



This and similar *Ender's Game* plates had a lot of green spill, enhanced by the reflectivity of the uniforms, which required different amounts of despill to be used on the suits, the skin, etc. The other difficulty was that the helmets and visors were real and they tended to reflect the bg screen to such a high degree along their sides and top that it was sometimes difficult for Roto and Comp to tell where their edges actually were.

Pulling the *Tron* mattes was not especially difficult, but the show was filmed in stereo and the polarized light produced differences between the two plates, especially on the surfaces of the cockpit. A variety of methods were devised by Paul Lambert (then Comp Sup) to match the plates to one another. In this scene and similar shots the fg glass was CG and occasionally it would have to be spatially adjusted in comp to keep it from appearing to bump into the actors in stereo.



The fg required heavy color corrections to fit Ender into the alien landscape. The After Effects sun flares definitely helped.



The background - depicting the ship approaching the colossal waterfall - went through an unusual number of iterations so as not to reveal too much too early.



The green screen background was somewhat contaminated, complicating the matte pulling process.



Nothing less than capturing every single strand of the Duchess's hair would satisfy Bryan Grill et al. Comping the arming device was easy by comparison.



The grandstand set on the 1970's White House lawn was shot against a giant outdoor green screen that redefined the term "unevenly lit". Nevertheless, I utilized the screen to pull multiple keys, especially in the panning shot to preserve the natural motion blur. Both shots were composited by me in stereo.

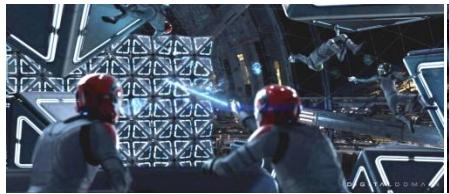
In these shots only Capt. America and his cycle are the original cinematography. The bridge, the gateway, and the jet are CG. In the CU I created the bg by tiling location footage. The raining debris and dust are mostly comp-created 2D elements.



The bg space-based arena and the doors are CG as is the top of the portal, since the kids who jump out into the weightless battle area are actually suspended on wires from above. Paint and Roto did an excellent job removing the rigs. The green screen was more uneven than was typical of other *Ender's Game* shots, but the biggest challenge was perfectly matching the top of the portal and inside panels to the practical set, especially since we delivered the full frame.

The left shot was all CG. In the right, the CG top had to be perfectly combined again with the portal set. I also had to correct the actor's flight path. In the first place,

the wire rig carried him up, when we needed him to drift slightly down. Second, in spite of his gentle step off, he nevertheless bounced on the end of the wires.



In the shot on the right, only the two fg cadets were real.

In both of these shots deep compositing was used to combine the contending armadas in the bg, one in the atmosphere and the other in space. The shot on the right was finaled by me with temp graphics. (The real graphics became available while I was on vacation and were substituted by another compser.)



This shot was a set extension - behind and on the left side. The matte painting of the clifftop facility was done by Gillian George and we see more of it as the shot progresses. Capturing and putting the practical on-set rain over the matte painting was the key to creating a seamless effect. The problem was that the dark fabric of the set's back wall reflected enough light that it created a distinct pattern in the rain itself. As a result a ghostly impression of the back wall could initially be seen in the rain on top of the matte painting. Fortunately, we had an excellent 3D camera which I used to first reveal (because the pattern was invisible on any single frame) and then neutralize the pattern.

In general, the compositing of the robots themselves went smoothly on *Real Steel*. In this shot, for instance, the second most difficult task was getting the reflections in the pools of water right. Fortunately, the plate provided plenty of real reflections to reference. But the most difficult task was seamlessly combining the robot's CG shadows with the real shadows of the fg dead limb.



This shot was made more challenging by the fact that the robot had a stand-in, a stunt person in a blue motion capture suit on stilts. The problem was that the CG robot didn't entirely cover the stand-in by either a little or a lot on any given frame. The majority of my effort, therefore, was spent removing the stand-in almost completely, before proceeding with the CG comp. Excellent roto support was provided for the ropes and the airmen.

Ideally, from a strictly compositing point of view, this shot should have been filmed with the fg rail and spectators shot separately against a green or blue screen so that we could comp the robots and then comp the extracted people on top of them. This was not the case. Roto did as good a job as could be expected on the fg people, but not much could be used. The inherent difficulty of this shot required an intensive solution only comp alone could provide.



An editorial change caused a rare discrepancy between the 3D geometry and the plate's 2D objects: table, printer, etc. With the use of precise morphing and other comp adjustments, I was able to avoid the necessity of retracking and rerendering the CG.



