	anims	frames	move	repeat
ACTION1	Talking to Celestial Watcher,walking forward	Wchrtk1	1 to 106	N	Y
IDLE1	Standing, breathing	Breath	1 to 23	N	Y
IDLE2	Two frames of Wchrtk1	Wchrtk1	1	N	Y
IDLE3	Two frames of Wchrtk106	Wchrtk106	1	N	Y
PIVOTLEFTGO	Start pivoting to the left	Lpivot	1 to 2	N	Y
PIVOTLEFT	Pivot to the left	Lpivot	3 to 4	Y	N
PIVOTLEFTSTOP	Stop pivoting	Lpivot	4	N	Y
PIVOTRIGHTGO	Start pivoting to the right	Lpivot	4 to 3	N	Y
PIVOTRIGHT	Pivot to the right	Lpivot	2 to 1	Y	N
PIVOTRIGHTSTOP	Stop pivoting	Lpivot	1	N	Y
WALK1	walking (normal game jog/walk)	jog	1 to 8	Y	N
WALK2	slow walk	Cinewalk	1 to 16	Y	N
WALKSTART	Starts off the walking cycle	gorun	2 to 3	N	Y
WALKSTOP1	Stopping, from right foot extended	jog	1 to 2	N	Y
WALKSTOP2	Stopping, from left foot extended	jog	5 to 6	N	Y

Corvus 3	High Priestess	anims	frames	move	repeat
ACTION1	for 107-454.wav				Y
ACTION2	for 108-450.wav				Y
ACTION3	for 109-450.wav				Y
ACTION4	for 110-455.wav				Y
ACTION5	for 112-458.wav				Y
ACTION6	for 113-455.wav				Y
ACTION7	for 99-450.wav				Y
ACTION8	for 100-451.wav				Y
ACTION9	for 101-454.wav				Y
ACTION10	for 102-454.wav				Y
ACTION11	for 103-454.wav				Y
ACTION12	for 104-454.wav				Y
ACTION13	for 105-450.wav				Y
ACTION14	for 106-454.wav				Y
ACTION15	for 114-458.wav				Y
ACTION16	for 115-458.wav				Y
ACTION17		cpidle	1 to 20	N	Y
ACTION18		cwish	1 to 11	N	Y
ACTION19		ciwill	1 to 64	N	Y
ACTION20		cyour	1 to 48	N	Y
IDLE1	Standing there breathing	Breath	1 to 23	N	Y
IDLE2	New stance	stance	1 to 24	N	Y
IDLE3	Stance and teleport out	stance	1 to 24	N	Y

PIVOTLEFTGO	Start pivoting to the left	Lpivot	1 to 2	N	Y
PIVOTLEFT	Pivot to the right	Lpivot	3 to 4	Y	N
PIVOTLEFTSTOP	Stop pivoting	Lpivot	4	N	Y
PIVOTRIGHTGO	Start pivoting to the right	Lpivot	4 to 3	N	Y
PIVOTRIGHT	Pivot to the right	Lpivot	2 to 1	Y	N
PIVOTRIGHTSTOP	Stop pivoting	Lpivot	1	N	Y
WALK1	walking (normal game jog/walk)	jog1	1 to 8	Y	N
WALK2	slow walk	cinewalk	1 to 16	Y	N
WALK3	teleporting in, slow walk	cinewalk	1 to 16	Y	N
WALKSTART	Starts off the walking cycle	gorun	2 to 3	N	Y
WALKSTOP1	Stopping, from right foot extended	jog1	1 to 2	N	Y
WALKSTOP2	Stopping, from left foot extended	jog1	5 to 6	N	Y

