



technicolor



FEEL THE WONDER

“The Call of the Wild” Supporting Master Craftsmen on *The Revenant*

■ Customers

- New Regency
- Rat Pack Entertainment
- 20th Century Fox

■ Challenge

Technicolor teams were required to bring their artistry to a whole new level since Mr. Lubezki photographed the film using only natural light in very extreme conditions.

■ Solution

Working in unison with Mr. Inárritu's editorial team, Technicolor finishing and visual effects teams (along with MPC) advanced their finishing processes and methodologies under the watchful eye of Mr. Lubezki delivering one of the most stunning achievements in Technicolor's celebrated century-long history.

Technicolor weaves visual effects techniques (and a whole lot more) into the color-finishing suite to help Alejandro González Iñárritu and Emmanuel Lubezki execute their natural-light aesthetic for the critically acclaimed survival epic.

The punishing survival epic depicted in director Alejandro González Iñárritu's *The Revenant* has been greeted by wide box-office, critical, and awards' acclaim this year, including 12 Oscar nominations. Crafting the imagery for this saga to the specifications of Iñárritu and his friend and image-making partner, cinematographer Emmanuel Lubezki, ASC, AMC, was an epic tale all its own.

The story, based on a 2002 novel by Michael Punke about the true-life trial survived by 19th century explorer Hugh Glass, played by Leonard DiCaprio, has been discussed and written about across the industry as a challenging shoot in remote wilderness areas of Western Canada. Iñárritu and Lubezki opted to shoot the movie using only natural light under the harshest of conditions in chronological order during the fall and winter of 2014 and 2015.



In various interviews, the director, the cinematographer, DiCaprio, and various other cast and crewmembers have almost uniformly referred to the shoot as the most arduous project of their careers. What has been less well-discussed, however, is the fact that many of the project's post-production requirements were uniquely challenging as well, and at times, highly unorthodox. In particular, the filmmakers' needs for the color-finishing process over the course of eight intense weeks were more complex, and more unusual than just about any motion-picture that Steven J. Scott, Technicolor's supervising finishing artist on the project and the company's VP of Theatrical Imaging, had ever experienced in over 25 years as a visual effects artist and colorist working on major motion pictures.

"It's safe to say this was one of the most complex color-finishing jobs that has ever or will ever be done, if you are talking strictly about using tools available within the traditional DI suite," Scott insists. "Some of what we were asked to do was entirely new, at least in certain ways. One of the tremendous benefits we had, and the reason that Chivo [Lubezki's nickname] brought the project to us, was the history and aesthetic 'shorthand' we had developed with him going all the way back to 'Children of Men'. I've been privileged to work with him for many years, and am used to the very naturalistic approach he favors, the kind of *cinéma vérité* style he has been exploring more and more, which plays out in extremely long, hand-held shots, culminating with the Academy Award winning work he achieved on *Birdman* [2014]. All those experiences came into play here, and were greatly beneficial to our understanding and language and intuition about what we had to do for the most complex project with him of them all—*The Revenant*. Chivo knew from day one that this movie would be his most challenging on many levels, and had us work with him to plan the complex workflow that would allow him to complete the color finishing in the way he wanted. To accomplish this, we put together a whole team of people, including visual effects animators and artists led by [Technicolor VP of Visual Effects] Doug Spilatro."

Indeed, Lubezki had previously collaborated closely with Technicolor to pioneer a particularly un-orthodox method of color-finishing *Birdman or (The Unexpected Virtue of Ignorance)*, since Iñárritu and Lubezki shot that movie with exceptionally long takes subtly stitched together to give the illusion that the entire film was but an ongoing single shot.

On *The Revenant*, the Technicolor team was required to bring their technique to a whole new level since Lubezki shot the movie relying exclusively on natural light, which was constantly shifting during production. Indeed, the project posed challenges in this regard because of the subtle properties of the natural light that Lubezki captured on location while shooting the movie with a combination of Arri Alexa camera systems—the Alexa XT, Alexa M, and the then-brand new Alexa 65 system, to permit an ultra-wide-angle visual aesthetic. Shooting in the woods, on mountains, and on the plains of Alberta in the late fall and winter, his team was often limited to daylight shooting that started around 9:30 a.m. and ended before 4 p.m. most days. With shifting clouds and giant trees constantly blocking and changing the direction of light and producing moving shadows, the cinematographer knew from his earliest location scouts that his job mastering natural light to his satisfaction would be an ongoing process—one that would begin on location and be completed at Technicolor during the finishing phase.

