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3ds max 6 review

Written for CG Channel by David Lightbown

Introduction

In what appears to be a slightly accelerated release schedule, 3ds max 6 has been introduced 15 months after version 5. Once again developed by the California-based developers formerly known as the Kinetix group (now part of the global multimedia powerhouse Discreet), 3ds max is a well known staple of the 3D industry.

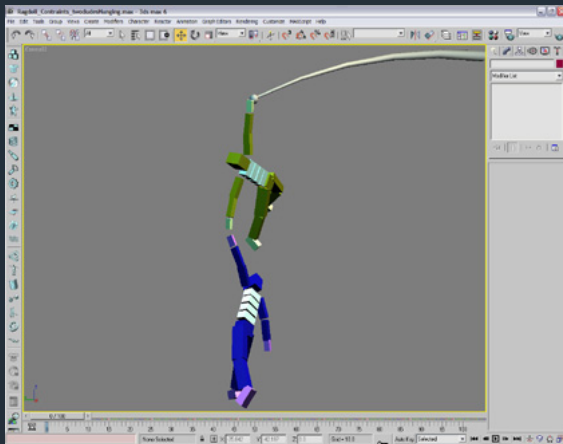
When Autodesk paired them up with Montreal-based Discreet Logic in the early months of 1999, one of the first improvements was setting in motion an upgrade to the software renderer over several releases. This was done partly for the purpose of bringing the software on the level with other competing packages, but also to integrate 3ds max as a turnkey solution in their film and broadcast products.

Even before Autodesk married these two software developers, 3ds max's user base was already quite large, having enjoyed success as the primary choice for game developers in North America in the early 90s (Softimage|3D having taken that crown in Japan). 3ds max is still commonly used amongst game developers, and is integrated into many popular middleware solutions such as Criterion's Renderware and NDL's Gamebryo.

Of course, 3ds max's roots (and axis) are in architecture. 3D Studio, having been developed originally by the Yost group, matured with an architectural base. It is still used by architects, primarily for animation and rendering, and Discreet has ensured that they do not forget their heredity, as shown by the Autodesk-influenced features in this version.

It would appear that 3ds max has three fronts to develop on: Film/Broadcast, Interactive Gaming and Architecture. Keeping three different demographics satisfied is never simple, and having a huge customer base with different opinions does not make it any easier. Discreet's latest revision has added new features to keep its customers happy and improve upon its predecessor, 3ds max 5. Here are the new features and improvements, broken down by category and analysed.

General & Interface



The 3ds max interface (click image above to see full-size version)

Stability

One of the main improvements that many 3ds max users wanted was increased stability. Discreet has taken a step forward in that respect by transferring all of the source code to a new environment, and in the process tying up some loose ends left over from years of development. However, as 3ds max 6 has only been out for a few months, only time will tell if their efforts were a success.

Tab Bar Removed

The Tab bar, a toolbox of many commands in 3ds max akin to Maya's Shelf, has been removed in 3ds max 6. However, it can be brought back through a series of workarounds, which can be found by searching on newsgroups or online chat forums.

Reactor 2 Sidebar

All of the options in the newly integrated Reactor 2 have been put into an easily accessible side bar (although it was possible to create a Reactor toolbar in previous versions of 3ds max by hand with the Customize menu). Those who have used Reactor before will find the toolbar and improvements in Reactor 2 to be very useful, such as a floating Properties toolbar and easily accessible Preview options. The rest of the improvements in Reactor 2 will be detailed later in this article.

Scene Management

Layer Manager

The Layer Manager included in previous iterations of 3ds max was a welcome addition already present in other competing 3d softwares, but was not user friendly, so much so to the point that at least three Maxscript-based replacements were developed by independent developers. Discreet decided to upgrade the Layer Manager, which is a marked improvement.

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Schematic View

One of the longstanding improvements many users were awaiting was an upgrade to the Schematic View. In 3ds max 6, many enhancements have been made over its predecessor such as advanced visibility controls and a floating toolbar, detailed viewing options and control over object relationships amongst others, flagging auto-arrange on a per-object basis, and more. Also, two direly needed improvements bring 3ds max on par with other competing 3d packages: Multiple Branch Selection and the ability to store a background image in the Schematic View, so as to more easily associate nodes in the Schematic View with what is in the scene. Unfortunately, the Schematic View does not yet support Materials, something many users were hoping to see. However, an extremely powerful and versatile Schematic Material Editor that shows great promise is being developed by Marsel Khadiyev and Chris Thomas. A screenshot can be seen here:



(Click image to see larger version)

Modeling

Vertex Painter

Here, 3ds max 6 has made an excellent improvement in its tools, not only upgrading a feature to the level of its competitors, but also surpassing them with some features not seen in other packages. First, the standard 3ds max painting tools are now used to paint vertex color onto objects, a vast upgrade over the method available in previous versions. As a result, the user has full control over shape, size, pressure, brush falloff, and more.