Corvus 4	**Ssithra Scout**	**anims**	**frames**	**move**	**repeat**
ACTION1	From standing to kneeling	sskneel	1 to 12	N	Y
ACTION2	Kneeling, raising right arm	ss_you are	1 to 40	N	YY
ACTION3	Kneeling, gesturing with right hand	ss_arethe	1 to 16	N	Y
ACTION4	Kneeling, looking up	ss_myjourn	1 to 24	N	Y
ACTION5	Kneeling to standing position	ss_getup	1 to 39	N	Y
IDLE1	Standing there breathing	breath	1 to 23	N	Y
IDLE2	Kneeling, idling	ss_idle	1 to 20		
PIVOTLEFTGO	Start pivoting to the left	Lpivot	1 to 2	N	Y
PIVOTLEFT	Pivot to the left	Lpivot	3 to 4	Y	N
PIVOTLEFTSTOP	Stop pivoting	Lpivot	4	N	Y
PIVOTRIGHTGO	Start pivoting to the right	Lpivot	4 to 3	N	Y
PIVOTRIGHT	Pivot to the right	Lpivot	2 to 1	Y	N
PIVOTRIGHTSTOP	Stop pivoting	Lpivot	1	N	Y
WALK1	walking (normal game jog/walk)	jog1	1 to 8	Y	N
WALK2	slow walk	cinewalk	1 to 16	Y	N
WALKSTART	Starts off the walking cycle	gorun	2 to 3	N	Y
WALKSTOP1	Stopping, from right foot extended	jog	1 to 2	N	Y
WALKSTOP2	Stopping, from left foot extended	jog	5 to 6	N	Y

Corvus5	**Dranor Scene**	**anims**	**frames**	**move**	**repeat**
ACTION1		youknow	1 to 8	N	Y
ACTION2		who	1 to 47	N	Y
ACTION3		spared	1 to 7	N	Y
ACTION4		itsnot	1 to 23	N	Y
ACTION5		iwill	1 to 33	N	Y
IDLE1	Standing there breathing	breath	1 to 23	N	Y
IDLE2	Standing there with his hand on his hip	who	1	N	Y
IDLE3	New idle, standing with arms at sides	stance	1 to 24	N	Y
PIVOTLEFTGO	Start pivoting to the left	Lpivot	1 to 2	N	Y

PIVOTLEFT	Pivot to the left	Lpivot	3 to 4	Y	N
PIVOTLEFTSTOP	Stop pivoting	Lpivot	4	N	Y
PIVOTRIGHTGO	Start pivoting to the right	Lpivot	4 to 3	N	Y
PIVOTRIGHT	Pivot to the right	Lpivot	2 to 1	Y	N
PIVOTRIGHTSTOP	Stop pivoting	Lpivot	1	N	Y
WALK1	walking (normal game jog/walk)	jog1	1 to 8	Y	N
WALK2	slow walk	cinewalk	1 to 16	Y	N
WALKSTART	Starts off the walking cycle	gorun	2 to 3	N	Y
WALKSTOP1	Stopping, from right foot extended	jog	1 to 2	N	Y
WALKSTOP2	Stopping, from left foot extended	jog	5 to 6	N	Y

Corvus6	**Sewer Scene**	**anims**	**frames**	**move**	**repeat**
ACTION1		propup	1 to 11		
ACTION2		groan	1 to 20		
ACTION3		moan	1 to 12		
ACTION4		lookup	1 to 29		
ACTION5		strong	1 to 11		
ACTION6		notnow	1 to 47		
ACTION7		relax	1 to 16		
ACTION8		nofear	1 to 35		
ACTION9		standup	1 to 18		
ACTION10	falling with arms above head	falling	1 to 10		Y
ACTION11	being knocked down	kodown	1 to 12		Y
IDLE1		propup	1		
IDLE2		1breathing	1 to 26		
IDLE3		2breath	1 to 21		
IDLE4		1breathing	26		
IDLE5	standing and breathing	breath	1 to 23	N	Y

