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Overview

Evan Jacobs & Patrick Tatopoulos on Resident Evil 3

Article by Joe Fordham



Filmmaker Paul Anderson and producer Jeremy Bolt first tackled Capcom Entertainment's videogame, *Resident Evil*, with a film adaptation in 2002. Written and directed by Anderson as a prequel to events in the game, the film traveled beneath a deserted mansion into a zombie-infested research laboratory owned by the nefarious Umbrella Corporation. The 2004 sequel, *Resident Evil: Apocalypse*, ventured above ground into Raccoon City, a fictional metropolis overrun by flesh-eating cannibals; and this year's *Resident Evil: Extinction*, explored the irradiated wasteland beyond Raccoon City. All three stories revolved around an Umbrella security operative, played by Milla Jovovich, a genetically modified superhuman soldier known simply as 'Alice.'

To create post-apocalyptic environments for the third film, the production selected desert locations in Baja California, followed by a studio shoot in Mexico City. Patrick Tatopoulos Studios supplied zombie makeups and practical creature effects and Mr. X, in Toronto, served as the digital effects vendor.

After a year in development, the project kicked into high gear for visual effects supervisor Evan Jacobs, who shared supervisory credit with Mr. X president Dennis Berardi and oversaw visual effects throughout principal photography. "There was a clean division of duties," said Jacobs. "I prepped the show, shot it, and handed over the elements. Then Dennis took the ball and ran with it."

Jacobs joined preproduction in Los Angeles, meeting with director Russell Mulcahy just a week before the production move to Mexico, then prepared pre-visualizations with Mr. X animator Jason Edwardh on location in Mexicali, planning shots that catered to the director's brief in the unforgiving desert environment. "Russell's directing style was very fluid, shooting from the hip," related Jacobs. "He comes from a music video background and likes to 'run and gun.' We almost always had three cameras running, many of them handheld, pointing in different directions to get the energy that he wanted to achieve."

One of the film's most ambitious shots follows an opening sequence in which 'Alice' is killed in what first appears to be Spencer Mansion — the Umbrella Corporation research facility established in the first film — and then tossed out into a desert trench filled with dozens of other discarded Alice clones. The production filmed the trench reveal on location in Mexicali, using motion control repeat passes to create the illusion of multiple Alice corpses. "It was 122 degrees

Fahrenheit in the shade in Mexicali," stated Jacobs, "and we were planning to shoot Milla in the trench, first unit, with motion control. I called Camera Control in California, whom I've worked with off and on for a couple of years, and lead motion control operator Simon Wakley and his team brought their Milo rig out to location with 120 feet of track. They built the rig in a day, and we shot it the next day."

To create overlaps of corpses, the production positioned six Alice body doubles down the length of the trench, filmed in 18 passes. Last-minute scheduling made it impossible to include Jovovich among the doubles, so Jacobs and Camera Control filmed all of the visible Alice elements using motion control on a bluescreen set in Mexico City, aligned with Mexicali plates. "The shot started off with Milla in a non-motion-control crane move, shot on location," said Jacobs. "We dollied back as two guys dropped her into the trench, and we tilted down. The whip-tilt transitioned into our motion control shot, with Milla rolling into frame, filmed on bluescreen in Mexico City. We then picked up the first pack of six girls; and the camera moved down the trench, with a little gap where we positioned Milla. We made our way along, layering the elements with a lot of roscope." Mr. X created a seamless transition from the Milo move to a Technocrane shot that appeared to continue the pullback, slipping through a chain-link fence. "We started with our Technocrane right up to the fence and pulled out. Mr. X created a transition using a piece of a digital set and fence, and then transitioned into a reveal of Patrick Tatopoulos' zombies outside the fence."

Harsh conditions put demands on zombie makeups overseen on location by key special makeup effects artists Richard Redlefsen and Bruce Fuller. "We wanted to stay true to the style of zombies in the *Resident Evil* world," said Tatopoulos, "but Paul Anderson and Russell Mulcahy asked us to find a color scheme that would work for zombies in the desert environment, so we came up with a sandy, dusty look." The Tatopoulos team created six sculptures to depict lumbering 'desert undead' and a second breed with more aggressive tendencies, seen later in the film, known as 'super-undead,' depicted with a hairless, organic wet look based on a smoother sculpt. Foam lab supervisor Mark Viniello oversaw production of foam latex appliances in Los Angeles, which Fuller and Redlefsen used as a palette to create varieties of zombies. "We had a kit of multiple pieces. We could take the upper forehead of one, or lose the forehead of another, creating a pool of elements to create different characters. Bruce and Richard did



most of the work through painting, sometimes creating things from scratch, improvising and responding to the look that Russell wanted."

