

The Dark Knight Rises. BAFTA Special Visual Effects Supporting Statement

As he had done with the earlier films in the Dark Knight Trilogy, director Christopher Nolan chose to ground the world of Batman in photographic reality, shooting much of the production on location and striving to capture the action - when possible - in-camera with extensive use of practical SFX. Unlike the earlier films, which mainly took place at night, the action of The Dark Knight Rises was primarily set during the day; a new physically-based raytracing renderer was rolled out to give vehicles and architecture the highest possible level of photorealism, enabling the VFX to build upon and sit in seamlessly with the cinematography.

Mixed Formats: IMAX & Cinemascope

Once again, the film was partly shot in 65mm 15 perf IMAX (1.43:1). This time, however, IMAX accounted for over an hour of the finished film (as opposed to 28 minutes of TDK) with the remaining 90 mins using Cinemascope (35mm anamorphic 2.40:1). All IMAX VFX shots were finished at 5600x4096 pixels and all 35mm at 4096x3112 pixels. The greatly increased amount of IMAX and 4K material required a complete overhaul and upgrade of the VFX pipeline which included new server and render farms. Over the duration of the project the VFX team created nearly 500 terabytes of data.



The Prologue: An Aerial Heist

Precise previsualisation of the action was used to carefully plan the aerial shoot and stunts. SFX built an aeroplane set on a two-axis gimbal for interior scenes and close-up action on the wings. An actual aeroplane fuselage was suspended beneath a heavy-lift helicopter for four shots. VFX combined CG and 5th-scale miniatures with VFX animation to hoist the plane and tear away the wings and blow off the tail cone.

The Bat: Batman's New Ride

Envisaged as a jump-jet/helicopter hybrid, the Bat was realised by the SFX team as a full-sized prop, complete with an animatronic Batman, that could be mounted on a variety of rigs including overhead cables and a flatbed vehicle with a 3-axis motion base. VFX erased rigs using IMAX background plates and digital recreations of the relevant cityscapes. For shots where greater manoeuvrability was required a digital version Bat was used to create scenes of the aircraft soaring through the spires of Gotham City and across the sea.



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The Football Stadium

The shoot was staged at Heinz Field in Pittsburgh with a crowd of over 11,000 extras which then was topped up digitally by VFX to fill the 85,000 seat stadium. Art Dept, working with VFX, designed an elevated platform with pre-cut holes that stunt performers could fall into. SFX laid a series of pyrotechnic charges that chased the players across the field. The collapse was created in CG with detailed physics simulations, precisely timed to stop just short of the touchdown zone. Subsequent views of the devastation were built from the final state of the simulation with additional matte painting work to tie the CG model into the location plates.



Gotham Isolated

Aerial plates of New York City were augmented with CG architecture and monorail trains. Large scale pyrotechnic elements were added along with dynamically-simulated collapsing buildings and bridges. Twilight plates of the city skyline were carefully roto-scoped to remove traffic and street lighting from blacked-out areas. In later scenes the aerial views were reprised with addition of snow and ice-bound rivers to create the image of a city in deep-freeze. SFX created practical snow effects on location which were extended in post with VFX animation and matte painting

Underground Lairs

The set of Bane's Gotham sewer hideout was built as complete with rushing torrents of SFX water. A full-size Batmobile was dropped from a crane into the set for Bane's breakthrough into Applied Sciences. Up angles were completed with a 1/3 scale miniature showing the initial explosion and the subsequent ascent of Bane's mercenary forces.

The Batcave was built on a soundstage in Los Angeles and equipped with a hydraulically-operated landing stage that rose from a central pool. The full-size practical Bat was placed on a track and propelled through a practical waterfall. VFX manipulated the footage for extra speed and dynamism adding digital water and prop spray. The landing shot was achieved with a digital Bat. For the final shot of the movie VFX topped up the set, adding a roof to the cave, hiding the lighting and adding swarms of circling bats as Joseph Gordon-Levitt was lifted from the pool by the rising SFX platform.