

695 QUARTERLY

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5439 Cahuenga Blvd.
North Hollywood, CA 91601



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SPRING 2014
VOLUME 6 ISSUE 2

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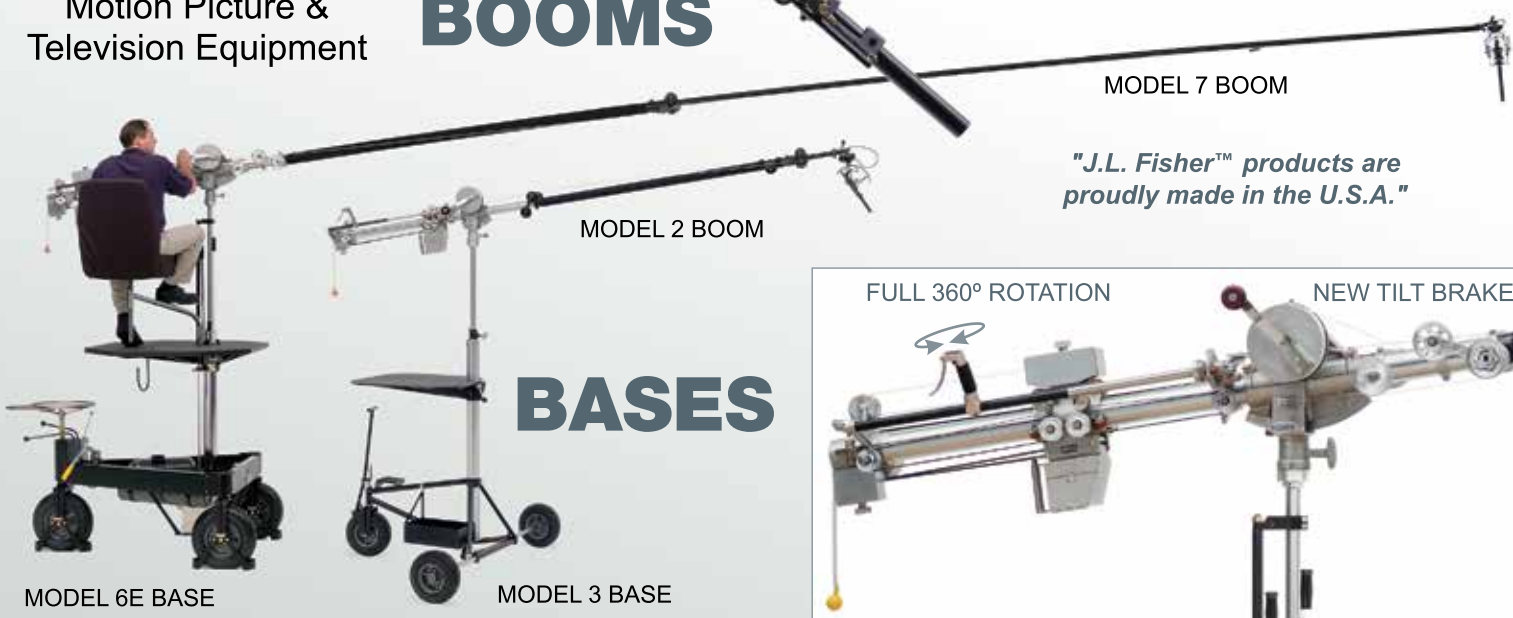
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Cover: Filming the pirates as they attempt to
board the Maersk Alabama in Captain Phillips.
Photo courtesy of Columbia Pictures



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From the Editors



In this issue of the 695 Quarterly, Local 695 members demonstrate a commitment to excellence, a willingness to devote time to planning, preparation and testing, to realize a brilliant outcome. This has been the theme of every issue since we began publishing in the spring of 2009.

In *Captain Phillips*, Chris Munro, CAS used equipment concealed on the pirate skiffs to relay audio to follow boats. This required careful preplanning to ensure that sufficient equipment would be available on location and that all the elements would coordinate effectively. He brought an equally complex, but technically different, approach to his award-winning work on *Gravity*.

Robert Maxfield drew upon everything he's learned in 30 years of production experience to bring in good tracks on *The Walking Dead*. His determination to find a way, and his good grace under pressure, bring renewed respect for the Sound Department on that difficult show.

Finally, in Part 2 of his overview of P-Cap and MoCap technique, Jim Tanenbaum, CAS brings 50 years of production experience to a new and developing field. Even with the skills learned over a long and productive career, he extends his thanks to fellow Mixers who allowed him to shadow them and observe their approach to the task. Keeping skills sharp is an ongoing commitment to excellence.

This is what Local 695 members do every working day; find solutions to problems. Drawing on years of experience to find new ways to get the best results and entertain the audience.

Fraternally yours,
Richard Lightstone, Eric Pierce,
and David Waelder

From the President



locals and members, including Local 695.

A union's power comes from the strength of its collective voice. All institutions need rules to function and succeed. Local 695, as part of the International, is no exception.

The Trustees, alongside Interim Business Agent (Scott Bernard), Special/Field Representative (Joe Aredas, Jr.) and Education Director Laurence Abrams, have been hard at work to correct the past missteps of the union and devising ways to better serve the membership going forward. At the

As you are probably aware, the former officers of Local 695 have been removed due to the recently imposed Trusteeship. You should have received an email from me with an explanation as to why this action was necessary to maintain the integrity of the IATSE Constitution and By Laws, and the rights of IATSE

695 offices, the warped, faded and peeling exterior sign has been replaced. This emblem goes to your identity and you deserve to fly your flag proudly. Improvements are happening inside the office too: technology is being modernized and members' needs are being addressed across a broader variety of productions. From reality shows to scripted dramas, the current representatives of Local 695 are here to advocate for you. Their clear instructions are to put the member first.

Once the Local is back on its feet and operating smoothly, the IATSE's goal is to restore autonomy to Local 695. We hope you will help us through this transition by continuing to be our eyes and ears on the set. Please continue to report nonunion productions and call us with any contract questions or safety concerns. Scott, Peter, Steve, Laurence and Joe are available to answer your questions about the Trusteeship, and how Local 695 is changing to better serve you and the Alliance of which it is an important part.

Matthew Loeb
IATSE International President

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Jonathan Tan, Sound Mixer

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Our Contributors



Robert 'Max' Maxfield

For more than 30 years, Robert 'Max' Maxfield has worked in radio, television and motion pictures. For most of those years, he was a Boom Operator, Utility Person and Production Sound Mixer. His notable credits include *Mission: Impossible III*, *Rush Hour 3*, *Twister*, *O* and the current TV hit *The Walking Dead*. Max was a part of Sound Mixer Geoff Patterson's team that was Oscar nominated for *Twister*, and Michael P. Clark's team that was CAS nominated for *The Walking Dead*. In his spare time, he teaches a class entitled The Art and Craft of Recording Motion Picture Sound.



Chris Munro, CAS

Chris Munro is a Local 695 member and Production Sound Mixer on more than 70 films. He has collaborated with some of the most successful filmmakers in recent history, including Ridley Scott, Guy Ritchie, M. Night Shyamalan, Atom Egoyan, Paul Greengrass, Ron Howard and Alfonso Cuarón, to name a few. In addition to 2014 Oscar and BAFTA Awards for *Gravity*, he was nominated at both ceremonies for *Captain Phillips*. He previously won an Academy Award for *Black Hawk Down* and a BAFTA for *Casino Royale*.



Andy Rovins, CAS

Andy Rovins has been working in production sound for a long, long time. He kind of remembers the good old days.



Fred Schultz, CAS

Fred began production mixing in the mid-'80s. Most of his shows aspired for magic, and in some, lightning truly did strike. A small handful actually became cultural touchstones. Then he was diverted for a decade and a half, developing file-based digital technologies and workflows. While that technology was new, it also had magic. But by 2010, his patience with corporate life had run dry. He wanted back into production where magic is valued and lightning still happens. He bought a new chair, and some digital kit for a very old sound cart, and is a happy guy once again.



James Tanenbaum, CAS

With almost five decades of experience as a Production Mixer, Jim Tanenbaum is known to many as the man who "wrote the book" on timecode (*Using Timecode in the Reel World*) and as an educator. He has taught sound classes at UCLA since 1988, and traveled to Japan (1995), China (2010 & 2011) and Vietnam (2012) to train other mixers and film school students in the discipline of sound for movies and TV. He continues to work in production, most recently completing the first season of the reality series *Jim Henson's Creature Shop Challenge*. He worked on the last three years of James Cameron's *Avatar*, and hopes to do *Avatar 2*, *3* and *4*.



David Waelder

David has recorded sound for films for several decades and has been an editor of the *695 Quarterly* since its inception five years ago.

Photo of Robert Maxfield by Gene Page, AMC-TV, photo of Fred Schultz by Cassia Dominguez. All other photos courtesy of the respective contributors.

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Television Engineers,
Video Assist Technicians and
Studio Projectionists

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are vested in the Trustees.

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IngleDodd Media

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Advertising@IngleDodd.com

From the Interim Business Agent



Trustees appointed by the International now administer Local 695. The International President asked me to act as your Business Agent during this transition period. As a 35-year member of Local 695, 10 of those years as a Special Representative for the Local, I take great pride in being able to serve the membership. I pledge to navigate these choppy waters with both respect for the accomplishments of my predecessors and commitment to practices that will benefit members in the future.

Every change comes with opportunities. The Trustee Administrators are eager to fulfill a mandate to leave the Local in better condition than they found it. Together, we have been reviewing office infrastructure, equipment lease contracts and the phone system, seeking ways to improve service and manage costs. It's a good practice to perform this sort of top-to-bottom review periodically, and upgraded phones, computers and work assignments will enhance efficiency in assisting members. Webmaster Laurence Abrams has already implemented a change permitting members to pay dues and financial obligations online with a credit card.

Although there have been some changes in work assignments, most of the office staff is unchanged. Donna Gamble continues as our Executive Secretary, Leslie Otsuki still handles Accounting and Membership Services and Michael Kanyer handles the reception desk and also inputs data to the production tracking system. We welcome new employee Nicole (Nikki) Riordan in the Accountant & Membership Services Department. She comes to us with a background in accounting and computer networking. We also welcome Joe Aredas Jr. as a Special/Field Representative. Members coming to the office should expect to find assistance from a capable staff.

Local 695 is a participating member of the Entertainment Union Coalition (EUC). The EUC is a consortium of organizations committed to bringing production and post-production work back to California. The turnout for their kickoff event in February more than filled the largest meeting room at the Pickwick Center and, with more than 2,000 members attending, was the largest gathering of IATSE members ever. The goal of this first event (there will be others in the future) was to support the passage of AB 1839. We expect that bill to come up for its second committee review soon and we'll again be distributing letters for members to sign and forward to their representatives. Please watch your email for that distribution and for other information about activities at the Local.

The Local belongs to the membership and derives its strength from you. With your support and participation, we will emerge stronger.

Scott Bernard
Interim Business Agent

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Set Safety

When I first started doing narrative projects in California, I worked for an assortment of sketchy producers with more ambition than good sense. Like me, they were near the beginning of their careers and didn't yet have production experience in depth. Many of these shows had car crash stunts with pipe ramps and explosions. Gunfire was common and most scripts had moving car shots with process trailers.



Despite these potentially hazardous elements, I never felt that I was ever in any real danger. At that time, any film with location power requirements exceeding what could be provided by ordinary household outlets was required to employ a Fire Safety Officer. Local fire departments maintained a roster of retired or semi-retired officers to supervise film sets. They had the responsibility to ensure that the film didn't burn down the building or electrocute anyone. Some of these officers interpreted their responsibility very narrowly and only concerned themselves with fire and electrical safety. But many took on a larger role and would oversee any activity they considered a potential hazard. They might, for instance, inspect scaffolding for weight-bearing capability. Although their authority to dictate practices outside of fire safety was untested, Producers generally acted on their recommendations. Liability for an accident would be more acute if they were to proceed in spite of a warning from a safety official.

