

Digital Dimension

Artists blaze through photorealistic CG effects with 3ds max® in Tom Cruise's The Last Samurai

Imagine spending weeks of time and effort to create something, obsessing over the tiniest details until everything is perfect, only to have your hard work go virtually unnoticed.

To most people, this is extremely frustrating. But to the artists at Digital Dimension who worked on effects sequences in the blockbuster film *The Last Samurai*, it's the ultimate compliment. "The filmmakers didn't want any of the work we did to be noticeable," says Ben Girard, founder and president of the Burbank, California-based visual effects studio. "This is not an effects film. So everything we did had to blend perfectly with the live-action footage." According to Girard, the artists were able to accomplish this feat with the rich modeling animation and rendering tools found in Discreet **3ds max** software.

The Warner Bros. film *The Last Samurai* stars Tom Cruise as Captain Nathan Algren, a disillusioned Civil War veteran, and Ken Watanabe as Katsumoto, the last leader of Japan's ancient Samurai line of warriors. In the film, the Emperor of Japan hires Algren to train

As Girard explains, two of the sequences involve Tom Cruise battling an army of warriors using a sword as his weapon, and one sequence involves a Samurai warrior throwing a lance. In all three sequences, the weapon had to be computer-generated. "For example, when the warrior throws the lance, he impales a soldier with it," Girard says. "Plus, Tom is stabbing people and you can see the sword coming out their backs. Tom's fighting choreography in those scenes is very fast and close to the camera, and there's little chance a practical cheat would have worked."

To create the CG sword and lance, the artists began with data provided by Eyetronics, which cyber-scanned a real sword and lance that were used in other shots in the film. Once the artists got the scan data, they used it as reference to build a polygonal CG sword and lance in **3ds max**. Using the software's texturing tools; they added a chrome texture to the sword, and wood and metal textures to the body and tip of the lance, respectively.

Next, using Autonomous Effects' SceneGenie, a scene solver plug-in for **3ds max**, the artists tracked the camera and objects in the scenes so that they could accurately match the CG sword and lance to the actors'



Japan's first modern army. But as the Emperor's advisors try to eradicate the Samurai in preparation for a more Westernized government, Algren becomes impressed and inspired by the Samurai, and he soon finds himself at the center of a struggle between two eras and two worlds.

In total, Digital Dimension worked on 48 effects shots in the film. A certain amount of them concerned the addition of a photorealistic 3D sword and lance into live-action footage; which appears in three main sequences of the film. For this work, the artists turned to **3ds max**.

hands. Then the artists keyframe-animated the weapons in **3ds max**.

At this point the artists used the software's lighting tools to light the weapons so that they matched the lighting in the live-action footage. According to Girard, the camera projection mapping tools in **3ds max** were particularly helpful here. "We used these tools a lot, primarily to sample the reflections of the sky and surroundings in the CG objects in our scenes," Girard recalls. "Even though the sword is moving quickly in these scenes, we still needed to reflect these things in the blade because



the sword is visible enough in the scenes that if we didn't do this, it would look unrealistic." Once this step was complete, the artists rendered the weapons using V-Ray, a **3ds max**-compatible renderer from Chaos Group.

According to Girard, the CG weapons look so real, no one can tell they weren't part of the original scenes. Jeff Okun, the film's visual effects supervisor, was very pleased with Digital Dimension's work. "Jeff told the film's director, Ed Zwick, that if an effects shot was visible in the movie, the movie would be ruined," Girard says. "Expectations for this film were very high. But we were able to pull it all off using **3ds max**," Girard concludes. "Our work looks photo-real and completely integrated. Everyone is very pleased."



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