Scott emphasizes that the seamless integration of Technicolor's finishing department was not only crucial to the project, it was also made easier by the fact that Technicolor's On-Location Services unit was tasked with handling data management and dailies work as the production labored in the Canadian wilds. In fact, that Technicolor unit traveled with Lubezki's crew to all locations for principal and second-unit photography, and handled dailies distribution back to multiple visual effects vendors and editorial, and made sure data management was consistent throughout the entire project.

An Autodesk Lustre color-correction system was utilized on location for color grading dailies, allowing for full finishing color and controls on a 2k projector, which was set up in a Technicolor trailer near the show's production offices in Calgary and British Columbia. Colorists Jodie Davidson, Jeff Olm and Dave Wilkinson handled dailies color-grading responsibilities. Technicolor's dailies platform, rendered-out deliverables in multiple formats as needed—DNX36 175 for editorial, H.264 for the PIX dailies viewing platform, and HDCam SR for 20th Century Fox marketing requests, while all dailies were backed up to LTO drives. Additionally, a dailies screening room was set up for editorial and creative needs in the production offices. Lubezki would frequently supervise grading in the trailer in 2k, and then go to the screening room for nightly screening sessions. Kenny Vicent, Technicolor's director of field engineering, helped support the location work.

"Chivo always knew it would be an extremely complex undertaking, and that he would not have the typical lighting support and setups," Scott explains. "In fact, he planned strategically based on the fact that he would have no [lighting] control. He was keenly aware of the issues that would bring about, and he wanted to be as prepared as possible. So we talked about that early on, as soon as he started doing scouting and conducting tests. I saw all that [test] material, and we would get together and play with it and establish preliminary looks. In fact, even before he shot a frame of this movie, Chivo knew what kind of pipeline we would have to set up, and he knew how long we would need for the finishing and that it would be a longer schedule than typical. We discussed the kinds of work we would be doing, and that we would be isolating and playing with different parts of individual frames. That was all planned out in advance."



More specifically, Lubezki needed Technicolor's in-house visual effects department to work in tandem with the finishing department to do the job that Lubezki envisioned. In fact, Spilatro emphasizes that Lubezki "told us early on, 'I'm going to make changes until the very last minute,' so we would need to be flexible. We understood that, with his [cinematography plan accounting for] light shifts during the finishing, we would have to build our own hand-drawn animated mattes and track them, and that there would be a large number of them, far more than on *Birdman*, where we originally experimented with this technique."

The project required a visual effects team in-house, under the same roof as the finishing team, precisely as Technicolor Hollywood has been structured. The subtle visual effects-related work inside the finishing processes that Lubezki planned for was precisely within Technicolor's wheelhouse. A team of finishing artists under Scott's supervision color graded the imagery using Lustre 2015 Extension 3 software and a Christie 4220 4k projector. Simultaneously, a team of 10 visual effects artists under Spilatro's supervision worked to hand-animate mattes and use them to perform roto work on faces, bodies, and other elements photographed by Lubezki in order to assure that directional key light, backlight, or shadows were hitting exactly where Lubezki wanted them to hit, and moving correctly with corresponding body parts or elements in a natural way so that viewers would be unable to detect any manipulation had ever occurred.



The creation of those mattes gave the filmmakers options to make sure their creative choices were not limited by shifting, lighting conditions, weather conditions, locations, or time of day. Scott says the Technicolor team got so detailed on the technique that they even coined names for the types of lighting shifts they were executing on particular frames—"Volumization" when creating extra shadows on a person and "Characterization" when adding more detail to natural elements, such as snow or cascading water, for instance. But the over-riding idea was to always build on the foundation of Lubezki's original material to achieve his creative goals; to dig into his digital 'negative' and re-balance it in precisely the way he wanted.

