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Reported, written and edited by David Duberman
For editorial/subscription inquiries, send mailto:
spectrum1@broadviewnet.net
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SPECTRUM REVIEW

Spectrum Feature Review: Toon Boom Studio 2.0

By David Duberman

When it comes to graphics tools, this publication tends to focus on 3D software, but there's a whole range of terrific 2D programs out there as well. Perhaps the best-known 2D animation tools are Macromedia's Flash and Director, but both of these require specific methods of working that might be alien to those familiar with traditional

animation. For the latter, and those who'd like to explore a Disney-style approach to animation creation, there's Toon Boom Studio, from developer/publisher Toon Boom Technologies.

Drawing

The first stop in 2D animation creation is drawing line art: the inked outlines that will later be filled with color. Toon Boom Studio provides a set of vector-based drawing tools that work well with the mouse, but benefit from the use of a digitizing tablet. Available from a vertical tool palette, they include brush, pencil, line, polyline, rectangle, and ellipse. All of these create centerline shapes of a constant width, except for the brush, which draws a variable-width line, depending on pressure. The resulting brush stroke consists of a filled area between two lines, whose shapes you can manipulate independently. The Properties settings let you specify the minimum and maximum width of the brush line, as well as the amount by which the software smoothes it when you finish a stroke. The centerline tools use the maximum width setting.

Drawing a closed shape with the Brush tool results in a two-vector shape, one describing the inside contour and another describing the outside, with a fill in between. You can use the contour editor tool to move an entire contour, or individual points and handles, but you can't move multiple points. If you move a point on one contour outside or inside the other, you get an open shape, with the outline becoming a single contour. Other editing tools include Select, which lets you scale, move, and rotate entire shapes, and Perspective, which lets you add skew and perspective by moving points on a shape's bounding box.

Toon Boom Studio also gives you a number of ancillary drawing tools: For instance, it's usually necessary when drawing to zoom in and out a lot, so it's convenient that these functions are mapped to the X and Z keys, respectively, rather than the Ctrl-key combinations used in other graphics programs. A nice addition here would be the ability to see a text readout of the zoom level. Panning uses the usual spacebar+drag combo, but unique to Toon Boom Studio is the Rotary Light Table feature, which lets you rotate the entire drawing surface interactively. This comes in handy if you're more comfortable drawing at a certain angle. There are also keyboard shortcuts to reset the zoom level and viewing position.

Another animation-specific tool is onion skinning, which lets you see one, two, or three frames ahead and/or behind as you draw. The program uses color coding so you know which is which. And the S and A keys let you move forward and backward through a sequence of animation frames.

If you'd rather create your line art in another program, Toon Boom Studio can import and vectorize images in a variety of formats, including BMP, Photoshop, GIF, JPEG, Targa, and TIFF. It does a remarkably good job of it, too. The vectorizer has a number of different smoothing and sharpening options that can accommodate a wide range of source imagery. It can't work miracles, though; you'll get the best results if you don't color it first. Vectorized line art comes in as brush strokes, which you can then edit with the regular drawing tools, if you like.

To organize and sequence a character's animation, you use the exposure sheet feature. This uses a spreadsheet model, with each element using a column, and each animation cel using a cell in the column. Here you can drag cells to change their sequence, insert and delete cells, import artwork, and change how animation sequences loop. You can also take advantage of a nifty static light table feature that lets you see other drawing elements as you work. The exposure sheet's functionality goes far beyond that of a traditional dope sheet; it's an impressive piece of work.

Painting

When adding color to your drawings, you're likely to want to work with a limited selection so you can easily find the color you need. Toon Boom Studio lets you easily create and define as many custom color palettes as you need, and optionally name each color swatch for the part of the drawing in which it will be used. Each color can be a solid, or a linear or radial gradient with any number of steps, and each step can have its own transparency (alpha) value.

