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NUENDO 5

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" Nuendo is my solution of choice because it allows me to work the way I want to work rather than within parameters specified by someone else. From the all-inclusive, no a la carte capabilities out of the box to the great price point, there's no other solution that can match Nuendo feature for feature, dollar for dollar."

- John McClain I Owner, "Sound Guy" The Dog and Pony Show, Las Vegas Nevada

"Nuendo has the perfect combination of post features, recording functionality and modern composing tools all in one place. No matter what the project calls for, Nuendo can handle it. It's easy to use, it sounds great and the tech support is amazing. I can't imagine using anything else."

- Michael Johnson | Staff Composer, "Music Guy" The Dog and Pony Show, Las Vegas Nevada

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695 UARTERLY



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Cover:

Warner Bros. Vitaphone Sound Truck #15, restored to original condition by Jay Dumesnil. Custom bodies were built by Nogues Body in Los Angeles, on 1.5 ton Ford chassis. Truck #15 is one of the two trucks still in existence.

In 1936, Jack Warner commissioned 10 trucks, originally equipped with an RCA optical recording system. The trucks in the 1950s that were still in service were converted to magnetic.

Truck #15 was the only Vitaphone truck to be sent to the Brooklyn, N.Y. headquarters of Warner Bros.

(Photo courtesy of Jay Dumesnil)

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From the Editors



Years ago, an English producer recounted the story of a friend, also English, who had been living for some time in Southern California. His parents were coming to visit, and he was concerned that they would be acutely disappointed. After his many letters, they were expecting to find him in exotic circumstances but he and his wife just lived in "boring old Topanga Canyon." With years of familiarity, he had completely lost the sense of how exotic Topanga Canyon would be to someone from England.

Raising awareness of the professionalism that Local 695 members bring to their tasks is a primary objective of this magazine. We hear reports that it is having a positive effect. Many producers, people one would expect to already be familiar with what we do, have commented on how articles printed in this quarterly have enhanced their appreciation for the high-tech nature of our work.

We're sure there are many more stories that deserve to be told, and we hope in coming issues to recount accomplishments from all the diverse roles played by members of Local 695. We encourage members to contact us with ideas and accounts of events and accomplishments in their work. Remember, although it may be "boring old Topanga Canyon" to you, it is likely to be fascinating to someone not already familiar with the place.

You may reach us at mag@695.com.

Fraternally, David Waelder, Eric Pierce and Richard Lightstone

From the **Business** Representative

Privacy in the Workplace

The U.S. Supreme Court is hearing a case concerning privacy in the workplace, as it applies to cell phones, email communications and other recording transmittal devices.

Should the U.S. Court Justices rule broadly and uphold the no-privacy



policies instituted by some employers? Such a decision may very well affect employees nationwide.

Policies adopted by many employers and communicated to employees, maintain that employees have no expectation of privacy when sending messages using employer-supplied devices like computers and cell phones. Employee communications may be read at any time, and no employee may claim a reasonable expectation of privacy. Employees are vulnerable to discipline or termination for the content of these personal messages.

A question of electrical transmitted audio/video recording is also being considered.

At issue before the U.S. Supreme Court is whether or not employees have any expectation of privacy when sending personal messages originating from their work computers, cell phones or other devices, even in circumstances where they pay for the portion of service used for personal communication.

Local 695 members typically provide their own communication tools. Even so, the outcome of this decision may apply to anyone who uses their own computer and their own Internet server but connects via studio Wi-Fi link or other carrier frequencies.

This is a matter of significance requiring a clear understanding of a reasonable expectation of privacy in the workplace.

Should you have any input regarding this subject, please address your comments to [OConfidentialinfo@695.com.

QUARTERLY

I.A.T.S.E. Local 695 Production Sound Technicians. **Television Engineers**, Video Assist Technicians and **Studio Projectionists** Certified & Chartered September 15, 1930 A California Nonprofit Labor Corporation Incorporated July 31, 1951, State of California Affiliated with the A.F.L.-C.I.O., California State Federation of Labor, and L.A. Central Labor Council

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SOME THOUGHTS ON MIXING

We have an amazing combination of creative and technical expertise in the 695 membership: sound, video, projection, computer and engineering skills, second to none in the world. I am impressed with the scope of our group skill set. My particular work is as a Y-I Production Sound Mixer and I'd like to share some thoughts on production mixing with you this issue.

We're called mixers for a very specific reason: we actually blend the elements that make up the dialog tracks for the show. Some have begun to wonder if we are becoming mere accumulators of raw elements to be assembled later. That day will never



What is the value of that work? In the music business, it's pretty much the whole enchilada. In the film/television business, it's nearly the same work but often unrecognized. We spend our days with the talent, making essential creative decisions in the field, often in a vacuum-pressure, responsibility, no wiggle room, no margin for error. This is wonderful fun, for those of us who love it.

