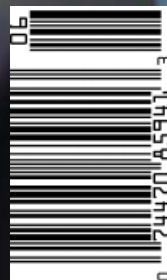# CAMERA OPERATOR

The Journal of the Society of Camera Operators

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CAMERA OPERATOR

Why use a fully CGI image on the cover of *Camera Operator* magazine? Even if a shot like this is made in the computer, it certainly tells the reader what they are going to read about. Frankly, with a movie like this, I think many people forget that there were camera operators involved at all. With such great work, I'd hate for that to happen.   —Jack Messitt, editor

COURTESY OF WETA

Letter from the President

Let's Make *Real* Movies

In our present day cinematic world things are changing at a very rapid rate. Productions are being shot all over over the globe, in places that may or may not resemble the locales in the original stories, for the sake of dollars and not the projects themselves.

Kickbacks and cheap labor are the determining factors in our business at present. Studios and facilities are being built in foreign lands to save and make money. If films turn out to be good in addition it's a bonus, but it's not a deal breaker if they don't and if they aren't gimmicks can be used to get unsuspecting audiences into the theaters anyway. New buzz words like 3D and Empire Imax can be used to coax viewers, but all too often the corners cut leave audiences disappointed and disgruntled that they spent extra and didn't get their money's worth. What to do?

The simple answer is to start making movies again. Not celluloid versions of video games or remakes of old ideas or miscasting just for the sake of box office, but honest to goodness movies that rivet you to the seats of the theater and don't let you go until they're done with you. Films that leave you with a great sense of satisfaction at the end and that joyous feeling that you've really witnessed something life changing after all is said and done. That's what we're lacking these days. I'm not saying there aren't exceptions, but for the most part we're in a cultural void.

Part of what's at fault is the large amounts of money involved in production. Just like the many establishments in the financial crisis, these mega-movies have become too big to fail and are propped up at all costs resorting to test screenings and changed endings if the test subjects don't like what they see.

When that happens the art goes out the window, the point of view is lost, and the director's vision is compromised. The majority of our efforts are reduced to movies by committee.

I for one long for the return of the way it was when I got into this business. Independents could put together a film for a few hundred thousand, and get it picked up and out to the masses through theaters and drive-ins. It was commonplace, possible and happened frequently, but now with the advent of the blockbuster, smaller efforts are cut out and the new definition of a low budget film is one that costs millions instead of thousands.

What does this mean for us as Camera Operators? In a nutshell, less quality work, less projects you can believe in, less passion, and more of a factory mentality. We are making widgets, delivery vehicles for product placement, and setting the groundwork for video games. Where are the great characters, the great scenes, the great quotes, the great moments that we carry with us for a lifetime?

I think it is still possible to have them, but we all have to work toward that goal in earnest. Writers have to write stories and characters that truly inspire us, directors have to fight for them, studios have to take chances on something that isn't a guaranteed success in the hopes that greatness will come from the unknown and we have to step away from the blockbuster. We just have to do it. We have to make a conscious move toward smaller interesting less commercial films again. After all we are filmmakers. We tell stories. We make magic with the placement of our lens.

How can we settle for anything less? Sincerely,

Dan Kneece
SOC President

JOEL LIPTON

Take Advantage of Your Crew

Filmmaking has always been a visual medium and with the reemergence of 3D, this is only becoming more evident. But good storytelling is so much more than simply getting good visuals or exceptionally inventive coverage.

Without good dialogue, no one will care if the scene is one continuous Steadicam shot or that it takes place in a purely digital world. Without rich characters to care about, it won't matter if the film looks amazing. Without a compelling storyline, none of our hard work on set will really matter.

A well-told story is an emotional journey that carries the audience along for the ride. That is where the director comes in. A director is there to make sure that the most important aspects of filmmaking remain in focus.

Much is made of the division between "above the line" and "below the line" positions. But as more "below the line" crew members make their way to the director's chair, the more we come to realize that every member of the crew is a part of the filmmaking process.

Regardless of your position on set, from PA to camera operator to director and producer, you are a filmmaker. No movie or television show can be made without the help of every single person involved.

"Above the line" jobs are tremendously stressful, especially in today's more corporate-influenced industry. But every director and producer should know that the "below the line" crew is there to help tell their story the very best way it can be told.

Giving the crew an idea of the big picture is extremely helpful in allowing us to do our jobs. The more we know, the more we can help bring a director's true vision to life. And knowing that there are hundreds of eyes looking out for them can really allow a director to step back and focus on what really matters.

It has been my experience that the more you allow your crew to do the jobs you hired them to do, the better the experience will be for everyone—right down to the audience.

Great ideas can come from the most unlikely of places. Allowing the crew to help fill in some of the details can be a treasure trove of good ideas. Not that anyone should feel obligated to take every idea. In fact, I think that knowing when to say no is one of the director's most important jobs. But the more you allow for a creatively open environment, the more opportunity you will have to benefit from the vast experience of your crew.

Jack Messitt SOC

COURTESY OF JACK MESSITT SOC

Panavision sponsors breakfast, demos new 3D equipment

Panavision has added to its rental inventory the Element Technica Quasar 3D Rig fitted with Panavision Genesis cameras and Primo prime lenses.

The modular rig was reviewed in a mini workshop Q& A presented by the Society of Camera Operators (SOC) at their quarterly breakfast meeting held at The Motion Picture & Television Fund Home in Woodland Hills. Sharon Walker from Panavision and Chris Burket from Element Technica explained the features of the stereoscopic rig and answered questions from the attending cinematographers and camera operators about the many technical and aesthetics details of acquiring 3D footage using the Quasar 3D rig. Another smaller 3D rig , the Neutron, was also presented. It is designed for 1/3 or 2/3 inches cameras such as Iconix or SI2K-mini.

More information and photos are available at **http://filmcastentertainment.blogspot.com/2010/04/quasar-3d-panavision-at-soc.html** —George Leon

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The Dolly Grip Has My Back

by Dan Gold SOC

Dan Gold SOC (right) with Dolly Grip Tim Christie at the edge of the Grand Canyon on *Due Date*. Photo by Dan Gold SOC.

The dolly grip is the camera operator's partner. I like to think of us as a team. True, the operator has his unique responsibilities and the dolly grip has duties that are his alone. But when it comes to planning and executing the shot, they work together toward the same goal: to successfully translate a bit of storytelling into a visual medium.

For me, as a camera operator, there is no more important collaborator on the set than the dolly grip. As the director and the director of photography discuss the shot, a good dolly grip is already thinking about what kind of track to use. I believe in looking through a director's viewfinder to set the start mark and end mark so everyone agrees on the shot.

Once the director and director of photography turn their

always changes and a lot of the decisions that affect the success of a shot will occur while you're rolling. An actor will miss the mark or the scene will take an unexpected turn and both the camera operator and the dolly grip have to be ready to adapt to what is happening in front of them. If the dolly grip is hesitant or feels that he doesn't have the endorsement of the camera operator and the director of photography he won't take those chances that are necessary to make the shot work on the spur of the moment.

Many dolly grips use on-board monitors to help them see exactly what the operator sees. If there is a problem, if an actor is being blocked or the shot isn't moving along the way it should, they can make an adjustment and see the results of the change right away. But a good dolly grip knows what's

Armed with the information about the shot, the dolly grip is ready to suggest how to proceed. I've learned that this is a good time for the camera operator to listen.

concentration to other matters, the dolly grip and I start our discussion. Shall we build a plywood dance floor or use rail or maybe just roll on the floor? It's so important for a camera operator to share information with his dolly grip so he can make informed choices in the planning stages. Among other things, they should discuss the focal length of the lens, the speed of the move, and whether or not the actors will have to cross the dolly track.

Armed with the information about the shot, the dolly grip is ready to suggest how to proceed. Over the years I've learned that this is a good time for the camera operator to listen. The dolly grip will recommend orienting the dolly in a certain direction. He may suggest using an offset or a slider to reposition the camera slightly or perhaps we need a camera riser. An experienced dolly grip has seen many camera operators struggle with the execution of a shot and can really help with some simple solutions.

I can't tell you how many times over the years I've had an impossible shot turned easy by the dolly grip quietly putting my seat into a different post on the dolly. In the days before remote heads camera operators often found themselves climbing over the arm on the dolly to clumsily execute 360 degree panning shots. One day the dolly grip suggested that we put an 18-inch riser under the head allowing us to drop the arm 18 inches. The camera was still at the right height but now the arm was down out of the way. I could walk around over the arm 360 degrees with no problem. I'm still amazed at the simplicity of that solution.

After the preliminary work of planning and setting up, the dolly grip's contribution to the execution of the shot is extremely important. It's essential that the camera operator empower the dolly grip. He needs to know that the operator trusts him, trusts his judgment and his taste so that he feels the freedom and has the confidence to make adjustments to the shot on the fly.

No matter how much you plan in advance, something

happening in the frame even without looking at the monitor. He understands the shot, he knows the focal length, he sees what the operator is doing and where the actors are and even without the monitor, he is able to see the frame and make those little accommodations in the movement of the dolly that make the difference between a spoiled take and a successful shot.

On dolly shots or crane shots using remote heads, we often use wireless intercoms so the dolly grip and the camera operator can talk throughout the shot and make those little

1ˢᵗ Assistant Mikael Glattes sitting on the crane with Camera Operator Dan Gold SOC; dolly grip Dwight LaVers at the base of the crane; filming *Air Force One*.