Early in the film, Alice encounters a fan-favorite creature of the franchise — ferocious zombie dogs. Problems filming Doberman pinschers as zombie performers in the earlier films led the production to seek a new breed of canine. "We used Belgian Malinois," explained Evan Jacobs. "They resembled bulky German shepherds, were incredibly obedient, but also very vicious-looking. It was a great foundation to create a different breed of zombie dog, and helped a lot with performances."

The Tatopoulos team worked with animal handlers to acclimatize Malinois to spandex body suits that served as the foundations for prosthetic applications. "Once the dogs were used to the spandex," Tatopoulos said, "we built up the rib cage and the hips using brush-cast latex elements and paint. They had learned on the previous films that dogs do not like applications close to the head; and so all we could do there was add a little coloring to the face to bring out some of the bone tones." Mr. X digitally manipulated the dogs in post, adding a more dramatic meat-and-gristle texture and altering the animals' faces with undead eyeballs and fangs.

Resident Evil: Extinction, the third movie taken from Capcom Entertainment's shoot-'em-up videogame, focused on the exploits of a genetically modified superhuman soldier Alice (Milla Jovovich) who encounters a zombie holocaust amid post-apocalyptic wastelands. Visual effects supervisor Evan Jacobs oversaw visual effects on desert locations and a studio shoot in Mexico City, while visual effects supervisor Dennis Berardi furnished digital effects at Mr. X in Toronto. Patrick Tatopoulos Studios artists Michael Mosher and Ralis Khan apply makeup to one of several hundred 'desert undead' zombies.

Refugee survivors of the zombie plague use a truck-mounted flamethrower to fend off an attack by zombie crows. Special effects coordinator Darrel Pritchett supplied a diesel-fueled flamethrower for shooting in the Mexican desert location, where the production used four live crow performers and Tatopoulos Studios rod-puppet crows for closeups and attacking shots. The visual effects team shot elements of crows flying against the sky and elements of birds attacking camera during a bluescreen shoot. Mr. X used that footage as animation reference and as elements, combined with CG crows replicated en masse using digital flocking technology.



Escaping into the desert, Alice encounters a group of Raccoon City refugees who combat a murder of zombie crows. Tatopoulos Studios created crow puppets, using taxidermy pelts and rod-puppet mechanisms, to supplement live crows provided by the animal handlers. Mr. X sequence lead Daniel Mizuguchi generated wide shots of swarming flurries using live and digital birds. “We were going to shoot inserts and tile elements of live birds,” said Evan Jacobs. “The plan was to shoot a lock-off, bring in a crow, do another take, have him land in another position and then split-screen it together. Once we got on location, it was so hot the crows would only land in the shade. So instead, we pointed the camera at the sky and flew birds through, grabbing elements; of them flying. Mr. X used that footage as animation reference and as elements, so any time we saw a mass of birds, we had a live hero crow closer to camera.” Jacobs also shot crows against bluescreen in Mexico City for shots of birds attacking camera and pecking at the crow trainer’s face. Mr. X then added zombie eyeballs to birds for closeups.

Shots of hundreds of crows in flight were animated using flocking technology developed by Mr. X senior technical supervisor Colin Withers. “We created point clouds in Maya particles,” stated Jacobs, “assigned

crows to particles, extracted vector data and then aimed crows in the right direction. CG birds weren’t feathered in wide shots. Closer CG birds had feathers, but there were so many, it was more about the bulk than the individual crow.”

To repel crows, survivors wield a truck-mounted flamethrower, rigged by special effects coordinator Darrell Pritchett using a practical diesel-fueled device capable of producing a 100-foot jet of flame. Mr. X used practical pyro elements to suggest interaction of flames with CG crows and for shots of Alice interacting with flames, rescuing one of the refugees by bending fire with a telekinetic force field. “We mapped real fire textures onto 3D geometry,” said Jacobs. “It didn’t make a lot of sense to develop a huge synthetic fire system for a handful of shots. So instead we leveraged the amazing fire elements that we had on film, and manipulated them in the composite.”