Once picture is locked, the post-production sound team does their part, creating the finished soundtrack. I'm often asked, "What's the typical balance between original location-recording dialog and ADR?" Depending on the director and the style of the picture, the dialog you hear may be 90% production track or even 100%. But many of us, both in production and in post, have moved away from this scorecard view and are now asking, "What's the best way to contribute to the storytelling?"

There are many aspects to sound recording that are not obvious storytelling elements. Like the impact of lens selection or depth of field on the image, our choices can impart a first-person or a third-person sensibility. Whether the mike placement is intimate or more distant, the ambient elements are dry or stylized, affects the whole tapestry and how the scenes and performances are perceived. Sometimes this is an active collaboration with the director. Often, the many demands of production force the director to leave these interpretive decisions to our discretion. When directors move into post-production and find that the original elements naturally enhance the scene, they often come to appreciate the value of the original work. This can be the foundation of a relationship of mutual trust between the director and the mixer. You never know.

that is the film crew.

Next: On Boom Operating

Fraternally. Mark Ulano President I.A.T.S.E. Local 695

From the President

come. We record the primary performance of the actors and whatever else the director creates on set. What we capture is how the film's sound is experienced throughout editing and, often, through final release. The mix is handmade, a spontaneous judgment of how all the elements should sound that is the product of years of experience. In a world of deadlines, the value of a track that does not require assembly from parts cannot be overstated.

I've been grateful that there are people who like to have my crew as part of their jazz band. What we do-psychologically and emotionally-is akin to being session players. We come in, sight-read the chart, and immediately perform collaboratively in the band

NEWS & ANNOUNCEMENTS

Kudos to the **Winners**

Local 695 would like to congratulate all the award recipients and their production sound crews below:

Oscar - Achievement in Sound Mixing

The Hurt Locker Production Mixer – Ray Beckett Re-recording Mixer - Paul N.J. Ottosson Production Sound Team - Simon Bysshe, Craig Stauffer, Juniper Watters

2010 BAFTA - Sound

The Hurt Locker Production Mixer – Ray Beckett Re-recording Mixer - Paul N.J. Ottosson Production Sound Team - Simon Bysshe, Craig Stauffer, Juniper Watters

CAS Awards

DVD Original Programming: Into the Blue 2: The Reef Production Mixer - John M. Reynolds Re-recording Mixers: Terry O'Bright, CAS, Keith A. Rogers, CAS Production Sound Team – Richard Linke, Dan Garab

Television Non-Fiction, Variety or Music -Series or Specials: Deadliest Catch "Stay Focused or Die" Re-recording Mixer - Bob Bronow, CAS

Television Series:

Mad Men "Guy Walks Into an Advertising Agency" Production Mixer - Peter Bentley, CAS Re-recording Mixers: Ken Teaney, CAS, Todd Orr Production Sound Team – Chris Sposa, David Holmes

Television Movies and Mini-Series:

Grey Gardens Production Mixer – Henry Embry Re-recording Mixer – Rick Ash Production Sound Team – Jim Thompson, Mike Filippov, Ron Stermac

Motion Pictures:

The Hurt Locker Production Mixer – Ray Beckett Re-recording Mixer – Paul N.J. Ottosson Production Sound Team - Simon Bysshe, Craig Stauffer, Juniper Watters

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

Tracking Database

This is a reminder to report all employment to the production tracking database, union or non-union. Reporting your employment is required of all members under the bylaws of Local 695, and assists the Local in helping members with contract questions, MPIHP employer contributions and more.

You can call your employment in at 818 985-9204 or enter it online at www.695.com, by clicking on "Production Tracking Database."



Pins

Service pins are available by request for members who have been in IATSE for 5-10-15-20-25-30-35-40-45 and 50 years. To get your service pin. contact Elizabeth Alvarez at 818 985-9204 or liz@695.com

Production See Your Physician If Injured at Work

If you sustain a work-related injury, your employer will require that you see their physician for treatment, which may not be in your best interest. To ensure that you are able to see your personal doctor or worker's comp specialist, you should file a "Predesignation of Personal Physician" with your employer prior to any workrelated injury or illness. Local 695 strongly recommends you file this on your first day of a job.