Producers often chafed under the requirement. On a low-budget show, it wasn't unusual for the Fire Safety Official to be the highest paid employee on the project. But there was a benefit for the Producer as well. If an accident did occur, the presence of an independent safety officer made it apparent that the production was probably not operating recklessly.

The Los Angeles Fire Department continues to assign Fire Safety Officers to film sets but the requirements have been eased in recent years. In an effort to make

the permit process more production-friendly, officers are no longer assigned to every production that uses a generator. A Safety Officer is now assigned only if particular hazards are present, based on an evaluation of the permit application.

Recent events give reason to question whether thinning out independent oversight was wise. The presence of a trained officer with independent authority is a stabilizing element on a set. It discourages reckless behavior. This is a practice that should be encouraged on professional sets everywhere.

You may find more information about the on-set Fire Safety Program at: <http://www.filmla.com/> (Navigate through "For Filmmakers" to the "Forms" section for PDF downloads).

-David Waelder

Candlelight Vigil



Photo: Mary Jo Devenney

A candlelight vigil on February 20 held in honor of Sarah Elizabeth Jones, the camera assistant killed in the train trestle accident during the filming of *Midnight Rider*, drew nearly 1,000 marchers. Her parents, Richard and Elizabeth Jones, were among those attending and pledged to make the event the beginning of a campaign for improved set safety.



J.L. Fisher Open House

The 9th Annual J.L. Fisher Open House, Mixer and BBQ Lunch (free) will be held on Saturday, May 17, 2014. The event starts at 9 a.m. and runs until 4 p.m. J.L. Fisher hosts the annual event in association with SOC, ICG and ASC and numerous corporate sponsors. It's an excellent opportunity to meet other production technicians, tour the Fisher facility and enjoy an outstanding lunch. Local 695 will be demonstrating the 23-ft. Fisher boom and you're welcome to take the opportunity to hop up and spend some time on it yourself. We'll be there all day. Stop by anytime. For more information, go to <http://www.jlfisher.com/JLF-2014-Open-House>

Sign of the Times

Replacing the ratty old sign on the building. Come by to see the new one proudly displayed.



Photos by Mark Ulano, CAS

Bringing Jobs Back to California



Scott Bernard (Local 695 Interim Business Agent) at rally

More than 2,000 film workers assembled at the Pickwick Gardens in Burbank on Saturday, February 22, to address the challenge of runaway production. This was the first event in a campaign sponsored by the Entertainment Union Coalition (EUC), a consortium of representatives from IATSE, DGA, SAG-AFTRA, PGA and Teamsters. The immediate objective was to rally support for an expansion of California's tax credit program through AB 1839, a bill introduced by Assemblymen Mike Gatto (D-Los Angeles) and Raul Bocanegra (D-Pacoima).

The need is both immediate and apparent. Of 41 big-budget pictures made in 2012 and 2013, only one was shot entirely in California. According to the Milken Institute, California lost 16,137 film and TV jobs between 2004 and 2012. And the *Los Angeles Times* reports that 1,694 members of IATSE have already permanently moved from California to pursue work opportunities in Georgia, Louisiana and other states with active incentive programs. Attendance at the rally underscored these figures: it was standing room only in the meeting room and attendees spilled out into the anterooms.

If there's a bright spot, it's the recognition this need is receiving from local politicians. The Gatto-Bocanegra bill received 40 immediate co-signers and had 20 more within a few days. Since then, it received unanimous approval in its first committee vote. Numerous local politicians attended the rally including both of the sponsoring Assemblymen, IATSE International VP Thom Davis (keynote speaker), Art Pulaski, Executive Secretary-Treasurer of the California Labor Federation, and others.

To assist this effort, visit 695.com for regular updates and go to <http://www.backtoca.com/> for information on volunteering.

2013 Awards

Local 695 salutes the CAS, BAFTA and Oscar winners and their Production Sound Teams

50th CAS Awards

The Cinema Audio Society Awards ceremony was held on Sat., Feb. 22, 2014, at the Crystal Ballroom of the Millennium Biltmore Hotel, Los Angeles, California.

Motion Pictures – Live Action

Gravity

Chris Munro CAS, Skip Lievsay CAS, Niv Adiri, Christopher Benstead, Gareth Cousins, Chris Navarro CAS, Thomas J. O'Connell, Adam Fil Mendez
Production Sound Team: Steve Finn, Jim McBride, Tim Fraser, Will Towers, **Pud Cusack**, **Richard Bullock**, **Joel Reidy**



Casey Stone, Mary Jo Lang and David Fluhr CAS



Chris Navarro CAS and Chris Munro CAS

Motion Pictures – Animated

Frozen

Gabriel Guy, David E. Fluhr CAS, Casey Stone, Mary Jo Lang



Larry Blake and Scott Curtis

Television Series – One Hour

Game of Thrones “The Rains of Castamere”

Ronan Hill CAS, Richard Dyer, Onnalee Blank CAS, Mathew Waters CAS, Brett Voss
Production Sound Team: Simon Kerr, James Atkinson, Daniel McCabe, Bradley Kendrick, Luke McGinley



Penny Harold, Brian Harman CAS and Dean Okrand

Television Movies and Mini-Series

Behind the Candelabra

Dennis Towns, Larry Blake, Thomas Vicari, Scott Curtis
Production Sound Team: **Javier M. Hernandez**, **Gerard Vernice**, Mark Agostino



Brett Voss, Ronan Hill CAS, Mathew Waters CAS and Onnalee Blank CAS

Television Series – Half-Hour

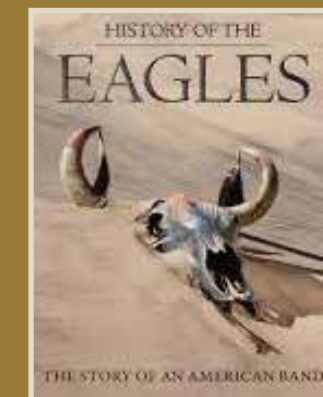
Modern Family “Goodnight Gracie”

Stephen A. Tibbo CAS, Dean Okrand, Brian Harman CAS
Production Sound Team: **Srdjan “Serge” Popovic**, **Dan Lipe**, **Ken Strain**

Television Non-Fiction, Variety, Music Series or Specials

History of the Eagles: Part One

Tom Fleischman CAS, Elliot Scheiner
Production Sound Team: Alan Barker, Tyler Wood



Award Winners



Niv Adiri, Glenn Freemantle, Chris Munro CAS, Skip Lievsay and Christopher Benstead (Photo: BAFTA/Richard Kendal)

EE British Academy Film Awards

The BAFTA Awards ceremony was held Sun., Feb. 16, 2014, in London, England.

Sound

Gravity

Chris Munro CAS, Glenn Freemantle, Skip Lievsay CAS, Christopher Benstead, Niv Adiri
Production Sound Team: Steve Finn, Will Towers, Jim McBride



Chris Munro CAS, Christopher Benstead, Skip Lievsay and Niv Adiri. (Photo: Matt Petit/©AMPAS)

Oscars

The 86th Academy Awards ceremony was held Sun., Mar. 2, 2014, at the Dolby Theater in Hollywood, California.

Sound Mixing

Gravity

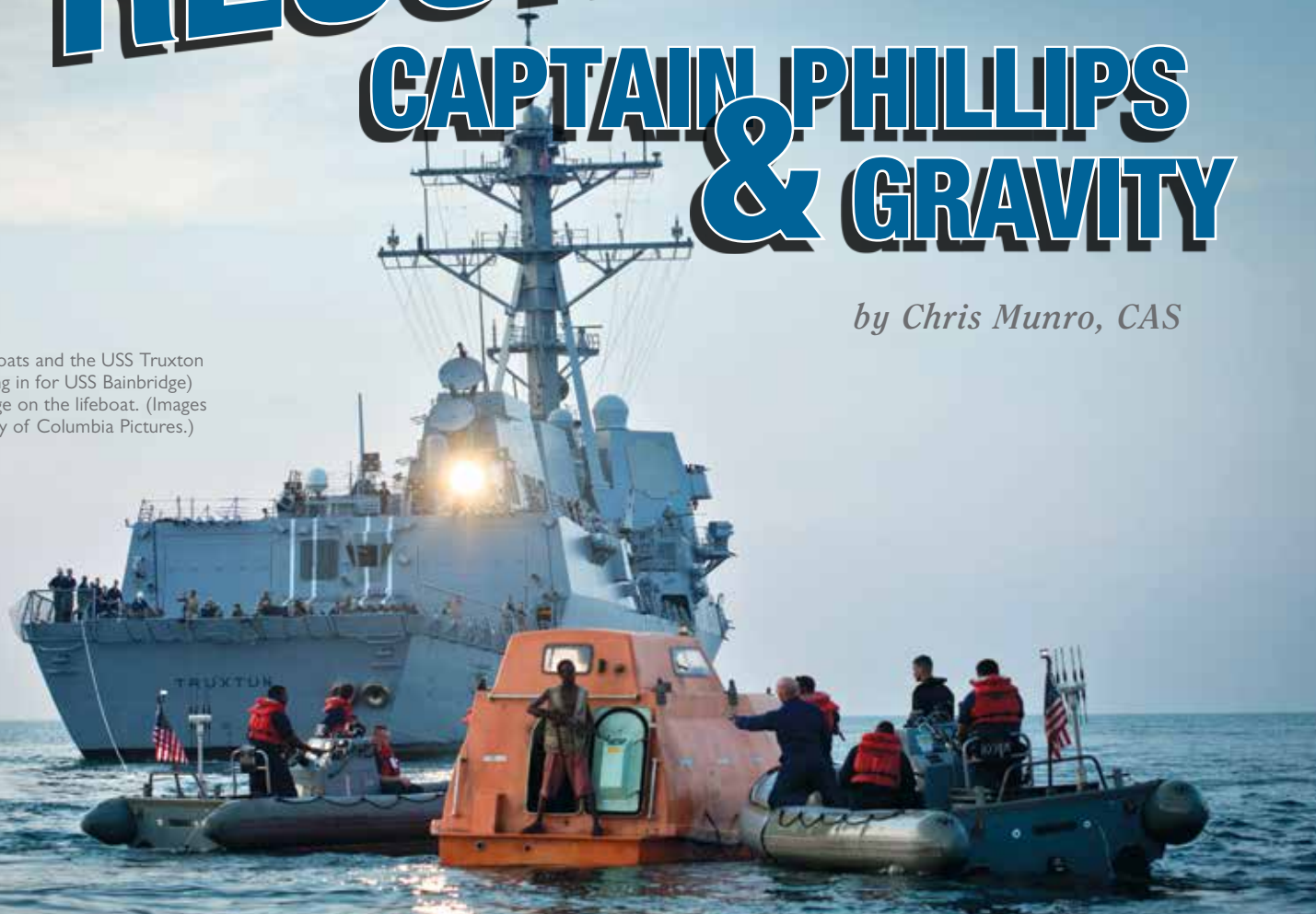
Chris Munro CAS, Skip Lievsay CAS, Niv Adiri, Christopher Benstead
Production Sound Team: Steve Finn, Will Towers, Jim McBride

Names in **bold** are Local 695 members.

RECORDING CAPTAIN PHILLIPS & GRAVITY

by Chris Munro, CAS

Navy boats and the USS Truxton (standing in for USS Bainbridge) converge on the lifeboat. (Images courtesy of Columbia Pictures.)



Sandra Bullock in *Gravity*. (Photos courtesy of Warner Bros. Pictures except where otherwise noted.)