CLAUDETTE BARIUS

Dan Gold SOC, Mike Brennan, and Zoran Veselic on *Spiderman*. Photo by Zade Rosenthal.

changes on the fly. Those kinds of shots are really fun because by actually consulting each other during the shot, it becomes a true collaboration. The dolly grip is swinging the crane around, extending and retracting, the camera operator is panning and tilting and the whole time we're communicating and improvising, reacting to what's happening in front of the lens. It's a very flexible, fluid way of working that often ends in unexpected and exciting results.

In addition to planning and executing the shot, dolly grips have responsibilities that are outside the realm of actual dolly movement. But these are just as important to the success of our work. Safety—particularly the camera operator's safety—is one of the dolly grip's most important jobs.

It is the dolly grip's responsibility to guide the operator through a handheld shot when he can't see where he is going. If I'm shooting handheld while backing up through the set trying to stay in front of fast moving actors, I put total trust in my dolly grip. It's his responsibility to safely pull me past the obstacles, cueing me with a light but firm touch. He tells me when to turn or step up or down and delivers me to the end mark in the same way he would as if pulling the dolly.

When we shot *Spiderman*, I was fortunate enough to work with Michael Brennan, one of the best dolly grips I've ever had the pleasure of working with. He is a natural at moving the dolly and swinging the Technocrane and we did some wonderful moving shots thanks to his talents. But I was also happy to have him standing right next to me on many handheld occasions.

In one scene we were inside a burning building where the Green Goblin lures Spiderman inside the flaming structure to trap him. Michael Brennan, first assistant Zoran Veselic and I were all wearing fire resistant firemen's uniforms as we sat in the building surrounded by burning timbers. A couple of times during the shot, while both hands were holding up the camera, I felt a warm spot on my arm or leg and looked down with my other eye to see a burning ember smoldering on my jacket. Each time, Michael Brennan calmly and gently removed the flaming wood fragment without disturbing the shot. It was comforting to know Mike was there to prevent me from bursting into flames.

Recently I was working with dolly grip Tim Christie on a movie called *Due Date*. I've done three movies with Tim and he's one of those great dolly grips that seems to read your mind. He knows exactly what we need to do to make the shot work before we even discuss it. He's always right. On the rare occasion when I disagree with him about how to do something, we try it my way and inevitably we end up doing it Tim's way. I trust Tim.

At the rim of the Grand Canyon, we shot a handheld scene with Robert Downey Jr and Zack Galifinakis. Of course we were not supposed to go near the edge of the canyon without safety harnesses. But we were shooting an action scene and the actors were moving around quite a bit. When they came at us, we had to keep backing up to keep them in the shot. Perhaps we ended up being closer to the edge that we should have been. I had my back to the canyon edge, an edge that

dropped off about 5,000 feet. Of course, Tim was behind me guiding my movement the whole time—and we were moving pretty quickly. At the end of each take I'd put the camera down and look back at the 5,000 foot drop behind us and think, "Boy I'm glad Tim's back there keeping me away from that thing." But while we were rolling, I never thought twice about my safety because I felt Tim's hands on my belt guiding me through the shot. I knew he would never let me get near that cliff. Like I said, I trust Tim.

On *The Perfect Storm*, Mike Schwake was the dolly grip and I was very lucky to have him. Mike is a master dolly grip and an amazing crane operator. He did so many crazy Technocrane shots on that movie. While I had the luxury of operating the

a 100 by 100-foot tank on Stage 16 at Warner Brothers. But when we begin to shoot, the ship starts to bounce up and down on a huge hydraulic gimbal. Wave machines create 4 to 6 foot swells. Water cannons blast the ship from 2500 gallon dump tanks and 100 mile per winds whip from the fans.

I was trying to hold onto the camera for dear life and Mike was keeping me from sliding off the deck, dropping the camera, landing on my head, and falling into the water. No one was holding Mike, but he was holding me with thousands of gallons of water pouring all over us, making sure I didn't get slammed into the side of the hull or washed over the side.

These are just a few stories from years of great partnerships.

Camera Operator Dan Gold SOC and Dolly Grip Mike Schwake in the tank on *The Perfect Storm*.

Libra Head or Mega Mount from a remote location well out of harm's way, Mike was being drowned by thousands of gallons of water during the shot.

I was not in the clear on every shot though. I did a lot of handheld shots from the ships' decks while getting pounded with wind, rain and waves. In one scene, a Coast Guard cutter tries to rescue parajumpers in heavy seas. The men fight the raging waters as they try to climb a net thrown over the side of the ship. In a harness, I was handholding a Panaflex in a water bag over the side of the hull, shooting down into the water. Mike Schwake had rigged a bungie cable over my head to help me support the weight of the rig and was holding on to my harness.

Sure, the reality is that the ship is only a set piece. We're in

A good experienced dolly grip can make the camera operator's job so much easier and more gratifying. He can be a wonderful collaborator and partner. I find that the dolly grip is often one of the most level-headed crew members on the set. They have a unique perspective from back there, behind the dolly. They tend to see the big picture more easily than the rest of us.

Over the years I have not only enjoyed working on shots with these talented individuals, but also confiding in them and commiserating with them. As camera operators we not only trust our dolly grips to help us to get the shot, but we trust them with so much more. They are there to save our lives, both figuratively and quite literally.

Taming 3D Steadicam for *Avatar*

by David Emmerichs SOC

Jake Sully (Sam Worthington) wiith his unborn avatar.

of the many computers connected to my 3D camera via the fiber optic cable that followed me everywhere. I had stepped through the looking glass to find myself in New Zealand at Stone Street Studios shooting the live action portions of James Cameron's *Avatar*.

My involvement began in Los Angeles in 2007 when Director of Photography Mauro Fiore asked me to be the Steadicam operator for Cameron's new film. Producer Jon Landau invited me to visit the performance capture stage to watch the actors run around in their funny suits as they recorded the performances that WETA Digital would eventually turn into fully rendered photoreal scenes on the alien jungle world of Pandora. I saw ten minutes of low resolution 3D footage cut together with music and sound effects and found myself completely absorbed in the world and the characters. I was getting pretty excited about my involvement in the film.

Then I saw the camera I'd have to carry and I wasn't excited any more. The obvious difficulty with 3D at the moment is that you have to carry around two cameras. The Steadicam is heavy enough with just one, thank you very much. Vince Pace, a long time collaborator with James Cameron, provided

Jake's avatar wakes up for the first time. Scenes like this were easier to choreograph and frame using the Simulcam system which made it possible to see the avatars on the Steadicam monitor. This is a final image from the film; the resolution of the live image was much lower.

The ten foot tall blue alien needed to move just a little camera right to balance the composition. I looked up from my Steadicam monitor and started to ask him to shift to his left... and he wasn't there.

I'd become so used to seeing the virtual character on my screen that I'd briefly forgotten he didn't really exist. His performance existed. It had been recorded on the performance capture stage in Los Angeles months earlier by actor Sam Worthington. Now it existed as a digital file playing on one

Shooting the interaction between the humans and the as-yet nonexistent Avatars using Simulcam, which allows me to see the Avatars on my monitor.

the cameras through his company. For those of you not familiar with 3D cinematography, some technical information follows. For those of you well-versed in the technology, please bear with me.

The Fusion 3D camera system we used consisted of two heavily modified Sony F950s mounted at right angles to each other in a support frame. One camera sat horizontally in the conventional position shooting through a half-silvered mirror (beam splitter), and the other ran vertically, shooting the reflection on the mirror's surface. The two cameras mimic
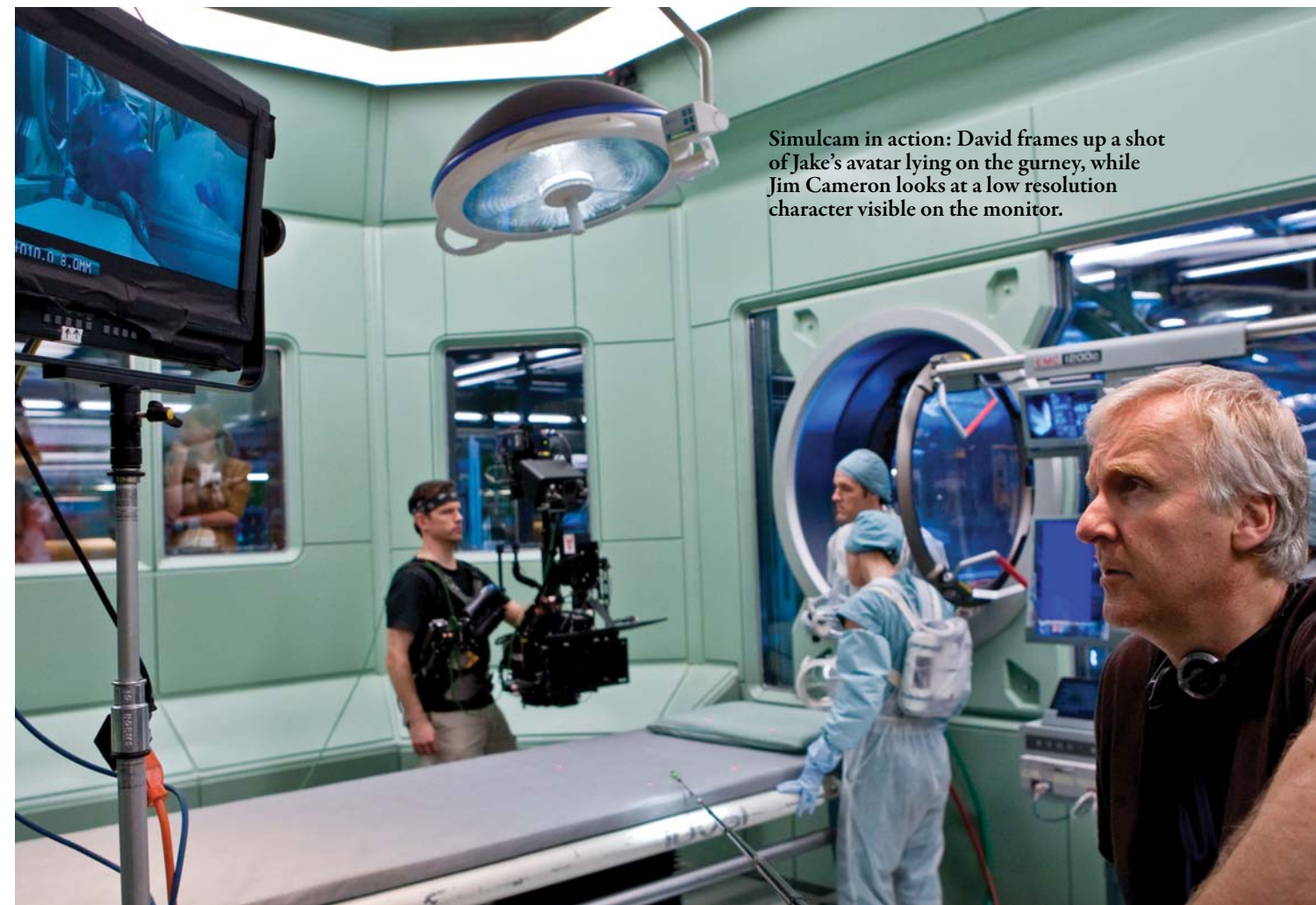
Simulcam in action: David frames up a shot of Jake's avatar lying on the gurney, while Jim Cameron looks at a low resolution character visible on the monitor.