A Predesignation form can be filled out and downloaded at http://www.dir.ca.gov/dwc /forms/dwcform 9783.pdf. This link is also available on the "News & Announcements for Members" page at www.695

For more information, contact Elizabeth Alvarez, Co-chair, Membership Health & Welfare Committee, at 818 985-9204 or liz@695.com



GARRY K. **CUNNINGHAM** Mixer

Nov. 23, 1937 – Apr. 22, 2010

HAL WHITBY JR. Mixer

Oct. 18, 1946 - Apr. 9, 2010

WILLIAM H. WISTROM **P.A.P.** Operator Dec. 20, 1935 - Mar. 10, 2010

D'MARCO RAY SMITH Mixer Jan. 6, 1973 – Feb. 1, 2010

New Yamaha 01V96 User Group

Phillip W. Palmer, CAS has established a new user group for the Yamaha 01V96 digital mixing board for production sound mixers. The 01V96 was designed with music production and public address in mind, but many television and feature production sound mixers have adopted it as their mixer of choice. http://olv96psug.proboards.com

Other sound and video user groups are:

- Jeff Wexler, CAS's discussion group http://jwsound.net
- Casey Green's RED Camera Forum
- http://www.redcamcentral.com
- Coffey Sound forum http://www.coffeyinteractive.com • Video Assist Yahoo! Group
- http://movies.groups.yahoo.com/group/VideoAssist
- rec.arts.movies.production.sound Usenet: Can also be accessed at http://groups.google.com

Computer and Video Monitors on Set

There are many non–IATSE rental companies who provide props and set decoration to production, including items that display an image that will be photographed as part of the production. Some of these companies will also attempt to provide non-IATSE employees to perform jurisdictionally covered property and video maintenance/operation work as well.

Local 44 provides production "Property" jurisdiction properly assigned to its members, but when a production requires on production television and/or electronic display monitors to display an image which is to be photographed, the maintenance and operation of such electronic equipment falls under the established jurisdiction of Local 695.

In September, IATSE Locals 44 (Affiliated Property Craftspersons) and Local 695 signed a joint letter reconfirming both Local's determination to protect their members' established jurisdictions and work opportunities so that they may be employed to earn wages and qualify for health and pension benefits.

Please contact Local 44 and/or Local 695 Business Agents offices to report any incidents where the producer is not employing IATSE Local 44 and/or Local 695 members to perform this jurisdictionally covered work.

To see the full joint letter, go to www.695.com/mbr/695-44letter.html

.com.

Keeping Track of Hours

On July 31, 2011, the minimum hours to qualify for health coverage will increase from 300 to 400 hours per six-month period. It is imperative that every member check their pay stubs going back at least five years against MPIPHP records at www.mpiphp.org to

ensure that all hours are reported. With the new requirements, members more than ever need to be diligent in making sure all hours worked are reported in order to qualify for benefits.



Stay Connected

Read important Local 695 news, get announcements about upcoming events and training, add and remove yourself from the Available for Work List, take advantage of free classified ads, get listed in the searchable Membership Directory, keep your member profile up to date and more. If you're already registered:

Be sure to log in and verify that your email address is current.

If you're not already registered: It only takes a minute to register, so do it today! www.695.com

www.695.com

EDUCATION & TRAINING

by LAURENCE B. ABRAMS



If you are registered and have a valid email address at www.695.com, then you've already received notices about Local 695's greatly expanded list of educational programs for the 2010–2011 training year. (If you didn't get any email notices, check to see if they landed in your spam folder and then check to see if you have a current email address registered at www.695.com.)

Some of the classes

tinuation of those offered in previous years but most are available now for the first time. Some are entirely free and others are reimbursable by 2/3's from **CSATTF** (Contract Services Administration Training Trust Fund) if you meet their qualifications. The 695 website contains complete reimbursement details but basically, you need to be on the Industry Experience Roster, you need to have completed Safety Passport training and you need to have a valid I-9 on file at Contract Services in order to apply for reimbursement.

described below are a con-

Cable Clinic: Construction & Field Repair is all new this year and will be repeated on multiple training dates. The objective of this free handson workshop is to develop proper techniques for fast and reliable cable construction and maintenance. We assume that all of our members have considerable soldering experience, but this training takes it to a more advanced level. Conducted by "Master Cable Builder" James Eric, the class will cover essential soldering technique, cable and lavalier re-termination, working with the common and less common cable and connector types for sound and video, working on PC boards and more. Class size will be very small so that each trainee can spend the session at a solder station practicing critical bench skills and techniques. Each solder sta-

Summer Training Options

tion is fully equipped with the necessary tools and supplies. For further details, see www.695.com/mbr/ edu-cable-clinic.html or email edu@695.com.

Fisher Boom: One-on-One Intensive is a unique and free training opportunity offered only by Local 695. The demands placed on the sound department with HD production and the ability to shoot takes of unlimited length place greater importance on considering the Fisher microphone boom as an on-set solution.

