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What Lies Beneath · FX Review

Alfred Hitchcock, in his fifty plus year career developed a cinematic style that was as much a star of his suspense films as were Cary Grant, Ingrid Bergman, Grace Kelly or James Stewart. Inventive, even surrealistic shot designs-the hallmarks of that highly individual style where achieved through a variety of on set tricks. Hitchcock would shoot oversized objects to maintain depth of field in tight close-ups, for example, or shoot revolving sets as a means of changing backgrounds in camera and without cuts. But despite such ingenuity, Hitchcock's hands were tied, creatively, by the physical limitations of filmmaking that existed in his time. One wonders what the old master might have accomplished if he had been free of those physical restraints and had bee given access to the virtual realm. If Hitchcock had a computer, how would he have used it?

That question drove the cinematic style and consequently the effects for *What Lies Beneath*, the supernatural thriller directed by Robert Zemeckis. The story, the seed of which was first suggested by DreamWorks head Steven Spielberg, with the narrative then fleshed out by Sarah Kernochan and Clark Gregg, concerns a university research scientist, Dr. Norman Spencer (Harrison Ford), whose seemingly idyllic life is shattered when the ghost of a young woman begins to appear to his wife, Claire (Michelle Pfeiffer). In mute plea the dead girl seems to seek Claire's help in avenging her murder; and in a shocking twist, we learn that the crime was perpetrated by Norman himself as a means of concealing his illicit love affair with the beautiful coed.

The story and its themes were so reminiscent of Hitchcock's eerie psychological thrillers that Zemeckis could not resist the notion of bringing a Hitchcock like flavor to the film. But rather than revisit the style of classics such as *Vertigo*, *Rear Window* and *North By Northwes*t, making *What Lies Beneath* just another in a long line of Hitchcock rip offs, Zemeckis intended to reinvent that style using the newest digital tools.

Those tools would be in the hands of visual effects supervisor Robert Legato and his Sony Pictures Imageworks crew. Legato began the project with a review of many of Hitchcock's masterpieces, looking to determine what elements, specifically, went into creation a quintessential Hitchcock moment/ "We started looking for moments in those films that felt as if only Hitchcock could have done them," Legato recalled, " and we found that many elements, the music, the lighting, the staging - contributed to them." Most notable, however was the distinctive camera work; executed in service to the mood the director was trying to convey. "Hitchcock used a lot of tight close-ups with distant backgrounds, creating a voyeuristic, creepy feeling. In addition, he created an `edge of your seat' suspense by extending camera moves beyond what seemed physically possible. Those were the types of shots we were looking to do for this film."

Of the film's seventy plus effects shots, the vast majority wold involve the creation of these Hitchcockian camera moves. Specifically, the idea was to film the live action portion of any given shot on a partial set-thereby avoiding physical confinement of the camera - then fill out the remaining parts of the set digitally. "We were looking to create the kinds of shots the mind really wants to see," Legato explained, "but never has before because of physical limitations. It is the difference between what your eye can take in, and what you can actually shoot with a camera on a set. Directors have thought up shots like these before - but then they would get to the set and realize that they couldn't fit the camera into the space, or the crane couldn't complete a move because a wall was in the way. All of those physical realities would come into play, and the director would have to throw out his interesting shot design and shoot things in a more standard way.

"In this film, we were going to get around those physical realities, using CG. There would be a wall on the set, and we couldn't move the camera through it; but what we could do was move the camera up to the point of contact with the wall, then remove the wall and continue the move. Adding the wall back in later, digitally. That way we would be able to create shots that had never been seen before. None of them would be "Wow, look at me' Effects shots; but, together they'd create a mood and a distinctive style."

Subtlety was key, however. In fact, Zemeckis intended the effects to be so well integrated into the live action only the most film savvy of audience members would take notice of them. "All of the effects shots would look as if they could be achieved in camera," stated Legato, " so the audience wold never be thrown out or the story. That was the magic of these shots. They were physically impossible; yet, the way they were designed, most of the people in the audience would never notice that. They would not stop and say, `That shot is impossible.' It would just become part of the style of the piece."

In *What Lies Beneath*, director Robert Zemeckis sought to emulate and advance the visual style of Alfred Hitchcock by employing digital technology to create quirky camera moves that could not be achieved otherwise, Sony Pictures Imageworks contributed dozens of such shots, including one in which Harrison Ford Carries Michelle Pfeiffer to a bathtub. The shot in which the camera passes over the actors and

through a wall, ending up looking through the side of the tub was filmed on a set with a wild rear wall and a cutaway tub, which was later restored with CG elements.