human binocular vision, though there are more variables in the camera system than in human vision. For instance, human eyes have a fixed focal length—roughly 43mm when compared with 35mm spherical lenses—whereas you can put nearly any focal length lens you want on a camera. Focal length directly affects another parameter which is fixed on a person but variable on a 3D camera rig: the interocular distance. This is the distance between the imaging devices, whether they're eyes or cameras. In camera systems it's also called the interaxial distance, but we used the term interocular, which I'll shorten to IO from now on.

In humans the IO is fixed at around 2.5 inches, but with the beam-splitter camera rig that distance can be brought all the way down to zero where both cameras are shooting

essentially the same image. Why would you want to do this? The distance between the cameras affects the amount of 3D apparent in a scene. The farther apart the cameras, the more 3D you see—the closer together, the flatter the image. Longer lenses and close-ups benefit from a smaller IO (often less than an inch), and scenic wide shots look better with more separation. With moving shots these parameters change constantly so we changed the IO on the fly to compensate.

Convergence is another variable that changes frequently. Convergence is best described in visual terms. Hold up a finger and stare at it. Your eyes are converged on your finger. Now look at something in the distance. Your eyes are converged on the background and you'll see two out-of-focus fingers in the foreground. The cameras do the same thing, pivoting to recreate this effect. For the viewer, the plane of convergence is the same as the plane of the screen. Anything behind the plane of convergence appears to be within the screen receding into the distance while anything in front of the plane of convergence looks like it's popping out of the screen.

On *Avatar*, we usually set convergence at the same plane as focus—linked via software. This meant that our A-Camera first assistant—the incomparable Larry Nielsen—pulled both focus and convergence while Sean Kelly pulled IO. ⇒

For the Steadicam operator these camera adjustments present a unique problem. As convergence and IO change throughout a shot, the camera in the horizontal position is sliding side to side and pivoting all the time—throwing off the balance of the rig. It made me crazy in prep. I couldn't wait to have to operate a real shot on set with everything shifting on me.

As for the weight of the system, we arrived at a nice solution. I replaced the bottom of my PRO sled with the camera's fiber optic converter/power module and used a lightweight LCD monitor. When all was said and done the rig weighed about the same as a Panaflex XL with a 50mm Primo. Not too bad considering I was carrying two cameras. Actually, to be accurate, I was carrying half of two cameras. The other half of each Sony F950 sat in a rack at the other end of the fiber optic cable where the video signals were simultaneously recorded on tape and Codex hard drives.

My first day on set started well. The sets were amazing, the cast and crew were wonderful, and Jim (he's not the Mr Cameron type; he's Jim) was like a kid in a candy store. He's got a tough reputation, but if you know your craft and understand what he wants, he's a pleasure to work with.

I've found there are generally two kinds of directors when it comes to their expectations of the camera operator. They're either expecting a lot of input and creativity in addition to moving the camera around well, or they simply want you to put the camera in the right place at the right time, which is, when you come right down to it, the most fundamental aspect of the job. *Avatar* really was Jim's vision and as such he had a very clear idea of what he wanted to do. He was open to suggestions, but when he told me he wished he could plug a remote control directly into my cerebral cortex, I knew he was firmly in the "right place and time" camp. I wasn't going to be coming up with the shots, but I'd damn well try my best to make them perfect for the movie.

Alas, this was not to be, at least not at first.

I knew I was going to struggle with the balance of my rig as the camera moved from side to side, but I thought I'd be able to memorize the moves the camera made and compensate for them. I was wrong.

The first scenes I shot involved people walking around in the sets for the remote link location: essentially two long parallel containers connected by a corridor making a layout like a big letter H. During fast moves around corners, when you need the sled to be perfectly balanced to make level fast pans, the actors naturally get closer to the camera or you lose them around the corner. 1st AC Larry Nielsen would rack focus as the actor neared, the convergence would shift, and the Steadicam would roll. The shots are in the movie and I grit my teeth when I see them. I know, nobody else cares. It sucks to be a perfectionist sometimes.

As I struggled to tame my bucking Steadicam, I learned more about shooting 3D. We had a mobile theater called The Pod that followed us to every set. Before Jim signed off on a shot we always watched it in The Pod in 3D. We'd all don our polarized glasses and Jim would give notes on where the convergence should be and call out adjustments for the IO.

There are all sorts of things to consider when shooting 3D, and I received a crash course on the subject. I learned that it's tough to do something as common as an over-the-shoulder shot. The shoulder in the foreground is soft as you'd expect, but there are two of them and if the IO is too wide, the split between the two images can be distracting or even hurt your eyes. Longer lenses and a smaller IO were the answer.

LED tracking markers glow on the camera as Simulcam tracks every move the Steadicam makes.

Likewise you have to be careful with practical lights in the background. They split into two and can bleed over actors in the foreground. Mauro and his gaffer, Chris Culliton, found that light smoke, dimmer lights, and a smaller IO helped.

An embarrassing moment in The Pod taught me another lesson. I watched the video feed from only one camera— usually the fixed one mounted in the vertical position so I didn't get thrown off from seeing the camera pan when I was locked off but convergence was shifting. I hadn't checked what the other camera saw and I ended up photographing a c-stand that wasn't in frame for the left eye, but had snuck into the right eye frame. After that I made sure there was another pair of eyes watching the camera I wasn't monitoring.

I admit to being skeptical about 3D at first, as I'd never been a fan of it in the past, but Jim doesn't use 3D as a gimmick. His characters don't wave guns or spears out over the audience's head and there aren't meteors rushing at you in an attempt to make you duck. He uses 3D to make you feel more a part of the world he's created. It's another tool that, if used properly, helps you forget you're in a movie theater.

Jim saw me struggling to keep the Steadicam under control during moves where the IO and convergence shifted, and told the guys at Pace Camera to come up with a solution. The president of the company, Patrick Campbell, came through with flying colors. He built and programmed a slick motorized plate that slid the whole bottom portion of the sled side to side to counter what the camera did on the other end.

He installed it the day I had some fairly big Steadicam

shots to do and it worked perfectly on the first try. It's no exaggeration to say it saved my ass. Jim looked at what I was able to do and said something along the lines of, "So this is how you shoot when you're not blindfolded with one arm tied behind your back." After that we shot a significant amount of the live action with the Steadicam and life was good.

Then came the next curveball: Simulcam—the system that allowed us to see the purely digital avatars on our monitors. Glenn Derry is the tech-wizard who built the system and it was pretty amazing. It was also pretty complicated. The camera I carried now sprouted long stalks with infrared LED clusters on the end of them. Fixed cameras hidden within the live action sets recorded where those LEDs were in space, thus tracking every move I made.

Quite often, the move I made was to stick myself in the eye with one of the LEDs while panning, but that's beside the point. That spatial information, combined with the animation of the avatar, was piped back to my rig through the fiber optic cable with the result that I could see the avatar on my monitor and move around him as if he were really there.

The actors couldn't see him, of course, but it made it far easier to tell them where to look and where to go. I could even see the set's computer holograms hovering in mid-air and all the digital environments outside the windows. The resolution was pretty low—everything looked like a late nineties video game—but it was perfectly adequate for our purposes. Jim could even run over to the Avid and cut a shot into the scene in progress to see if everything was working. It was a lot more effective than cutting in an empty plate and trying to imagine the avatars in the shot.

As with much of the cutting edge technology we were

David demonstrates the automatic sliding balance plate that made it possible to shoot smoothly while the 3D camera moved around on the sled. Vince Pace, whose company built the camera rigs, and director James Cameron look on.

playing with, there was a price to pay for using Simulcam. All of that computer processing takes time, resulting in a six frame delay between the action in front of me and what I saw on my monitor.