This one-on-one, hands-on training is important for Boom Operators and Utility Sound Technicians as well as for Production Sound Mixers who will benefit from learning how this tool can address HD-related safety issues and how it can enhance the capabilities of the sound crew. Contact edu@695.com to schedule a training session.

Certified Pro Tools training, reimbursable by 2/3's from CSATTF if you meet their qualifications, has been expanded this year to add 16 new Pro Tools modules, including classes that focus on sound design, audio engineering workflows and Pro Tools plug-ins and effects. Local 695 will also be conducting a free four-day series of Pro Tools classes in June. Check the 695 website for complete details.

Apple Logic Studio training is new this year and eligible for 2/3's reimbursement from CSATTF if you meet their qualifications. Training for Final Cut Pro continues to be available and is also eligible for reim-

bursement. Local 695 will also be conducting a free four-day series of Final Cut Pro classes in June. See our website for more info.



REDucation training, conducted by the RED Digital Cinema Camera Company, is brand new this year and is likely to be of interest to Local 695 Video Engineers and Data Capture Engineers. This class combines the previous RED Tech and RED Post training programs into one comprehensive five-day session, eligible for 2/3's reimbursement from CSATTF if you meet their qualifications.

Studio Arts in Los Angeles is providing training for Local 695 members from a large list of classes that includes multiple levels of Avid Media Composer, Flash, Illustrator, Photoshop, SketchUp, Final Cut Pro, After Effects and many more. Studio Arts will have a total of 42 ten-week and one-week training sessions, all eligible for 2/3's

reimbursement from CSATTF if you meet their qualifications. See a complete list of classes at www.695 .com/mbr/edu csatfrmb.html.

An additional selection of training sessions to be offered by the **IDEAS Workshop** will be announced very soon. They will include **Pro Tools, Final Cut Pro, After Effects**

and many more, and will be eligible for 2/3's reimbursement from CSATTF if you meet their qualifications.

And lastly, we remind you that Local 695 members continue to have free access to VTC training, an excellent educational tool offering more than 750 online work-at-your-ownpace software tutorials covering a broad range of topics. The Pro Tools 8 tutorial, for example, provides more than 13 hours of detailed instruction and includes downloadable work files to accompany the training.

Complete details on all of the above training resources are available online at www.695.com/mbr/edu .html. If you have any questions or suggestions, don't hesitate to contact us via email at edu@695.com or call Laurence at 818 985-9204. Enhance your skills by taking advantage of as many of these educational options as you can.



Rocky Quiroz, Johnny Evans, David Waelder and Jerry Wolfe attend a session of the ongoing series of Local 695 Cable Clinics.



"The Sound of Success" panel with Glenn Berkovitz, Woody Woodhall, Keira Morrisette, Phil Palmer and Jay Patterson.

"The Sound of Success" at Showbiz Expo 2010

On April 24, Local 695 conducted a workshop during this year's Showbiz Expo at the Los Angeles Convention Center. This panel discussion, called "The Sound of Success," focused on the pre-production decisions that impact critical aspects of the production and post-production sound process. Contributing to this workshop were Glenn Berkovitz, Local 695 Production Sound Mixer, who also served as the moderator; Keira Morrisette, Associate Producer and Post Production Supervisor; Phillip Palmer, Local 695 Production Sound Mixer; Jay Patterson, Local 695 Production Sound Mixer; and Woody Woodhall, Re-Recording Mixer and owner of Allied Post Audio in Santa Monica. Woody pointed out that he has often found himself sitting in the final mix with a director or producer who has been saying throughout the production process that "we'll fix it in the mix" ... only to realize that this IS the mix and that now is the time he or she will start paying for all the compromises that were made on the set. The moral of the story ... producers should understand that shortcuts and compromises made during production may eventually end up costing lots more money than they thought they were saving. The video of this workshop is online at www.695.com.

Digital Media Technician: **Bridging the Gap Between Production and Post**

by Ben Betts

This brings us to today, where a growing num-

ber of productions are no longer shooting on

film. Most of the jobs on set are unaffected by

this transition, but for the camera department,

the nature of their baby is now different. They

still need to operate, pull focus and change

magazines; it's just that the magazines contain

Since there is no need to develop film on a

digital camera and the footage just shot can be

immediately played back, there is an irresistible

desire to do so on set. This responsibility falls to

the engineer and/or utility sound technician or

video assist technician. By embracing the new

technologies and related responsibilities, we

seize the opportunity to enhance the process of

With the age of digital motion picture production upon us, the industry is adjusting to new tools and different technologies. Considering that the basic tools of our trade haven't changed very much in the last 100 years, it's understandable that there is a lot of confusion. Modern film cameras and their crews are still doing the same basic jobs they did when making those first silent movies: we still expose frames of film through a lens in quick succession and then carefully get the media to a lab so that captured images can eventually become a presentable product.