That style would be captured in the live action photography, as well as in the postproduction effects work. Prior to principal photography, much of which would be conducted on location at Lake Champlain in Vermont, Legato oversaw construction of specialized camera equipment that would enable Zemeckis to capture highly stylized live action plates. “The idea was to set the Hitchcock tone of shots not only with visual effects but with dolly and track life action moves,” commented associate visual effects supervisor Carey Villegas. “For example, it was typical of Hitchcock to have a foreground character remain in focus while the background changed dramatically in size and perspective, appearing to start off far away, then closing in on the character. In the past, that kind of effect has been very hard to control. It involved zooming out quickly as you dolly in, all the while trying to keep the foreground character in frame. The challenge was to come up with a way to better control that, encoding the equipment so the focus and the zoom would be synchronized with the dolly move as the dolly moved in, the camera would zoom out. Likewise, if the dolly slowed down the zoom would slow down.”

The system was designed and built in digital form first, as a means of working out the bugs. “We had a CG version of the dolly,” Stated digital effects supervisor Richard Kidd, “and we hooked up the virtual camera to that, setting it up in such a way that as we moved it in and out, the focal length of the lens would change. To showed the tests to Bob Zemeckis and he really liked them. Then we took that data to the stage and set up the actual cameras based on what we had done in the computer.”

Even with such specialized camera equipment on the set, computer generated images would be required to realize the majority of the film’s unusual shot designs typical of those shots was one set in the Spencer family bathroom, where Norman—intending to drown his wife, who has pieced together the circumstances of the murdered girl’s disappearance—carries a drugged and immobilized Claire to the bathtub. In the beginning of the shot, the action is viewed from above, as if the camera is perched in the ceiling of the

room. “The camera follows this slow, slow walk from above,” Legato explained, “ and you can see the back wall of the bathroom, the bathtub - everything that would be in that room. Nevertheless, in the course of the shot, The camera appears to move right though the back wall and through the side of the tub, winding up right next to Michelle Pfeiffer in the tub. You don’t really thing about it, but the camera couldn’t do what it appears to do in that move, because of physical limitations of that space.”

The live action portion of the shot was filmed from a crane on a partial set that had an opening where the back wall would be and a bathtub mad of clear Plexiglas on the far side to enable the camera to see through it. On that set, the crane arced down from the ceiling, moving through the imaginary wall, ending at the Plexiglas side of the tub. “Once that whole camera move was shot,” Said Kidd, “we had to fill the missing parts of the bathroom set with photoreal CG. There was a lot of detail that had to be filled in - part of the shower and the shower rod, a kind built in vanity on the side wall, all the candles and bars of soap

and other stuff on it, the side of the tub, plus a window with a curtain and light going through it. To finalize the shot, camera reflections in the shower head had to be removed digitally.” Since no motion control was used in the filming of the live action plate, cubes were positioned on the set to guide CG tracking.

In a subsequent sequence, Norman slips and injures himself, affording Claire a slim opportunity for escape. Grabbing a set of keys from the foyer, Claire runs out to her car. “The camera moves in as she gets to the car,” Legato explained, “passing through the window as she’s trying to get her key very

nervously into the ignition. Then the camera drops down below the steering column to the key hole itself and in that close-up, we realize that she has the wrong key. It is another Hitchcock like Image, bat achieved without an oversized key prop. “The vehicle itself was an interior only, set up on blocks on stage. “For the part of the shot where the camera moves through the window we indicated on the set where the window would be. Then, in post, we put reflections to the right and left of the camera - so you do not really get a sense that the camera is breaking through glass or anything that physical. It just passes through the window, unencumbered. “ The dashboard viewed by the camera as it passes through the window was actually held in position by two stagehands; then, as the continuous shot’s point of view shifted to look up Pfeiffer in the drivers seat, the dash board was yanked away to make room for the camera. Finally, in post, a CG car exterior was added, with stagehands and other crewmembers digitally painted out of the scene.

Realizing her mistake, Claire exits the car and runs to the family pickup truck - to which a trailer and boat are attached - parked nearby. As the scene continues, the truck moves out of the driveway and toward camera at about twenty miles per hour. For the live action, the camera was mounted to a crane arm that started high and moved down to meet the truck as it neared. At that point, the intention was to lock the camera to the truck so it would appear to stay with the vehicle as it sped away. “There was no way, physically, to get that kind of shot,” Kidd noted. “So we shot the truck coming at us; then on the greenscreen stage, we shot the truck static, with Michelle Pfeiffer actually in the drivers seat, pretending to drive and the camera locked to it. To complete the shot we had to put a background in the greenscreen area. We also needed a CG truck to bridge between the location plate of the truck coming forward and the greenscreen shot.:

The camera continues to follow the truck as it travels across a bridge spanning the lake. An initial wide aerial view of the bridge and vehicle was computer generated, as was the subsequent move down through the bridge structure, with the camera ending on a close-up of Michelle Pfeiffer at the wheel. The only live action portion of the lengthy shot was an element of Pfeiffer sitting in a truck interior and shell, its roof removed to permit the camera to pass through th3e side window and end up on a close-up of the cell phone Claire is frantically dialing. Except for this element of the actress and the partial truck, the entire shot from beginning to end, was computer generated - including the truck exterior. Non effects shots in the sequence were competed a full sized bridge set, built by the production at the former Hughes Aircraft facility in Playa Vista.