When filling outlines with gradient paint, where you click sets the center of the gradient. Thereafter, you can use the Edit Texture tool to move, resize, and rotate the gradient fill. And with radial gradients, you can even add a skew factor. Another handy paint tool lets you automatically close gaps as you fill an outline. It doesn't add ink at the gap, though; it just uses it as a barrier.

A typical animation contains thousands of frames, which would be very time consuming to paint one by one. A partial solution is Toon Boom Studio's Paint All feature, which applies the fill color to every frame that contains an outline where you click. If the part of the drawing you're painting is relatively static, this can be a godsend, but things do tend to move around in animations, so Paint All sometimes creates more work than it saves.

Lip Sync

If your animated characters speak, using digitized voice tracks, and you want their lip movement to approximate that of real people, Toon Boom Studio has you covered. It uses seven phonemes, or basic mouth positions for different vocal sounds, plus a closed-mouth position. When you load a voice track, the software can analyze it, assigning a sequence of default mouth positions to the track. Then, in the exposure sheet, you simply draw a version of the default mouth for each phoneme. When doing this, you can take advantage of a handy exposure sheet feature that lets you move columns around by dragging them, so as to position elements that you need to compare next to each other. If you've already drawn and sequenced your mouth key frames, the program can automatically rearrange them to match the results of its analysis.

Scene Planning

As you gather and create your content, you add it to the project library, where it appears in a list. Then, to create the final animation, you go to the scene planning module, which uses familiar stage (camera view) and timeline metaphors. This is where the ability to implement an entire 2D animation studio in software really shines.

Actually, Toon Boom Studio is a 3D program that lets you position each scene element at a specific position interactively and/or using coordinates. Instead of X, Y, and Z, the program uses east/west for left and right, north/south for up and down, and front/back for in and out. You position elements using top view and side view windows. These don't show the elements, but the top view shows their width, while the side view shows their height. The scene elements, being two dimensional, can be positioned, scaled, and rotated on the in/out axis, and moved up and down in the layer stack.

To animate an element's or camera's position, you attach it to a "peg," or animation path. By default, the path has a start point and an end point, both of which you can reposition interactively in the camera, top, and side views. You can make the path more complex by adding intermediate keys and control points, which you can also move interactively. The difference between them is that a key's frame is fixed, while a control point's frame can change depending on how you manipulate neighboring keys and control points. You can also build hierarchical animations, for example, to have a bird flying around a walking character's head.

Once you've completed setting up an animation, you can export it in Macromedia Flash or QuickTime format. Because Toon Boom Studio doesn't tween images, exported Flash animations aren't particularly compact. But the program seems intended primarily for creating animations destined for presentation on film, tape, or DVD, in which case file size doesn't matter.

Conclusion

What I've described above is impressive, but it doesn't begin to cover the full range of the program's functionality. For instance, you can use the clipping mask effects to "cut out" parts of images with arbitrary shapes. And you can animate or change colors additively or multiplicatively, such as increasing an image's redness by 20 percent. To help you learn about its features, Toon Boom Studio comes with two well-written electronic manuals: an online Help reference, and a user guide in Acrobat (PDF) format. There's some overlap, but they complement each other nicely. The latter includes a few introductory tutorials, but Toon Boom could stand to add a few more.

Toon Boom Studio 2.0 is an extraordinary and remarkably complete program, and, at \$374, or \$144 for students, a real bargain. I couldn't think of many features it could use but doesn't already have. The manual justifies the lack of image tweening with some good points, but the feature would definitely come in handy in some circumstances. In any case, after using Toon Boom Studio, it's hard to understand why anyone would go to all the trouble and expense of using traditional cel animation when a program like this can save you inordinate amounts of time and work, with results that equal, if not exceed, those achievable using standard methods. If you're working in 2D animation, this is the tool you should be using. And if you're embarking on a career in animation, this is one of the best places to start.

Toon Boom Studio is available for the Windows and Macintosh platforms; version 2.0 for Mac is currently in development. Find out more at <http://www.toonboomstudio.com/main/>.