Next, all Vertex Paint modifiers are treated as layers in the Modifier stack, and have options such as blending modes akin to Photoshop (Screen, Multiply, Lighten, Darken, Hue, Saturation, etc...), per-vertex, edge and face filtering with Soft Selection support, and Opacity (which can be keyframed for another often requested feature in 3ds max: vertex animation). On that last note, the only method in which users were able to create vertex color animation in previous versions of 3ds max was to associate the UVW data from a Unwrap UVW modifier to the RGB value of a vertex's color and keyframe the movement of the UVW data, which gave an effect similar to Maya's vertex animation in which the status of the vertex is recorded for the current frame. 3ds max's method of controlling Opacity in a separate layer has its advantages and disadvantages: it is easier to control and keep track of the vertex colors since they are on a separate layer, but if the object is collapsed, the animation is lost.

Finally, the floating VertexPaint toolbar combines many commonly used controls into one floating menu, such as toggling display mode (Vertex Color, Alpha, Illumination, etc...), selecting which channel to paint on, not only paint brushes but also buckets to remove or add vertex color, an Adjust Color control to tweak all colors on a layer with HSV or RGB controls, a useful Blur Tool for softening up unsightly errors in the vertex colors, and more. However, it is still impossible to see vertex alpha real-time transparency in the 3ds max viewport without the use of a DirectX shader, which means the user cannot view true vertex alpha in OpenGL. Despite that, Discreet has done an excellent job improving its Vertex Paint system, which is a huge boon for game developers.

Particle Flow

Particle Flow is an event-driven particle system, with a Schematic View to follow the process and easily edit particles. Particle Flow works by building up a tree of Actions, which trigger Events, which in turn create different types of particles, known as Flows, which are all encompassed in one Particle System. Actions include control over options such as Birth, Force, Material settings, Shape, Speed, even adding a script. Also, there is a sub-object control mode to select specific particles for effects, or create a region for further control. With a bit of practice and by learning its nuances, it is an easy to use and powerful particle creation system.

Isoline Display

This is a feature that many users were initially excited to see when it was announced. Isoline display shows the same number of edges and vertices on a model whether it is subdivided or not, wrapping the edges around the object so as to reduce clutter in the display. Other packages with Isoline display, such as Lightwave and Softimage|XSI, allow the user to edit the object's components (vertexes and polygons in the case of Lightwave, and edges and polygons in the case of Softimage|XSI) directly on the subdivided object where they lie. However, 3ds max 6's Isoline display is visual only, and still requires the user to click where the edges, polygons and vertices were before subdivision on a Control Mesh, akin to Maya's default Subdiv. Furthermore, when other modifiers are put on top of an object with Isoline activated, the original cluttered mesh returns unless another Meshsmooth modifier with Isoline active is put on top and "Show End Result" is activated.

Spline & Patch Improvements

Most users interested in a modeling method other than polygon subdivision turn to the Spline and Patch method, which is a better alternative to the NURBS modeling available in 3ds max. Discreet has made improvements to these two areas, increasing their productivity and making them more attractive to work with.

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Spline now has the option to automatically connect the cross-sections of one line to the next when an object is shift-copied (an extremely useful option which speeds up Spline cage creation substantially) and Copy / Paste tangents, which makes aligning tangent handles easier.

Improvements in Patch include: selection controls similar to Editable Poly such as Grow and Shrink, Ring and Loop selection, Open Edge selection, Soft Selection, and Patch smoothing to average the orientation of the newly added Patch Handles mode, to smooth out kinks and bumps in the patch. Finally, an Editable Patch modifier allows the user to convert their Spline objects into Patches, without the requirement of CrossSection and Surface modifiers, which were necessary most of the time in past versions of 3ds max.

Channel Info

Control over Channel Information is a useful feature intended for experienced technical users that grows more powerful the more the user understands it. The Channel Info window allows the user to copy a vertex selection to an vertex alpha channel, or copy XYZ data in the scene to a UVW map, or simply keep a very large list of vertex selections for use in various operations with the "Select By Channel" modifier, amongst other things. It can also be used to blend materials by associating a Channel selection to a material with a falloff so that two textures blend on a per-vertex basis. It is quite a useful feature and will prove to be useful to users who take the time to learn it.

Autodesk Product Support

Extended support for customers using various Autodesk products such as AutoCAD and VIZ has been added to satisfy 3ds max's architect and pre-visualization user base. Improvements include better handling of DWG and DXF files, Material Propagation, Architectural Material, AEC Objects, and more. Some of these can be useful to Film/Broadcast and Interactive Games users, but mostly for architectural customers. It also appears as though this is an effort to move VIZ users over to 3ds max, so as to focus Discreet's line of products.

UV Mapping

Not many improvements have been made to the UV Editor in 3ds max 6 aside from creating an interface to activate the Relax UV option, as it was available in 3ds max 5 but simply never exposed to the end user. It is also still not possible to export the UV Coordinates to an image without the help of third party plugins, such as Texporter.

In a recent dialog with Discreet, I asked for a few features, which are available in most other high end 3D packages, such as snap to UV points, display number of UV points selected, the ability to synchronize selection of all Sub Object types between the 3D viewport and the Edit UVWs window. I was told that my suggestions were added to their list of requested features.

Animation

Reactor 2

As mentioned in the Interface section above, Discreet has upgraded to the latest version of Reactor and made it easier for the user to access with a toolbar directly in the main 3ds max interface.