Corvus7	**Morcalavin Scene**	**anims**	**frames**	**move**	**repeat**
ACTION1	for 121-60.wav		1 to 11	N	Y
ACTION2	for 123-66.wav		1 to 20	N	Y
ACTION3	for 125-76.wav		1 to 12	N	Y
IDLE1	Standing there breathing	breath	1 to 23	N	Y
IDLE2		idleA	1 to 12	N	Y
IDLE3		idleB	1 to 12	N	Y
PIVOTLEFTGO	Start pivoting to the left	Lpivot	1 to 2	N	Y
PIVOTLEFT	Pivot to the left	Lpivot	3 to 4	Y	N
PIVOTLEFTSTOP	Stop pivoting	Lpivot	4	N	Y
PIVOTRIGHTGO	Start pivoting to the right	Lpivot	4 to 3	N	Y
PIVOTRIGHT	Pivot to the right	Lpivot	2 to 1	Y	N
PIVOTRIGHTSTOP	Stop pivoting	Lpivot	1	N	Y
WALK1	walking (normal game jog/walk)	jog1	1 to 8	Y	N
WALK2	slow walk	cinewalk	1 to 16	Y	N
WALKSTART	Starts off the walking cycle	gorun	2 to 3	N	Y
WALKSTOP1	Stopping, from right foot extended	jog	1 to 2	N	Y

WALKSTOP2	Stopping, from left foot extended	jog	5 to 6	N	Y

Corvus8	Siernan Scene	anims	frames	move	repeat
ACTION1		kneel	1 to 8	N	Y
ACTION2		knitrn	1 to 13		
ACTION3		knicyc	1 to 12		
ACTION4		ido	1 to 6		
ACTION5		stand	8 to 1		
ACTION6		butits	1 to 24		
ACTION7		bytome	1 to 18		
ACTION8		iam	1 to 11		
ACTION9		noharm	1 to 31		
ACTION10		willu	10		
ACTION11		bytome	1 to 9		
ACTION12		bytome	10 to 18		
ACTION13	use 71-21.wav	arethe	1 to 21	N	Y
ACTION14	use 67-18.wav	canit	1 to 21	N	Y
ACTION15	use 74-21.wav	crtful	1 to 58	N	Y
ACTION16	use 69-16.wav	kelmnt	1 to 77	N	Y
ACTION17	use 65-18.wav	potion	1 to 51	N	Y
ACTION18		pstop	1 to 5	N	Y
ACTION19		drink	1 to 21	N	Y
ACTION20		pour	1 to 19	N	Y
IDLE1	Standing there breathing	breath	1 to 23	N	Y
IDLE2	Last frame of pour twice	pour frame	pour19	N	Y
PIVOTLEFTGO	Start pivoting to the left	Lpivot	1 to 2	N	Y
PIVOTLEFT	Pivot to the left	Lpivot	3 to 4	Y	N
PIVOTLEFTSTOP	Stop pivoting	Lpivot	4	N	Y
PIVOTRIGHTGO	Start pivoting to the right	Lpivot	4 to 3	N	Y
PIVOTRIGHT	Pivot to the right	Lpivot	2 to 1	Y	N
PIVOTRIGHTSTOP	Stop pivoting	Lpivot	1	N	Y
WALK1	walking (normal game jog/walk)	jog1	1 to 8	Y	N
WALK2	slow walk	cinewalk	1 to 16	Y	N
WALK3	walking with potion	pwalk	1 to 16	Y	N
WALKSTART	Starts off the walking cycle	gorun	2 to 3	N	Y
WALKSTOP1	Stopping, from right foot extended	jog	1 to 2	N	Y
WALKSTOP2	Stopping, from left foot extended	jog	5 to 6	N	Y

Corvus9	T'Chekrik Scene	anims	frames	move	repeat
ACTION1		cstartle	1 to 26	N	Y
ACTION2		ctranslate	1 to 19	N	Y
ACTION3		ctell	1 to 63	N	Y
ACTION4		cbecause	1 to 77	N	Y

