

Coalesce v1.0.0b

Introduction:

This is the first beta of a 3D modeler for Macintosh. Your computer needs to have Mac OS X and OpenGL hardware acceleration. Being the first release it is missing many features, such as the ability to export in different model formats. The main idea is for testers to see if the program would be useful and what features they would like to see in future releases of the program (e.g. different model formats).

Using the Program:

Navigating:

An important thing to know about the modeler is how to change perspectives. If you hold down spacebar while dragging the mouse in the window your workspace will rotate. If you hold down command while dragging the workspace will move in the direction you dragged. If you hold down option while dragging up the camera will zoom in and if you hold down option while dragging down the camera will zoom out.

Exiting:

Command-Q works just as it always does to quit the program. There is no "Are you sure you want to quit" dialog. If you think there should be let me know. Pressing Escape will jump you back to the finder and will hide Coalesce. Clicking on the icon in the dock will take you back. Also clicking on the blue bubble in the upper left corner will do the same thing as pressing Escape.

The Window Menu:

The Vertex Window:

This window has three coordinates that describe the location of the vertex that is currently selected. If more than one vertex is selected only one of them will be affected by this window. If you click on the values of the vertexes X, Y, or Z coordinate you can type in a new value. This is particularly useful if you need a vertex in a specific position. I've been wondering whether an option that locks the vertices to a grid would be useful. If you think so let me know.

The Design Window:

This window has four different tools. The first tool creates new vertices. You can create vertices by simply clicking on the workspace where you want the new vertex to be.

The second tool selects vertices. If you click on a vertex it will be selected and you can drag it around the screen. If you click but not on a vertex a drag box will appear and anything inside the drag box when you release the mouse will be selected. Holding down shift will allow you to select more vertices without unselecting the previous ones.

The third tool creates triangles. If you click between three vertices a triangle will form there. A note of caution is that the triangle that will form will be the one as near as possible to the camera. That means if you have many vertices scattered around the screen the triangle that will form will most likely not be one that you wanted. A way around this is to leave as few open vertices as possible (i.e. make the triangles *as* you create the vertices, not long after). The triangle tool is mainly for creating the first triangles on the model or for filling in holes later on. The bulk of the model should be created with the extrude tool (below). If you can think of any other tools for creating triangles that would be helpful please let me know!

The fourth tool selects triangles. The only real reason for this is to delete unwanted triangles.

There is a fifth button in this window called "Strict Rules". Normally the triangle creation tool does some tests to see if a potential triangle should be allowed. With this option turned off Coalesce will do much fewer tests when creating the triangles. This means you should only have the vertices that will be part of the triangle visible. You can use the Visibility window to hide other vertices (below). This option is useful when making a layer of transparent triangles above opaque triangles.

The Stats Window:

This window describes how many vertices and polygons are in the current model. This modeler has the option of undoing and redoing as many changes as needed when you are editing your model. Unfortunately this means that it will eat up a lot of memory in the process. Just make sure your memory use is reasonable. There is a Flush Memory button at the bottom of the window that will clear all undos and redos to free up memory. The program is limited to 10 undos to texture

changes because of how much memory textures take up.

The Visibility Window:

The purpose of this window is to remove portions of the scene from view to make the model easier to work with. The Hide button will remove vertices or triangles from the scene. Show All will bring all hidden objects back into view. Keep Only will hide all objects except those selected.

The View Window:

This window allows you to change how you view the model. The buttons on this window are pretty much self-explanatory. The only thing to really notice is that the normalized option will change the lighting when polygons are in the scene. The lighting in each triangle will be blended with the lighting of the triangle next to it.

The Tools Menu:

The Extrude Window:

This tool will extrude triangles that are selected out to a specific depth. The extrude depth can be set by sliding the slide bar or by clicking on the number and typing in the depth desired. Clicking on preview will display in green what the model will look like after extruding. To extrude click on the extrude button.

The Transform Window:

This window is used to rotate, scale, or flip selected vertices. Clicking on the buttons and dragging will perform the transformation desired. The Flip button will flip vertices across the screen horizontally.

The Split Triangle Tool:

This can be found in the tools menu. It will split a selected triangle into 3 triangles.

The Flip Two Triangles Tool:

This can be found in the tools menu. It will take two triangles that are sharing an edge and will flip that edge to the other direction.

The Draw Menu:

The Draw Window:

This window is used to modify the textures that are mapped onto the triangles.

Before you begin drawing or painting on the model make sure you press the project button. If you have previously drawn on the model and are just adding new triangles press the remap button. (below). The first button is called draw and it allows you to drag across the model with the color selected. The color can be selected in the color window (below). The sample button allows you to click on the model and select the color of the texture you clicked on. The paint button will fill in a triangle with a solid color. Project will set the entire model to a certain color. Remap is useful when you change the shape of the model but want to keep the previous textures. The textures will become proportional to the model so drawing will not be warped. Be sure not to use this too often as the textures are changed slightly every time.

The Color Window:

This window is used to select which color to draw with. If neither the draw button nor the paint button is selected in the draw window the background color will be changed rather than the painting color.

The Replace Window:

This window is useful when you need to change a color on the model to a different color. For example, if you wanted to change a green to a red you would set the paint color to the green that is in the model (using the sample tool) and click on the source button on the replace window. Then you would choose the new color to change to and finally click on the target button in the replace window.

The Skeleton Menu:

The Skeleton Design Window:

The first tool allows you to place joints down (they look like large vertices). The second tool is very similar to the select vertices tool as it allows you to select and move joints. The third tool lets you create bones for the skeleton. This is done by clicking on the first joint in the bone and then on the second joint. The fourth tool allows you to select bones. This is used mainly for deleting the bones.

The Attach Window:

When you select bones in this window they will turn blue and their parent will turn red. The joint between them will turn purple. You can select vertices using the vertices button. You select the bone using the bone button. The slide bar sets how much the vertices are attached to the blue bone and how much they are attached to the red bone. When the bar is far to the right the vertices are most strongly attached to the blue bone. (Note: The vertices are actually *attached* to

the nearest point on the nearest bone. However, the slide bar determines the orientation of the vertices. If you can think of a better way of doing this let me know.)

The Animate Window:

This is the window you use to animate the model. In order to begin animating you must press the activate button. Once you have created a model and attached vertices to bones you need to press the reset button to begin animating. Most of the buttons are self-explanatory. When the animation is playing none of the other buttons will work. You need to stop the animation in order to change anything. Also, if you create or delete any bones all of the animations will reset. If you move any joints the animation will likely get messed up. Moving vertices *should* be okay though. Just make sure that when you move vertices you press the Calculate button before using the animations again. The delay slide bar represents how long the animation takes to get to the next frame. Each frame has its own delay value.

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