In another shot in the sequence, the camera moves down the grille of the moving truck, passing beneath the chassis and boat trailer, and out the other side. The grille, underside and trailer were all computer generated. CG sections of the pickup also had to be constructed for a shot in which the camera moves down to a ground level position, at the point where the tire met the road.

“This was done as a CG shot because Bob Zemeckis wanted to get the camera unbelievably close to the tire of this moving vehicle,” recalled Villegas, “ plus, the boat trailer had to come sweeping over the top of the camera. It would have been really risky to put an expensive camera on the ground like that, with a truck and trailer coming at it full speed.” To test whether of not the shot was doable practically, targets were placed on the ground, at the spot Zemeckis intended to position his camera. “The idea was to see if the stunt driver could get these targets dead on. It turned out that he could not with any kind of consistency. Therefore, they decided to make the truck CG at that point as a transition from that plate

to a second one of the trucks barreling away and going through a fence. So it goes form live action to CGI, just for the tire on the ground, then back again to live action though the boat and trailer were CG throughout the sequence." Lead compositor Brian Battles was instrumental in finessing the truck shots. Marrying digital imagery with live action and green screen elements.

The truck comes to a stop when it crashes into a fence surrounding the lake. Ambient fog rises from the body of water, punctuated by an intermittent beam of light from a nearby lighthouse, setting an eerie tone for the finale of the film. To add the thick fog to the live plates shot at the lake, the effects artists first experimented with practical smoke elements. Finding that the practical approach did not give them sufficient control to create exactly the look desired by Zemeckis, however, the team swiched to a digital solution. Working with steamboat's Jig software, a renderer so new it had not yet been introduced to the marketplace. The major benefit of the new software was its speed in rendering volumetric material. Allowing the team to create huge volumes of fog. The sweeping light beam was also CGI and was featured not only in the movie's climax, but also in the main title sequence. Undulating water over which the titles emerge, was created by senior technical director Zsolt Krajcsik, using an in house water system originally written for the upcoming Tome Hanks movie, *Cast Away*. Also directed by Zemeckis.

Though the majority of the show's effects were intended to create mood rather then spectacular, stand alone images, a handful had more common applications, such as creating the various manifestations of the dead woman, Madison Elizabeth Frank (Amber Valletta). The concept for the apparition changed over the course of production as Zemeckis leaned toward a more physical presence and away from a `did we see that or did not we?' approach. "Originally," observed Villegas, "it was supposed to be more of a psychological thing, so that when the film was over, it would be up to the viewer to determine if it was really a ghost or just Claire's imagination at work - the audience would not be sure if she was seeing a ghost or just going crazy. But eventually it evolved into much more of a real, physical presence."

The ghost of Madison would appear in three basic incarnations, designated by the effects team as

`Amber,' `Beautiful Madison' and `Horrible Madison.' Both Beautiful Madison, a bluish colored, veiny corpse, and Horrible Madison, a skeletal, decomposed body, were designed and built as puppets by Stan Winston Studios, which started with a cyberscan of Valletta. For shots of Amber, the most `alive' form of the apparition, separately filmed elements of the actress would be composted in to scenes, in most instances. However, for shots - many of them underwater - that would have been difficult or impossible to do with Valletta herself, Amber was sometimes represented by a CGI head, the geometry for which was taken from a cyber scan of the Beautiful Madison puppet. Photographs of the actress were then projected onto the CGI head geometry. "We shot a series of stills from different angles," Said Legato, "so a digital artist could blend them all together to make a perfect map of her head in 3D. that way, the head looked photographically real no matter which way it turned or which angle the camera was at."

Of the half dozen shots in which the apparition appears, several are set in the Spencer family bathroom. In one instance, she emerges as a faint reflection in a fogged bathroom mirror. As Claire wipes the mirror to get a closer look, condensation drips down the class front, spelling the words `you know.' "We had an element of Amber Valletta shot against a black backing," said Kidd, " and we just printed that element in lightly behind the fog in the mirror. The fog was digital, as was the dripping moisture and the words. As Claire wiped off the fog we wiped the reflection as well." Complicating the f shot was a camera move that started on one side of the mirror and boomed over to the opposite side, with equipment and members of the camera crew reflected in the glass surface. A static, Clean plate of the bathroom and mirror minus the booming camera, ghost element or condensation facilitated the removal of the unwanted images.