ACTION5		cchallenge	1 to 13	N	Y
ACTION6		cfall	1 to 5	N	Y
ACTION7	knock down	kodown	1 to 12	N	Y
ACTION8	getting ready to surf	ready	1 to 3	N	Y
ACTION9	surfin cycle	ready	4 to 26	N	Y
ACTION10	coming out of surf	ready	3 to 1	N	Y
ACTION11	rolling forward	rollA	1 to 15	N	Y
IDLE1	Standing there breathing	breath	1 to 23	N	Y
IDLE2		1breathing	1 to 26	N	Y
IDLE3		cfinalidle	1 x 2	N	Y
WALK1	walk	cinewalk	1 to 16	Y	N
WALK2	walk backwards	cinewalk	16 to 1	Y	N

Dranor Actions	**Description**	**anims**	**frames**	**move**	**repeat**
ACTION1	Raising left arm up to point	go	1 to 4	N	Y
ACTION2	Pointing, talking, brandishing weapon	go	5 to 114	N	Y
ACTION3	Talking and gesturing	slayer	1 to 52	N	Y
ACTION4	Talking with arms at sides	1iwas	1 to 8	N	Y
ACTION5	Talking with arms at sides, shoulder shrug	2iwas	1 to 74	N	Y
ACTION6	reverse of ACTION4	1iwas	8 to 1	N	Y
ACTION7	Reverse of ACTION5	2iwas	74 to 1	N	Y
ACTION8	Talking and pointing with left hand	1butyou	1 to 71	N	Y
ACTION9	More talking and pointing with left hand	2butyou	1 to 33	N	Y
ACTION10	Talking, small gesture with left hand	2insert	1 to 33	N	Y
ACTION11	Standing there	1insert	1 to 8	N	Y
ACTION12	Single frame of 1insert33	2insert	33	N	Y
DEATH1	He dies	death	1 to 20	N	N
IDLE1	Dranor looking down breathing heavy	1idle	1 to 10	N	Y
IDLE2	Transition, left arm up to down to side	relax	1 to 11	N	Y
IDLE3	Looking straight ahead, breathing	2idle	1 to 20	N	Y

Elf Lord	**Description**	**anims**	**frames**	**move**	**repeat**
ACTION1	"Corvus, perhaps I owe you. . . "			N	Y
ACTION2	2nd part of "I owe you dialogue			N	Y
DEATH1	His head explodes			N	Y
DEATH2	Waves arms around and spew gas			N	Y
GIB1	Blows up	None	None	N	N
IDLE1	Idling, hands down	idle	1 to 24	N	Y
IDLE2	Idling,hands up	cidle	1 to 20	N	Y

High Priestess	**Description**	**anims**	**frames**	**move**	**repeat**

ACTION1	for 107-454.wav				Y
ACTION2	for 108-450.wav				Y
ACTION3	for 109-450.wav				Y
ACTION4	for 110-455.wav				Y
ACTION5	for 112-458.wav				Y
ACTION6	for 113-455.wav				Y
ACTION7	for 99-450.wav				Y
ACTION8	for 100-451.wav				Y
ACTION9	for 101-454.wav				Y
ACTION10	for 102-454.wav				Y
ACTION11	for 103-454.wav				Y
ACTION12	for 104-454.wav				Y
ACTION13	for 105-450.wav				Y
ACTION14	for 106-454.wav				Y
ACTION15	for 114-458.wav				Y
ACTION16	for 115-458.wav				Y
BACKPEDAL1	Walking backwards			Y	N
IDLE1	Standing there looking good			N	Y
WALK	Walking the walk			Y	N

High Priestess2	**Pod Scene**	**anims**	**frames**	**move**	**repeat**
ACTION1	92-448	hpod	1 to 27	Y	N
ACTION2	93-445	hpod	28 -38	Y	N
ACTION3	94-447	hpod	39 to 137	Y	N
ACTION4	95-448	hpod	138 to 201	Y	N
ACTION5	96-446	hpod	202 to 300	Y	N
ACTION6	97-446	hpod	301 to 348	Y	N
ACTION7	98-447	hpod	349 to 470	Y	N
IDLE1	Standing there looking good	hpod	1	N	Y

