

## Special Visual Effects: *Transformers: Revenge of the Fallen*

*Transformers: Revenge of the Fallen* picks up where the original left off as did the artistic and technical challenges. *Transformers* had 14 robot actors, half of them built as hero models; *Revenge of the Fallen* had three times that number. Six months before principal photography, twelve digital model-makers and texture artists began constructing 47 new robots with increased parts and complexity. Each character required 20 weeks to build. Consulting thousands of photos, we shot every conceivable auto-part, striving to improve the “photo-realist” look of the metallic robots.

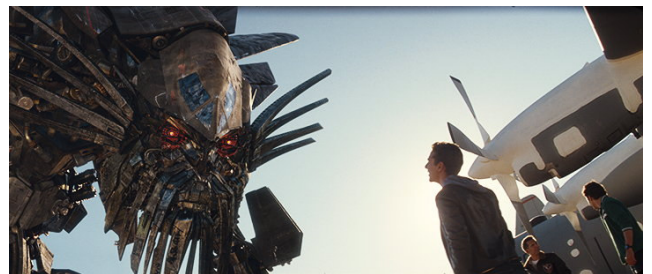


Additional detail was crucial as sequences were shot for IMAX’s 70mm film frame (eight times the 35mm anamorphic frame). Digital robots and composited elements were stored and rendered with eight times the resolution. *Transformers* utilized 20 terabytes of hard disk space; *Revenge* used over 145 terabytes.



Extreme close-ups on Optimus Prime and Devastator required extreme detail. Devastator consisted of 52,000 pieces; some of his IMAX frames took 72 hours to render - the largest model ILM has ever built. As with *Transformers*, the complex transformations were handmade and are mostly an animation process.

Interaction with the environment makes our characters seem more real. To that end, we shot elements of squirting liquids and simulated slobber so our robots could spit, drip, leak, and spark. This interaction gave the robots memorable characteristics and helped define the characters.



Because the camera moves during most shots, it’s difficult to use elements shot with a locked-off camera. An ILM team created new digital simulations of moving sand, smoke and stones. The pyramid destruction simulation with over 100,000 blocks was eight times larger than ILM’s previous record- holder.

As our characters were usually rim-lit in a moody fashion, our lighting style used more shadows, mirror boards, nets, flags and cucolorises. We added live-action lighting tools - a major change in lighting methodology for CG.

This film was shot in Egypt, Jordan, France and seven U.S. states. Our live-action plates had sun flares, light flash, blowing hair and sand, moving branches, and lots of pyro. With all these 'imperfections' in the first unit photography, our mantra was "shoot dirty" and use our expert rotoscope artists to integrate the CG models into the scene. We shot only a couple of days of Bluescreen with our actors. These are handcrafted shots, making them look more real.



To create interesting plates with choreographed explosions, cable-pulled cars or primer-cord studded sand, Special Effects Supervisor, John Frazier and I worked together non-stop. The CG work would never have looked as good as I believe it does without the physical effects providing a ballet of motion in which to place our robots.



Filming in New Mexico, Frazier and his crew produced a massive explosion for a shot with actors running in it. The huge event set a Guinness World Record. The scope and scale of this film combined with exotic locations, photo-realistic robots and natural lighting adds up to an entertaining ride.