

AUTODESK MAYA 2009

By Bijan Forutanpour



AUTODESK

★★★★★

STATS

Autodesk, Inc.
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PRICE

\$1,995 Maya Complete

PROS

- 1 Powerful new animation layering feature.
- 2 Good polish on polygon component selection tools.
- 3 Improved Maya Asset system.

CONS

- 1 Face loop selection does not work on triangles.
- 2 Multi Select mode should exist for NURBS and subdivisions as well.
- 3 Sculpt Geometry tool needs to be developed further.

I MISS THE GOOD OLD DAYS WHEN

software had version numbers, and when even the fractions in the version numbers had meaning. Today software seems to be marketed like automobiles, with year, make, and model names. The lines become blurred when RX7 is a sports car and CS4 is software. Without further pondering of the wisdom of marketing professionals, let's begin our test drive of the 2009 model of Maya, which I would like to nostalgically refer to as Maya 10.0, or Maya X for Mac users.

THE BIG PICTURE

True to its history, Maya continues on its development path with new features and functionality. Some are geared towards efficiency, some focus on managing scene complexity, and others offer completely new functionality. The new developments in the 2009 version display a global view at Autodesk, with a crossover of features and ideas from Autodesk's other products into Maya. With regard to their recent acquisition of Softimage, I'm sure the new baby is in good hands.

IMPROVED MODELING WORKFLOW

Maya 2009 has introduced a set of workflow improvements intended for speeding up modeling, by focusing on one of the most common tasks, namely model and component selection. The first of these is the new multi-component mode, which allows for preselection highlighting of faces, vertices, or edges. As the cursor is moved along the model, the underlying edge, vertex, or face is highlighted before the actual selection is made. This saves the step of using a hotkey or menus for

switching between component types. I found it to be useful, but noticed that NURBS or Subdivision surface tools didn't have a Multi-Component mode feature as well. For those of us working in the games industry this may not matter, but for CAD users I'm certain NURBS tool enhancements would be a welcome addition as well.

The next improvement in the Selection tool is the introduction of the soft selection feature. This comes in handy mostly in organic modeling, in changing proportions, or creating bulges using the usual transformation tools, with a smooth blending back to the rest of the model. Soft selection is based on a radius, which can describe either a volume or a surface. There is also a Global mode, in which the vertex selection is not limited to vertices on the currently selected object, but can also include vertices on other objects as well. Choosing a radius setting is easy with a press of the B hotkey, which displays a resizable circular radius cursor and provides live feedback of the effects by color coding the model's vertices.

Another setting is a falloff curve that specifies the "weights" assigned to the vertices selected. It can be edited, and includes curve profile presets and the ability to create new profiles. It was immediately reminiscent of Mudbox's brush controls. This made me ponder Maya's other organic sculpting tools, namely the Sculpt Geometry Tool. The Sculpt Geometry Tool has remained mostly unchanged for many versions, and it could really stand to benefit from the user interface and display features added to the soft selection tool, as well as adding a few new features like pinch and bulge.

Another enhanced feature to the Select tool called Drag Select gives users the ability to paint a selection of faces. This is a raycast version of the existing Paint Selection Tool, with an option for culling backfaces. It does in fact work better than the Paint Selection Tool, which requires an appropriate radius to easily overlap with a face's centroid and work correctly. However, the Paint Select tool also works with vertices and edges, which the Drag Select does not. It would be nice to see the Drag Select and Paint Selection tools be merged into a single, more robust tool.

The Select Tool has added some edge and face loop selection workflow enhancements. Double clicking on an edge now selects an edge loop without having to explicitly invoke the Edge Loop

Tool. Faces loops and partial face loops are also now easier to select. Double clicking a face, then hitting shift and double clicking another face will select the faces in between them. However, I noticed this seems only to work on quadrilateral meshes, and not triangulated meshes, or on a mix of triangles and quadrilaterals. Still, selection is more efficient, and once a partial face loop is selected, using the arrow keys to select the full face loop allows for pick-walking the face loop along the model.

One "new" feature to the Move Tool is the Preserve UVs option. This option used to be part of the Maya Bonus Tools, but has made its way into the standard release. Preserve UVs allows for vertices, edges, and faces to be translated while maintaining the overall look of the texture mapping on the model. Usually modifying model geometry after UV texture coordinates and textures have been assigned results in the final result looking distorted. The Preserve UV feature attempts to avoid this distortion by automatically recalculating new UV values for the newly transformed vertices. For the most part the feature works relatively well, but it cannot really account for all scenarios. For instance in the case of discontinuous UVs, where one vertex has multiple UV coordinates, there is only so much that can be done, short of automatically changing the texture's pixels to compensate. Another small detail to note is that even though in the desirable case of continuous UVs, the end results aren't pixel perfect either, and there is still a small amount of distortion visible. It can be a huge time saver, but may require some paintwork to clean up some details.

IMPROVED UV CREATION WORKFLOW

One interesting new feature in Maya is in the area of UV creation. Selected UVs can now be interactively unfolded or relaxed for more control of the final result. The amount of unfolding or relaxing is controlled by how much the mouse has moved, like a scrollbar. Unfolding can also be constrained to a single direction by holding down a modifier key. This gives more control to the user so that when the UV layout is good enough it is possible to stop iterating new UV values.