Spilatro adds, "this gave Chivo and Steve Scott flexibility when they were working, because the process was designed by Chivo. It wasn't about fixing anything—it was about delivering the impact he envisioned on location, manipulating light as he does on location or on set. It was a need he understood clearly and demanded from the beginning as part of his master plan. If you think about it, they were [shooting the movie] in the wilderness, with daylight only available for a few hours during the winter. It wasn't possible to set up lights. So Chivo instead set up this process, working with Steve and the rest of the team, and we were able to give him the flexibility he needed to make adjustments for dramatic purposes during the finishing instead."

Spilatro adds that Technicolor was able to perform all the animation work using the Lustre software, though it is traditionally considered a color-correction tool first and foremost. This was required, once again, for what Spilatro calls "maximum flexibility," because of the need to rapidly move mattes and other digital material through the finishing pipeline to keep the process from bogging down.

"The visual effects pipeline [within the finishing suite] that we designed started very early with Chivo, Steve, and myself," Spilatro states. "We sat with Chivo on early cuts to map out the type of looks he was requesting. Once we had a locked cut (from picture editor Steve Mirrione, ACE) Steve and [finishing artist] Charles Bunnag would painstakingly go through every shot and build key-frame mattes—single frames of the requested mattes. Steve and Charles would then use our shot tracking software [called Ftrack] and spreadsheets to pass the information onto the VFX team."



Then, the matte was animated, reviewed, and sent to the finishing team for integration.”Using Lustre in this way was largely made feasible through the company’s unique partnership with Autodesk, according to Scott. “We have always worked closely with Autodesk, and their team, led by Bernard Malenfant, doing things which allowed us to complete the challenging roto in the way that we did,” Scott says. “Some of this also builds on work we’ve done for the Marvel movies.

Those kinds of relationships and that kind of experience really benefit a project like *Revenant*, and ultimately the entire industry, because we are showing how we can expand the environment and the perception of what can be accomplished within the finishing suite.”

The project also benefitted from the fact that Technicolor’s global reach includes its subsidiary MPC, one of the world’s leading visual effects producers, and the fact that MPC’s pipeline seamlessly plugs into Technicolor’s finishing pipeline. The MPC team worked on the film’s early ambush sequence. Supervised by Arundi Asregadoo with support from VFX producer Lena Scanlan, the scene was meant to supplement Lubezki’s execution of an extended, one-take illusion in which a brutal, surprise assault on a trapper encampment by native fighters along a riverbank is seen—and felt—as intimately as possible. Lubezki choreographed and shot much of it handheld, and operator Scott Sakamoto shot the rest via Steadicam and Technocrane. But Iñárritu wanted to subtly enhance the brutality and realism of the moment with the addition of more photo-real elements.

MPC also created photo-real CG animals, including a beaver, deer, vultures, and horses, and its effects and compositing teams added smoke, fire, flying mud, and sky replacements, and strategically placed CG arrows to complete the illusion.

“Our whole approach was conceived and based on what Chivo said he needed to achieve and what Alejandro and he were envisioning,” Scott adds. “We advanced the technology and our thinking about how to do things so that they could be in the middle of the process. That is a fairly new concept for this industry, but it is the best way for the cinematographer to continue to guide the imagery, even after production ends, and not to sit to the side waiting for ‘post’ to do its thing. This is his work, and he should be able to continue in his role as the author of the images until the movie is released. Our job was to support him in doing that.”

That support was made possible thanks to an all-hands-on-deck commitment from Technicolor. Under Scott’s supervision, in addition to Bunnag, the film’s finishing color-work also included finishing artists Michael Hatzler and Ntana Key, finishing producer Mike Dillon, finishing assistant producers Laura Holeman and Brandie Konopasek, and finishing data assistants Juan Flores, Chris Jensen and Kevin Razo. Supervising finishing editor Bob Schneider and finishing editor Carrie Oliver handled the film’s editorial conform responsibilities, interfacing with the production’s editorial team, led by Mirrione. Technicolor created a master 4k DCP for the movie, while the film’s Dolby master, award-season screeners and home-video versions were finished by colorist Skip Kimball.

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