You've probably dealt with older video down-converters that have two or even three frame delays. For the most part you can deal with it, but it becomes a real problem when you're trying to follow fast action or land whip pans. Imagine that with a quarter of a second delay.

When you're looking through the eyepiece and waiting for an actor to stand up, you're reacting in much less than a quarter of a second. I ended up having to memorize the avatar's moves and anticipate everything by six frames. Luckily the avatar was guaranteed to do exactly the same thing every shot. No missing marks or false starts from these

Another example of a Steadicam shot with Simulcam. The operator could see the hologram on his monitor and help the actors interact better with what they couldn't see.

digital actors. Spontaneity is fine, but not when your reaction time is handicapped.

If Jake's avatar was going to stand up in the shot, I'd have to start tilting up a quarter of a second before I saw him move. The picture on my screen wouldn't show the change in what I was doing until six frames later. A quarter of a second sounds like an insignificant amount of time, until you're shooting with it. Glenn has a newer version of the system in the works and says the delay is down to two frames, so hopefully none of you will run into the same problem.

Once we'd figured out how to make all this stuff work, we pretty much got on with shooting the movie. The live action only makes up somewhere around fifty percent of the film

and most of the frenetic action takes place in the CGI jungle. That left me with a lot of character interaction to film, something I've not had much of a chance to do in recent years.

No one was shooting at me, throwing burning cars at me, or blasting dirt, water, fire or smoke in my face. It was kind of nice. Jim wasn't going for the presently trendy and hopefully soon-to-fade overly shaky handheld look, which was a relief. It's a great technique for some action scenes, but I feel it's too often used to disguise the fact that the director has little to show you, and in dialog scenes it's nauseatingly distracting. So it was a pleasure to operate well-crafted shots designed to tell a story.

Many of *Avatar*'s futuristic sets had detailed and multilevel floors so the Steadicam made it possible to do longer shots that traveled from room to room while maintaining the look

of a dolly. I'm a fan of using the right tool for the job, whether it's a crane, dolly, handheld, Steadicam, or any other method of moving the camera around. However, I'm not a fan of what many people refer to as the "Steadicam look." The Steadicam look is the result of mediocre Steadicam operating which has led to the widely held opinion that Steadicam always rolls around and looks floaty. When done well, Steadicam can look enough like a dolly shot that it won't pull the viewer out of a scene or make them seasick. I tried to emulate a dolly for the majority of the shots I did in *Avatar*, and when I was told by someone who knows what to look for that there wasn't much Steadicam in the movie, I knew I'd succeeded because there's actually quite a bit.

3D presents its unique challenges, and for the Steadicam operator they are potentially daunting. How many of you have seen the photograph of the operator with two Sony F23s on his rig? Ouch! But with cooperation from everyone involved it's possible to solve just about anything, and I ended up quite comfortable with the 3D rig I used on *Avatar*.

In the interest of full disclosure I have to confess that I didn't operate all of the Steadicam in *Avatar*. The production ran long and I had to return to Los Angeles to start another movie at the beginning of 2008, so Roberto De Angelis took over for the last few weeks. But I can proudly say that most of the Steadicam in the movie is mine, and I'm thrilled that I got to be involved in such a cutting edge production. Thanks to Mauro, Jim and Jon for letting me participate in the huge success that is *Avatar*.

Shooting in what I called No-Mode. Sam Worthington's height in the wheelchair was that problematic place a Steadicam doesn't want to go: too high for low-mode, too low for high-mode.
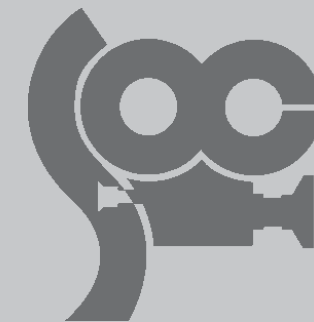
Crossing the Line

More members of the SOC are making the leap from the geared head to the director's chair. As they do, they bring a special visual sense to their projects because of their experience behind the camera. Their "below the line" experience fosters a different relationship with the overall crew and creates a wonderful shorthand with their fellow operators, DPs and camera crew. As our members make the move "above the line," *Camera Operator* is there to chronicle their journey.

CHICAGO HORROR FILM FESTIVAL

Presents

Best Feature Film
Midnight Movie
2008

2010 CANADA FILM FESTIVAL
RISING STAR AWARD
TRUTH NEVER LIES
AIKEN WEISS
DIRECTOR

Aiken Weiss and David Frederick on *Truth Never Lies*

interviewed by
Sawyer Gunn
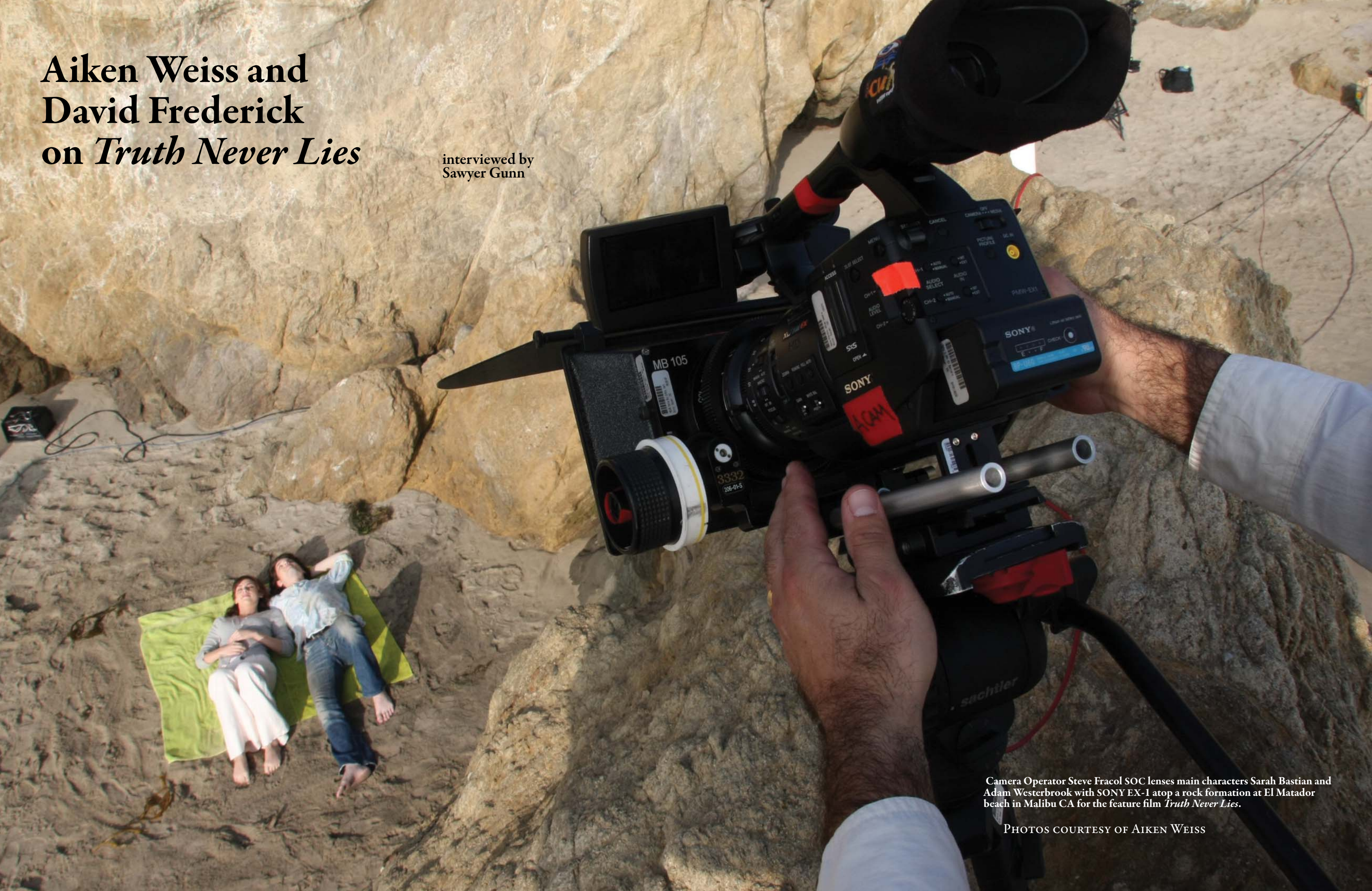
Camera Operator Steve Fracol SOC lenses main characters Sarah Bastian and Adam Westerbrook with SONY EX-1 atop a rock formation at El Matador beach in Malibu CA for the feature film *Truth Never Lies*.

Photos courtesy of Aiken Weiss

A s a family mourns the death of a daughter, a young girl shows up at their door, injured, confused and without her memory. By taking care of the young girl, their pain transforms, stirring up secrets from the past.

The dramatic and emotional story of *Truth Never Lies* was what Aiken Weiss SOC decided to take on as his first directorial project. Lensed by former SOC President David Frederick in 2008, this ultra-low budget film won the Rising Star of Excellence in Filmmaking at the 2010 Canada International Film Festival.

Camera Operator caught up with Weiss and Frederick and asked them about moving up from camera operating as well as their close collaboration on the project.

How did this project come about?

AIKEN: I had been looking for an opportunity to professionally grow and expand for a while. Even though I love operating, I wanted to explore another side of me. Learning more about producing and directing would not only allow me to understand more about those parts of filmmaking, but make me a better and more understanding operator as well. I could only win.