Morcalavin	**Description**	**anims**	**frames**	**move**	**repeat**
ACTION1	for 120-54.wav	talka	1 to 300	N	Y
ACTION2	for 122-52.wav	talkb	1 to 101	N	Y
ACTION3	for 124-52.wav	talkc	1 to 82	N	Y
IDLE1	Standing there in a single frame	talka	1	N	Y
IDLE2	single frame anim	talkb	1	N	Y
IDLE3	single frame anim	talkc	66	N	Y
IDLE4	single frame anim	talkc	1	N	Y

Ogle	**Description**	**anims**	**frames**	**move**	**repeat**
ACTION1	hammering chisel above head, little taps	hamupa	1 to 5		
ACTION2	hammer chisel above head, big swings	hamupb	1 to 9		
ACTION3	hammering chisel down, big swings	hamdwn2	1 to 9		

ACTION4	picking partially down, big swings	pikxup	1 to 9		
ACTION5	picking floor, big swings	pikxdn	1 to 7		
ACTION6	dancing, swing arms above head, right to left	cela	1 to 6		
ACTION7	jumping up and down, arms above head	celb	1 to 10		
ACTION8	moving arms briskly toward waist (Beavis)	celc	3 to 8		
ACTION9	slapping motion	celd	5 to 10		
ACTION10	butt wiggling	cele	5 to 8		
ACTION11	charging with tool down and left arm up	charga	1 to 8		
ACTION12	charging with both arms down	chargb	1 to 8		
ACTION13	charging arms raised, big movements	chargc	1 to 8		
ACTION14	charging arms raised, small movements	chargd	1 to 8		
ACTION15	charging arms raised, moving side to side	charge	1 to 8		
ATTACK1	Pick attack	pikxup2	1 to 7		
ATTACK2	running and swinging down, one handed	rnatka	1 to 8		
ATTACK3	running and swinging down, both hands	rnatkb	1 to 8		
DEATH1	falls to side, dead	deatha	1 to 14		
DEATH2	spining death	deathb	1 to 14		
GIB1	blows up real good	none	N/A		
IDLE1	Same frame twice	walk1	1 to 1		
IDLE2	resting, leaning on tool	rstaid	1 to 8		
IDLE3	resting, wiping sweat off forehead	rstawp	1 to 11		
IDLE4	wiping sweat off while working with pick	pkaxwp	1 to 10		
IDLE5	wiping sweat while working with hammer	hamwp	1 to 13		
IDLE6	standing there with tool on back	brkidl	1 to 8		
PAIN1	covering head while working	paina	1 to 4		
PAIN2	covering head while resting	rstapn	1 to 8		
PAIN3	arms thrown up in pain	brkpn	1 to 6		
THINKAGAIN	starts thinking like a monster				
TRANS1	from working to rest	rsta	1 to 6		
TRANS2	from ACTION1 to IDLE6	brka	1 to 7		
TRANS3	from ACTION3 to IDLE6	brkb	1 to 6		
TRANS4		celc	1 to 2		
TRANS5		celd	1 to 4		
TRANS6		cele	1 to 2		
WALK1	walking along	walk	1 to 8		
WALK2	pushing something with tools in hand	pusha	1 to 8		
WALK3	pushing something with no tools	pushb	1 to 8		
WALK4	pushing something with hands a little lower	pushc	1 to 8		

Siernan 1	**Siernan Standing**	**anims**	**frames**	**move**	**repeat**
ACTION1	talking gesture	A	1 to 21	N	Y
ACTION2	talking gesture	B	1 to 20	N	Y
ACTION3	talking gesture	C	1 to 16	N	Y
ACTION4	talking gesture	D	1 to 11	N	Y
ACTION5	talking gesture	E	1 to 37	N	Y

