

Uncharted Territory and 3ds max® create breathtaking visuals never before seen

Given its name, it's not surprising that the mission of Uncharted Territory, LLC, is to explore uncharted territory in feature films by creating images and scenes that venture into the realm of impossibility.

It's also not surprising that the artists at this Los Angeles-based production company rely on Discreet **3ds max** modeling, animation, and rendering software to help them accomplish that mission. "**3ds max** is a very strong package for creating digital effects for film," enthuses Marc Weigert, who, along with Academy Award-winning visual-effects supervisor Volker Engel, formed Uncharted Territory in 1999. "**3ds max** is the only 3D application we use for modeling and animation here. It has the tools and workflow we need to create whatever effects are necessary for a project."

Weigert speaks from experience, having just completed production on the independent film *Coronado*. The first project to come out of this young facility, *Coronado* is an action-adventure film that tells the story of Claire Winslow, a young woman whose search for her missing fiancé takes her to the jungles and cities of Coronado. While there, she uncovers a dark secret that will change her life, as well as the future of this war-torn Central American country. According to Weigert, the 90-minute film, which is currently being shown to major distributors, boasts 615 visual-effects shots. All of those shots, which Uncharted Territory completed on a budget of just \$1.2 million (including a four-week miniature shoot with high-speed cameras and 45 minutes of digital previsualization), were created across various stages by artists using **3ds max**.

According to Weigert, the only way to complete these shots was to create them in **3ds max**. "First of all, you'd never be able to shoot this scene with real aircraft and a real waterfall because you'd never find a waterfall that's hollow in the back to allow one of these aircraft to fly through," he explains.

Nor could the effect be pulled off using miniatures because it would require an enormous setup. "Just to get the scale of the water to look correct we would have had to build a miniature waterfall that's about one-fourth the size of a real waterfall, and then build waterproof miniature V22 Ospreys to fly through it," Weigert says.

"We were scared how these shots would look," he adds. "We wrote them into the screenplay, but in all honesty we weren't sure how to pull off the effect."

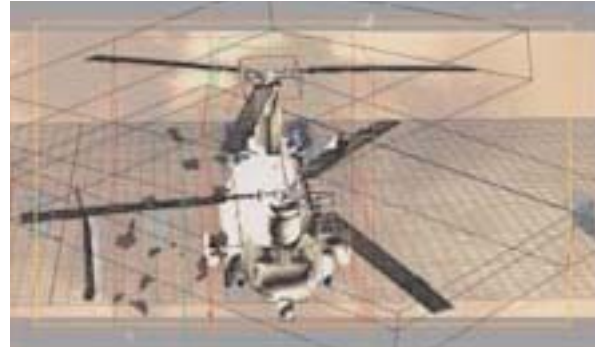
Fortunately, **3ds max** boasts all the tools the artists needed to model, texture, animate, light, and render 3D aircraft flying through a mostly digital waterfall in a convincing way. To create the effect, the artists began by building 3D models of the V22 Ospreys. "All the aircraft in *Coronado* are CG," notes Brandon Davis, who was the lead CG artist on the film. "Most of them started as ready-made Infografica models that we modified the hell out of in **3ds max**."

The waterfall, meanwhile, is an actual waterfall in Vera Cruz, Mexico, which the artists composited into the scene and then manipulated heavily. "*Coronado* is a fictitious Central American country, so we shot most of the film in Mexico," explains Weigert.



One of the most challenging sequences of shots for which the artists relied on **3ds max** extensively is a four-shot sequence in which two V22 Osprey tilt-rotor aircraft fly through a waterfall toward the camera. As Weigert explains, one of the plot points in the film concerns a rebel base in a huge underground Mayan temple complex, which is situated behind a waterfall in the jungle. The rebels travel to and from their base by flying through the waterfall.

But the real waterfall that we shot on location wasn't adequate, so we had to build it up by cloning portions of it and stitching the cloned portions into the footage where necessary," adds Davis, who notes that this task was accomplished in compositing by compositing supervisor Ben Grossmann. In addition, the artists had to add **3ds max** water elements to the scene to make it look as though the waterfall was realistically interacting with the CG aircraft. "We added a lot of splashes and drips



coming off of the aircraft, and we created particles to add mist being kicked up from the rotors as the CG Ospreys fly through the waterfall," Davis says.

