



# Remaking The Polar Express

**IMAGEWORKS DIGITAL EFFECTS SUPERVISOR ROB ENGLE OVERSAW A SEPARATE TEAM OF 70 ARTISTS, INCLUDING CAMERA, TECHNICAL DIRECTORS AND EFFECTS ARTISTS, THAT TRANSFORMED THE POLAR EXPRESS INTO THE FIRST FULL-LENGTH IMAX 3D CG FEATURE. AROUND 7 MONTHS BEFORE THE END OF PRODUCTION, ROB WAS ASKED TO ESTABLISH A PARALLEL PRODUCTION TEAM WHOSE JOB IT WAS TO TAKE THE 2D VERSION AND PRODUCE A 3D VERSION USING ALL OF THE SAME ASSETS, INCLUDING THE TEXTURES, THE MODELS, ANIMATION, AND LIGHTING SETUPS.**

**DMW:** When working with 3D on projects like *The Polar Express* and the upcoming *Monster House*, what kind of 3D setup do you use in (post-) production?

**RE:** We had a variety of different techniques for viewing the 3D material, depending on how many people needed to use it. For the purposes of working at an artist's desk we typically just used the anaglyph glasses. Alternately, people could do a fairly good job of working by toggling between the left and right eyes and just making sure the amount of parallax from one eye to the other was consistent with the depth of the object. It's very low tech but it's also the kind of thing you can deploy very quickly, and once you do it a little bit, people really get it. People understand that things that are farther away should not move as much as things that are close and something in between should move half as much. We also did use stereographics crystallised active shutter glasses for our initial reviews. About a month into production we built ourselves a little 3D screening room with polarised screen and a couple of projectors with polarised filters in front of them and used the actual IMAX glasses to look at the material and view it there. The room was fairly small with a 15-20 foot throw but it was enough for us to be able to assess how well the 3D was working. We'd find ourselves doing things like standing up and getting close to the screen so that we could simulate the field of view of an IMAX screen. One of the really wonderful things about IMAX is that the screen fills your field of view and you almost don't even sense the edge of the screen. In order to take in the material you have to experience it that way, with the screen filling your field of view.

**DMW:** Because the IMAX screen has an aspect ratio of 1.33:1, did you not run into trouble reframing the image from 2.35:1 - especially regarding objects being cut-off at the sides of the screen, resulting in retinal rivalry within the 3D image?

**RE:** Early on we made the decision that we would not re-compose or reframe the film for an IMAX aspect ratio. Aesthetically we wanted to make the film that was Robert Zemecki's vision and his film was designed for 2.35:1. Also if we used all the renderings at 2:35:1 in our final result then we had cost savings because we didn't have to re-render.

**DMW:** You used IMAX' DMR process to blow-up your 2K source images. Why did you not render at 4K?

**RE:** The cost was prohibitive. We were delivering a 3D film that in terms of resolution was identical to the theatrical release and all of our elements were rendered at 2K. We did some early tests and of course IMAX has done numerous tests to verify that 2K material blown up to 4K would work fine. Having seen the final result I think they did a very good job with it.

**DMW:** When you are able to plan for a 3D version of the film from the outset of preproduction, as with *Monster House*, will you be able to devote separate expertise to the execution of 3D cinematography. Will you have specialists devoted to stereoscopic photography; the camera work for the 3D output?

**RE:** We want to make the same movie for 2D and 3D as much as we can. With *Polar Express* we did adjust things to make for a better 3D experience in terms of composition but we really stayed within the boundaries. There will possibly be up to 150 3D-capable Real D cinemas in the US when *Monster House* comes out, but that is still a drop in the ocean compared to conventional 2D.

**DMW:** It is well known that editing for 3D must be different. It takes the eyes more time per shot change to get used to the new depth framing of the shot. Is the editing of *Polar Express* in the 3D version any different from the 'flat' release?

**RE:** One of the reasons why *Polar Express* really worked was because it wasn't specifically designed to be a 3D movie. People who see the rollercoaster rider or the train's top sticking out into the audience might disagree, but those shots were in the movie well before there was a 3D version. It's a testament to the way that Robert Zemeckis makes films, the fact that he uses a very deep canvas. He likes to use very long shots, and his average was 7-8 seconds which means you can really soak in the environment. If you went into an IMAX 3D movie with MTV-style rapid cutting you would walk out very tired. *Polar Express* was well-suited to 3D. 