It sounds somewhat ungrateful to complain about being nominated for two films in the same year. Though I was honored to receive both BAFTA and Academy Awards for *Gravity*, a part of me was disappointed that *Captain Phillips* has not been equally recognized.

These are two very different films with different challenges for production sound. *Gravity* was completely different from anything I had done before, whereas *Captain Phillips* is a prime example of how drawing on previous experience enables us to be better at what we do. Having worked with Paul Greengrass on *United 93*, the film about the terrorist takeover of a passenger jet on 9/11, I knew that Paul likes to shoot in a documentary style, with no rehearsal and a lot of improvisation, and to cast non-actors in key roles. When I came to work with Paul again, on *Captain Phillips*, this experience was vital but we now had the added issues of shooting at sea on a container ship, a lifeboat and in the Somali skiffs.

Having worked on five James Bond films, I was no stranger to action sequences involving water, especially the boat-chase sequences on *Quantum of Solace* filmed in Panama. On *Captain Phillips*, I needed waterproof lavalier microphones that also sounded good out of the water so I chose to use Da-Cappo DA04s (now Que Audio performance series in the USA). These are very popular in theater because of their very small size but have great waterproof qualities due to the inlet size being smaller than a droplet of water. I mounted them upside down so that no water settled on the microphone. I had to develop a system for getting longer range reception for recording in the high-powered pirate skiffs. I used Audio 2040 mini-tx radios in aquapacs on the pirates. The receivers were built into secret compartments in the skiffs where audio was recorded and re-transmitted to the bigger boat that we were all on. We were regularly recording up to 16 tracks and feeding a mix to Video Assist, the Director and Camera Operators. I recently wrapped on *Heart of the Sea*, with Ron Howard where again I was able to use what I had learnt. Months before I started on the film I said to the boat builders, "I need you to build these secret compartments..."

On *Captain Phillips*, we were based in Malta on a container ship, which was our studio for much of the film. Each department had a base in one or more of the containers to store equipment and carry out any maintenance. We still needed to be highly portable as we would shoot inside the ship, perhaps in the engine room or cabins while heading out to sea and returning to port, and shoot on decks and the bridge when at sea. There were a lot of stairs, and some passageways were very narrow. Generally, we were shooting multi-camera without



Top: Sandra Bullock and George Clooney facing director Alfonso Cuarón on the set of *Gravity*. (Photo: Murdo Macleod, courtesy of Warner Bros.) Above: Paul Greengrass directing on the bridge of the Maersk Alabama. (Image courtesy of Columbia Pictures)

rehearsals and all with improvised dialog, sometimes with the scene playing out between several groups in different parts of the ship.

We were limited in the number of crew on the ship, but I was very fortunate to have a great crew with my usual UK Boom Operator, Steve Finn, and tech support from Jim McBride. Tim Fraser recorded 2nd Unit in Malta and in Morocco, and Pud Cussack looked after Boston and Virginia.

Oliver Tarney was Supervising Sound Editor. I had also worked with him on *United 93* and the two Sherlock Holmes films with Guy Ritchie. One of the best things we were able to do was to get Oliver to spend a weekend with us on the ship recording sound FX. Not only did he get the FX that he needed, but he also got to experience the ship and to understand how it should sound at sea and its geography. He also got to experience being in the lifeboat—known by us as the vomit vessel—certainly not a pleasure craft!



Skiffs similar to the pirate boats were used as camera boats



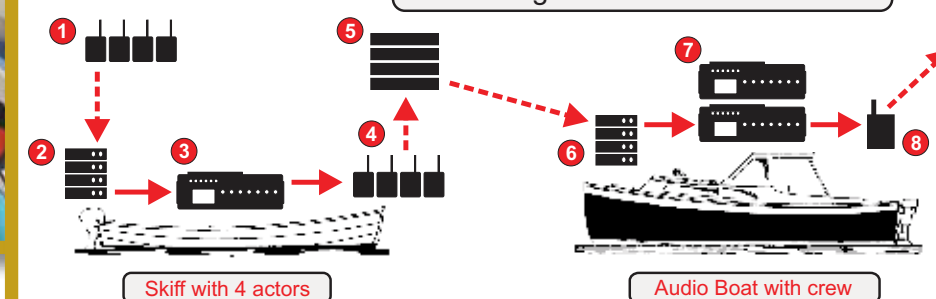
Filming the action in the pirate skiff



Chris Munro's "at sea" rig with two linked Fostex PD606 recorders for up to 16 tracks.



Recording action shots on the Skiff



- 1 All 4 actors wear Audio Ltd. TX2040 transmitters
- 2 4 Audio Ltd. DX2040 Receivers
- 3 Remotely operated Fostex PD606 recorder for backup
- 4 2nd set of 4 Audio Ltd. TX2040 transmitters
- 5 4 RF Amplifiers (custom built)
- 6 2nd set of 4 Audio Ltd. DX2040 Receivers
- 7 2 Fostex PD606's as Master recorders
- 8 IFB to Camera Boats for Director, Script, AD's, Operators

Chris Burdon and Mark Taylor were Re-recording Mixers; I've worked with both on previous films.

Gravity was a completely different experience from anything I had previously worked on. When I first got the call and was told that there were only two actors in the film and that there is no sound in space, it sounded like the perfect job! Then when I met Alfonso Cuarón and he started to talk about his ideas for the film, I was hooked and immediately knew that this was going to be something special. Every few years there is a film that breaks the technological boundaries—this year it was *Gravity*. The first issue was that both the cameras and the actors could be on robotic arms. I had recently shot a small

Alfonso Cuarón originally had a plan for all of the radio conversations and OS dialog to be live, and we had planned to have different rooms in the studio for those to be performances. However, due to artist availability and other issues, this proved to be impractical so we pre-recorded as much as we could. Most of the pre-records were guides that were re-recorded as ADR in Post Production.

Will Towers was our Pro Tools operator. He made loops of the lines that we could play from a keyboard. The idea was that each line was on a separate loop, and there were alternative performances available for the on-screen actor to react and interact with. We would use different performances and adjust the timing for each take to create spontaneity while still having to be sure that certain lines were occurring at the correct frame space allocated in the previz. All film is a collaboration, but on this film I was collaborating more with VFX and the actor than ever before. It was also necessary for us to work very closely with Editorial as the film took shape and timing parameters or dialog constantly changed.

Here was another opportunity to use the Da-Cappo microphones—this time because of the very small size. The microphones used were a mixture of a Da-Cappo capsule that Jim McBride, our tech support engineer, had fashioned to an arm connected to the inner helmet and a latex shield that we made for both visual accuracy and to reject noise from outside the helmet. A second Sanken COS-11 was sewn into the inner helmet as were earpieces for communication. We also had in-ear molds made for some scenes. Each different piece of headgear that Sandra Bullock wears in the film contained practical microphones and earpieces. Even the classic Russian headset that she uses at one point has a built-in transmitter and receiver. We achieved this by borrowing bare 2040 mini-transmitter boards from Audio Ltd. and building them in to headsets.

I used a Cedar DNS1500 during shooting to reduce some of the fan noise from the LED lighting rig and the robotic arms. This was only on one mix track. The iso tracks and another mix track were left unprocessed.

The communication system could rival NASA Mission Control at

Houston. In addition to feeding scripted lines that the actors would respond to, we also played atmospheric sounds to Sandra to set the mood for each sequence. Additionally, we played loops of her breathing from the preceding or following shots so that she was able to get the correct breathing rhythm for the shot. Often the shot could start at one pace but finish with breathing at another pace so it was important that we were able to give the correct breathing rhythms throughout the shot.

The Director and the 1st AD needed to be able to communicate with the actors and DP, Camera and other departments without distract-

a dark stage for weeks on end. It was during one particular break during shooting that I discovered that both Sandra and George knew all the words to "Rapper's Delight" and could sing a pretty good version!

You could be forgiven for thinking that most of *Gravity* was created in Post Production but, in fact, much of the shooting was oddly conventional. We had six weeks of pre-shoot, 12 weeks of principle photogra-



Chris Munro had Tech Support Engineer Jim McBride fit the headset with a Da-Cappo microphone suitable for making quality recordings.

sequence with these and knew that, although the arms could move with not too much noise, the associated power supplies and controllers were very noisy. So the first job was to negotiate that these could be extended and built into blimps far away from the action.

We had a very comprehensive **previz** of the film that we worked to. The previz helped us keep the VFX elements, still being designed, in sync with lighting, camera moves and sound. I had originally thought that we might be able to lock everything to the same timecode but, for a number of reasons, timecode wasn't always practical as the controller. **Touch Designer** was used to control the robots and as a visual platform, sending midi triggers for us to sync to.



The classic Russian headset was fitted with an Audio Ltd. 2040 transmitter board. The microphone concealed in the housing at the end of the wand is a TRAM.

ing the actors when giving technical cues. The costumes and helmets so completely isolated the actors that they needed an audio feed both to hear each other and also to hear their own voices. Allowing them to hear themselves, but at a reduced level to avoid distraction, required a second layer of IFB feed to each.

Sandra Bullock and George Clooney could often be in rigs for hours on end so, as well as providing a system for them to communicate with each other, I also ran a kind of mini-radio station to play music, YouTube clips or anything to keep them entertained between shots. Sandra Bullock has often said that she had never previously had such interaction with the Sound Department yet we were at opposite sides of



Director Alfonso Cuarón on the set of *Gravity*. (Photo: Julio Hardy.)

phy and two weeks of additional photography, all with sound. Some of the sequences were shot on actual sets and boomed! For every shot, the DP concentrated on the camera angle and how the actor was lit. The Director concentrated on getting the performance that he needed and the Sound Department concentrated on capturing that performance the same way that we all do on every movie.

Glossary of highlighted words

Previz Essentially an animated storyboard, a previz video shows a rough rendition of all the elements and special effects in a sequence so every department can see how it all fits together.

Touch Designer A software program that facilitates production of animated videos and graphic sequences.

Blood, Guts, Gore ... and Chiggers

Behind the Boom of THE WALKING DEAD

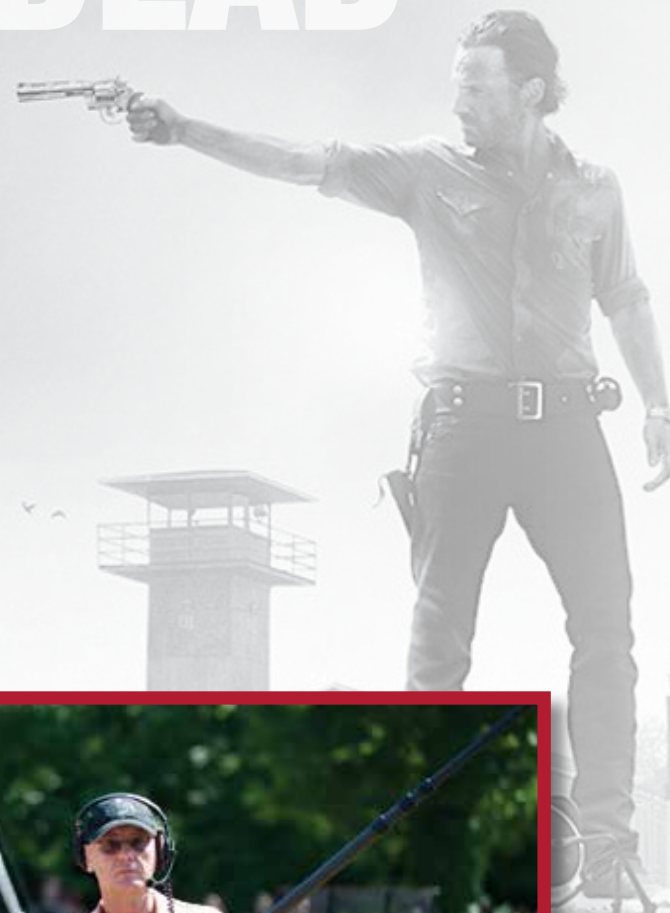
With Robert 'Max' Maxfield



Hot Georgia.
(Photo: Dennis
Sanborn, Utility
Sound)



Crew logo



Marching with zombies.



