

DNEG at 20 - Creative Milestones

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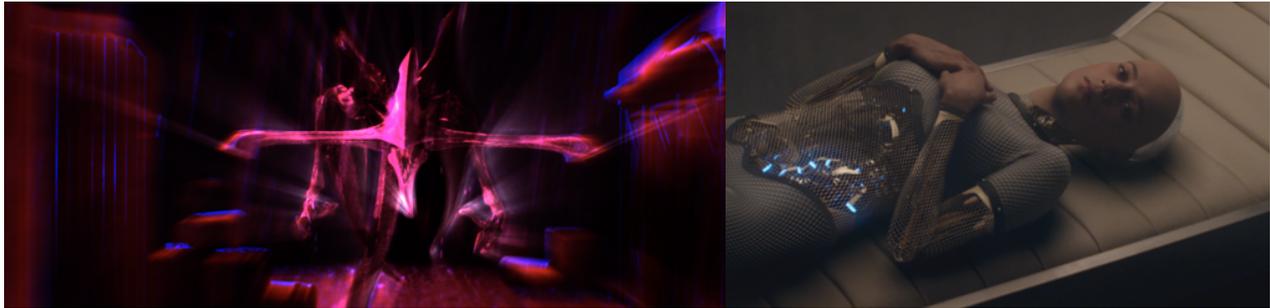


Figure 1: (left) A still from the film “Pitch Black,” the show that launched DNEG, ©2000 Universal Pictures; (right) A still of Ava from Ex Machina, which won the company its 3rd Academy Award, ©2015 Universal Pictures and A24.

ABSTRACT

DNEG has grown from a small studio with 30 employees in 1998 to a world leading giant, with over 5000 employees, 20 years later. This talk will celebrate some of the major creative milestones that established its prowess, led to significant award wins, and solidified its relationships with many regular key creative collaborators.

CCS CONCEPTS

• **Computing methodologies** → **Computer graphics**;

KEYWORDS

Creative milestones, Visual Effects, VFX, CGI, Invisible Effects, DNEG

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1 INTRODUCTION

The story of DNEG and its 200+ projects is a hard one to summarise in one talk and a brief abstract, but as Senior Visual Effects Supervisor and Company Co-founder Peter Chiang has been responsible for overseeing many of its biggest projects, he is well suited for trying. Known predominantly for photorealistic environment work, which grew from simple plate enhancement in the early days through to creating vast fully synthetic cityscapes in recent years, and more fantastical FX work, by using custom proprietary software when

that was the only route possible and growing to take advantage of one of the world’s largest Houdini teams to realise the wildest cinematic dreams, the creative possibilities for future projects are untold.

DNEG has also benefitted from regular collaborations with some of modern cinema’s finest creatives, adapting with them to deliver their visions in ever more demanding situations as the industry has evolved from low shot counts and sparse CG material to projects where the majority of shots contain VFX work and production timeframes become ever more compressed.

2 PHOTOREAL ENVIRONMENTS

One of the cornerstones of the seamless invisible effects work that DNEG prides itself on is its city generation and rendering solutions.

2.1 Art Directable Cities

From the early days when Chicago needed to be topped up with some unique Wayne-tinged buildings for *Batman Begins*, DNEG pushed strongly on a rendering toolset using Pixar’s *RenderMan*. Using production trickery like the *Windowbox* toolset for giving the illusion of internal offices on relatively simple geometry shells, the complexity of city offerings increased through projects like *The Dark Knight*, *Insurgent*, and *Batman vs Superman*. In one of the most iconic cinematic moments, it was used to more surreal ends to realise “Folding Paris” on *Inception*. In recent years more automation of city creation has become possible on projects like *Blade Runner 2049* and *Pacific Rim: Uprising*.

2.2 Scattered Environments and Projections

The methodology for organic environment work has evolved through many projects from DMP single frame paintings to lush moving landscapes with a high degree of geometric complexity. Environment highlights include jungles created for the *Hunger Games* arenas, space stations in *Jupiter Ascending* and *Star Trek Beyond*, and ancient cities in *Exodus: Gods and Kings*, and *Assassin’s Creed*.

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Many of the recent environment achievements have been facilitated by the power of Isotropix's Clarisse which DNEG have embraced and built a powerful lighting pipeline around.