Alice joins the survivors in a convoy of armored vehicles that sets out for the relative safety of Alaska, via a pit stop in the deserted ruins of Las Vegas. For actor interactions on the Vegas Strip, production designer Eugenio Caballero built a 400-foot-long set on the Algodones Dunes, in Southern California, containing a 30-foot-tall section of the Paris Las Vegas Hotel & Casino façade and a portion of the Venetian.

For wide shots of Vegas half-buried in sand, Jacobs brainstormed a cost-effective miniature approach with New Deal Studios miniature effects supervisor Matthew Gratzner. "We realized that if we shot a miniature on a huge stage it would cost a fortune," commented Jacobs. "The scene was supposed to be in daylight, so we decided to shoot outside in natural sunlight, which looked better anyway and enabled us to shoot on the New Deal backlot. Matt and his team built everything in six weeks."

New Deal designed miniatures based on Patrick Tatopoulos conceptual sketches, and then refined production previz to choreograph camera moves that followed a convoy of trucks through derelict buildings. Ruined casinos averaged between four- and five-foot tall, built in 'HO'-scale. Modelmakers used a rapid-prototyping wax jet printer to mass-produce window mullions and building patterns, and dressed buildings onto an 80-by-45-foot platform, backed by bluescreen and covered in fine-grain sand.

Director of miniature photography Tim Angulo filmed motion control camera moves based on production footage. "We shot an aerial plate of a convoy of trucks driving on a dry lake in Mexico," explained Jacobs. "We shot it from a helicopter on a windy day, and we only got a few takes. We tracked the plate and built it into our previz to try to reverse-engineer plates into our shots, but the producers preferred the previz to what we had shot from the helicopter and decided it was better not to compromise our shots to integrate the trucks. Mr. X ended up nudging in the live-action elements." The sequence incorporated a move around a larger-scale foreground miniature of Lady Liberty, representing the wrecked frontage of the New York New York Hotel & Casino. Mr. X generated a digital Eiffel Tower for close shots of the Paris Hotel. "We designed the Vegas miniature around our budget, but the Eiffel Tower had a lot of very fine grid work and, at HO-scale, against bluescreen, all of the hair-sized girder work would have read as 'noise.' So Mr. X ended up rebuilding the tower digitally, without the finer grids."

The film's finale plays out at a desert weather station, secret entry to an underground Umbrella Corporation laboratory, surrounded by an army of undead. Eugenio Caballero constructed the weather station set at Laguna Salada dry lake in Mexico. Visual effects then furnished zombie hordes using a mixture of practical and digital characters. "The weather station was supposed to be surrounded by thousands of undead," said Jacobs. "We had 300 people, which did not even make one row surround-

ing the set. I shot lots of bluescreen texture photos of Patrick's desert undead, and they became the foundation for creating a digital undead army." Mr. X generated CG zombies as Massive artificial intelligence crowd simulations, with walk cycles designed to emulate practical zombie behavior.

Mr. X used Massive 'rag doll' simulations for shots of an armored tanker truck plowing through the undead, scattering them on the vehicle's cowcatcher. "We had big wide shots with CG zombies," remarked Jacobs. "We had tight shots where we had heads hitting the cowcatcher, blood flying and people crashing on the windshield. We approached that in a few different ways. We had the real truck on location and did some stunts where stuntmen rode on a platform, jumped onto the cowcatcher and bounced off the truck. We then took the cab, without the chassis, down to Mexico City, put it on a bluescreen stage and had stuntmen jump off mini-trampolines and on wires, throwing themselves into the cab. We then added moving backgrounds behind them."

Overwhelmed by zombies, the tanker skids and rolls, filmed using a 1/4-scale miniature engineered by modelmaker Jon Warren at New Deal Studios. "The ground at the location was not stable enough to shoot the tanker crash full-scale," stated Jacobs. "We were concerned about safety, so a miniature was the best way to go. The tricky thing about toppling a tanker is that they're designed not to topple. We had to rig a ramp the entire length of the miniature to get all the wheels up on one side. We put hundreds of pounds of counterweight on one side, inside the tank. Then, once we got it past its center point, it went over by itself."