My wife Elke has written a bunch of wonderful scripts in the past, but I was hesitant for various reasons to consider any of those for my directorial debut. So we put our heads together trying to figure out what kind of project we would like to tackle. We agreed that it should be a drama and Elke wanted to work with a topic that has been fascinating her for a while —Memory. I loved the idea and within only four days, Elke had magically produced the first draft of *Truth Never Lies*.

The following few weeks were stuffed with casting, interviews, locations scouting and paperwork; Elke kept polishing the story. Due to the money we had available, we needed to be smart about the approach. Even though we initially planned on shooting even faster, we settled for a six day shoot with two locations. Everything was exciting and stressful and I would lie if I said I never thought of letting go of the project because it became on some levels a little bit overwhelming.

Understanding the job of pretty much everybody on set, especially that of the camera department, helped me tremendously in tightening up the workflow. Setting up scenes and covering it was so fast and easy, I really could get used to it.

Can you talk about hiring Dave Frederick as the DP? Why did you choose him?

AIKEN: There a lots of factors when picking a DP to collaborate with you on a project. Not necessarily in the order of importance: I needed to like my DP (every meeting should be inspiring and fun), he/she needed to be up for a challenge (fast pace, no time, no stress), he/she needed to embrace small cameras (to move fast and get into small spaces we chose to shoot with the EX1) and he/she needed to like the script in order to make it an enjoyable experience.

Dave has been a close friend of mine for many years and when I approached him, he was excited to do it. I tried to be very clear about the challenges we were about to face. After all, the goal was to shoot a 96 minute feature in under a week—all without losing too much of anything, but being open and aware of compromises and choices that needed to be made. I simply wanted to get the best product I could with the manpower, money, time and gear available. I felt that Dave would be able to tackle the project and give me what I needed even with all the limitations at hand.

How was it working as a director with fellow operators?

AIKEN: The main advantage to being an operator working with operators is that you understand their craft, and communication can be reduced to a minimum (most of the time). Due to the working environment and time restrictions, I needed to be sure to give my actors all the time they needed and deserved. Dave and camera operator

Day exterior scene at the "Richter house" location. Behind cameras, Dave Frederick SOC and AC Jorge Devotto, Steve Fracol SOC and AC Dan Taylor. Holding slate under boom microphone is 2nd AC and SOC event administrator Karen Beck.

Steve Fracol SOC allowed me to do exactly that. They gave me the necessary time with my wonderful cast to get the performances I wanted in almost always one or two takes.

Being a fellow operator, how was it working with Aiken as a director?

DAVE: An exciting part of my being the DP on the film is that Aiken is not just the director, but also a dear friend and camera operator colleague of mine. We got to know each other over the past five years through the SOC. During those activities, we became great friends.

We are both Steadicam operators and have recommended each other for many work opportunities. This friendship and shared knowledge of the craft was the basis of the perfect supportive relationship between DP and Director that is needed on any film—especially on this one since we set our production challenge level very high.

We were able to work with great trust of each other. We used a verbal shorthand that enabled us to quickly set up shots and get what was needed to tell the story well. Being an operator, Aiken was aware of our concerns and in the staging and even the rehearsal process, it was obvious how the training as an operator helped us to streamline the process of presenting the action to the camera.

Steve and I had been working together on two other television productions the entire year leading up to this shoot, so that we had a symbiotic relationship already in place.

You were shooting a movie in 72 hours. What was your approach?

DAVE: I took a deep breath and thought that there was only one way to do it—keep it simple.

This was our mantra: Talk out our dream scenario of how we would like to shoot a scene and then simplify it so that

> *Understanding the job of pretty much everybody on set, especially that of the camera department, helped me tremendously in tightening up the workflow.*

the important elements of story are met, the actors are moving in the frame to keep it interesting visually, and we could take total advantage of ambient light.

It was agreed that we would try to do each set up in one take and then move the camera for the next angle with whatever improvements we needed to make. This was where we learned to be glad of happy accidents and compromises.

AIKEN: I was curious to see if it was possible to shoot a

WINNER of the
Rising Star Award of Excellence
in Filmmaking
2010 Canada International
Film Festival

SARAH BASTIAN   ADAM WESTBROOK   JULIE LANCASTER   MATT O'TOOLE

TRUTHNEVERLIES

What if you couldn't remember who you are.

full-length feature in such a short time. With about 20 years as a camera operator under my belt, I have seen a lot of time and therefore money wasted.

I am not saying everything should be done so fast and restricted. Technically you can shoot a 96-minute film in 96 minutes if it is written, staged and executed right. Every minute, hour, day or week you add should be worth it and used to its full potential. What can you do to still make it a film with a story that works and that sounds and looks great? We did NOT want it to look like a film that was shot in six days.

What it comes down to is: script, location, preparation, resourcefulness, flexibility, communication and teamwork. I pitched the project to everybody who came on board (cast as well as crew) like a sports event. Prepare well, focus on the execution and enjoy the ride.

On low budget movies, it is an unfortunate commonplace for a DP to operate his/her own camera. But on *TNL*, each of you operated cameras. Why?

Aiken: That is of course a question I have been asked before and have been asking myself. One reason was money. We really had to make sure we were careful with what we spent. I didn't call any favors. I wanted everybody to get paid for their work. I believe the crew shouldn't carry the risks of producing a film. That's our job. So we went with the standard low-budget set-up of the DP operating one camera. I also used my own Steadicam gear and it felt natural that I would operate it too.

Which leads me to the second reason. For me *Truth Never Lies* was something new. I have been operating for two decades and feel so comfortable doing it that I wanted to be part of the camera crew somehow. Just a little. Play with the boys if you will. That's why I operated the Steadicam shots. Knowing very well that, if I had to, I could fall back to either one of two very experienced fellow operators, Dave or Steve.

Dave: *TNL* was an extremely low budget film with only limited token wages paid to crew. Without getting someone to work for nothing, which we didn't want to ask someone to do, it was necessary to operate when we filmed with two cameras—which was the majority of the time.

One of the major considerations for Aiken's choice to perform the Steadicam was monetary. All three of us, Aiken, Steve and myself make our living operating Steadicam, all very good and capable. Aiken was concerned about not being able to properly pay one of us to perform the task, as Steadicam work is rightfully rewarded with additional salary. By operating himself, Aiken was able to reallocate funds to needed areas of the film.

It was a very minimal crew—during the Steadicam shots, I was manipulating a handheld eye and fill light next to Aiken, while Steve was shooting tight coverage handheld.

What was the downside to operating your own cameras?

Aiken: As an operator my main focus is the shot design and the framing. When I direct my main focus is the performance. No matter how good of a multi-tasker you are, there

Panoramic vista shot of El Matador Beach, Malibu CA filmed by Steve Fracol SOC.

will always be one aspect you focus more on than the other. Especially on a dialog and performance driven film like *Truth Never Lies*, I feel my main focus should have been with the actors.

Dave: The downside of being an operating DP is that you simply cannot devote yourself to the entire photographic experience: dealing with the integrity of the image, completely serving the needs of the director's vision and importantly, anticipating the unforeseen pitfalls or opportunities of enhanced storytelling. When you are distracted by the necessity of physically operating the camera, something gets shortchanged.

Director Aiken Weiss and DP Dave Frederick collaborating on shot design during a pivotal scene.

Looking back, what would you have done differently?

Aiken: If there is one thing I would do differently, it is hiring an additional camera operator. I believe a second operator would have freed up Dave. Another operator would have given him more time to give both cameras full and equal focus. Having an operator on every camera meant that there was no trained eye at the monitors overlooking the images in regards to matching, color, frame, bogies etc. A few things needed fixing in post (which was tough at times) and could have been prevented on set with an additional operator.

And having Steve operate the Steadicam shots would have given me the advantage to give those scenes and my cast what they deserved—my full attention.

Dave: The lesson learned is that even though the project is low budget, it really pays off handsomely in the editing room and on the screen to have the tasks divided and the burden shared to provide the best results. Hire an operator for each camera and reap the benefits!

Working with Steve enabled me to make better and faster decisions concerning efficient and artistic photography. His camaraderie, communication, care and attention to detail allowed me to work quickly, lighting and jumping ahead to the next set so that we could keep up our breakneck speed of filming.

What camera equipment was used? What's the reason for that choice? Were you happy with your choice (camera, lenses, etc.)

Dave: The camera package we used: 2 SONY EX1 with stock lenses from Birns & Sawyer. We had a wide angle adapter and a tele extender for either camera. We were taken care of wonderfully by the staff at Birns and we thank Bill Meurer for all of his support.

SOC associate member Karen Beck trained to handle the data management of the EX1 cameras SxS capture cards. Since we were jumping from set up to set up Karen had to streamline her process of data dumping onto the hard drives to keep up with the quick shooting pace.

We did not have a DIT and in my hindsight this was the biggest sacrifice that we made. If we'd had a DIT, I would have been able to work just as fast but with a much higher degree of accuracy.

If there is one thing I would do differently, it is hiring an additional camera operator.

The biggest limitation with these small cameras is accurate exposure and focus monitoring of the image. It is truly impossible to have a precise representation of what you are achieving through the on board viewfinder or swing out screen. The matching issues, especially in the skin tones, was a problem that was taken care of in post, but it would have been better if it was taken care of during the shoot.

This is why as a DP it is crucial to be at a monitor ensuring the quality of the image instead of operating the camera.

How did you handle lighting? What choices did you make?

Dave: Gaffer Lance Dickensen and I stayed with the mantra "keep it simple." We were able to keep moving between setups quickly by keeping to this plan.

