

Spooks, Specters, Ghosts, and Princess Leia 3-D projection

The impossible tasks I would like to tackle today are making a ghost appear in a room and making R2D2 show the Princess Leia video onstage. Both are, in effect, 3D projections, but we do not have the technology today to actually project holographic images. The best and most realistic way to make a video projection look 3D is to use stereoscopic imaging with the red and blue glasses (or more recently, with polarized light and clear polarized lenses for better colors), but asking the audience to wear 3D glasses ruins the surprise of the effect. There are ways to make a stationary image appear convincingly suspended in space through the use of parabolic mirrors, but we wish to deal with moving images. So, we are somewhat limited to making a video projection on a 2D screen seem 3D.

Projecting onto a scrim is the most common way of making a video projection appear to float in midair. However, even though it's pretty effective, the scrim is still difficult to hide from the audience. I would like to use explore using a material called TransScreen for projection. TransScreen, created recently by Laser Magic Productions, is about as transparent as glass. In the right lighting conditions (and with its edges neatly hidden), the screen is nearly invisible. The TransScreen is essentially two pieces of acrylic with a thin film between them that "simultaneously diffracts, reflects, and transmits all wavelengths of light," according to company literature. What this means is that the screen can reflect projected light while transmitting light from objects behind the screen, giving the illusion that the projected image is transparent. Without lit objects behind it, the image appears solid, floating in space on a screen that can't really be seen.

It would be fun to shoot a video of an actor portraying a ghost in a black space with black-covered stools where chairs and other set elements should be so he can appear to interact with the set. The blacks, if kept in the dark, shouldn't show up on the projection any more than normal "video black" would. If the audience can see a chair through the ghost and a few feet behind him and the ghost turns around, walks upstage, and sits on it, the effect would be quite believable. I can see two especially interesting ways to put a ghost into the set.

Idea 1: The actor is filmed beforehand handling blacked objects or miming interaction with elements of the set. When the video is projected, the timing and placement will be the same every run through, so the run crew can spike set pieces exactly and get timing down to move physical elements of the set that the

ghost handles. Any violent, vengeful movements can be realised by poking, pulling, yanking, or pushing the mistreated objects from offstage. If the ghost kicks a chair, a thin line yanked backstage sends it flying. If he pounds his fist on the wall in frustration, a techie backstage can hit the flat in the appropriate place for not only physical but also sound effect.

Idea 2: Live video feeds are set up to allow the ghost to interact with a mortal. This can be done with a pre-filmed setup as well, but the ghost's acting will appear canned as he can't react appropriately if the mortal drops a line or does something a bit differently. A good ghostly interaction should allow real-time acting. The ghost is filmed offstage in a dark room with black-covered set pieces as before. The video is projected directly onstage with the mortal. The mortal is filmed from a ghost's-eye view and that video sent to a screen just out of view from the camera filming the ghost so the ghost can see what the mortal is doing.

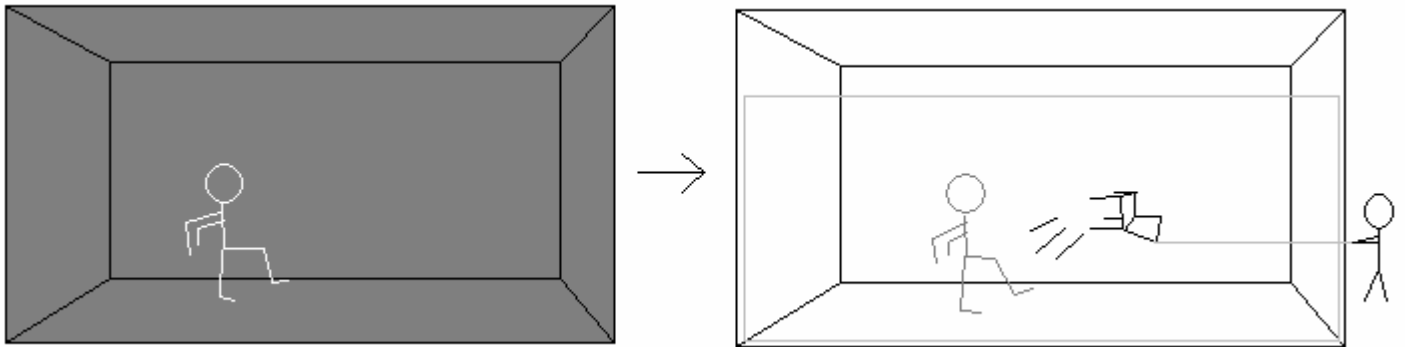
Now that I've had fun with ghosts, though, the real reason I started looking into 3D projection was to try to make R2D2 actually show the video of Princess Leia. When MTG did Star Wars: The Musical in IAP 2003, Princess Leia went onstage in different lighting to do her bit while the other actors pretended that she was five inches tall and standing by their feet as opposed to standing far stage right and in fact, out of their line of sight. This got the intended effect across and made the audience laugh, but I would like to have a way to make Leia appear onstage, five inches tall, at Luke's feet.

