

Les Miserables Special Visual Effects, Supporting Statement

Our brief from Director Tom Hooper was that the VFX should assist in the transitions from scene to scene and integrate seamlessly with the production design. In short, invisible effects that help 'open up' the production sets and locations to recreate 19th Century France and, for the second part of the film, Paris itself. In all, there were over 400 visual effects shots of varying complexity, from full CG to ear/mic fixes for onset performance sound recording.

The Prelude / Dry Dock

A stormy seascape inspired by 19th Century maritime paintings (specifically Joseph Schekty's 'Loss of the Magnificent') atmospherically frames the action as a storm-wrecked man-o-war is pulled into Toulon dry dock from open sea by two thousand convicts. Not just a vital story telling shot but also one that sets up a transitional scene later in the film.

A CG solution for this opening shot gave Tom Hooper the flexibility to try a range of camera moves and varying speeds to establish the grandeur and enormity of the convicts' task.



On location in Portsmouth dry dock no.9, over a tight 2 day schedule, were 200 extras (convicts, guards and drummers), SFX units (supplying 2 large dump tanks, water cannons and rain bars for in camera water interaction) and up to 4 cameras at any time (including a 50ft technocrane). The weather was beautiful, clear and sunny, exactly what was not needed, necessitating full sky replacements and rain top-ups for all shots in addition to CG build.

To enable a complete CG build and clean up of crew and SFX rigs the dry dock was lidared and texture referenced. The ships, including the hero man-o-war, were all based on a lidar scan of HMS Victory, each ship given its own re-paint and rigging variations. Sails, rigging and ropes were CG simulations designed to express the storm's vigour.

To create the stormy sea both our in-house procedural water software, dnOcean and Squirt were used in conjunction with live action greenscreen splash elements and Cornish sea plates. CG ropes were needed to join the CG Orion to the live action crane plate of the convicts. Angle specific splash plates were used to ease this transition.

Convict sprites were required to top up the existing 200 convicts shot in camera. This was achieved using a 6 camera CCD global shutter camera array, which caught the action of individual convicts against a green screen (at the location) and enabled us to adjust the sprites to suit the camera angles in the sequence - A 3D volume and texture capture system effectively.

Digne to Montreuil-sur-Mer Scene Transition

The plates:
Hugh Jackman (Valjean) shot handheld onto a crane platform in Oxfordshire.
A Helicopter plate shot of Gourdon, South of France (Digne)
Russell Crowe (Javert) shot with a 18ft MovieBird Crane on a Silverado in Chatham
Historic Dockyard, Kent (Monteuil-sur-Mer)

All these live action elements needed to be combined for a continuous shot to help create the time transition from Valjean's location to Javert's entrance on horseback into Montreuil-sur-Mer.

Digne's CG landscape was based on photography and cinematography of the Goudon plate with terrain reference from an online topographical map of the village. This enabled a re-projection of the helicopter plate and adjustments to the camera move. The church plate element was completely re-projected and re-lit to match the re-worked helicopter plate. Sun direction on both of these elements was crucial to assist in creating the town and marrying the elements together.

Javert on horseback was a 3 perf shot and a section of the action was lost out of frame requiring a partial rebuild of the back horse for the wider view as we come down onto the matte painted environment surrounding the horseback riders.

Lovely Ladies / Red Light District

Shot on a constricted sound stage with 270 degree painted backdrop of the night sky. Shots into the 'Reds and gantry' were extensively roto-ed and match-moved with matte painted skies comped in. The backdrop (used to avoid greenscreen/VFX) needed to be replaced in some instances to reflect sky changes for different time periods. The partial full-scale ship build (prow of ships) on stage were extended with CG ship hulks (based on CG ships in the prelude).

Funeral and Finale - Crowd and Street Top-Up

Live action shots in the grounds of Greenwich Naval College (representing La Place de Bastille) needed significant crowd top-up and Parisian street extensions. Crowd padding being shot at a later date. 100 extras were available at Greenwich, tens of thousands needed to be seen on screen. This meant multiple passes using matchmove data garnered from the selects, and a large amount of roto to extract the extras' performances at Pinewood and integrate them into the Greenwich plates, in addition to relighting to take into account weather conditions and time of day.



Production built barricade (30ft x 80ft) extended seamlessly as CG build to 10 times it's in-camera size).

CG buildings were fashioned from the set build around the Cafe Musain (built on T stage at Pinewood) and the production design inspiration of La Rochelle in France. Lidar and texture references were shot of both sources to represent the rich and poor sides of Paris.

Javert's Suicide

For Javert's final moments, Russell Crowe was shot with multiple cameras on a partial bridge set built against a greenscreen cyc. This footage needed to be seamlessly married with a Paris environment, which we historically researched from prints, paintings and Daguerreotypes of the pre-Haussman Isle de la Cite (in addition to an extensive production design library). Notre Dame was a HDRI photo image projected onto geometry. A convincing light model was key for the CG environment, this lighting made complex by multiple light sources on Javert. A single moon lit source would have been unworkable but a cloudy ambience fitted perfectly the scene of Javert's demise.



Richard Bain - VFX supervisor (6th Dec 2012)