This scene was shot in stereo and one of the consequences was that the lens flares were not the same in the two plates. Our methods for matching the differences between the plates didn't help. As a result, Paint removed the half dozen flare components from the subordinate plate and I replaced them with flares identical to the dominant plate's flares, compositing them in the appropriate stereo position along with everything else.



In the CU, integrating the CG shadows with the real ones was the most challenging task compwise, although we did spend a lot of time getting the little lights just right. In the comp of downtown Chicago, it was everything but the kitchen sink.

Having been shot in stereo, there were the usual reflectivity and keystoning disparities between the *Tron: Legacy* plates. In addition, the 3-person jet set was built on a movable rig causing subtle but noticeable warping and vibrations as it rapidly rotated for this shot and others, all of which had to be neutralized between the plates. Since the jet's stereo CG components completely enveloped the set, it was not uncommon for comp to have to make slight adjustments to the CG in order achieve a precise fit in stereo.



Most of the "look" of the completely artificial environment of *Tron:Legacy*'s cyberspace was well established during the extensive development phase. Nevertheless, it became a daily team effort to maintain consistency over the long haul. In addition, there were still certain locations and set pieces that were yet to be worked out, such as the portal. As the location of the final confrontation, the portal was seen from outside and afar (top right) to inside and extremely close up (bottom right). It was one of the very last sequences to finalize.

The hydra in *Percy Jackson* was not exactly a fire breathing dragon, but pretty close. The exploding fountain was a combination of real and CG water. The wings on Percy's flying sneakers required continuous animated tweaking to keep them visible and consistent frame to frame.



Because the bolt was so big here, I needed to carefully modify the comp sup's excellent bolt template to keep the glow from covering the whole frame while maintaining the look.

For the NYC environment, the compositors were provided with a superb 3D setup giving us total control of the background in Nuke.



On *G.I. Joe*, I was assigned the task of creating the nanomite effect inside the energized weapons. DD's art director had done a test using another shot of the nanomite cloud devouring the Eiffel Tower. Our clients were encouraged, but they wanted something "angrier". Following a suggestion by the VFX sup, I perused the DD library for elements to combine with the CG. This final result uses a series of shots I found in the Pyro section. With the help of the roto artists, I comped the effect into all the weapons of this shot, however, I did not comp the part of the laboratory which can be seen in the background through the windows.



Having come up with the effect, I then proceeded to comp most of the shots where Storm runs through the streets of Paris with the weapon.

Only the actors are original cinematography in the roof top shots below. The bgs are a combination of CG, matte paintings, and some additional footage shot specifically for inclusion in the shots.



In the shot on the right, the most difficult challenge was matching the CG helmet to the live-action suit with all its abrasions. The visors & heads-up displays usually required a lot of tweaking to improve their placement.



Typical “all hell breaking loose” enhancement: Steam ventings, blue flashes & falling sparks, bg explosions, and additional camera shake.

The orange tubes attached to the floor and their vertical flanges were part of the original set. The transparent part of the tubes, the orange bands riveted to their ends, and of course Scotty being sucked through the system are CG.



Virtually all my *Mummy 3* shots below contained projected matte paintings to augment the existing wall sections or to cover up unwanted terrain features. The two background armies, the Terra Cotta Warriors and Foundation Army (the skeletons) consisted of multiple elements of each: usually bg, middle, and fg units of both. In addition, CG drifting dust clouds, foot kick dust, shadows, static debris & bodies, and active flying fragments of Terra Cotta Warriors were all composited for the final effect.



Except for the far left, most of the bg wall was a projected matte painting. Roto was provided for Jet Li and Michelle Yeoh, but both required modification and augmentation with keys and additional garbage mattes. Each of the army elements had multiple channels so that their weapons, for instance, could be separately tweaked and/or used to generate additional bling effects.



The pan of the bg battle was made up of 5 groups of the two armies along with projected matte paintings of the distant wall sections and CG dust elements.



In addition to the usual compositing for this shot, I selected and modified the 2D explosions that made up the detonation effect and created the reactive lighting.



In these plates Rick was fighting guys in green suits which did not help. Roto was provided for Rick but again it had to be augmented with keys for his hair and to suppress the green spill of his original opponents. Some warping was used by me to line up the CG spear and the original spear.



Matte painting of drag trails were provided, but I needed to multiply and transform them to create the number required. I also created all the garbage mattes to animate their composites. Since this was one of the few shots where we see the skeletons' feet and since the ground was obviously soft enough for drag trails, I devised a relatively easy means of creating the scuff marks and foot prints as the characters get up and charge forward.