Booming Bob & Tyrees at the graves.

Did you know that chiggers don't really burrow under your skin?! Nope, actually they grab onto a hair follicle, and inject a digestive enzyme into your skin cells. The enzyme ruptures your cells so that they can drink the resulting fluid containing a protein they need to grow. Your skin hardens around the area, forming a nice big red volcano-like sore. That enzyme-filled volcano keeps you itching for a good three to four days. And you're almost never bitten by just one!

I came by this intimate knowledge of chiggers in the early fall of 2011 when I was invited to go down to Atlanta for three weeks to boom a show I'd never heard of called *The Walking Dead*. It was in the middle of Season Two, and I was told that another guy would come in after me to finish the last five weeks of the schedule. It's not a good sign when you take over in the middle of a season and it's even less promising when they've already scheduled another person to come in after you. I couldn't shake the thought that I was just another piece of raw meat for zombie lunch. And the prospect of working nights on a project with blood, guts and gore (I've never really taken to B-movie horror) was not attractive. I had memories of working with slimy creatures in the early '90s series *Freddy's Nightmares* and wasn't eager to revisit the experience. So, after a short deliberation, I told the Sound Mixer, "Thank you for inviting me, but I'm going to have to pass."

Well, seven days went by and I still hadn't booked anything for the following week, so I thought, "Heck, three weeks with a bunch of rotting corpses in sunny Georgia couldn't be too disgusting, and it's not like I have to eat lunch with them." Like any Boy Scout film worker during lean times, I called the Sound Mixer back and asked, "Still looking for a good Boom Operator?" He said, "Yes,

come on down." I shook off the disquiet that they were only three days from needing someone and hadn't yet filled the position. "Oh well, they're paying me housing and per diem, plus a box rental and rental car ... I'm outta here!"

Three days later, I was driving my rental car down a pitch-black country road at six o'clock in the morning, just outside the tiny rural town of Senoia, Georgia. The stages are situated in an old chemical plant on a dead-end road, one hour south of Atlanta in a thickly forested area that only chiggers could love. It's shrouded by trees, stagnant ponds, railroad tracks and all of the little creatures that make for a great horror flick. I fought off the feeling of this being my worst nightmare.

I arrived to some good news. They told me that I was the ninth Boom Operator on the show since its inception a year prior. "You mean that in only 13 filmed episodes, you have been through nine Boom Operators!" "Yep," the Sound Mixer said. This was not sitting well with me. By the end of that same Season Two, they would reach the milestone of 11 Boom Operators! To this day, they call me "Number 9, Number 9, Number 9..." There have also been several Mixers over the seasons, starting with my friend and supporter, Bartek Swiatek, CAS, a Local 695 colleague who left Georgia to move to California, and coming to the present day with Michael Clark, CAS.

Oh, and it turns out, I did have to eat with those zombie things. Nothing like lunch with a gooey corpse sitting across the table from me, spoon-feeding itself through displaced dentures into its black-and-blue prosthetic face—yummy. But, it's those little tufts of half-dead hair that really creep me out.

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The day before my arrival, they had filmed the Season Two farm scene where Rick, Shane and the others, slaughtered the zombies that Herschel's family had secretly kept in the barn. Our first setup had 12 cast members, spread 12 feet apart outside the barn, shuddering over the deaths of their kinfolk-turned-zombies. There were three cameras (a daily ritual) on three separate 30-foot lengths of dolly track that formed a large U around the actors. All of the cameras had long lenses. I was the solo Boom Operator, as the six remaining tracks on the Sound Devices 788t were allocated to the scripted speakers and the mix track. It was my first day with this Mixer, so I hoisted the boom, danced about the dollies and stretched with determination to prove that I could get some dialog; I wanted to stand out amongst the eight previous Boom Operators. My results seemed feeble, as I was only able to get a couple of lines. The Camera Operators and Dolly Grips were giving me funny looks like "What's with the new guy? What number is he?" "Not the last," said someone, "he's walker bait ... won't last a week!" They all chuckled. What the hell had I gotten myself into?

Far in the back of the acting pack was Emily Kinney (playing Beth), who sobbed uncontrollably throughout the scene. She was not wired but she dominated each take with her emotional outcries. I mentioned that it would be best to pull a wire off someone that I could get on the boom and put that wire on her but there was no enthusiasm for taking the time to make the transition. As the third take commenced, a loud jet entered the shooting zone. I immediately called for a hold, but the 1st AD cut me off. "We don't hold for planes ... roll sound!" The remaining three weeks of my stay were grueling, sweaty and filled with my first set of fluid-sucking chiggers.

Later, I learned that, due to time constraints, upper management restricted freedom to make corrections. The production schedule was so relentless that, at one time, they had adopted a policy of using radio microphones exclusively. They didn't ever want to see a boom over any actor and were determined to fix any sound problems in Post. The Sound Mixer went on to tell me stories about how they would wait for "Roll Sound," get the sticks and then, at the last second, slip the boom in for some of the close-ups.

The history of booming this show aside, there was a lot of pressure on me to boom some scenes because of challenges with wind, wardrobe, props and the active nature of the staging. One night, I had to boom a scene that took place in a tent. Both of the characters, Rick Grimes (Andy Lincoln) and Lori Grimes (Sarah Wayne Callies), entered the tent while talking and then disrobed and continued with their dialog. It was impossible to wire them, so I had to figure out a way to boom them in the tent. Do you have any idea how much space is available in a tent after two cameras, two operators and two assistants have been employed? Add in four apple boxes and two 4-foot sliders, and it's really



cramped. The only thing going for me was that they had to raise the side flap to position the cameras. There was barely enough room for me to insert a 12-foot boom pole with a Schoeps MK41 capsule on a GVC. I had to start the shot crouched down, yet standing, so as to reach the tent's entrance. Fortunately, I was able to aim the microphone straight through the fabric to bring them into the tent talking. I was just millimeters from the cloth ceiling, so I had to be extremely careful not to whisk the microphone on the cloth, while keeping it equidistant to their mouths. After they entered and began taking off their clothes, I had to back up and get down on both knees. At one point, Rick delivered a couple lines looking away from Lori. I couldn't possibly get them both, so I put a plant microphone on a nearby table, and boomed Lori until Rick turned back. The plant did its job. It was four o'clock in the morning, the last scene of the night, and I was exhausted. It was truly my best booming feat during the entire three weeks. But, as the Camera Operator, Michael Satrazemis, said that first week, "It's a tough show, but that's what makes it great."

Obstacles and frustrations aside, I figured I better work hard, have patience and keep a good attitude. The actors were fabulous and supported my efforts from the beginning. In fact, I remember the Sound Mixer telling me, when he was trying to entice me to do the show, that the actors were very warm and accommodating and kept him motivated to do good work. People like Andy Lincoln (as Rick Grimes), Norman Reedus (as Daryl), Scott Wilson (as Hershel), IronE Singleton (as T-Dog), Jeffrey DeMunn (as Dale), Lauren Cohan (as Maggie) and Steven Yeun (as Glenn) would come up to me and give me a good-morning hug. I hardly knew these folks, and they welcomed me like family. Jeffrey DeMunn said it first, and he said it the most, "WE are the Walking Dead" WE, the cast, crew and above-the-line executives, ARE THE WALKING DEAD! It's still true of the cast to this day. The Georgia heat, the remote locations, the grueling production schedule, the absence of zombie hygiene and chiggers, make this a very difficult show, but the spirit the actors bring to the project keeps the crew working together as a team.

Yet I still wasn't convinced that I wanted to be a part of it when I was asked to join Season Three full time. I had doubts, so many, in fact, that I said, "NO." I continued to say, "NO" for about four weeks. The thing that really turned me around was the fact that the Sound Mixer went to the wall to get me a rate I couldn't refuse. Yep, it came down to money. But now, after two full seasons, I look back, and I look forward, and I confess, it isn't the money that makes working on *The Walking Dead* worth it, it's the family spirit. It's the excitement of being part of one of the most amazing TV shows ever.



The setting of this TV series is unique in character, in that it takes place in a post-apocalyptic world. There is no electricity or running water, no trains, no planes, only a few cars and so far, no boat. We do have one obnoxious motorcycle, and usually we can get Norman (as Daryl) to turn it off before he speaks, but sometimes this is logistically impossible. A post-apocalyptic world is a quiet world. But, we shoot in rural Georgia. We have highways, lots of trains, farm implements, bustling towns and our studios are right in the approaching pathway of Atlanta Hartsfield International Airport. It's not easy recording dead quiet takes in our modern world.

Locations are often deep in the woods, on rarely traveled dirt roads, abandoned railroad tracks and around brush-shrouded ponds. This means that we have to load our equipment onto flatbed trailers and get pulled by four-wheel-drive vehicles to our locations. When the going gets rough, we all pitch in to get it down. And when a deluge of rain comes in, we all take the hit on another sloppy mud fest to get ourselves out of the swamp bog.

Many of these locations lay along the unused rail tracks that serviced the now-abandoned enterprises in this part of rural Georgia. The Construction Department built several wooden carts to help move gear along the tracks. They're very helpful when they work but they often break down and we're forced to remove our carts and roll or drag them along the gravel rail-beds adjacent to the tracks. Zombie apocalypses don't generally occur right next to the Walmart so we often need to haul the gear a considerable distance. That the carts are wobbly and tend to squeak doesn't really bother us except when they are pressed into service as camera dollies. Then the noise of the cart layered with the sound of grips pushing it on the gravel rail-bed does make recording a clean track difficult.

Actors on *The Walking Dead* roll around, run, shout, yell, fight, whisper, snap their heads from one side to side, kneel, bend over and swing lots of props (guns, knives, katanas, crossbows, backpacks, hammers, crow bars, bottles, etc.), all in the same setup. And, they



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Image courtesy of
Sound Mixer, Percy Urgena



do it amongst trees, vines, creeks, tall grass, railroad tracks, rubble, fences, furniture and the like. This constant activity makes booming the show a unique experience; my legwork has never been more tested. The dizzying array of props needed to combat zombies forces us to be creative in radio microphone placement. We've rigged collars, hats, hair, the props themselves and everywhere else imaginable.

Anyone who has viewed the show is well aware of how location-driven the sets are. We work in the

forest a lot. We work on gravel roads a lot. We work in fields a lot. We work with the elements a lot. But we also work a lot indoors. The difference is, 99.9% of our locations, wherever they may be, are filthy. They're dusted, shredded, destroyed, trashed, wetted, burned and pillaged. Everything is dirty on *The Walking Dead*. The only good thing, as far as sound goes, is that the mills and plants that serve as our sets are typically vacant and out of business. Turning off noisy appliances is not so much an issue with us. But, the sheer volume of filth complicates placing microphones on the actors. In fact, the costumers go to great lengths to pat them down with blood, dust, dirt and oil. Blood and oil are the real test. And this show really uses blood—lots of blood—gallons of blood. In fact, there's something like 10 types of blood: live blood, dead blood, real dead blood, drippy blood, gooey blood, thick blood, blue blood, black blood, it's bloody unbelievable! As much as we all love Joe's clear butyl, it doesn't work on bloody and oily clothes. Perspiration doesn't make such a good friend either. We end up having to sew most of the lavaliers into their clothes, especially during the warm months. This takes extra time. Fortunately, over the seasons we have conditioned the production staff to bring the actors to us extra early. Unfortunately, they have to be un-sewn whenever there is a technical issue with the lavalier, or when there is a wardrobe change. To avoid the need for re-sewing, we do tests, placing the microphone in the proposed position and having the actor go through anticipated body motions. Sometimes we'll wire additional wardrobe in advance. We've wired as many as three shirts at one time. On this show pre-planning is imperative, because we almost never do rehearsals, and time is so precious. Then, at wrap, the actors must come to us after a grueling day of rolling and fighting their way through the zombie apocalypse to have their microphones extracted from their costumes.