The invention of video and computers have not only enhanced the production process, but added whole new departments specializing in their uses. Of course, many of these technologies have remained under the jurisdiction of IATSE Local 695, having the technicians and engineers skilled at their use, expertly filling the new digital media positions.

Through the last half of the 20th century, video recording broke into television but never had much of an impact on film production from the acquisition standpoint. The quality of video just wasn't high enough to hold up on the big screen. Of course, it kept evolving, going digital and getting higher resolution with better dynamic range to the point that they

can now cram more pixels onto a frame than grains of film. The making motion pictures. mass production of computers and electronics continually drives down equipment and storage prices, so that it is now questionable whether film can be cost-competitive, especially when you add the of engineers, utility sound technicians, video assist technicians and time and chemicals required to process it.



The following is my personal take on some of the new digital duties data management technicians (aka data acquisition supervisor, data

digital data rather than film.

capture technician, data wrangler, or digital asset manager). Most of my recent experience has been with the RED and P2 camera workflows, so please excuse me if I leave out something specific to other digital camera systems.

Digital cameras like the RED One are completely different animals than high-definition video cameras. They also output a high-quality video signal that can be viewed live on a monitor, but the method and data capture process is very different. Cameras like the RED are akin to film cameras, being digital still cameras that can rapidly capture multiple high-resolution frames of raw data from their sensor. Video cameras record a linear series of fields/frames at a fixed resolution and bit depth, converting their raw sensor data into a standard video signal recording. What this means is that raw footage captured from a digital camera has much more leeway, consisting of tremendously more data than a traditional camera. Effectively managing this data is a whole new responsibility and critical for the success of a digital motion picture.

Depending on the scope of the production, this position can include a number of responsibilities:

MANAGING THE DATA

Once footage has been captured by the camera, a camera assistant (loader) will swap out a full digital magazine (digi-mag) with an empty one. The specific hardware of the digi-mag will vary by camera system, but it will be some type of flash memory or solid-state hard drive. Instead of taking the digi-mag to the camera truck, the loader will hand it off to the Engineer (DMT).

The digi-mag should be treated with the same care and respect as a film mag; always transported within some type of protective case. You'd never see a loader skipping across the stage, jumping over cables and equipment with a bare-exposed film magazine. The product of the entire production's labor should always be protected during even the shortest journey. Just because solid-state memory is more robust than film, doesn't mean it should ever be handled unprofessionally.

The first order of business for the Engineer (DMT) is to offload the digimag to multiple destinations (the digi-negs). There are numerous software packages that can perform this operation while doing a checksum verification of the data to make sure it is copied exactly. At the simplest level, the files can be copied off the digi-mag using a laptop.

It is generally recommended to make at least three identical copies across multiple single drives (digi-neg runners). These travel between set and the lab/post production, where an archival copy on LTO (tape backup) is usually made.

Some shows will opt for a large disk array in a RAID-5 configuration as the digi-neg master. This stays on set, contains the whole show for easy reference and will live with the production as the master copy. The advantage of a RAID is not only that it can be made up of a series of hard drives, striped together as one giant super fast volume, but the "Type 5" uses parity checksums in such a way that, should any one hard drive fail, no data would be lost.

All digital media, whether it's a compact flash card or a hard drive, has Once the digi-neg has been successfully copied to multiple drives, it is a good idea to do a visual verification of the footage. It may only be a finite lifespan. It is for this reason that I recommend against anyone renting drives to production. Drives are expendables just like film or necessary to watch the circled takes from head to tail, but it depends



on time allotted and how critical the particular footage is to production. Once the copied footage has been checked, the digi-mag may be reformatted and sent back to the camera department for use again. For safety, it is generally recommended to have at least a full day's worth of media on hand, just in case there ever is a problem along the chain. Just like any type of valuable data, once multiple copies have been made, it's good practice for the copies to be separated in physically different locations. Regular footage runs to post provide not only a quick workflow but great peace of mind for production.

tape and production should bear the cost. Manufacturers say that every hard drive will fail eventually; it's just a matter of when. No one wants to be burdened with liability when a hard drive fails. It is for this reason we make multiple copies of critical data and use external hard drives that have internal RAID-1 (mirrored onto two identical internal drives). These are cheap insurance for hard drive failure.

TIMING THE DAILIES

Since footage shot can immediately be played back and viewed, the director of photography (DP), among others, will inevitably want to see direct playback. Whether there is a lab or not, this gives the DP an opportunity to include their visual intent while on set. Often, it is not until the footage can be seen on a large high-quality monitor, alongside previously recorded footage, that more precise artistic determinations can be made. These settings (meta-data), including information about exposure, white balance (color temperature), gamma curve, bit depth, etc., can be made on the camera while footage is being acquired and is included with the visual data to establish a "look," but since it is just nondestructive look-up tables referencing the raw footage, it can be changed at any time.