Creating natural phenomena digitally is always tricky, but the default particles in **3ds max** are very reliable and can get you 90% of the way there very quickly," Davis adds. "In this case, dozens of layers made up the 3D elements for this series of shots, and some of the splash and mist layers had up to 4 million particles. But we were able to handle all of them beautifully in **3ds max**."

Another challenging sequence in *Coronado* involves a freighter carrying weapons being smuggled to the rebels. In this six-shot sequence, a fleet of helicopters flies out to the freighter, which is floating in the middle of the ocean. The rebels attempt to land on the freighter so that they can load the weapons onto their helicopters and fly back to the rebel base. However, a bomb has been planted on the freighter, and it explodes, destroying the helicopters.

According to Davis, nearly the entire sequence is computer-generated. Like the V22 Ospreys, the helicopters and the freighter are Infografica models modified extensively in **3ds max**. The water surrounding the freighter is a **3ds max** element. And the explosion comprises live-action footage combined with fire and smoke elements created in Sitni Sati's *AfterBurn*, a **3ds max** plug-in.

Davis says that *AfterBurn*, along with the *Mesh* tool in **3ds max**, were extremely beneficial in terms of creating a realistic explosion in this sequence. "The freighter literally comes apart. There are tons of fragments flying through the air, on fire, with smoke trailing behind them," he says. "With **3ds max** I could turn the explosion geometry into fragments that were driven by particles. And with *Mesh* I could adjust those fragments on a per-particle basis—move a fragment, delete a fragment, change the look of a fragment—to get an explosion that looked perfect."

In yet a third difficult sequence, the main characters in the film are trying to move a 2.5-ton army truck across a rickety bridge hundreds of feet over a valley, when suddenly a government fighter jet begins to attack them. The challenge in this 8-minute sequence was the fact that in several shots the valley had to be created digitally, and the camera had to fly through the valley as the computer-generated fighter plane attacked.

Despite the challenge, pulling off this effect was not a problem, thanks to help from **3ds max**. As Davis explains, the valley is a compilation of imagery of the Santa Monica Mountains as well as mountains in Mexico. Artist Rainer Gombos created the valley by using the camera-mapping tools in **3ds max** to project the mountain imagery from the virtual camera's point of view onto simple geometry, which he built in **3ds max**. The actors, shot against bluescreen, along with the miniature model bridge, were composited into the scene, as was the digital fighter jet, which was yet another Infografica model manipulated in **3ds max**. All told, the effect works perfectly. "It looks entirely real. It truly gives you the sense that the plane is flying through a real valley," Davis enthuses.

Besides providing tools that helped the artists overcome the above challenges, **3ds max** also offers additional features that aided the artists in other ways. One feature is the software's animation controllers. "For this film we animated a lot of CG helicopters flying around, and lots of times we'd animate their positions along a Bezier spline, keeping the original animation and adding another layer with subtle variations, assigned through controllers, to control the way they moved," Davis explains.

Another time saving benefit is the software's modifier stack, which contains accumulated history of an object in a non-destructive form, including creation parameters and any operations performed upon it. "With the modifier stack we were able to work with geometry and animation procedurally, which was great if we needed to change things further down the pipeline," Davis says.

A third important capability with **3ds max** is Xrefs, which enabled the artists to work in one viewport using low-polygon models and then swap out those models at render time with high-poly versions. Davis says this feature came in handy particularly in the scene in which 3D artist Mark Norrie had to animate 40 CG helicopters attacking a palace. "To have all 40 helicopters in one scene would have been a nightmare," Davis says. "Being able to work on low-polygon versions of these aircraft saved us a lot of time."

Davis also cites the importance of the robust network of rendering management tools in **3ds max**. "Most other packages make you rely on a third-party or expensive custom solution for managing network renders, but with **3ds max** this capability is built in. Once we submitted an element to be rendered we could change the resolution, where it was running to, the priority of which elements would render before others—all on the fly. It gave us piece of mind. We came back in the morning and knew our images had been rendered, and in the way we wanted," he states. Without this capability, Davis says the production would have suffered huge bottlenecks, especially in compositing.

According to Weigert, Uncharted Territory is already in the process of planning its next production. Most likely, that project will be completed with two new tools the artists are currently testing: Discreet's combustion compositing and effects system, and SplutterFish, LLC's Brazil Rendering System, which is a fully integrated rendering suite designed for use with **3ds max**.

Of course, it also will be completed with **3ds max**. "This software lets us create things that would be otherwise impossible," Weigert concludes. "It truly helps us accomplish our mission of exploring uncharted territory in film."



Images courtesy of Uncharted Territory