2.3 Large Scale Destruction

Half the job of creating massive cities and landscapes is very often destroying them too. DNEG built an enviable volumetric rendering toolset for handling pyroclastics in the sobering recreation of the Twin Towers collapse in 2006's World Trade Centre, and for destroying Yellowstone in the apocalyptic 2012. The Rigid Body Dynamics and destruction modeling toolset was used to great effect on tasks such as Metropolis destruction in Man of Steel, and the Jaeger/Kaiju battles of Pacific Rim: Uprising.

2.4 Vehicles

No environment would be complete without movement and life. Creating everything from military hardware in Green Zone, futuristic flying cars in Total Recall and recreating the iconic Blade Runner "Spinners," through to seamlessly matching a practically built Batmobile, and recreating iconic Formula 1 cars for Rush, vehicle work has long been an essential mainstay in a variety of projects. All of which would not have been possible without the same level of attention being paid to photoreal shader work as for the city generation, and a crack squad of hard surface experts.

3 FANTASTICAL EFFECTS

3.1 The Potter Effect

Most facilities are probably asked on a regular basis to create Something That's Never Been Seen Before, but by riding the wave of the growth of London studios with the Harry Potter series, DNEG repeatedly found itself defining some of the most magical moments that children the world over had only seen before in their imaginations. Various other projects have tapped similar creative ground, and the Art Department and FX team have regularly found themselves designing fresh looking magical effects on everything from the Chronicles of Riddick through the Sorcerer's Apprentice and Stardust. With the continuing stories being told in the Fantastic Beasts series, DNEG is still being given the opportunity to invent cinematic magic.

3.2 Space and Beyond

From the first project, Pitch Black, there was a need to create representations of space and other cosmic matters. This through-line continued on various other shows (for example Terrence Malick's Tree of Life) utilizing the volumetric toolset and other proprietary tools. The most significant milestone in this area was undoubtedly the collaboration with scientist Kip Thorne (who since won a Nobel prize for his gravitation work) on Interstellar, where DNEG created a gravitational renderer to visualize what a supermassive Black Hole and Wormhole might realistically look like. Not only did this result in another Academy Award, it also resulted in the publishing of papers that are still being cited in the scientific community. Less scientific but equally visually impressive have been the space battles created on projects like Star Trek Beyond, and the earthly psychedelic environments of this year's Annihilation.

4 BELIEVABLE CHARACTERS

4.1 Enhanced Humans

Many of the significant characters created at DNEG have relied heavily on a live action component – Blade Runner 2049's Joi hologram had a novel approach to its design, as did Ex Machina's Ava, which was as much driven by aesthetic as practical and budget considerations. Countless other projects have necessitated realistic Digital Doubles, and some such as Terminator: Genisys utilized integrated FX components.

4.2 Living Aliens

From the aliens of Pitch Black, realistic bipedal extraterrestrials have been a regular feature of DNEG shows. Early projects such as Hellboy 2 allowed some flexing of these creative muscles, the unique character design on Attack The Block involved a very creative approach to populate a low budget film with high production value villains, the lead comedic title character of Paul had a huge amount of dialogue and challenging performance moments, and of course the largest scale character project in DNEG's history, John Carter, had thousands of shots of performance captured Tharks. On more recent shows, DNEG has created the malevolent Calvin for the 2017 feature Life, and this year had the enviable task of creating a variety of Kaiju for Pacific Rim: Uprising.

5 SPECIAL RELATIONSHIPS

5.1 Directors

From founding collaborator David Twohy (Pitch Black, Below, Chronicles of Riddick), through to the most widely known connection Christopher Nolan (Batman Begins through to Dunkirk), DNEG has enjoyed a wide variety of projects with returning clients who always guarantee a great movie. Whether delivering gritty fast paced camera work for Paul Greengrass, idiosyncratic hyper-kinetic hilarity with Edgar Wright (Shaun of the Dead, Scott Pilgrim, Baby Driver), pushing the limits of sci-fi with Alex Garland (Ex Machina, Annihilation), or doing everything from hunting whales to Dan Brown mysteries with Ron Howard, these special relationships have meant some of the most compelling creative experiences for the company's artists.

5.2 Key Franchises

Many more of the iconic creative sequences have happened via the major franchises that are prevalent in today's cinematic landscape. The ongoing Potterverse, the Bourne series, multiple Fast & Furious projects, the most recent Mission Impossibles, and 10 films from the Marvel Cinematic Universe have all played their part in driving the company forward.