The sun provides its own little challenge. Ordinarily, "fly swatters" (20 x 20 diffusion frames rigged onto an overhead condor) would soften the shadows on exterior shots but they aren't used on *The Walking Dead*. The difficulty of getting that kind of gear a quarter mile down rail tracks to a shooting location precludes their use. Sometimes this forces us to use two booms to capture shadow-free dialog from a single player.

Much of *The Walking Dead* is shot in the summer. Georgia is sweltering hot with singing cicadas, croaking frogs and stinging sunburns on the back of your neck. Every time I wring out my shirt, I have occasion to remember the line from David Lynch's *Wild at Heart*, with Laura Dern and Nicolas Cage, "You're as hot as Georgia asphalt."

Summer is when the chiggers, ticks, mosquitos and spiders are most plentiful. Sometimes, before we even arrive on set, we drench our bare legs, arms, necks and midsections with a not-so-healthy dose of DEET. It stings a bit at first but really does the job. We don't like it, but it beats scratching for days on end until your flesh comes off. Ahhh, the glamour of Hollywood.

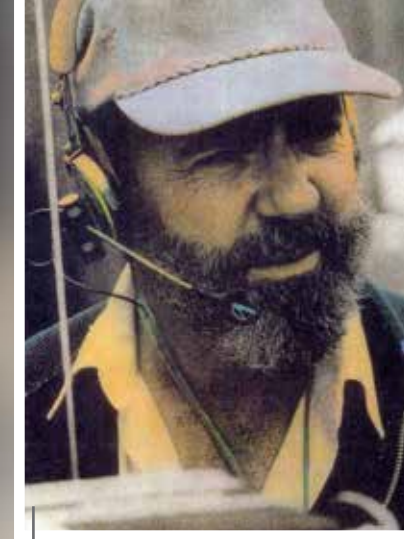
The Directors and Directors of Photography make full use, as they should, of all the visual tools at their disposal. They use Steadicams, Go Pros, DSLRs, below-ground positions, hidden cameras, long custom-made sliders to go among vines and trees, high-angle crane shots and every device imaginable to achieve an expressive image. Typically, several of these elements will be combined for multiple views of the action. This adds to the challenge of getting good dialog tracks.

Episode 405, "Internment," is illustrative. The Director, David Boyd, one of the former DPs on the show, believes in guerrilla-style filmmaking, using multiple cameras in obscure positions. The episode took place mostly in the prison cells, where Scott Wilson (Hershel) would tend to the near-death patients. These cells are really only about 10 feet by 10 feet with a bunk bed on one side. Director Boyd staged the scene with three actors, three cameras and two operators. Radios couldn't be used because the actors had blood on their chests and air masks on their faces so my assignment was to squeeze into the cell with everyone else and get the dialog. My regular position in these scenes was either standing on the upper bunk or squeezed between an operator and the wall, only inches from the talent.

These same cells presented one of our biggest acoustic challenges. Although they were prison cells, and ought to sound like prison cells, they were really made of wood. We used furniture pads on the walls, and acoustic tiles in the corners when they wouldn't be seen, but many times we couldn't control things. Fortunately, the reverberant effects that Post Production added fixed the problem, and made for some very interesting character effects.

Despite these extraordinary elements, the soundtracks have been getting better and better. This is due to a solid proactive plan, teamwork, ample first-rate equipment and excellent execution. Production Sound Mixer Michael P. Clark, CAS leads us through the process by being very involved. Days in advance he will be analyzing scripts, talking with decision makers, preparing equipment and contemplating solutions. And his mixing skills are sharp, clean and logical. Dennis Sanborn, the Utility person, is assertively proactive in preparing equipment, securing locations and most importantly, wiring all of the actors. He is both skillful and resourceful. As arduous as recording sound is on *The Walking Dead*, these guys step up to the challenge of working on one of the most difficult shows in television with grace and determination.

I've never before been part of something so deep, difficult and complex as the process of making this show. More than any project I have ever worked, the shared sentiment that "We Are the Walking Dead" makes this one of the most remarkable career experiences that I have ever had. It has truly changed my life ... and my career.



Jim Webb at work. (Photo: Peter Sorell. Courtesy of Jim Webb)

One day in 1981, while standing in line at a bank, I struck up a conversation with an older gentleman who said he was a retired Prop Master. When I replied that I was a Boom Operator, he said that his son, Chris McLaughlin, was a Boom Operator. "Really, Chris McLaughlin is revered among boom operators. He works with Jim Webb and gets equal billing with Jim as the sound team." The next day, I got a call from Chris. "Who are you, and why are you saying nice things about me to my pop?" We chatted a bit about mikes and booms and stuff. "What do you like," he asked? "A Schoeps is my favorite." "We use an 815 on everything. We did *All the Presidents' Men* with one 815 underneath and won an Oscar." You had to be spot-on with an 815 or it would sound funky; if you could handle one all the time you were a real Boom Operator.

A few days later, Chris asked me if I wanted to work on pickups for *One From the Heart*. Their regular third, Jim Steube, was on vacation. I jumped at the opportunity. I got to work with this famous team, and I'd heard about this film, with Francis Coppola directing from the Silverfish (a custom airstream trailer stuffed with monitors and video gear), Vittorio Storaro's lighting and Dean Tavoularis' forced perspective Las Vegas sets. I also got to meet Jim, whom I'd heard so much about. Jim was congenial and different from most Mixers I knew. He didn't want to be near the set, but was content to cable in and give his Boom Operators autonomy. We did scenes with Teri Garr and Raul Julia, and one with Nastassja Kinski sitting in a big martini glass singing "Little Boy Blue." Nastassja was a real flirt. I think every guy on the set had a crush on her.

At one point, Francis came on set and tried to talk Joanie Blum, the Script Supervisor, into directing the scene, but she wanted no part of it. I offered to do it, but Francis declined. "Who are you?" "I'm your new Sound Utilityman." "Oh, yeah, I used to do that job." He decided to direct it himself.

The last day, Chris felt ill so Jim told me I could boom. It was only a little announcement from Francis—they wanted to show the film to exhibitors, but the opticals weren't done so it would have some slugs that he wanted to explain. Francis was late that day and we sat around. Finally, someone came up with an idea. Ron Garcia, DP for the pickups, looked kind of like Francis with his beard. So we sat Ron in a director's chair holding a film can, while a prop guy dropped money into it from above, and Ron looked at the camera and said, "We will show no film before its time," a goof on an Orson Welles wine commercial running at the time. I think Ron still has a print of it.

Working With Jim Webb

by Andy Rovins, CAS

Jim brought me on some more projects after that. He would drive up in his white van, and we would pull out the Fisher boom—Jim was the only guy I knew who owned his own. He had his anodized black and changed out the platform wrench to a socket for faster action. When possible, Jim would mix from the van and we would run cable out. A cool thing about having our own Fisher was that we didn't have to bargain for one; it was there if we needed it.

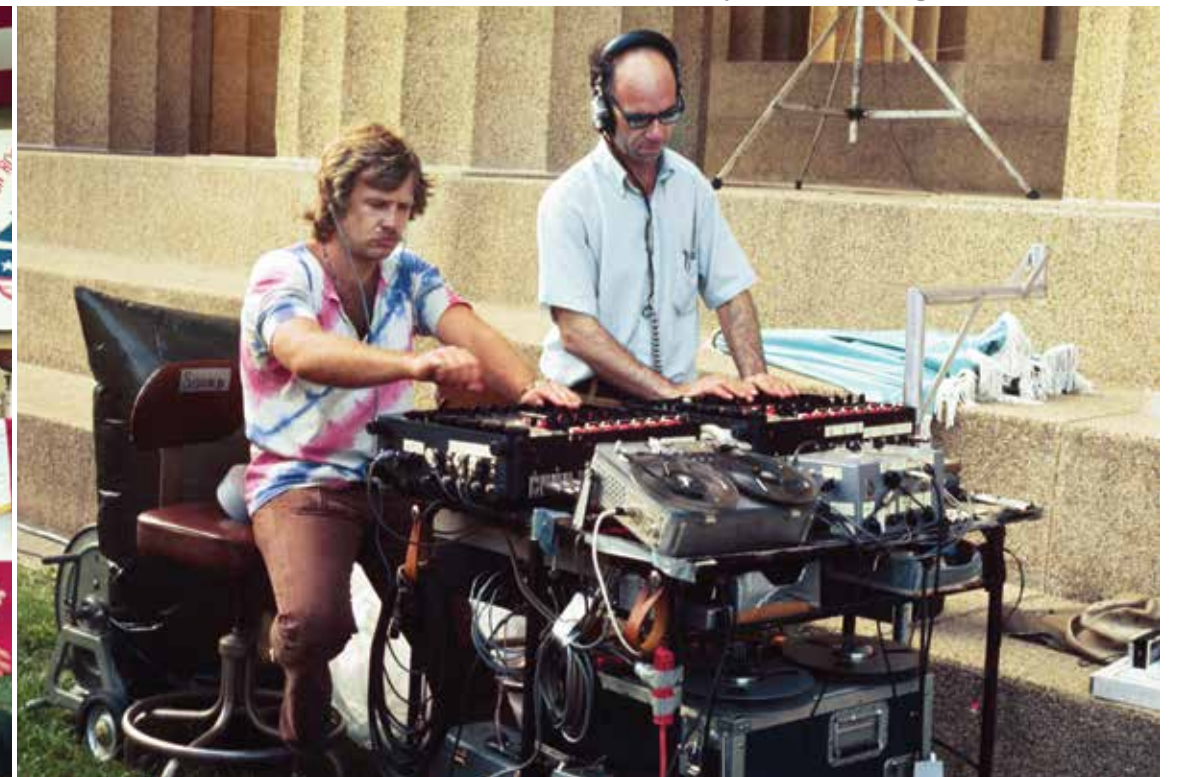
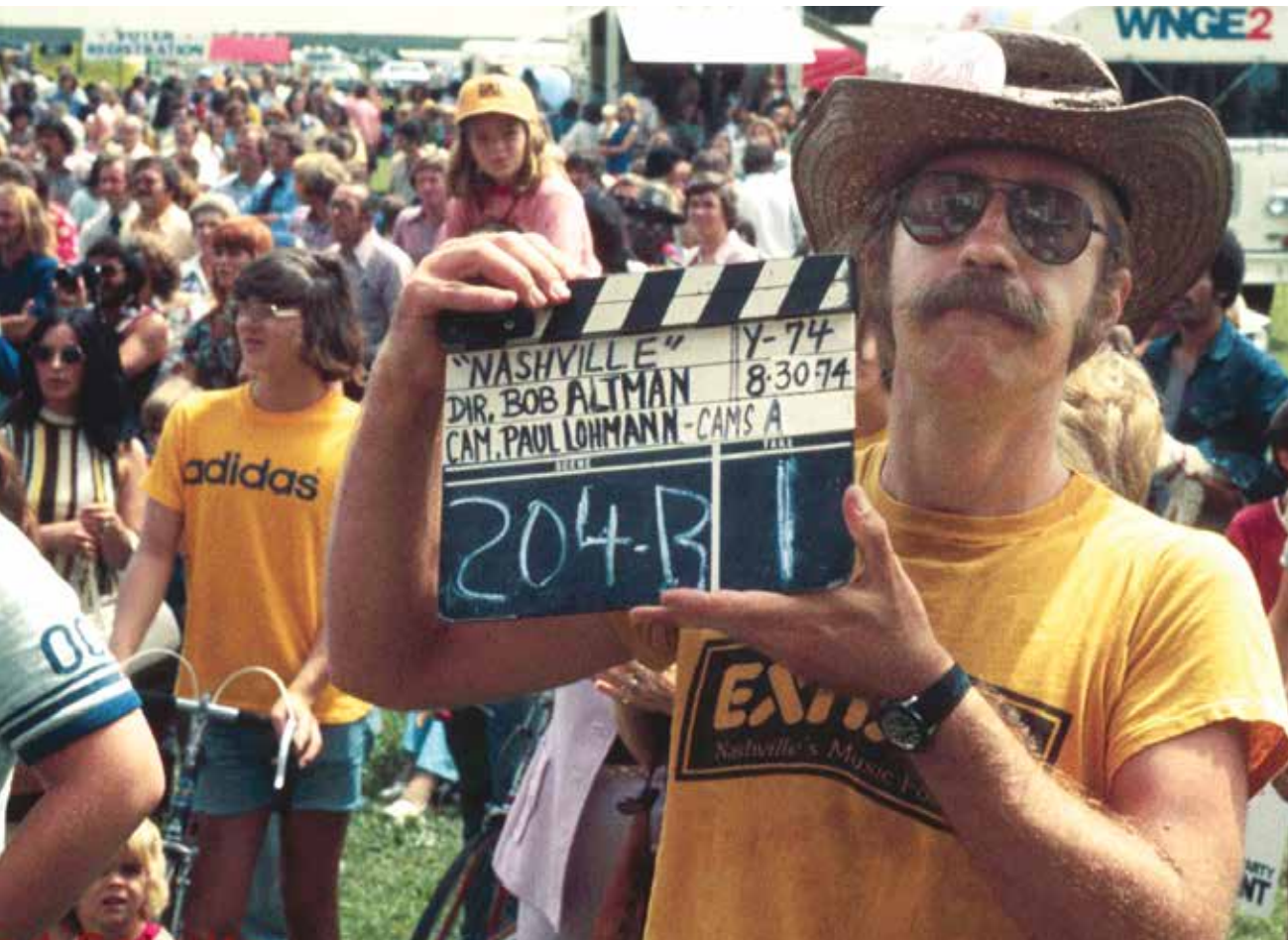
Jim got some interesting gigs in those days. He brought me on *Get High on Yourself*, an anti-drug special produced by Robert Evans as part of a plea bargain negotiated after an arrest for possession. It was a huge production with many bands and stars, including Ted Nugent, The Osmonds, Leif Garrett, Brooke Shields, Carol Burnett and Paul Newman. There were concerts and audience Q&As with lots of kids asking the celebrities questions. There was also a big production number with many stars and kids all singing the theme song in a style that would be mirrored by "We Are the World" a few years later. Jeff Fecteau and Chris Seidenglanz were the A2s and co-booms. There were many producers on that show; the event was kind of thrown together and disorganized but I think Jim thrived on being able to hold together challenges like that.