There are other UV workflow enhancements as well, such as prescaling UVs for multiple meshes such that their world space size is taken

OUR RATING SYSTEM :

★★★★★ EXCEPTIONAL

★★★★ GREAT

★★★ FAIR

★★ POOR

★ UNFORTUNATE

into consideration. This helps texture assignment so that there is some consistency in texture pixels per world space unit.

Yet another option in creating UV layouts is Placement Settings, which can help when a single texture is being used for multiple objects. And finally, some general UV editing improvements have been made for when individual or sets of UVs need tweaking.

ANIMATION LAYERS

As Mel Brooks once said, "It's good to be the king." Given that MotionBuilder also lives under the Autodesk umbrella, it was inevitable and much needed that technology from MotionBuilder would make its way into Maya. Any attribute can now be layered, and animation layers can be reordered, merged, grouped, and blended. The animation-layering engine allows for import, export, and reuse of animations, allowing different animations from different characters to be combined. Different types of animation can be combined as well, such as cycle animation, keyframed, constraint driven, or simulated animation. There is the ability to turn off or mute animation layers, or isolate a layer and mute the remaining layers. This allows for experimentation with different takes, or different versions within a single scene. Animation layers may also override conflicting animations that are below them in the animation stack.

Maya has had its current Trax Editor for quite some time, which is also used for editing and compositing animation tracks. Again, I would encourage a unified system that provides the best solution. I believe the new animation layering technology meets the needs of most animators, although time will tell.

MAYA ASSETS

As 3D scenes become more complex, efficiency in managing all the scene data can become an issue. To help manage complex data, Maya introduces the notion of Assets. An Asset is a package that contains other nodes and provides a custom interface that exposes only the necessary controls. This helps with organization, sharing, and using multinode objects in an easier way. Typically the interface exposed would be animation controls, but is not limited to animation. Shading and rendering controls, visibility controls, blend shapes, physics simulation controls, or any other type of attribute can

be published, thereby being exposed in the Attribute Editor for that Asset.

Although this feature existed before Maya 2009, in this edition of Maya it has been greatly expanded to include better creation and publishing options, hypergraph improvements, and is said to have better performance. For instance, in 2009 there are user-editable XML template files that can be customized. Different attributes can be presented to different users of the same Asset, based on their individual needs. For example animation controls for animators, rendering controls for technical directors, and so forth. These container nodes can be exported into an asset library, which encapsulates information about the original author, original asset and file name, creation dates, and notes. Asset management systems can now provide a finer granularity of project and production management.

RENDERING

For the film and visual effects industry Maya has been updated to provide all the intermediate rendering passes involved in the final image creation. This allows for precise control and fast iteration in the production pipeline by allowing 2D compositing packages to combine the render shading elements. There are over 50 production level passes available, such as refraction, reflection, translucency, motion vectors, coverage, and custom render passes.

Another new feature in Maya 2009 is the ability to create stereoscopic renders. The 3D viewer now supports a three-camera setup for left eye, right eye, and center, and renders the final stereoscopic image. This allows for quick previewing without the need for final renders. When it comes to creating the final renders, the render layers needed are automatically generated to produce the separate images for the left and right eye. Finally, in the interest of rendering speed, stereoscopic multi-camera renders are optimized in Mental Ray so that computational results are cached and reused. These include render time tessellation, final gathering, global illumination, light maps, and shadow maps.

MORE MORE MORE

There are actually many more features and enhancements to Maya 2009 than those mentioned here. For the purpose of brevity, the enhancements and features that relate to game production more

directly have been reviewed in greater detail, leaving less time to discuss the less relevant.

WHAT'S LEFT?

Perhaps the biggest feature not yet discussed is the continued development of Maya Nucleus, the new advanced unified simulation framework. Available only in Maya Unlimited, Maya Nucleus is at the heart of Maya nParticles, nCloth, and nRigids. Cloth, particles, and rigid bodies can all interact under Maya Nucleus, from collisions and stickiness, to cloth tearing and liquid simulation. One fact to note is Classic Cloth is not available in 2009.

Another area of development is the improved IPR (Interactive Photorealistic Rendering) for Mental Ray. Objects and lights can now be moved, duplicated, and instanced. More light types are now supported, including shadow maps and area lights.

Last but not least is Maya Muscle, an expanded muscle and skin deformation toolset that allows animators to create muscle and skin motion on their characters. The muscle system now offers NURBS-based muscles in addition to their previous muscle types. Other controls added include jiggle, wrinkles, sliding, stickiness, and collisions.

MILEAGE MAY VARY

If Maya 2009 were a sports car I would say that it has gained some good performance enhancements, and a few new engine upgrades. From the new MotionBuilder animation layering technology, to Maya Nucleus, it also handles complex models nicely with Maya Assets. The 5 speed manual transmission gives you better control over UV creation and editing, and the new Select Tool features with Soft Selection and Multi Component mode provide a smooth, fast ride. Sometimes there are too many controls, and some of them seem to do the same thing, but no car is perfect. With so many cars in the Autodesk garage, we know the mechanics have a lot of work ahead of them. But then again, these cars are fun to drive.

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