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Polygon Modeling Tips and Tricks

Maya contains a number of useful features that make it one of the premier modeling and animation tools across a variety of industries. These include the extrude, chamfer, split polygon, extract, slide edge, and mirror geometry tool, and more. I will provide a brief overview of many of these tools, starting with tools that cut geometry, leading into tools that expand geometry, and finishing with tools that improve quality of life using Maya.

To begin with tools that cut or destroy geometry, we have the split polygon tool, the cut faces tool, the edge loop tool, the offset edge loop tool, the poke face tool, the split edge ring tool, and the delete edge/vertex tool. The split polygon allows one to split faces by selecting points along the edges of said face. A cut is created between the two points selected by the user. This makes it similar to the edge loop tool, however the edge loop tool tends to cut perpendicularly to edge being selected by the user, and the cut can extend all the way around the model, meeting back up at the original cutting point. The offset edge loop tool makes edge loop cuts, however it creates these cuts in parallel to the selected face and makes two cuts equidistant to the selected edge. The poke face tool allows the user to select a random point inside of a given face, and subdivide that face into a number of triangles converging at the selected point and radiating to the vertices of the selected face. The split edge ring tool is similar to the edge loop tool, however the loops it selects do not have to loop around the entire model, and can instead circumvent face loops in a local region. For example, a loop that loops around the lips of a model. Finally, the delete edge/vertex tool allows the user to delete edges and vertices more thoroughly, as just using the delete key will still preserve the model deformations caused by the old edges and vertices, whereas the tool will recalculate the deleted geometry as if it weren’t there in the first place.

Next, we have tools that add geometry. These include duplicate face tool, the extrude tool, the mirror geometry tool, the wedge face tool, and the bridge tool. The duplicate face tool is straightforward. It duplicates faces. The new faces can be moved and manipulated independent of the faces they were cloned from. The extrude tool takes a face flush against other edges, and adds a layer of faces between the extruded face and the originally adjacent faces. This allows the extruded face to be pulled out, pushed in, resized, whatever, without changing the geometry of the originally adjacent faces. The mirror geometry tool duplicates and mirrors any selected geometry over a selected axis. The wedge face tool takes a selected group of faces, and allows them to be rotated around an adjacent edge, creating new geometry around that rotation point, the amount of which being determined by the number of divisions set within the tool. Finally, the bridge tool allows for the creation of faces between two sets of non-connected faces. Various options allow for the creation of either straight or curved sets of faces, and even the creation of a curve in order to manipulate the created faces at a later time.

Finally, we have the quality of life tools. Keep faces together allows the user to either separate faces or keep them linked when performing operations such as extrusions or duplications. The reverse normal tool reverses the directional aspect of faces without changing geometry. It just flips the normal 180 degrees. Separate and combine allow for the joining and splitting of objects based on face selections. The slide edge tool allows the user to move edges or edge loops along the geometry of a model, as opposed to being linked to a major axis or to the camera. Finally, chamfer vertex is useful to preserve quads after doing point extrusions and allows these extrusions to be dulled as it flattens the vertex down into a face.

There ya go.