Envisioning The New Zombie Apocalypse

Toronto's Mr. X FX Ravages Humanity for Dawn of the Dead

By Bryant Frazer

To build this crowd of shopping-mall zombies, motion-control passes were were combined with CG imagery and backdrops.

As end-of-the-world scenarios go, the one in Dawn of the Dead is pretty great: A cadre of human survivors holes up in a shopping mall to take refuge from the throngs of undead massing outside. The George Romero original is a lowdown genre classic, with much of its apocalyptic dread conveyed by insinuation. For Universal's remake, Toronto-based Mr. X FX signed on to help director Zack Snyder depict the wide-ranging effects of a global zombie catastrophe with a more sweeping visual style.

One thing was clear from the start — the production needed zombies. Lots of zombies. "The most extras we ever had in a day was 200, and we had shots where Zack wanted three or four thousand or more" says Dennis Berardi, Mr. X president and co-VFX supervisor on the film. "Should we do a digital crowd simulation that looks realistic, or should we try and shoot tiled elements and then composite them all together?" The best solution combined the techniques. In one scene, star Ving Rhames walks to the edge of the mall's roof as the camera lifts up and over him, revealing a parking lot overrun by zombies. To put those zombies in their places, the camera made multiple motion-control passes. First, Rhames was shot walking across the roof toward a green screen hanging from the edge. Then, about nine passes were made over a cluster of 200 zombified extras to create live-action tiles that could be laid into the shot near the building. The rest of the zombies were 3D models created in Maya.

Dennis Berardi

"We had live-action zombies right next to CG zombies, so digital cinematography was a challenge," says Berardi. "We render three layers, at least, out of Renderman, and the look really comes together in the composite. It's very rare that we will render something out of 3D and say that's the final look."

Aaron Weintraub

Big Backgrounds In 3D

To create a credible backdrop, including a huge parking lot, trees and burning buildings (see image, top left), instead of relying on a 2D matte painting the FX team built geometry (in Maya) representing the various objects, projected photographic textures onto them, and then painted on top of that to refine the imagery. "The good thing about this is we're not limited to a lock-off, because we've got a virtual camera and geometry," Berardi explains. "Now we can actually add camera moves and proper perspective and interactive lighting, where traditional [matte] paintings were always flat perspective." A one-day smoke shoot provided 2D plates for the burning buildings. In all, upwards of 20 and 25 layers were combined to get the right effect. "Putting it all together, making sure the depth of field was matching and the color seemed right, was a large 2D challenge," says Aaron Weintraub, compositing supervisor at Mr. X and co-VFX supervisor on the film.

A key question for Dawn of the Dead's effects artists was exactly how devastated the world outside the mall should be.

Mr. X FX built a proprietary AI algorithm in Maya?s embedded coding language, MEL, to control zombies destined to be wiped out in the film's propane tank explosion.

Another problem was controlling thousands of CG zombies. The company evaluated several digital crowd-simulation systems before deciding that, in the interest of simplicity, it made more sense to build a proprietary AI algorithm in Maya's embedded coding language, MEL. Essentially, the zombies didn't need to think for themselves — they just needed to do exactly what they were told, on cue. For example, one overhead shot depicts two buses driving through a zombie crowd just before a propane-tank explosion simply wipes out scores of the walking dead: effective, but not complicated. (The algorithm may come in handy again, as Mr. X finishes work on zombiefest Resident Evil: Apocalypse, due out in September.)

Dawn of the DI

As it turns out, another challenge of depicting the Apocalypse is making sure your images of terror, violence and destruction hold up in the digital intermediate process. The Mr. X crew had to anticipate the radical alterations that can be made by a da Vinci. A matte line might be invisible in a dark scene, but if a colorist cranks up the gamma, it will become painfully apparent.

Also, about a dozen shots for Dawn of the Dead involved muzzle flash, a typically simple way for an FX house to punch up gunplay. But given the extreme color work applied during the DI process, even those effects had to be rethought. "It's easy to paint in a flash that's just white," says Berardi, "but if they take it into the DI and want to bring all the other flashes out, they'll start to see density and detail in them. But if we're not careful, and our stuff is clipped out when we comp it, all they get is flat grey when they try to bring it down. That's the sort of thing that happens now, particularly on shows with lots of fire and explosions."

Dawn of the Dead was shot on Super 35 and then scanned full-aperture at 2048x1556 and delivered to Efilm at 2K for DI work. Mr. X proofed all of its shots on film, then made a final digital delivery at 2K for integration with the rest of the footage. Is 4K next? "It's a budgetary constraint with the producers," says Berardi. "I think 4K is definitely better, particularly with the improvement in film stocks, but we haven't seen the film financing side of the equation keep up with that technology. They just aren't willing to pay for 4K scanning, and then the extra rendering and compositing and production time it takes on our end. I see 2K being a standard for a while, except for much higher-budget movies."

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