I employed a wide variety of lighting: LED Lite Panels, Joker HMI, KinoFlo, small HMI par and tungsten Source 4 units and chimera bags. Each scene had its own flavor in the

house and we were able to leap frog from one room to another.

The 1´x 1´ LED Lite Panels were my "speed lights." I was able to have those rigged quickly and with the grids, color correction and diffusion they served the picture's quick pace shooting style extremely well. I also used a set of Joker HMI Lamps by K5600 for their quick set up and variety of uses. On day exteriors, we used 8 x 8 bounces and negative fill, as well as handheld poly boards.

We would literally rehearse, block, set shots, light and shoot 3 and 4 page interior scenes with two or three characters with full coverage in 90 minutes, every day, with each scene in a variety of locations in the house. We had to move the limited lighting package from room to room as we shot.

The name of the game was speed, to give the director and the actors the floor time and to be ready before they were. Because Aiken, Steve and myself have extensive documentary shooting experience, we rose to meet the challenge with great success. I was always looking for naturally existing artistic lighting opportunities based on the time of day.

When I look at this film on the screen, I am satisfied with the results for our efforts and the time in which we shot the film. I think that if we had twice, even three times the time, we would always look at a piece we did and have some consideration that we could have done it better or more effectively. I try not to

Jib arm shot at cliff's edge of El Matador Beach in Malibu set up by 1ˢᵗ AC Jorge Devotto, DP Dave Frederick and Electrician/Grip Carlos Aranda.

go there on this film. It was made quickly and we concentrated and forgave the shortcomings of many aspects in order to embrace the accomplishment. Then we had to allow the film to have its own life as a result of the pace of our production.

One of the great freeing aspects of this production was the willingness of everyone involved to look past our traditional job expectations in support of the greater success of the project's goal—to tell a filmic story, but tell it really quickly.

Jack Messitt
on *Midnight Movie*

interviewed by
Hunter Clark

Midnight Movie's **signature killer strikes at his audience—literally!**

In the summer of 2007, SOC 1st Vice President Jack Messitt was tapped to direct the horror film *Midnight Movie*. Since it debuted on DVD and Blu-Ray last year, it has received some real praise:
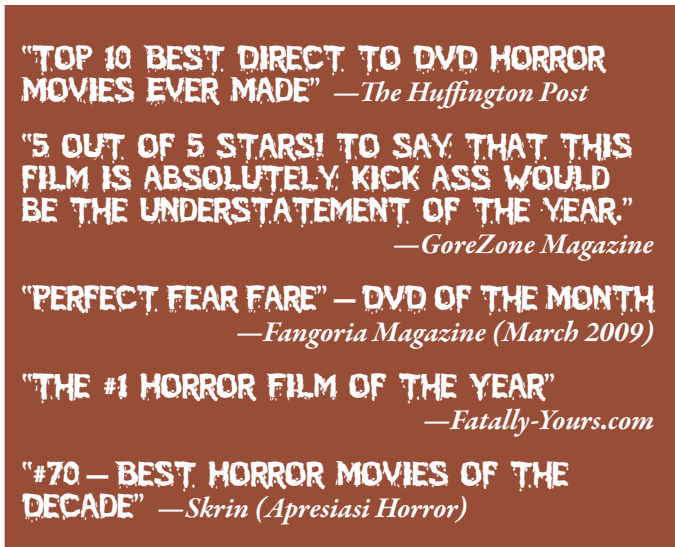
Camera Operator magazine sat down with Jack to discuss his transition from camera operating to his spot in the director's chair.

What is *Midnight Movie* about?

Midnight Movie is about a group of kids who go to a midnight screening of a long forgotten horror movie and the killer from the film suddenly comes off the screen and starts killing the people watching the movie. It's a real roller coaster ride of a movie.

Why did you decide to make your directorial debut with a horror movie?

Why not? Making a horror movie is awesome! You get to play with all the fun parts of making movies—stunts, fun make-up, fake blood... lots of blood! With 21 days of shooting and 18 kills, I showed up every day, looked around at the cast and asked, "All right, which one of you is dying today?" How much fun is that?

But as a working cameraman, it was actually a difficult decision to direct the film. While a great opportunity, it meant that I would have to sidetrack my camera career for at least a year. But after thinking about it, I figured that the worst that would happen would be that the movie was awful and, in the end, I could go back to shooting again—so why not?

I took the chance and am glad that I did! I am really happy with the way the film turned out and have been blown away by the reaction I have gotten from the horror fans.

***Midnight Movie* won Best Feature Film and Best Cinematography at the Chicago Horror Film Festival.**

I was totally jazzed about the Chicago Horror Fest! It was the first real audience that the movie played for and it was great to see the response! As a cameraman the Cinematography award was really special and the Best Picture award blew me away! And having grown up in Chicago, it was a real honor to win the awards in my hometown. I'm still smiling about it!

You'd have to be a horror movie fan to have written the screenplay for *Midnight Movie*.

I signed onto *Midnight Movie* with a script already written and financing already in place. But the reason I was hired was because I wanted to make major changes to the project.

I wanted *Midnight Movie* to be the fun ride I remember the '80s slasher films to be. I think that we tried to update that formula to work for today's audiences, but you can't help but see both the original *Friday the 13th* and *Nightmare on Elm Street* series in our film. When it came to *The Dark Beneath*, the movie within our movie, we based it on several films from the '60s and early '70s. *Texas Chainsaw Massacre, The Night of the Living Dead* and *Psycho* were the main influences.

And when I signed on, I did my research. In the past few years, I have seen countless numbers of horror films. Some good, some bad. In fact, I think you learn more about how to make a horror movie from the ones that don't work so well. You see what is missing and the pitfalls. And when you see a good one, you can see the formula that works.

But you can only have real scares and suspense if you care about the characters. So I worked really hard on making the
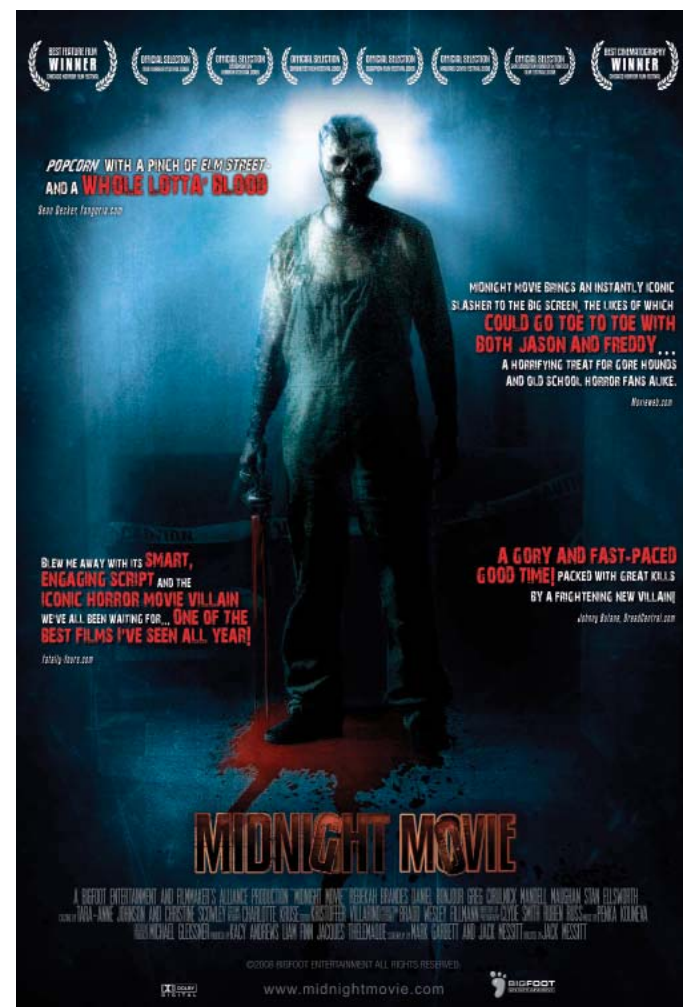
people in the film as believable as possible. I wanted the audience to like them (or in Mario's case, love to hate them). It is this connection that makes a moviegoer feel any of the thrills and chills you hope to set them up for.

Was *Midnight Movie* your first writing experience?

No. I wrote the screenplay for *Trust*, a thriller that debuted on Lifetime earlier this year. And like most writers, I have a pile of scripts gathering dust in my office.

Talk about the transition to director from operator and DP—what are some of the challenges?

Moving from behind the camera into the director's chair brings a whole new set of responsibilities. Instead of looking to someone else for guidance, everyone is looking to you for the answers. Instead of enhancing someone else's vision, you become the vision. The pressure is increased exponentially.

Working with the actors was a wonderful experience. As an operator we work with actors every day. But as a director, it is different. Instead of talking to them about marks and more technical aspects, I was discussing emotions and the arc of their characters. And I saw firsthand how much actors really need in order to make their process work. This is a lesson that I try to take with me as a camera operator.

From a technical standpoint, my experience as a cameraman really helped me during the pre-production and production stages. With such a short shooting schedule, you have to pick your battles. And my past experience was great when it came to scheduling to make the most of our limited time. On set, I knew what coverage we needed and what we could get away without because I had been a cameraman. Not to mention, I had a great shorthand with our crew.

What was the budget of the movie?

We had around a million-dollar budget. And while that sounds like a lot of money when it's in your bank account, it isn't much when you are making a movie. But I think that even if your budget is $100 million, as a filmmaker you never have enough time or money to do everything you want. But with only one million, this is especially true.