Jim liked my boom work so he asked me to come along for another unique show—recording a concert by pianist Mona Golabek in a women's prison in Chino, California. It was an odd scene. The prison had been built as a luxury resort in the '20s, so it was all marble and stone floors with high-vaulted ceilings.

The acoustics were somewhat echoey, so we put up furny pads when we could, mic'd the pianos with some Shure dynamics and set up an SM58 for Mona. We rolled the Fisher out of Jim's white van for me (with the 815) to mike questions and reactions from the prisoners.

It was somewhat incongruous: we had a classical pianist in a stately, beautiful building playing Chopin and Liszt for an audience of very rough-looking women in prison fatigues, but they were an appreciative group and seemed to regard the experience as a treat. I think Jim still has a recording of that show.

Jim is not just a great Sound Mixer. He's also one of the best raconteurs I've ever met. Just sit down with him if you get a chance. He tells me that one of his favorite stories comes from *Get High on Yourself* when I was working that long 815 on the Fisher boom to get unscripted audience responses. *To be part of Jim's stories is a real honor!*



Opposite page: Fred Schultz with slate. Robert Altman in Centennial Park, Nashville.

Chris McLaughlin and Jim Webb at the sound cart. Stevens 8-track is the large black road case on bottom shelf.

Starting From the Top: Working on Robert Altman's *Nashville*

by Fred Schultz, CAS

Nashville was my very first film job. It came about, like most of my best opportunities, completely by accident. Earlier, I'd moved to Nashville to attend grad school at Vanderbilt, but during the six years required to finish, the market for my degree turned belly-up. Professionally unappreciated, I responded by diving into rock 'n' roll where, with more enthusiasm than skill, I began mixing rock shows.

Within the year, I was house mixer at a new music club, run in an uneasy partnership between the regional concert promoter and the young owner of Nashville's massage parlor chain, a hustler with a love for rock and a cash flow in need of laundering. Before that party crashed, I polished my mixing skills on a stream of incredible talent including Bruce Springsteen (first national tour), KISS (ditto), Iggy Pop, B.B. King, Freddie King, Lynyrd Skynyrd, Bob Seger, and an endless number of their hard-driving southern & midwestern brethren.

So, one year in, the summer of '74, I was a self-identified rocker, overflowing with ego and lightly warranted self-esteem.

That's when Johnny Rosen, a business-savvy friend and owner of Fanta Sound, phoned me. A movie had come to town and its producers wanted him to find someone to work nights transferring sound for dailies using their pioneering eight-channel tape machine.

That fateful phone call placed me on Robert Altman's *Nashville* and in Jim Webb's sound department. Forty years later, it's clear I'd been handed a golden opportunity, but at the time it seemed a huge step down. Coming from the egalitarian culture of live music, I was shocked to discover that, as a local hire, I was virtually invisible, working on a crew that for the most part regarded everything about Nashville with abrasive amusement, and which respected film, not music, as the art of highest value.

Every day, I reported after wrap to our transfer room in the show's motel. There, a Teamster delivered the Stevens one-inch 8-track tape machine and production tape rolls straight from Jim's sound cart, along with his sound log marked up with my instructions.

My job was to transfer three of the eight tracks Jim designated (from wireless, boom, handheld and prerecorded instrumentals) onto sprocketed three-stripe mag stock. A couple of nights later, after the film had been processed and flown back, Jim would do a live mix at a dailies screening for the cast and crew using my three-stripe transfers. Over the years, those screenings have gone on to become the stuff of legend for their high camaraderie, fueled as they were by weed, alcohol and massive talent. However, across the motel courtyard in my transfer room, there was no weed, no

alcohol, no camaraderie. Still, the money was good and I'd begun to find the whole film thing fascinating.

The Stevens one-inch 8-track tape recorder was unique in that it operated without a capstan and it ran on car batteries, but was virtually unknown in professional audio circles. Jack Cashin was a USC cinema grad who knew of it and its capabilities, then convinced Altman he ought to use it, then oversaw making it work both technically and in workflow—a trifecta of history-changing contributions for which he's never been adequately recognized. Altman and Webb first used the Stevens on *California Split*, then, when planning *Nashville*, Webb completed the system we know today by bringing in wireless microphones. This full system was used one final time on *Buffalo Bill and the Indians*, after which thirty years would pass before the film business would again have eight tracks available for their production mixers.

I was able to attend filming at two of their locations. The Exit/In had been my favorite music-listening room since its opening, so when *Nashville* shot there, I burned my candle on both ends to sit at a table as a background player. This got me close enough to listen while Altman talked his talent through scenes for two days. As far as I knew, all directors did it just like him, right?

I also went to the assassination scene at the Parthenon, and the three photos above are from that day—me playing with the slate, Jim Webb and Chris McLaughlin (Jim's ace boom operator) behind the sound cart where Chris happily mimed mixing alongside Jim for my photo, and an enthusiastic Altman warming up the crowd as the master of his universe totally oblivious to the pistol clearly visible in his pocket.

But I proved not to be the perfect employee and suffered a fall from grace. One night, a solo vocal track by Karen Black somehow captivated me—it was probably from her SM-58 handheld though I don't really remember—but I was absolutely convinced that something magic was in that track. And no, drugs were not involved. It was the raw power live music had on me.

I wanted everyone to appreciate exactly that same magic, so, contrary to Jim's log notes, and ignoring his written instructions as my production mixer—I recorded that one microphone track onto all three strips of the sprocketed mag stock. Inevitably, two nights later at dailies when that particular scene went onscreen, the shit truly hit the fan.

As Karen launched into her song, Jim potted up her instrumentation track only to hear more of the same—her naked *a cappella* vocal. Apparently, Karen had been insecure about her singing before this, but now with her voice unaccompanied and unsweetened in front of cast and crew, she absolutely freaked. Flipped. Exploded. Jim Webb was on the spot, Robert Altman was on the spot, and a firing of the responsible party was inevitable. I was given the news and sent home. The small upside that night was that no one knew who I was, so no one recognized me on my way out.

An hour or so after I got home, Johnny Rosen phoned. "Think you learned anything here?" he asked. I confessed my naïveté, he got a laugh at me, then reported what had gone down. First, Altman assured Karen Black that he'd had me fired. Then he made it clear that, with the firing done and on record, he didn't want any delays

or compromises going forward with his dailies—nudge, nudge, wink, wink. "Just show up on time tomorrow and do what your mixer tells you," said Johnny. My lesson learned, I did as instructed and no further word was ever uttered. Fast-forward to last year, nearly four decades later, in a conversation with Jim I finally dared to ask what he remembered about the incident. Always the gentleman, Jim drew a blank on it altogether.

After *Nashville* wrapped, my career took me back into live music for four more years, including one on the road mixing Johnny Cash, but Hollywood had already set its hook. By 1987, I was living in Los Angeles, a production mixer myself and now brimming with enthusiasm for the MOWs and television episodics that were becoming my bread and butter.

And that's it. My film career started at the very top, working with Jim Webb on Robert Altman's *Nashville*. I was a hands-on user of their paradigm-shifting multi-track production sound recorder. For two months, I was a cog in our industry's very earliest multi-track film production workflow. Along the way, I screwed up so spectacularly that Altman had me fired. Then had me re-hired.

With the perspective that can come from enough time and distance, I'd like to suggest that sometimes one finds an unsuspected upside to learning your hard lessons while anonymous—wait long enough and some of those lessons may morph into stories worth sharing.

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P-Cap, MoCap, and All That Jazz Part 2

by Jim Tanenbaum, CAS

No square inch of my light, small cart is left unused, with the batteries on the lower shelf (Note the capture cameras with a ring of LEDs around their lenses in the BG)



Set Procedure

The capture techs will have an earlier call so they can calibrate the volume. This involves placing a single reflective marker at specified positions so the computer can associate them with the images in the capture cameras. The marker is mounted on a rod, usually the same length as the side of the grid squares. First, the rod is used as a handle to position the marker on the floor at each intersection of every grid line. The system will beep or chirp when it has calibrated that point so the tech can move on to the next one. When the floor grid is calibrated, the other end of the rod is placed at each of the intersections, and held vertically with the reflector at a fixed distance directly above the spot, and the procedure repeated. During the calibration, the volume needs to be kept clear of other crew people.

Reflective objects are *verboden* in or even near the volume. Any Scotchlite strips on shoes or clothing need to be taped over, and if

the anodizing is worn off of the clutch knobs on your fishpole, they will need to be covered with black paper tape. Some poles' shiny tube sections are a problem too, and black cloth tubular shrouds can be purchased to slip over the entire fishpole. J.L. Fisher has black-anodized booms available to rent for use on capture shoots. If you have work lights on your cart, be sure their light bulbs are not directly visible to any of the capture cameras.