Hiding the video projector is easy. While this could easily be projected from offstage (the TransScreen is amenable to both front and rear projection), since R2D2 is supposed to be projecting it, we might as well let him project it. In the IAP 2003 show, we used a plastic cooler that could easily have hid a small video projector (and I don't think the projector needs to be state-of-the-art to get the effect across). When Luke is working on R2D2, he can discreetly turn on the projector and tadaa! R2D2 is projecting videos.

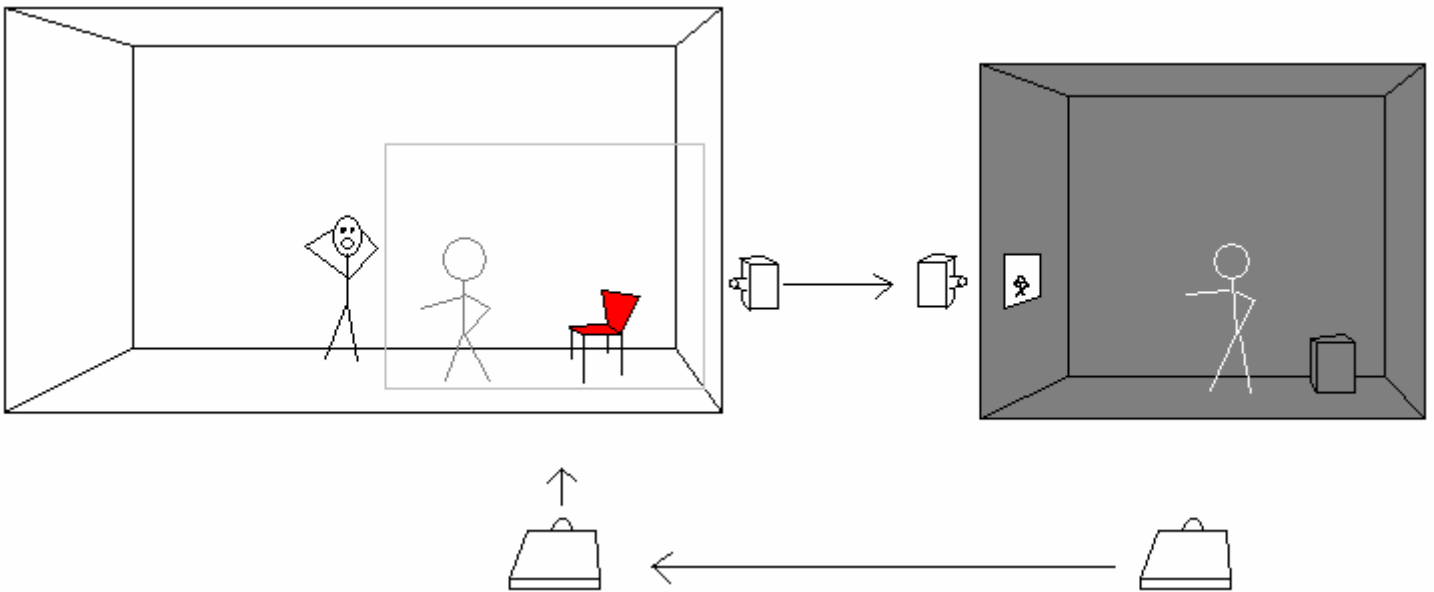
Hiding the screen is a bit tougher. The idea I have right now is to have two boxes for C3PO and Luke to sit on. A small TransScreen screen is attached to and stabilized by the box C3PO sits on, and the other box hides the screen. When Luke gets to "You've got something jammed in there pretty tight," or whatever the exact line is, he can grab the second box to sit on to get at R2D2 better and also expose the screen. Then, when he turns on the projector (which Luke can aim right where it needs to go while fiddling with and cleaning R2D2), the image appears to float in the middle of the stage. Instant holographic Leia. Dimming

the ambient light for the hologram scene will draw more attention to it and hide the screen even better.

This would be an effect to play around with to get the placement angle and lighting just right, but the end result should impress the audience. Now if only I can figure out what to do for the light sabers...



Idea 1: A poorly drawn stick figure kicks the air. When projected, and with the aid of an offstage techie, the poorly drawn stick figure's ghost kicks the chair.



Idea 2: The poorly drawn stick figure confronts his son. The PDSF can see his son and react to the acting. The PSDF's son can see the projection from some angles but mostly has to rely on memory and rehearsing.

References

“Can Laser Images Float in Space?” Lytle, David, editor of The Laserist. The Laserist: Laser Show Basics/3D Effects. http://www.laserist.org/Laserist/showbasics_3D.html

“3D Projection Technologies” Laser Magic Productions.
<http://www.laser-magic.com/holographicprojection.html>