With such a low budget, did you have a camera operator?

Of course—and one of the best! I was lucky enough to have Greg Collier SOC on A-camera. With the short amount of time we had, I knew
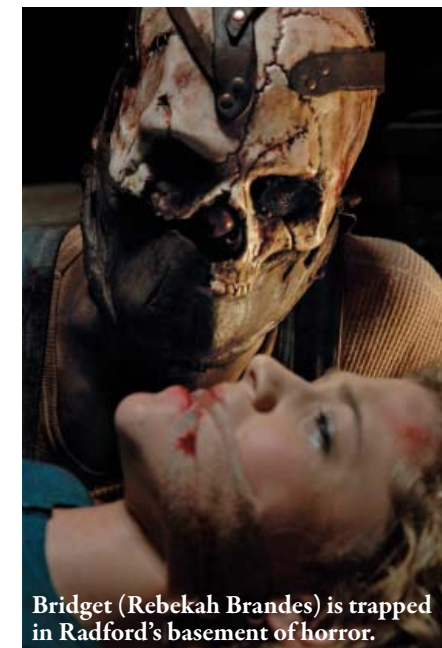
that we needed to make the most out of every minute. With an operator, I know that I got at least two more set-ups each day. Without Greg, there is no way we would have gotten nearly as much footage to work with in the editing room. And his creative input made a huge difference on *Midnight Movie*.

I have been lucky enough to work with Greg on several projects. He operated for me on *Irreversi*, a movie I shot in Hong Kong. And I have operated for him when he was the 2nd Unit DP on *Bones*. We have a great time working together and have really similar sensibilities when it comes to framing. I can't wait to work with him again!

But working with Greg was just one of the ways we spent our money wisely. We did everything possible to make sure that every penny showed up on the screen. Shooting 35mm was another one of these choices and I think that it shows. We just couldn't have gotten the same look with video—even HD. Not on our shooting schedule. It just doesn't hold up the same.

And when it came to our effects budget, we made sure that it was high enough to deliver the kind of effects that our audience expects. Like it or not, we are competing with all the studio films out there. That is where the bar is set. People do not give us a break just because we had a low budget, so we had to deliver.

Were there any particular scenes that were more fun or more challenging to shoot? Why?

The challenging scenes are the one with the effects. On-set effects always take a long time and *Midnight Movie* has a lot of them. The biggest difference in having more money is

Bridget (Rebekah Brandes) is trapped in Radford's basement of horror.

RUBEN RUSS

KRISTOFFER VILLARINO

Bridget and Timmy (Justin Baric) try to escape from Radford in the climax of *Midnight Movie*.

Radford (Lee Main) stalks his prey.

structure the kill sequences in the film to mirror the history of horror movies. Being inspired by specific periods of the horror genre helped give each kill its own personality. Not only did this allow us to create some really memorable moments on our limited budget, it also gave the film an increasing progression of kills—a nice arc. So don't be fooled by the first few sequences of the film. Like with the horror genre itself, the movie becomes darker and much more graphic as time goes on...

How much is in-camera effects and how much is CGI?

The movie in the movie was also composited into the film later. This worked really well because we used the screen as a lighting element on the set which created an easy luminance key in post.

Outside of that, we tried to do everything we could on set. While there are a few scenes that were enhanced with computer effects, we limited them to the effects that just weren't physically possible on set. For example, we added some CG electric bolts that fly around the room when one of our characters is electrocuted.

Then, there is a scene late in the film where a character has a gaping wound in his face. We used green screen makeup within an outer prosthetic. Although we could have used strictly a prosthetic, it would not have had any depth. While we initially planned on creating a CG wound, a photorealistic wound proved prohibitively expensive—and had no real guarantee of quality. So we switched gears and instead shot a practical wound in a plaster cast of our actor's head. This was

having the resources to shoot an effect more than once. With our budget, if the effect didn't work, we had to move on anyway. No time to clean things up and try again.

But I planned out each and every one with storyboards in pre-production. Our effects house built the gags to the exact camera angles we needed—which saved a ton of time and guaranteed (as much as you can) that we could get the coverage we needed.

There is a marquee kill about halfway through the film where two key characters get taken out in spectacular fashion. Not to give too much away, it involves someone trapped in a window. Well, we only had one day to shoot this and to make matters worse, we had one of the actors for only the first six hours of the day. We had to shoot all the shots with him first, then we went back and picked up all the others. It was tricky and thank god I had planned the scene well. We left with all the pieces we needed to put together a really fun scene!

Overall, I am really happy with the way the effects turned out. I think they are amazing for our budget level! Having said that, there were a lot of sequences where I dreamed up some really amazing shots and effects that we just didn't have the time or money to pull off. Maybe on my next feature, I'll have more resources to work with... We'll see.

So is the movie gory?

Midnight Movie has an increasing level of gore. We kill off 18 characters by the time it's all said and done. But the one thing I didn't want to do was put our best kill up front. I didn't want to peak too early and have everything afterward seem like a letdown. So I decided to

Camera Operator Greg Collier captures all the gory details as Detective Barrons (Jon Briddell) meets his fate.

later composited into the scene by Pixel Magic. In the end, this worked out much better than the CGI wound ever would have. It was much more real and tactile: a deep actively dripping wound that really makes the scene memorable!

Why was *Midnight Movie* released straight to DVD, rather than in a theater?

Actually, we had a limited theatrical release in the Fall of 2008. We played in 10 cities and, for obvious reasons, the

Director Jack Messitt and Camera Operator Greg Collier SOC work out a shot of actor Michael Swan on the set of *Midnight Movie*. Photo by Alex Szuch

midnight screenings were a big hit. But since the DVD street date was set first and coming up quickly, that was all we had time for.

How are sales/rentals going for *Midnight Movie* DVDs? Is the fact that it was pirated a problem?

The movie is selling really well—especially considering that this is a time that even well known DVDs are not selling like they used to. Getting into the retailers is half the battle. Luckily, we had a good distributer that got us into Blockbuster and Netflix for rentals and Walmart stores and online for sales. Most of our marketing has been on the web. The horror websites out there—and there are a lot of them—were great in helping spread the word.

It has also had a ton of showings on Showtime and The Movie Channel throughout the past year. I have to say, it is pretty cool to turn on the TV and see my movie playing.

Piracy is certainly an issue and we probably would be selling more DVDs if illegal copies weren't available online. But until we can get the general public to understand that piracy is theft, this is not going to change.

You have tried your hand at just about every facet of filming. What has been your most rewarding part of the film process?

I love them all, really. Making movies and television is a lot of fun. The positions I've held are so different and all have their own unique challenges. Screenwriting is a world where you can dream up wonderful characters. As a camera operator and DP, you are able to take someone else's vision and turn it into a reality. And when I am directing, I am able to breathe life into the story. But the best part of making movies and TV shows are the wonderful people I have been able to work with along the way.

So will you be writing and directing from now on?

We'll see. The thing that I've found is that with every new job I take on, I get better at the other ones. When I started writing and directing, I became a much better cameraman. I had a much better idea of where directors wanted to go and then what I could do to enhance the vision they were after.

I've done plenty of camera operating since I finished *Midnight Movie*—and I still think that it is the best job on the set! But in the past year, I've also directed some big 2nd Unit sequences and even shadowed a director on *The Mentalist*. I'm ready for anything.

I like to think of myself as a guy with a lot of irons in the fire. I'll run with the ones that get hot. When I first put my director and screenwriter irons in the fire, they actually got hot fairly quickly. If they stay hot, I'd love to explore where they'll take me.

Camera Operator Greg Collier SOC on *Midnight Movie*:

What was your previous working relationship with the DP, the director and the producer?

Jack and I have known and worked with each other for over ten years. We have both been operators for *MM's* DP Clyde Smith on different projects together or separately. Recently Jack and I have assisted each other; I have operated on projects he has directed and DP'd and he has operated for me on shows I have DP'd.

This was my second film with Producer Kacy Andrews.

Describe your on-set relationship with the DP and the director.

One of the reasons Jack asked Clyde and me to work on *MM* was because of our relationship with each other. We not only like working together, we're friends. Jack knew we would support him faithfully and give him input when he needed it.

What was the overall visual approach to the project? What camera equipment was used?

For me as an operator the challenge was that the film was to be over 90% handheld. This was a visual decision Jack had made early on in the planning.

I was very happy to know that the camera I would be handholding would be the Arricam, Arri LT. It's the lightest production camera that still has a solid feel. More important than weight is how a camera balances out on the shoulder. My other preference would have been a Panavision Gold; that camera has a great feel on the shoulder.

Did you get to rehearse much? How does that affect your work?

That's a great question. When operating handheld, it's a balance between too much rehearsal and keeping the shot organic, visceral, loose. In my opinion the point of handheld is to create immediacy, tension. Otherwise you're a human tripod or poor man's Steadicam. There should be a reason the shot is handheld.

What were the environmental conditions of the shoot? Did anything hold you back from doing shots the way that you'd have liked to do them?

The shot list was very ambitious for the budget of the film. We were all up to the challenge; we pooled the resources of our collective experiences. At the end of the day, I really think we pulled off something amazing for what we had to work with.

How involved were you in the blocking, shot conception and actor rehearsals?

Jack keeps an open dialogue between himself, the DP and the operator. Jack had been living with this project and knew exactly what he wanted, but he was always open to suggestion and building something better. That's why we were there.

What was the cast like to work with? Concentration level, skill level on camera tasks?