On most shoots, you will have only a single assistant, either to boom or to help with the wireless mikes. This means that the smaller and lighter your package is, the easier it will be to set up, move and wrap.

I make it a habit to run on batteries at all times. This avoids problems with hum from ground loops because you are tied into the studio's gear through your audio sends, and also the possibility of having your power cord kicked out of the wall outlet. Being a belt-and-braces (suspenders) man, I also use isolation transform-



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ers in my audio-out circuits. (See my cable articles in the Spring, Summer and Fall 2012, and the Winter 2013 issues of the *695 Quarterly*.)

The usual recording format is mix on Channel 1, boom (if used) iso'd on Channel 2, and wireless mikes (if used) iso'd on succeeding channels. You will send a line-level feed of your mix to the IT department, where it will be distributed to the reference cameras and imported into the editing software. Your isos may also be sent into the system during production.

Metadata may be conventional (Scene 37a, Take 6) or extremely esoteric and complex (195A_tk_00E_002_Z1_pc001_0A01_VC_Av001_LE). Hopefully, you will be allowed to abbreviate long ones like this—I was able to get away with: Scene 195A_00E_002, and Take 2, but since the last digit of the “scene” number was also the take number, I had to manually advance it every take. Fortunately, the Deva allows me to make corrections retroactively, but it is still a

variable. Many directors will want to see and hear playback during the day. I have found that the simplest solution is to get a feed of your mix back from IT and send that to the Comtek transmitter. They should automatically have the correct delay for both direct and playback. Unfortunately, a number of new, smaller volumes have sprung up, and they sometimes do not have any means to compensate the audio for the video delay. Behringer makes an inexpensive variable-audio-delay unit called the “Shark,” and it is worthwhile to carry two of them along with an XLR switch so you can quickly feed your Comtek with the appropriate delay for direct and playback audio. Your direct mix will go into delay 1, and the mix return from playback will go into delay 2. The XLR switch will be used to select the output of either delay as required to feed your Comtek transmitter.

A problem with sending your mix and isos into the capture system in analog form is that the gain structure of their audio channels may be less than optimal, and more importantly, accidentally be changed after you have adjusted it initially. If you can have any control over the infrastructure, try to get a digital audio (SMPTE/EBU) audio path so you won't have to worry about this, or hum/buzz pickup.

It is vitally (and virtually) important to discuss digital audio parameters with the IT department. The most common TC frame rates are 23.98 and 29.97, but 24 and 30 are also encountered, and you must be sure to use the correct one. Although you can use 29.97 with a 23.98 system, and 30 with a 24 system—the rates can be converted without too much trouble—it is much more difficult (and expensive) to use 30 with a 23.98 system, or 29.97 with a 24 system. Usually, you will get a TC feed from the capture system. Ask specifically about the user bits—some systems have fixed random digits that remain unchanged from day to day. If you are working more than one day on the shoot (and remember that sometimes a one-day job runs over and requires a second day), it is important to put the date (or some other incremented number) into the user bits yourself to avoid duplicate TCs.

There are two “standards” in TC circuitry: BNC connectors at 75Ω and 3-pin XLRs at approximately 110Ω. Unfortunately, these parameters are not universal, and to make matters worse, some facilities have built up their own infrastructure and have patch panels with connectors that are fed from equipment with the inappropriate impedance.

Unless long cable runs are involved, this impedance mismatch usually does not cause problems. (See the cable articles for using balun transformers.) The best you can do is to use mike cables with XLR TC sources and 75Ω coax cables with BNC TC sources. If this does not match the TC input connector of your recorder, try a simple hard-wired adapter before going to a balun. If the recorder's display shows a solid indication of the proper frame rate and there are no error flags, you are probably okay. If this is a long-term project, you should have time for a pre-production test, if not, cross your fingers. (Or invest \$10,000 in a time-domain reflectometer to measure the jitter in the “eye pattern” and determine the stability of the TC signal at your end.)



Set up for a good view of the volume—you won't have to move for any “new camera angle.” [Formerly, Giant Studios, now Digital Domain's Playa Vista, California, stages]

When it comes to wireless-mic'ing the capture suits, there is good news and bad news. The good news is that you don't have to hide the transmitter or mike. The bad news is:

1. There is a tremendous amount of Velcro used on capture suits, and it can make noise when the actor moves. Applying gaffer tape over the offending strip of Velcro will sometimes quiet it. For more obdurate cases, a two-inch-wide strip of adhesive-backed closed-cell neoprene foam (aka shoe foam) may prove effective. As a last resort, one or more large safety pins fastened through both sides of the Velcro usually works.
2. Mounting the mike capsule requires some forethought. If no facial capture camera is in use, the top of the helmet opening can be used to mount a short strut to hold the mike in front of the forehead. I use a thin strip of slightly flexible plastic, 1–2 inches in length. If a face-cap camera is used, its mounting strut can be used to secure the mike, but in both cases, be sure to keep the mike positioned behind the vertical plane of the performer's face to help protect against breath pops. Also, the exposed mike is susceptible to atmospheric wind, or air flow from rapid movement of the actor. I have found that a layer of 100% wool felt makes an excellent windscreen, especially when spaced away from the microphone element about 1/8 inch. (Incidentally, felt can be used to windscreens mikes under clothing as well.)
3. Because the mike is located so close to the actor's mouth, it is exposed to very high SPLs. Many lavaliers overload acoustically at these levels, so turning down the transmitter's audio

gain doesn't reduce the distortion. Both Countryman and Sanken make transmitter-powered models designed for higher SPLs, but not quite high enough. The problem is that the mikes require at least 5 volts of bias for these peak levels, and most wireless mike transmitters supply only 3.3 to 4 volts. An inelegant fix is to use one of these mikes with an external, in-line battery power supply, because their extra bulk doesn't have to be concealed. The other side of this coin is that these high-SPL mikes are noisier at low dialog levels. Be prepared to quickly switch back to the low-SPL mikes between loud and quiet dialog scenes. Another possibility, if you have stereo transmitters (currently only available from Zaxcom), is to employ two different mikes, one for high levels and the other for low, and iso them both.

4. There may be other electronics mounted on the actor's suit that can interfere with your wireless mikes. If a face-cam is in use, there will be a digital video recorder and timecode source. This may be an onboard TCXO, or a receiver for an external reference. Another possibility is a transmitter to send locally generated TC to the capture system. If real-time face monitoring is present, there will be a video transmitter, either in the WiFi band (2.4 GHz) or on a microwave (above 1 GHz) frequency. If active markers are functioning, they may receive and/or transmit an RF synchronizing signal. The RF from any of these transmitters can get into your wireless either through leakage in the transmitter case or through the lavalier's capsule housing, cable or plug. Keeping your gear as far from any of these transmitters and their cables is the first line of defense.
5. If motion control apparatus is being used, there may be multiple RF links involved, all at different frequencies. As soon as possible, coordinate frequencies with the appropriate department(s).
6. The reference video cameras, if camcorder types, may have video monitor transmitters. Some of them still use the old analog Modulus units, and they present very serious interference problems.
7. Walkie-talkies usually operate well above or below your wireless frequencies, but at 5 watts they can cause trouble if close to the actor or your sound cart.
8. For general wireless mike problems, see my radio mike article in the Spring 2011 issue of the *695 Quarterly*.

When it comes to booming a CGI-capture scene, there is good news and bad news. The good news is that you don't have to worry about boom shadows. The bad news is:

1. You can't block the view of the reference cameras. When 12 of



Avoid the IT area's computer fans and talking unless your headphones are very isolating (like mine). Photo courtesy of Jim Tanenbaum. [Just Cause Studios in Marina del Rey, California]

nuisance so I'm very careful when I enter the data initially. Discuss metadata requirements with production as soon as possible.

Digital sound reports are very convenient, but you need to secure your tablet carefully; the cost of replacing a dropped Galaxy or iPad overcomes any amount of convenience.

Comtek monitors can be a problem because of system delays in the video display screens, which are often non-standard and even

them are in use simultaneously, it can be hard to keep track of all of them. But the mike and boom can be visible in the reference camera(s) as long as it isn't between them and an actor's face (or key part of the body).

2. There is no such thing as “perspective” in a captured scene, since it can be rendered from a POV at any distance. Every shot needs to be mic'ed as closely as possible. Distance is easily added in Post, especially now that we have DSP (Digital Signal Processing), but cannot be removed.

When it comes to booming a live-action capture scene, there is good news and bad news. The good news (if any) is dependent on various factors. The good/bad news is:

1. It depends on the particular project as to whether the mike and/or boom can be in frame. For green/blue screen work, a green or blue cloth sleeve is available for the pole, and similarly colored foam

from a shot relatively easily, and this can include mike booms. (Of course, this is no license for sloppy work.)

Another use of CGI solved a problem that has plagued filmmakers from the very beginning: reflections of lights, cameras and crew in shiny surfaces. Bubble faceplates on spacesuits were a particular problem. (We had to build a quarter-million-watt artificial sun for single-source lighting on the TV miniseries *From the Earth to the Moon*, in major part because of the astronauts' mirrored visors.) For *Avatar*, most of the exopack masks were only open frames, with red fiducial (computer-tracking) dots around the edge. CGI faceplates were added in Post, complete with the appropriate reflections of trees, sky, other characters, etc. Many of the windows in vehicles were CGI'd in the same manner. This provided a rare benefit to the sound department: the ability to shoot through a “closed” window or a facemask with a boom mike.

When it comes to setting levels and mixing the production (real-time) scratch mix for a capture scene, the usual live-action esthetic and dramatic considerations do not apply:

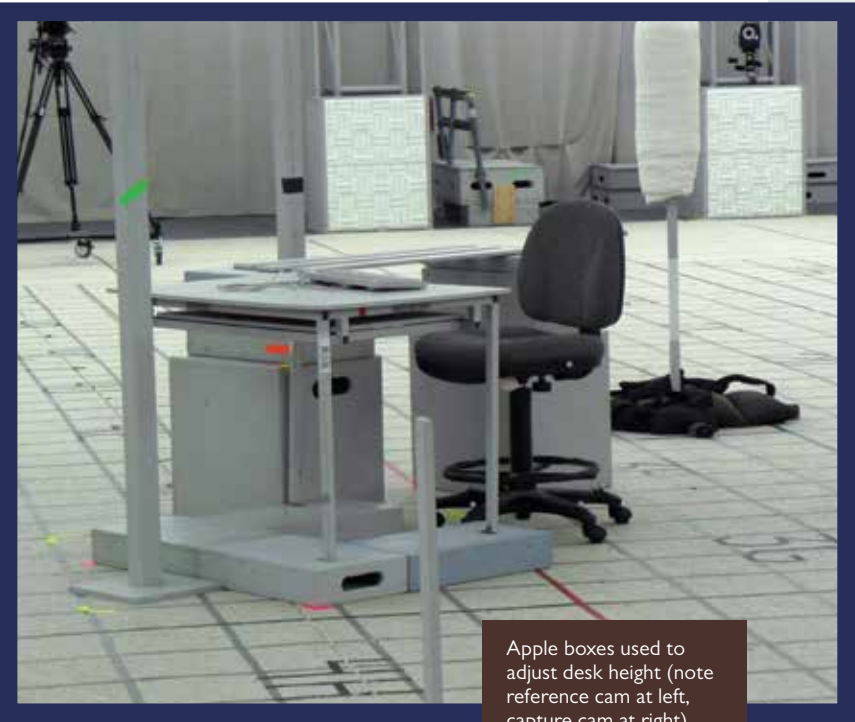
1. As just mentioned, there is no “visual perspective” as such for a given take, because it can be rendered from any POV. Wireless mikes sound “close,” and you will try to boom mike as closely as possible, too. With every channel iso'd, there is the freedom in Post to mix them in any proportion, but remember that your work is normally judged in dailies. (Although nowadays, that usually means the immediate playback of the take.)

