GHOST INTHEMACHINE

By Nigel Taylor

With all the big 3D solutions now competing on a more or less level playing field in terms of price and functionality, it's no surprise to see workflow enhancements coming to the fore in major upgrades. Though Max's next release is around the corner, the launch of the current release brought improvements in workflow as a reaction to the many users' wishlists.

The many thousands of users of Max were looking to these improvements to streamline their production pipelines, and the introduction of XRefs and proxy objects eased the sharing of work across a studio. Modelling tools are still one area that is far from perfect, which becomes immediately apparent when you see what third-party plug-ins such as Surf-iT can do.

Developed by Ghost 3D, Surf-iT is a set of modular surfacing tools that come together to form a robust modeling toolkit, but one that has also been developed with workflow in mind. Parametric spline and surface construction tools present the user with a powerful modeling toolkit that is similar to using NURBS, but far more flexible.

These tools are primarily to be found lurking in the create and modify panels, as the workflow is designed to start with the user creating a spline object, before editing it and modifying it, and finally surfacing it, hence the product's name.

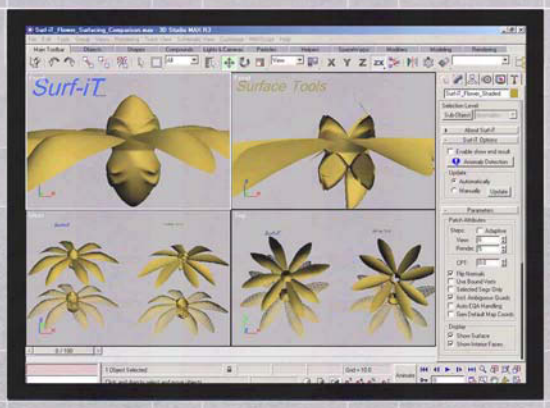
The first step of this process kicks off with the creation of a spline object, which for the sake of a very simple example, could consist of two parallel lines, each with the same number of vertices, which are all set to smooth. Now, by applying the Segment-iT modifier, one can further subdivide the splines by specifying how many knots should be added between each vertex. There are also options for setting regularly spaced knots, or specifying the total number of knots in the spline. The Connect-iT modifier then creates the spline lattice, basically an intersecting network of splines that can then be surfaced.

Further subdivision tools now allow one to add additional spline objects that are parallel to and conform to the originals. Now it's time to surface, and, you guessed it, this is carried out using the Surf-iT modifier. There are two flavours of this: the Surf-iT Patch and Surf-iT Mesh modifiers. Staying with the former for the moment, once this modifier has been applied, a patch surface appears, and if it doesn't there's a handy flip normals checkbox within the modifier's own parameters.

Also within these parameters are controls for subdividing each patch, so detail can be added and taken away from the patch and how it appears in the

Surf-iT - Product Review by Nigel Taylor, CGI magazine

Surf-iT 3d modeling kit is manufactured by GHOST 3D, LLC - http://www.ghost3d.com



Left: Though using identical spline objects with the same patch resolution, the polygon count for the same object surfaced with Surf-iT has 40 percent less faces than the same object surfaced with Surface Tools

viewports, as well as how it is treated at render time. Now dropping right back down the stack to the original editable spline, one can select individual vertices (in Sub-Object mode, obviously) and begin to change the shape of this spline and, using the Show end results toggle switch, see how the resultant surface is shaping up.

If this editing results in a surface whose curvature does not quite match up to the one shown at spline level, returning back to the topmost Surf-iT patch modifier permits further subdivision to bring the resolution of the surface up to a level that brings about a smooth curvature.

And that's basically all there is to it! To try something a little more adventurous, all you have to bear in mind is that the intersecting spline networks should consist of segments that always form triangles and/or quad shapes. Where you do not connect or snap a particular vertex to form valid quadrangular and triangular shapes, an opening in the surface will appear. You can also use bezier vertex types and adjust the handles to create complex curves with these triangular or quadrangular shapes in your spline lattice.

In terms of the quality of the resultant topologies, the plug-in's developers claim that Surf-iT has been designed and tested carefully to ensure the highest quality surfaces. Its high-profile users testify to its robustness, and though this product version was only recently released last November, Surf-iT has been around since 1996.

With both Digital Dimension and Manhattan Transfer swearing by the toolset, it's difficult to argue with the developer's claims, and having spent a weekend using the solution, I find myself in total agreement. Yes, Surf-iT does seem to produce a very high quality of surface, but that's not even half the solution's appeal.

Errors can quite understandably occur in the creation of complex networks of splines, and even the most seasoned modellers will find themselves experiencing surfacing problems. The Surf-iT patch modifier actually contains a sub-object mode called 'anomalies', whose use identifies and reports a list of all potential problems with such surfaces. Not all anomalies will need addressing, but this feature can help quickly correct any inadvertent errors. One simply selects the individual anomalies in the reported list, which selects the edges or segments that causes the anomaly to be reported, and a description of the anomaly is provided.

Primitive behaviour

The plug-in also provides a set of five spline-based primitives, or S-Objects: the grid, cylinder, sphere, box and cone, which are great as a basis for creating complex objects, such as those found in character modelling. For instance, a cylinder could be used as the start point for an arm, leg or torso and the circle as a character's head. By creating an S-Sphere and specifying an increased segment value, one would then use the plug-in's own spline editor modifier. This contains useful radial selection tools, and using the transform tools, the vertices can be moved around to model the head's features, with bezier tangent handles tweaked to alter the spline curves. Another very simple but invaluable option at this level is a checkbox that allows the show end result toggle to be kept on, which shows the level of thought that's gone into this solution's development.

Whilst five S-Objects might not seem like a huge amount, the vastly flexible Connect-iT modifier ensures that closed 3D spline objects can be quickly created from basic 2D shapes, and the combination of these two approaches pretty much covers all bases.

It is in this spline editor modifier that one finds yet another very well-implemented feature for snapping multiple vertices together. This is one feature that Digital Dimension describes as a "godsend". The selected vertices are moved to be coincident at one or more points in 3D space if neighbouring vertices are within the threshold specified in the spatial snap spinner threshold. The spline editor snap tool does not alter any bezier or bezier corner vector handles, maintaining the in and out vectors in their original state. This means you can instantly join two mirrored halves of a body, a face, or any object, without inadvertently destroying the curvature of the object's splines.

If you are a busy 3D modeller, Surf-iT is a solution that, in keeping the work focused at the spline level, allows the artist to directly and parametrically create superior patch or mesh surfaces, and still allows him to modify the splines. In keeping the workflow centered around the spline editor in this way, the user is able to do all of their work at the spline level without giving up the flexibility of parametric surfacing, easy local and global refinement, whilst (somewhat uniquely) allowing users to watch their surface update while working on splines.

Compared with the way that edit patch or Max's NURBS forces the user to commit to the 'critical' surface decisions, modelling with Surf-iT is an absolute pleasure.

Product information
Surf-iT
- **Price:** $199.95
- **Developer:** GHOST 3D, LLC
- **Contact:** www.ghost3d.com