New Deal used a winch to tug the miniature into shot at 15 miles per hour, steering with radio control, until the tanker's wheels hit a ramp and the tanker rolled. The production shot scenes inside the crashed tanker cab on a bluescreen stage in Mexico City, then cut wide to a miniature as the tanker explodes. New Deal aligned the miniature tanker crash to helicopter plates of the full-scale tanker positioned on its side in its final resting place beside the weather station fence. They then fitted the miniature tanker chassis with a thin aluminum cab and tank designed to rip apart with explosive detonations rigged by pyrotechnician Richard Stutsman. Mr. X digitally integrated miniature elements into desert plates and added Massive swarming zombies.

Inside the Umbrella laboratory, Alice discovers a chamber containing clones of herself suspended nude inside anti-gravity liquid bubbles. The concept

For shots of Alice and the refugees passing through the ruins of Las Vegas, the production filmed performers in Southern California desert locations and, for wide shots of casino buildings half-buried by sand dunes, used miniature effects created by New Deal Studios. Miniature effects supervisor Matthew Gratzner and his team built the miniature on the New Deal backlot and filmed it in natural sunlight, using motion control camera moves determined by previz and helicopter footage. Modelmaker Ray Moore prepares a section of the 1/87-scale Las Vegas Strip miniature.



Refugees employ a heavily armored truck to plow through throngs of desert undead lining the perimeter of a desert weather station, secret entryway to an underground zombie virus lab. For shooting in Mexico, the production built a full-scale vehicle. For scenes of the truck flipping onto its side and erupting in a fiery explosion, New Deal Studios constructed a 1/4-scale miniature. Modelmaker Jon Warren, who engineered the miniature sequence, uses radio control to drive the truck up a ramp, where several hundred pounds of counterweight inside the tank cause the vehicle to roll.





Rogue scientist Dr. Isaacs (Iain Glen) surveys one of many clones of Alice suspended in fluid-filled spheres inside his secret underground laboratory. The production based the visual concept for the floating spheres on real-world scientific research in diamagnetic levitation, where organic objects are suspended in electromagnetic fields. Mr. X generated the zero-gravity effect using bluescreen elements of Milla Jovovich filmed in a water tank, integrated the actress into a Maya fluid sphere with reflection and refraction effects, and then composited elements into the clone tank set.

was based on scientific research in diamagnetic levitation. "I showed Russell Mulcahy footage of experiments where scientists used electromagnets to make small organic objects float in midair," said Jacobs. "I suggested that the clone tanks could be like magnetic levitating balls of fluid, where clones grew inside. Russell thought that was a neat image. Patrick Tatopoulos drew a beautiful conceptual drawing and we filmed bluescreen elements of Milla breathing through a respirator in a water tank." Mr. X integrated bluescreen elements into plates of Jovovich walking around an empty space on the clone tank set, and generated hovering liquid spheres using Maya fluids, with displacements and rippling effects.

Alice meets her clones' creator, Dr. Isaacs (Iain Glen), who, infected with the zombie virus, has transformed into Tyrant, a powerful shape-shifting mutant. The Tyrant concept was inspired by creatures featured in more than a dozen versions of the game, translated into a modular full-body monster suit sculpted to fit Glen and stunt performer Brian Steele. "We wanted to take Tyrant through different stages as he transformed," said Patrick Tatopoulos, "but we didn't have the budget to build five or six suits, so we sculpted an upper torso, arm and face to fit a lifecast of Iain Glen, and then sculpted elements to be added as

Tyrant transformed during his fight with Alice."

The creature team sculpted rigid appendages to simulate claws that spring from Tyrant's mutating inner core. "The idea was that the virus extrudes tendrils that become his claws," stated Tatopoulos. "We sculpted the claws so that tendrils could be animated, with thousands of filaments growing together to become a hard spear, which he uses as a weapon. The main suit was made of latex; so, to reinforce his arm, we fabricated a rig on a cast of the actor's arm then built up the spear to about three feet long." Mr. X enhanced the suit with animated elements and created additional effects for a final showdown between Alice and Tyrant that takes place in a corridor equipped with a grid of flesh-slicing lasers — an environment reprised from the first *Resident Evil* film.

The sequence concluded 515 visual effects shots, completed by Mr. X during an intense eight-month postproduction period. "The *Resident Evil* movies are always made in post," concluded Jacobs, "and the vision is Paul's and Jeremy's. They know the games backward and forward, and always strive to give the fans a fun ride."

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