As evidence that the ghost is possessing both her mind and her body Claire takes on Madison's facial characteristics in a couple of scenes, an effect realized through morphing techniques. "In these shots," noted Villegas, "Michelle Pfeiffer's eyes turn the same vibrant green as the girl's and she physically morphs into her. But their features were so similar, it turned out to be an extremely subtle thing." The casting had been deliberate, as the resemblance between Claire and Madison was a storypoint in the script. Even so, the similarities between the two women were startling, and all the more evident when the

digital crew attempted to morph one into the other. “We wanted it to be subtle; but as we got into it we saw that it was so subtle; you almost didn’t notice it. The audience is left wondering. `Did I just see that? They cant put their finger on it, they just know that something weird has happened.”

One morph scene has Norman pulling Claire barely conscious in the bathtub - up out of frame to remove an incriminating necklace from around her neck. When she comes back into frame her face has chained to that of the ghost. Startled, Norman drops her back into the tub - by which time, the face has morphed back into Pfeiffer’s. “Michelle Pfeiffer did the action with Harrison Ford in the tub,” Kidd recalled, “and that was our main plate. Then we took the Beautiful Madison puppet and put it in the tub and took pictures of it from several different positions, giving us images with the appropriate lighting and placement for the scene. We used that information to put the ghost image on top of Michelle in the main plate.”

The film climaxes with the truck crashing into the lake where the girl’s body was deposited a year earlier. As Norman and Claire struggle in the cab of the submerged truck, Madison appears underwater. A stunt woman was shot in a tank her head ultimately replaced with the CGI Amber. “The CGI head looked photographically real,” asserted Legato, “ and we were able to get a very subtle performance from it. The CGI head was the best way to go since Amber Valletta’s schedule made her unavailable for the underwater portion of the shoot. Even if she had been available, the physical restrictions of shooting underwater would have been too difficult. Therefore, we would have had to turn to CGI to help realize the sequence, in any event. It allowed us to get what we needed with a stunt woman, then make it look as if it was Amber.”

Zemeckis conceived a shot for the sequence in which Madison’s hair would cover her face, then part and float upwards to reveal the character. The stuntwoman was filmed with her hair pulled back so that appropriately animated tresses could be added later. Though tests were run with a new hair renderer the team ultimately shot a wig against greenscreen and then manipulated those elements digitally and added them to the tank footage.

Justice of the poetic kind is served when the ghost girl contributes to Norman’s drowning in the lake. Her goal accomplished, the corps falls away, morphing from the Horrible Madison to Beautiful Madison to Amber as she nears the lake bottom camera. “We did three passes on full CGI versions of Horrible Madison, Beautiful Madison and Amber” said Legato, “ all of which were created using photographic textures taken from the Stan Winston puppets. During the composite we determined where and when to have the elements transition from one to the other.”

The film then shifts to a final scene at a snow covered cemetery. “In the previous scene,” noted Kidd, “as Madison floats down closer to camera, the headlights of the truck slashing through the water flare up, whiting out the screen. That white becomes the sky; and then we pan down to the graveyard where Claire stands at Madison’s grave.” The flare of the headlights was added in the composite, as was the white screen and a painting of the sky. “We panned down from that matte painting to Claire in the graveyard, which was another very large painting with on little live action portion where Michelle Pfeiffer was standing.”

A final homage to Hitchcock plays out in the shot. “`At the end of psycho,” said Villegas, “as it fades to

black, you see a faint skull superimposed over Anthony Perkins face. It is a subtle thing that you can easily miss. We tried to duplicate that idea in the matte painting of the graveyard. As the camera pans down from Michelle Pfeiffer walking away you see the face of the Madison character molded into the shadows of the snow."

Just as lightweight, portable camera and lighting equipment opened the door to expanded location shooting in the sixties which resulted in realistic, gritty films supplanting the melodramatic and romanticized visions of the thirties and forties, digital technology is bound to have an impact on both the style and ultimately the content of motion pictures. "A shift in the kinds of movies that were made occurred when technology allowed filmmakers to move from soundstages to locations," Legato commented, "and another shift is going to occur now that filmmakers can return to the convenience of stages and back lots, with CGI providing photoreal backgrounds. It is going to mean a return to historical dramas and exotic locations. In fact, that trend has already begun. Titanic was made possible by CGI which enabled Jim Cameron to get the shots he really wanted, without literally having the titanic there to shoot.