ACTION6	use 75-14.wav	uhave	1 to 136	N	Y
ACTION7	use 73-16.wav	rember	1 to 68	N	Y
ACTION8	use 72-14.wav	noknow	1 to 81	N	Y
ACTION9	use 66-20.wav	ifear	1 to 117	N	Y
ACTION10	use 68-23.wav	notin	1 to 143	N	Y
ACTION11	use 64-18.wav	yes	1 to 100	N	Y
ACTION12	???	siping	1 to 22	N	Y
ACTION13		accept	1 to 9	N	Y
IDLE1	breathing idle	Idle	1 to 24	N	Y
IDLE2	last frame of idle	Idle	24 to 24	N	Y
IDLE3	accept frame twice	accept1	1 to 1	N	Y
IDLE4	hands out twice	accept9	9	N	Y
IDLE5	drinking frame twice	siping	22	N	Y
WALKSTART	begin walking	strtwalk	1 to 6	N	Y
WALK1	walking cycle	walk	1 to 12	Y	N
WALKSTOP1	stop walking	stpwalk	1 to 5	N	Y

Siernan 2	**Siernan Laying**	**anims**	**frames**	**move**	**repeat**
ACTION1		Minions	1 to 130	N	Y
ACTION2		Minions	1 to 120	N	Y

Ssithra Scout	**Description**	**anims**	**frames**	**move**	**repeat**
ACTION1		ss_recover	1 to 39	N	Y
ACTION2		ss_hecured	1 to 60	N	Y
ACTION3		ss_talk1a	1 to 86	N	Y
ACTION4		ss_talk1b	1 to 44	N	Y
ACTION5		ss_cougha	1 to 26	N	Y
ACTION6		ss_noshe	1 to 34	N	Y
ACTION7		ss_talk2a	1 to 70	N	Y
ACTION8		ss_talk2b	1 to 62	N	Y
ACTION9		ss_talk2c	1 to 25	N	Y
ACTION10		ss_coughb	1 to 19	N	Y
IDLE1	Breathing	ss_breath	1 to 31	N	Y
IDLE2		ss_idlea	1 to 16	N	Y
IDLE3		ss_idleb	1 to 25	N	Y
DEATH1		ss_death	1 to 54	N	Y

Ssithra Victim	**Description**	**anims**	**frames**	**move**	**repeat**
ACTION1	Ssithra stretched out on the rack			N	Y
ACTION2	Ssithra being released from the rack			N	Y
ACTION3	Ssithra putting his arms down after being released			N	Y

ACTION4	"Too late for me.." speech			N	Y
ACTION5	tv_itwillA animations			N	Y
ACTION6	tv_itwillB animations			N	Y

Tcheckrik Male	**Description**	**anims**	**frames**	**move**	**repeat**
ACTION1	leaning forward to talk	ts_lean2talk	1 to 9		
ACTION2	leaning forward listening	ts_listen	1 to 60		
ACTION3	poking with spear	ts_spear	1 to 10		
ACTION4	leaning forward, talking	ts_talk	1 to 60		
ATTACK1	Jabbing with spear in hand	spearb	1 to 11		
ATTACK2	Shooting spell from wand in hand	spell	1 to 17		
ATTACK3	Downward attack with sword	sword	1 to 9		
BACKPEDAL1	walk backwards	backpeddle	1 to 10		
DEATH1	fall backwards and die	deathfr	1 to 22		
IDLE1	standing there looking around	idle	1 to 50		
IDLE2	up on haunches looking down	ts_rdy2idle	1 to 4		
IDLE3	just standing there	ts_idle	1 to 60		
PAIN1	spasm in pain	paina	1 to 7		
RUN1	running	run	1 to 10		
WALK1	walking	walk1	1 to 20		

Tome	**Description**	**anims**	**frames**	**move**	**repeat**
IDLE1	moving in a slow circular pattern	poly00	1 to 31		
IDLE2	non moving	poly00	1		