This was a great cast and they all had their difficult scenes. After all, they have to die, one by one, a horrible graphic violent death. However, working with a young inexperienced cast does present some problems. Sometimes my job would require having a one on one conversation with an actor about the importance of hitting your mark and why it's there.

Jack employed a technique I've seen used on TV series with a young ensemble cast. That is to bring in a seasoned veteran to show them the ropes. For us, that guy was Stan Ellsworth who played Harley. Stan was someone with set savvy and he really helped keep focus and attention on set just with his professional presence.

Describe a particular operating challenge on this movie.

Wow! I can't think of one that *wasn't* a challenge!

What made this project stand out from your previous projects?

You can't beat an opportunity to work with friends who value your ability and appreciate your input. Now we're makin' movies!

Have you ever worked on a horror film before? How was it working with all the gore?

In 1989, I was the 1st Assistant Cameraman on the George Romero/Tom Savini remake of *Night of the Living Dead*. As you might imagine those guys don't hold back when it comes to gore. Recently, I have been A-camera operator on the FOX-TV forensic crime drama *Bones*, a show that likes to make gore a leading character. It is true that you get desensitized to all that is disgusting around you, but sometimes when you step back and really look at it all you can't believe how awful your surroundings can be. I remember on *MM* looking down at my shoes and seeing myself standing in 3 inches of movie blood. Yuck!

Please add any special story from the project to share with our readers.

MM DP Clyde Smith had to leave the show early because of a schedule conflict. DP Rubin Russ was brought in to finish. The morning of his first day, he confided to me that working with an operator was new to him. He usually operated his own camera. At the end of the day, he told me he never wanted to work without an operator again. That was special.

Tell us a little about your camera crew.

We had a great camera department. I can't speak enough about the focus pulling talent of Heather Leroy. 2nd AC Kelly Cummins and Loader Emily Goodwin rounded out an excellent team.

Meeting the Special Needs of 3D

By Jeffrey Cree SOC

**Vice President/Technical Services
Band Pro Film & Digital Inc.**

The success of James Cameron's *Avatar* has ignited interest in 3D camera systems and the parts to produce these systems. The early adopters of 3D had to design and manufacture the rigs but in many cases repackage the cameras to get the desired results. I have had the pleasure of being around a large group of the early adopters of these systems and have witnessed the issues of packaging existing products into workable 3D systems. The process was often long and tedious and made it impossible for those without high levels of engineering expertise to enter the market. During the recent NAB exhibition, it was very evident that this has changed. New products from both the established manufacturers and new boutique manufactures are providing all the various elements to construct functioning 3D systems without a machine shop.

3D Rigs

Since the integrated 3D cameras from Panasonic and Sony are not available, some type of rig is required to produce those 3D images. These units come in many shapes and sizes to support the various camera systems, but all these rigs are divided into two basic categories, Side-by-Side or Beam-Splitter type.

Side-by-Side rigs are the most cost effective and simplest way to produce 3D. Simply mounting two cameras on a bar or platform parallel to each other will provide the basic stereoscope view needed to produce 3D. These systems are generally used for wider shots or longer-range shots as the intraocular separation is limited by the size of the cameras and lenses, making it almost impossible to perform close-ups with these systems. This can be improved by using special camera systems modified for this purpose such as the Sony "J" camera which was designed to allow for a 1¾″ inch separation. Block cameras are also used for this purpose, but

Quasar-Broadcast-Sony-1500s

with some loss in quality. When automating functions like intraocular separation and convergence are added to the package, the expense and sophistication of the systems multiplies. Maintaining alignment of the images also moves beyond the budget and abilities of most low-budget projects.

Beam-Splitter rigs have become the common system as they allow the use of higher-quality, full-size cameras. One camera looks through the split mirror and the other looks at the reflected images allowing the smaller intraocular separation required for capturing close-ups. Additionally, depending on the size of the mirror, the separation may be increased as required for those long shots. These rigs can be very large depending on the cameras and lenses utilized for the production. The mirror size is also a key factor in the size of the rig. A larger mirror can increase the versatility of the system to produce a wider range of images while reducing the usefulness due to the size of the rig. Many of these rigs have utilized the "T" head cameras such as the HDC-F950 and HDC-1500R from Sony. These allow the optical block of the camera to separate from the processor, keeping the mounted portion of the system very small. New camera systems like the Sony HDC-P1 provide the performance of much larger system while reducing the size and versatility of the rigs. The smallest split mirror rig that I have seen for a performance camera was built by Element Technica for the Silicon Imaging SI-2K.

These types of rigs required a build-it-yourself approach in the past, but that is no longer the case. Currently more manufacturers than could fit in this magazine issue are making 3D rigs. Here are a few the key players:

Element Technica builds 3D rigs for all sizes of cameras, from the F35 down to the Iconix miniature cameras, and all of their rigs are convertible from Beam-Splitter to Side-by-Side and back. Their new **Quasar** is very popular with Red One users, but the new Sony HDC-P1 fits very well on this system too. This unit can use the wireless 3D Technica Hand Control for controlling the functions of the rig. Those in the EX1/3 market will find that the **Pulsar** rig will fit their needs at a lower price point. A simpler design with fewer features than the Quasar, the Pulsar still provides good performance for this part of the market. The **Neutron** Rig is the smallest production unit from Element Technica which works very well with the SI-2K cameras and other smaller cameras.

P+S Technik has their popular **Universal Mirror Rig**, designed to handle the largest of cameras from all manufacturers. P+S provides the necessary pieces to customize the rig to the camera selected for the project. System costs can be minimized by selecting the manual version of the rig, but a full servo control version is available as well.

The **Stereo Tango Rig** is a space-age carbon fiber construction, reducing the overall weight while maintaining the rigidity of this full-size rig. The rig is designed to interface with the full line of Arri camera accessories including bridge plates, bellows, and filter frames. The unit is available in both manual and full servo configurations. All of the major lens

control systems—Arri, Cmotion, Scorpio and Preston—control the rig to simplify the interface.

3D Film Factory of San Diego has a line of both Side-by-Side and Beam-Splitter rigs. They are best known for their well-built economical units, but the **3D-BS Pro Rig** is a full featured system that can handle the Red One, Sony HDW-F900 and HDC cameras. Designed for the smaller EX1 type cameras, as well as the new DSLR systems, the **3D-BS Mini Rig** provides a low-cost entry system for the masses. The 3D Film Factory's Side-by-Side Pro and Indie systems are of a simple rail design for the less-demanding, fixed applications.

Cameras

The camera system used on a 3D rig is a very subjective choice. Many of the experienced 3D production companies prefer 2/3″ cameras rather than some of the newer cameras with large format imagers because the increased depth of field is often considered enhancement of the 3D image. However, by now nearly every camera has been paired for 3D. Here is a rundown of the most common cameras used for 3D production.

Due to the low cost, compact size and high performance, the **Red One** has become very popular with the independent 3D production companies. It still requires a full size rig, but the compactness of the system reduces the overall mass of the 3D system. New introductions from Red promise to help reduce rig size even further.

The **Silicon Imaging SI-2K Mini** provides a 2K image in a very small package. The camera lends itself to Side-by-Side rigs or very small Beam-Splitter rigs. The SI-2K outputs a RAW image so recording is performed directly to a computer or to the new Cinedeck recorder unit. To simplify the process the SI-3D system uses two remote head SI-2K Mini connected to a single processing system and custom software via gigabit Ethernet, where they are synchronized and controlled through a touchscreen interface.

The **Sony HDC-F950** and **HDC-1500R444** are popular with the high-end 3D companies for their 4:4:4 capabilities and their "T" Head configuration. The optical block is separated from the camera processor and placed on a special 50-meter cable reducing the size and mass of the 3D rig while maintaining the image quality and control of the high-end system camera.

Industrial box type cameras are used for 3D systems when size is a key element of the rig. The performance of these systems have never been up to the quality levels of the system cameras and camcorders used by normal production companies so Sony designed a hybrid camera they call the **HDC-P1**. The simple box design maintains the small size of the box type cameras while providing the performance of the HDC-1500R system camera. The camera includes Genlock in 4:2:2 outputs and interfaces with the standard Sony remote control systems. On elite productions where size of the rig is not a limitation, you will find full size "Cine" cameras such as the **Panavision Genesis** and **Sony's F23** and **F35** attached to full size Beam-Splitter rigs. Mounted to the correct rig these cameras provide high performance with real-time viewing capabilities that has made them the choice of higher budget projects.

Neutron with Sony-P1s-1

Lenses

Choosing the right lenses can the key to a successful project. Finding a matching pair of lenses is no easy feat. Just taking two prime lenses of the same manufacture, model, and focal length off the shelf will not guarantee a matching pair. Zoom lenses that are to be used in tandem for 3D productions must share the same focal length—and during shooting, they must also match zoom and focus position. The **Fujinon 3D Synchronous Control System** uses 16 bit encoding to synchronize the left and right lenses so zoom and focus accurately move in unison. Fujinon is producing four models providing coverage from 6.3 to 175 mm without using the extender.

The creation of these tools for the 3D production has opened opportunities for the entire market, not just master machinists and mechanical designers. By taking these individual pieces and putting them together, it is possible for a crew with reasonable mechanical skills to assemble a 3D rig. However, not all 3D is good 3D, so you must take the time to learn process, procedures, and skills to produce quality 3D. Good Luck!

"Mr. DeMille, I'm ready for my close-up." Actress Melissa Steach endures the glamour of Hollywood gore make-up on *Midnight Movie*.

ALEX SZUCH

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