2. For your production mix, however, you will have to make certain choices without knowing what perspective image it will be mated to. EXCEPTION: When a virtual camera is in use, if you can see or be told, what the composition is, by all means use that perspective, because it will most likely be seen (and heard) that way first, as in dailies.

3. The biggest problem (IMHO) concerns overlapping dialog when the characters are separated in the volume by a large distance. If you don't have the virtual camera info mentioned above, try to imagine what the composition of the rendered shot(s) will be. Is a main character speaking with a secondary one? Then the main character will probably get the most screen time. Is one character

reacting more emotionally than the other? Then they will probably get the close-up.

4. After you have determined (made your best guess) which character will be featured, mix them just noticeably hotter than the other one. The separation in levels should be just large enough that the lower level dialog doesn't muddy the higher level dialog, but no more. Since both actors are close-mic'd, if they happen to feature the secondary one, the overlap will still work. EXCEPTION: If you know the purpose of the overlap, assign the higher level to the appropriate character's dialog. This will call attention to the overlapping character, but that's the reason for the overlap in the first place.



In addition to the usual noise problems on a live-action stage, the volume has some unique ones:

1. The area lighting is often supplied by ordinary fluorescent lamps, and many of them have older magnetic ballasts that emit 120 Hz hums and buzzes. Modern electronic (high-frequency) ballasts are usually quiet enough, and are available as direct replacements for the older magnetic ones.

2. There are usually a great number of computers on the stage, and their cooling fans are a significant source of noise. If the facility has been in existence for some time, this may already have been dealt with. If not, plywood baffles, covered with sound-absorbing material on the side that faces the computers, should quiet them sufficiently.

3. Some volumes' floors are carpeted to eliminate footstep noise, but unfortunately, some are not. An adequate stock of foot foam should be on hand for this eventuality. Be sure to remove any dust or other loose material from the shoe soles before attaching the foam. I have found that repeatedly wiping the soles with the sticky side of gaffer tape, using a new length of tape each pass, does an outstanding job of preparing them. An expedient method when time is limited is to slip heavy wool socks over the shoes. You may have to cut holes in the socks for the foot markers. Unfortunately, the socks can slip around, and also have less traction on the floor than rubber soles. I keep a dozen 2' x 5' carpet rolls on my follow cart, and these can be laid down along the path taken by the actor(s) during the rehearsal. (Of course, they never deviate during the take.) Normally, the strips are taped in place, but when time is short, they can be attached with staple guns (unless the floor is concrete). IMPORTANT: Roll up the carpets with their upper surface out—this makes the strip curl downward when it is laid out, so the ends hug the floor and do not curve up to present a tripping hazard.

4. The floor-contour modules are another source of footstep sounds. Some of them are carpeted, but can still produce dull, hollow thumps from the impacts of running or jumping (which video games seem to have in abundance). The un-carpeted platforms are particularly loud. If at all possible, arrange to have them carpeted before shooting begins. Both types of modules benefit from having the underside of the top surface sprayed with sound-deadening material, such as automotive underbody coating. Using thicker (and unfortunately, heavier) plywood for the upper surface makes a big difference, too. During shooting, carpet strips can be utilized on the modules in the same manner as on the floor.

5. Front-projection video projectors have cooling fans that can be problematical. Ask if their use is absolutely necessary. Check in their menus to see if they have a “low-noise/low-speed” option.

6. Props (and some set dressing) are usually not the real objects they represent. Rifles are plastic or wood pieces shaped like the guns they represent, or toys or air rifles.

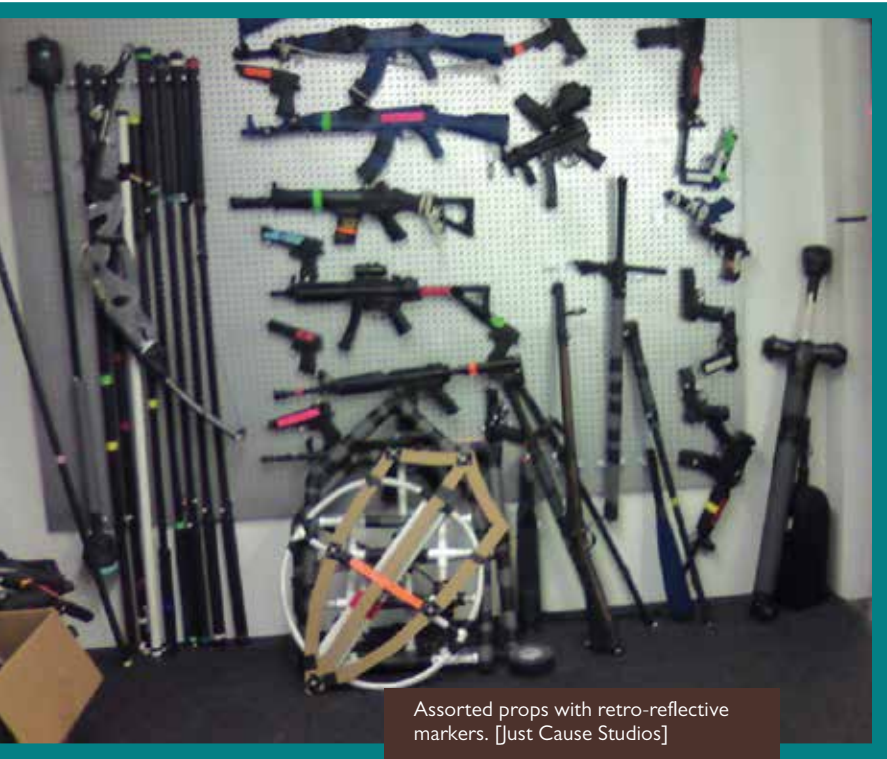
A solid oak dining table may in fact be only a row of folding card tables of the same height and overall size. Be alert to any sounds they produce—an object set down on the card table (not on a line) may make an effect at the appropriate level, but the sound will not be appropriate to the nature of the CGI-heavy wood table. There are two schools of thought in dealing with this: 1, eliminate as much noise as possible by padding the table so the effects cutter will have a clean room tone to lay the correct effect into; and 2, leave the production effect in, as a guide to synchronization when laying in the new effect. I suggest discussing the matter with Post ahead of time, but my personal preference is number 2, because the presence of the padding will affect the manner (body motion) in which the actor sets down the object. Of course, if the inappropriate sound is on a line, either pad the table or object, or record some clean wild lines.

Capture Procedure

When a capture scene begins, the actors will start by spreading out and taking a “T-pose” near the edge of the volume. If you haven't been given a specific “Roll sound,” this is the time to go into Record. An added precaution, be sure to set your recorder's pre-roll to the maximum time. T-pose is a standing position with the legs slightly spread and the arms extended horizontally, which allows the capture techs to see that the system has properly recognized all the markers. The techs give the okay, the actors will take their proper positions in the set and then the director will call “Action.”

At the end of the shot, after the director calls “Cut,” the actors will again move out and take the T-pose. When the capture techs are satisfied, they will announce that the capture system is stopped, and then you can stop recording.

The primary difference between a capture shoot and any other



windcreens for the mike. Also, appropriately colored paper tape can be used to cover the shockmount, or acoustically transparent colored cloth can shroud both mike and shockmount. Be sure the cloth is far enough from the mike that it does not rub when moved.

2. For non-screen work, the ordinary booming rules about shadows and reflections apply, except...

Now that HD video is the norm, there is no film “sprocket jitter” to make the matt lines stand out, and there is no “generation loss” from optical film processes. This, plus the much lower cost of video image processing compared to film, has made producers and directors less reluctant to use it. Offending objects can be removed



Virtual camera—the “front” is facing left, with a strut-mounted marker to show direction. (Photo: *Avatar* ©2009 Twentieth Century Fox. All rights reserved)

type is that you won’t have much free time once the process starts. Unlike live-action, there is no setup time for camera and lighting. And there are no setups for alternate camera angles, or retakes for bad camera moves, flyaway hair, or any of the multitude of other delays sound is used to. Once the scene has been performed to the director’s satisfaction, the action will move to the next one, which again requires no re-lighting, new camera setups, wardrobe changes, or makeup and hair. If any set or prop changes are necessary, they can be accomplished in a few minutes. Plan your bathroom breaks accordingly.

This high-density work can generate many GB of audio, so be sure to have a large amount of pre-formatted media on hand. Depending on your particular recorder, you may have your on-set archive on an internal or external hard drive, or a CF or SD card. Most productions want audio turned in on a flash memory card. SD cards are much cheaper than CF cards (and all those tiny fragile pins in the CF card socket scare me). If you are using a Deva with only CF card slots, consider an external SD dock into the Deva’s FireWire port. Depending on the particular job, you may or may not be required to turn in the flash card(s) during the day or at wrap. The audio may be imported immediately and the card(s) returned to you, or they may be kept overnight or longer. Use only ‘name-brand’ cards, as the wear-leveling algorithms on the cheap ones can cause premature failure, with the possible loss of all your data.

The director may have several options to monitor the scene during capture:

1. The live video from the reference cameras.
2. A crudely rendered live CGI frame, with a fixed POV chosen in advance.
3. Using a “virtual camera,” pioneered by Cameron on *Avatar*. This is a small, handheld flat-panel monitor equipped with reflective markers. The capture system knows its location and the direction it is pointed, and renders a live CGI frame from that POV and “lens

size.” The director can treat it as a handheld camera, pointing it as though it was a real camera in the virtual world. Incidentally, the camera does not have to actually be pointed at the actors—the GCI world seen by the virtual camera can be rotated so that the camera can be aimed at an empty part of the stage to avoid distractions. Another feature of the virtual camera is a “proportionality control.” Set to 1:1, the camera acts like a handheld camera. At 10:1, raising the camera two feet creates a 20-foot crane shot. With a 100:1 ratio, it is possible to make aerial “flyover” shots, because the entire extent of the virtual world is available in the computer’s database.

When a virtual camera is in use on a multi-day shoot, the capture days may not be contiguous. After a certain amount of capture has been done, the main crew and cast may be put on hiatus while the director wanders around the empty capture stage with the scene data being played back repeatedly. The crudely rendered video will appear in the handheld monitor, from the POV of its current position. The director can then “shoot” coverage of the scene: master, close-ups, over-the-shoulders, stacked-profile tracking shots, etc. This procedure ensures that all the angles “work.” If not, the director has two options: re-capture the scene on another day; or fix the problem in the computer by dragging characters into the desired position and/or digitally rearranging the props, set or background.

If this is the case, you have two choices: wrap your gear at the end of each capture session, and load in and set up at the beginning of the next one; or leave your gear in place during your off day(s). The trade-off is between the extra work (and payroll time) of wrapping and setting up, and the danger of the theft of the gear, or your getting a last-minute call for another job on the idle day(s). If you elect to leave your equipment, see if you can get a “stand-by” rental payment. Even if this is only a token amount, it establishes a precedent, and you may be able to raise the rate on the next job.

Conclusion

In addition to on-the-job training, if you know another mixer who will let you visit a capture set, take advantage of the opportunity as soon as possible. I probably would have not survived the first day of my first capture job (*Avatar*) if it were not for Art Rochester, who kindly let me shadow him before he left the show. I also got many hours of coaching from William Kaplan, who mixed the show before Art, and let me use his regular Boom Op, Tommy Giordano, to help with the load-in and setup of my gear. Bill also sent his son Jessie to work with me on the set. If at all possible, hire a boom op who has capture experience. (Note to boom ops: list your capture experience in your 695 directory listing.)

I wish you an absence of bad luck, which is more important than good luck in this business.

Text and pictures

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Avatar set photo ©2009 Twentieth Century Fox.

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