This version of Reactor adds a few new constraints, such as Hinge (useful for limiting the movement of objects to a specific axis, with a informative gizmo that shows the maximum possible orientation visually), Car-Wheel (which includes a Suspension axis to simulate shock absorption and a Spin axis to rotate the wheel based upon its speed and momentum) and a Rag Doll constraint (a feature becoming more and more commonplace in physics based simulation systems) to name a few.

Dopesheet Improvements

The Dopesheet has had a few improvements, such as a speed increase by improved filtering, optimized workflow and a general refresh time. Also, multiple channels can be set to Keyable or Unkeyable at once, instead of one at a time, a much needed upgrade from 3ds max 5.

Mirror Bones

One of the new additions to the Skin modifier is the Mirror Parameters rollout, which is a quick and easy way to mirror all Envelope settings from one side of the model to another, using a mirror plane and controls for offset, threshold and plane axis, which is at the mesh's center-point by default. It works well, and compliments the Mirror Paint option nicely.

Rendering

Mental Ray

One of the most widely touted features in 3ds max 6 is the inclusion of Mental Ray, a renderer whose reputation precedes itself. There is no need to overview the quality of Mental Images' robust high quality rendering engine, as it is a well known staple of the industry. Alias included it in an early version of Maya, and Softimage|XSI had its core rendering solution built around it from the start. It seems natural that Discreet would include it to even up the score.

Mental Ray is a complex rendering engine, and to the first-time user may seem dauntingly large and complex. The user may have difficulty getting quality images out of it with good render times, but with enough practice to harness its features, it can be very powerful. However, not all aspects of Mental Ray are fully supported in 3ds max 6, such as Glow Lens, Ring Lens, Lens Effect Focus Filter, G-Buffer Data can only be saved to a single layer to name a few. Discreet has released information on how to expose these hidden shaders should they be required, which were disabled because they had not yet been fully tested at release time. Another unfortunate issue is that it is impossible to use Mental Ray out of the box to assign vertex colors, which is possible in other 3D packages which include Mental Ray. A full list of omitted features is in the 3ds max Mental Ray ReadMe file.




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Another aspect worth mentioning is that of all the 3D software packages available, 3ds max has the most diverse selection of rendering solutions. The built in software renderer in 3ds max already has a host of excellent options and isn't a pushover for quality if tweaked correctly. Then there's Brazil, VRay and Final Render, all with strong user support and excellent render quality. Adding Mental Ray to this mix makes for quite a selection of renderers for the end user.

Conclusion

Evidently, not every new aspect of 3ds max 6 has been covered here. There are some other small improvements, such as Region Net Render (splitting an image into pieces for multiple computers to render), improvements to the Render to Texture interface, Material Editor improvements (working with full Sub Material names instead of simply ID #s, support for .FX files and some Multi Material tools) Save Copy As, BlobMesh, Shell Modifier and the usual slow but steady improvements to the SDK and MaxScript documentation and support. Most of these are all overviewed on the Discreet website.

Some have said that 3ds max 6 seems more like a 5.5 release, and the same has been said about other 3D software packages in the past before. With so much competition, users want more out of their software, and they feel that a point-zero release should be a substantial upgrade from the last. Also, there are managers and CEOs who base their purchases off how high the revision number of software. (If that was always the case, the majority of companies would be choosing Newtek's Lightwave or Side Effects' Houdini).

A few issues from previous versions of 3ds max have been addressed in this version, such as unselected frozen objects remaining visible in isolation mode, and unselected sibling objects in Groups remaining visible in isolation mode. However, some still remain, such as unusual behavior with 3ds max's coordinate system, issues with the use of non-uniform scaling, snapping imprecision, problems with Wire Parameters and expressions, difficulty in properly managing Attributes, inability to rotate or pan while creating a polygon, slow Editable Polygon performance using OpenGL or DirectX with no cached-meshes and no object self-shadowing when using Assign Vertex Color, amongst others. Hopefully Discreet will address these issues in a point release or in their next major revision. Many users would be glad to see these issues resolved.

In the case of 3ds max 6, when looking over the complete new feature and enhancement list, there are many things to like: the improved Schematic View, Vertex Painter, Reactor and Spline / Patch usability, as well as the addition of Particle Flow, Channel Info, Mirror Bones and Mental Ray. The question is whether it warrants the suggested retail price of \$795 USD to upgrade from 3ds max 5 to 6. That is up to the user to decide, based upon how much they would use the features and improvements detailed in this article, and what the competition has to offer. Regardless, current 3ds max users continue to look to Discreet to improve their product to keep up with the competition, resolve old issues and develop new technologies to keep them ahead of the pack.

*Review by **David Lightbown***

David Lightbown has worked in the industries of video games, broadcast television, web design and internet technologies. He is presently employed at DC Studios as Lead Technical Artist, where his responsibilities include technical 3D art supervisor and research and development for project art pipelines. He can be reached at david@cgchannel.com.

David wishes to thank Kevin G. Clark, Dan Prochazka and the 3ds max development team for their extensive feedback and assistance.

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