Traditionally, on live camera video shows, the "painting" of the cameras would be performed by a video controller (VC). However, unlike video cameras, the raw data recorded from a digital camera is not altered by these types of settings; the meta-data is just included to be applied during playback. One of the engineer's jobs is to assist the DP and director in conveying their vision. This first step in color-timing notes can now be performed on set, during and after the shot has been captured. Based on the additional input, these meta-data looks can be managed by the engineer and included with the digi-neg raw footage. These adjustments are all performed with software. For example, for RED footage, "RedCine-X," can adjust every aspect of the picture, while viewing the finished product on a high-quality monitor with a scope. Software-based scopes are becoming more sophisticated and along with those built into monitors, a dedicated hardware-based unit is becoming unnecessary. The meta-data is stored as files, alongside the raw footage and is delivered to post on the digi-runner hard drives accompanied by more traditional written logs, adding any additional notes from camera, script supervisor and, of course, the director.

Critical viewing and smooth real-time playback cannot be performed merely from a laptop, so building and maintaining a DMT cart is another area where our IATSE Local 695 engineering heritage comes into play. Generally, this cart will contain at least one fast multi-core computer with high-end video card(s) like AJA Kona3 or RED Rocket, RAID, high-quality HD monitors and, the most critical, UPS battery backup. This is where a dig-neg master containing the whole show for reference can be maintained.

PRODUCTION/POST-PRODUCTION BRIDGE

A good Engineer (DMT) will be involved at prep to help determine the workflow and stay in communication with the lab, post supervisor and editorial to ensure the dailies process is running smoothly. Whatever is captured and processed on set should be optimized all the way through the chain from lens to final delivery. Different shows have different requirements, so the workflow should be designed and agreed upon in prep on each show.



With the absence of the need to develop film and the ability of the DP to pilot color correction from the start, we are seeing productions skipping the tele-cine lab portion of the traditional workflow altogether. In fact, it's becoming more common for editors to be on set rough-cutting footage as it is being shot.

SET ETIQUETTE

Just like any critical position on set, it is wise to employ a certain amount of political common sense, learning how to subtly make suggestions if you have a concern, without stepping on toes. Get to know the personalities/egos in play and where your contributions are realized. It's good to immediately establish a friendly dialogue with the camera department, letting them know you are there to help them as a resource, not the "exposure/focus police." If you see a mistake being made with exposure, quietly mention it so the DP can decide whether or not to take your advice from a creative standpoint. If not, they will live with the results, but at least you did your due diligence.

Companies like RED and Arri are adding features in their software and hardware that enable a myriad of new possibilities. Since the new digital camera menu systems are so much more sophisticated than on film cameras, it's common for the camera crew to expect the Engineer (DMT) to be familiar with these settings. As the new resident "expert," you should be able to help set the camera in the correct recording modes, format media, help the DP with live monitoring meters, such as histograms, false color meters, time code, sync and other functions that are not typical of a film camera. The cameras all contain sophisticated computers, so we're seeing things like H.264 encoders and ethernet connectivity becoming



standard. Imagine a set where at the end of the night, sound and camera tracks are automatically synced and dailies files wirelessly sent to the director and DP's iPads to be viewed on their way home!

New technologies bring new challenges along with their new capabilities. We must seize this opportunity to flaunt our innovative pioneering heritage. Most departments are being dragged into the digital age;





we are the ones with the knowledge and confidence to ease their transition. We will be rewarded, not only by the satisfaction of greatly contributing to the efficiency of these new workflows, but

also by maintaining important and fulfilling jobs in production.

We would like to congratulate Ben Betts and Nicole Myrick-Betts on the birth of their son, Francis James Betts, born at home in Glendale, February 6, 3:06 p.m., 8 lb, 4 oz.



THE REALITY OF REALITY

AMERICA'S • NEXT **DUDINIS** by Jon Taylor "JT"

When was the last time you had one of those "how did I get here" moments? That thought occurs to me regularly working as an audio mixer on the set of the hit reality show America's Next Top Model. And I'm not referring to the, "Tough gig, eh?" comments I get from time to time. I'm talking about hanging on for dear life on the back of a jet ski in Maui, mix bag wrapped in plastic, booming a surfing photo shoot;

or back-pedaling through traffic in downtown Los Angeles, catching every frantic comment in a race against time. Having the opportunity to work alongside some of the top shooters, mixers and people in the business, in some of the best and most beautiful locations, capturing some of the most compelling moments in unscripted television—that's what I'm talking about. What a gig!



Mixing it up in between shots with the ANTM audio department. In back from left: Martin Talty, David Lerner, Jim Champagne, Tim Mitchell, Tyson Schaffner, JT. In front: Douglas V. Carney, Jose Torres. (Photo: Douglas V. Carney)

How did I get this gig anyway?

Working as a freelance ENG audio mixer in the field for the past seven years, I've experienced everything from "Reality" to EPK behind-the-scenes set visits, Red Carpet premieres to every kind of sit-down interview you could imagine. Two years ago, I was mixing audio for a "reality style" cable home-improvement show, mic'ing up our host and homeowners and following the action. For two days, we tore down cabinets, ripped out flooring, installed new features, shot on-the-fly interviews and did the whole tearyeved before and after reveal. As I was wrapping mikes at the end of our shoot, one of the on-camera homeowners revealed she was a producer for America's Next Top Model. She said she had been observing me, appreciated my work, and asked me for my card. A few weeks later, I got a call and an offer to work on the show!

My first day on *Top Model*...

Here's the reality for me behind *this* reality gig. I started on *Top* Model two years ago, and I remember my first day like it was yesterday, for several reasons. First, I was totally nervous arriving on location taking in the scope of a show this size. This was a big, new challenge for me and I couldn't sleep the night before. It was a lot like the first day of school, but I jumped right in, did my job, and began making friends right away!

All was going well on my first day of school when at lunch, I received a sobering text telling me that a close friend from my church named Katherine had just suffered an AVM stroke and was being rushed to the hospital for surgery*. Just like that. All the excitement and perceived glamour of working on a popular reality show about models and high fashion was put into perspective in that moment. I recall telling my segment producer, Alison Chase Coleman, and my audio supervisor, Martin Talty, about what was happening to Katherine. It was an interesting way to bond with people I had met just that morning. I know it's a strange association, but for me, this show and Katherine's story will always be linked. What a day. (*She lived... Check out www.KatherineWolf .info for the rest of her amazing story.)

JT monitoring host and talent audio during a recent runway challenge. (Photo: Douglas V. Carney)

What is it like to work on *Top Model*?

I've visited many sets over the years and have met many different types of audio mixers. So, what makes working on an unscripted show so different for me? Well, usually I'm on my own with just a camera op and maybe a small crew but on a larger show like this one, there's an entire mobile team of camera ops, mixers, ACs, field producers, lighting and tech people, production staff, security, coordinators and PAs. A typical season will use six or more camera crews!

America's Next Top Model is a fierce competition, a "panel of judges"-style elimination show. Models stay or go home each episode based on their performance in various photo shoots and challenges throughout the week. We start with around 30 girls on the first day (most of whom are wired) and over the course of a three-month shooting schedule, it gradually narrows to 20, 14, the final three, and ultimately, the one who is crowned as "Top Model."

Well, with hosts, photographers and models, that's a lot of people on camera and a lot of people talking. With multiple cameras, mixers, and scenes it can get a little chaotic. A scene may involve all six cameras with more than 20 people wired, or it could be one crew shooting a quiet conversation between two contestants. Luckily, we can take all our sound cues from our audio supervisor, Martin Talty. He and A2 Doug Carney do an amazing job of coordinating all the gear, RFs, and talent ahead of time and overseeing all the mixers during the shoot. On day one, we receive a laminated chart with all the girls' faces, names, and their respective RF channel which we use throughout the cycle to quickly dial up the person we need to hear.

No matter what the scene or who is in it, I'm always following my lens, making sure I hear what my camera operator is shooting. In a reality situation with several people wired, that calls for a lot of fast RF channel switching. I need to anticipate what action is about to happen and make quick decisions about who is going to be talking, then dial up their frequency and get it.



JT and camera operator Gretchen Warthen in Maui doing their best to keep the equipment dry. (Photo: Douglas V. Carney)

Here's a typical unscripted moment in the model house: I'm in the living room with Gretchen, my camera op, following a beat with four of the girls. A producer calls out on our walkie, "Gretchen's crew, something's blowing up in the kitchen! Get in there and cross shoot with Coleman's crew!" We drop our living-room coverage and in that brief moment en route to the kitchen, I call Coleman's mixer, Tim, on walkie, figure out which girls to dial up, decide how I'm going to pan my tracks, and whether or not to use the boom. Gretchen and I fly into the kitchen right in the middle of a huge argument and immediately find the line, begin cross coverage, get the audio right and capture what's going on, before it goes away. All the while I am assessing all the new factors in the room, watching Gretchen's back, listening for audio quality, constantly monitoring my mixer and, as much as possible, trying to stay to Gretchen's left so I always have a visual on my levels going to camera. It's all for naught if it's not on camera! Phew! This can get pretty intense!

Another thing to consider with unscripted television is that there are strict rules on a reality show where there is a 'winner.' There are confidentiality contracts and rules in the way that we interact with the contestants; you are not supposed to make eye contact, talk, or influence them. For example, if a girl is looking for her eyeglasses and you see them on the table right in front of you, you can't help her out in any way. So, trying to be in the middle of things and do your job without being in the middle of things is an art form I suppose.

So what's in my mix bag?

Martin has us set up with a sturdy and reliable kit. We use the Wendt X5 mixer in a Petrol PPMB bag, Four Sennheiser EK 3041 receivers (2 Block 506, 2 Block 722), a PSC Elite boom pole with a Sennheiser MKH 60 microphone (great choice because you can pad down—10 db when the girls are screaming—this happens a lot), Sony WRT-8B UHF synthesized transmitters (wireless sends), Sony WRR-862 UHF synthesized dual diversity tuner (attached to the camera plate on the Sony XD cam) and a Sennheiser EW 500 G2 transmitter for producer IFBs. I use my own Petrol PEHR-N heavy-duty shoulder harness to carry the bag. The whole rig is light and efficient. I feel like reality mixers are the Marines of TV and this kit is our M-16.

No matter what we shoot, my favorite thing about working on a big unscripted show like *Top Model* is the excitement of first arriving on location and gearing up with the other crews. It's the excitement in the air when you show up in the morning, the buzz in the tech room as everyone prepares for another intense day. Camera packages are being built, audio kits assembled and tested; there is camaraderie, a rhythm, and a sense of belonging like you would feel on a sports team or in the military. It's the locker room ritual before everyone runs out on the field.

I also just love being around other mixers. Mixers are a great group of people. I'm constantly learning new things by watching how they handle their gear and what choices they make. The mixers on this show have made me a better mixer, they've helped me sharpen my skills and develop my own style. You know we're always tweaking and optimizing our setups right?

I am not an island

Production is like a body; every part is connected and affects every other part. Audio is just one part supporting a larger goal and *Top Model* has some of the best and most interesting parts in the business! Because audio effects every part in some way, I thought I would ask a few friends from different departments to comment on their experience with audio mixers. I got some great feedback and some good insights! Here's what they had to say.

Camera operators Gretchen Warthen and Stephen Coleman

What's the difference between a good mixer and a good 'reality' mixer?

GRETCHEN: Mixers in general really underestimate the skill level of reality mixers, especially because reality mixers need to be able to mix five or more channels depending on the mixer, boom and mic and de-mic people, all at the same time!

Gretchen and JT safely back on shore setting up for OTF's (On the Fly) cast interviews. (Photo: Douglas V. Carney)

How does a good audio mixer help the camera operator?

GRETCHEN: A good audio mixer makes me look good and makes us look good as a team. As a camera operator, a lot of times I'm worrying about so many different things, I try to listen, but I'm not always able to. So it's helpful to have a mixer who is always listening to the conversation, looking for story ... especially pre-fading other girls off camera and monitoring what people are talking about ... then get on walkie or tap me on the shoulder and say, "Hey Gretchen, so-and-so is talking about such and such, it's a good conversation, we should go over and get this..."

STEPHEN: We are literally the eyes and ears of the show. It's our job to capture everything that happens. My audio mixer gets me through the day. I need that support. I know they've got my back and all day it's camera & sound, hand in hand, communicating back and forth.

GRETCHEN: I also appreciate a mixer who is not afraid to incorporate the boom. A lot of times, the girls will lay down on their mikes for example, or something goes wrong with the mike and a good mixer will calmly dial up the boom without stopping the scene to adjust... Let it play out.

Editor Matt McCartie

What are some things an audio mixer can do to help the editor?

MATT: Just be mindful of the editor and what we'll need to cut with. Let a scene play out. I know some situations get pretty crazy, but if everyone is miked and dialed up and talking over each other, I can't use that audio. Isolate the crucial dialogue. I love when a good mixer can walk into a room and immediately figure out what's going on, dial up the right audio and follow the conversation. Then I don't have to 'Franken-byte' a scene together. A good mixer makes my job a lot easier. The best compliment I could give an audio mixer is, I didn't even notice you. If I don't notice, or don't have to think about the audio, they're doing their job right.

Senior producer Cheryl Aguilar

What do you think makes a good audio mixer?

CHERYL: The number one thing I look for in an audio mixer is a great attitude! We're spending long hours together, working as a team... I need someone who will get along with everyone and make me laugh!

What makes a good unscripted TV mixer?

CHERYL: Working in unscripted TV, I need an audio mixer who knows they'll have to RUN! We're following the action here people... A lot of mixers from scripted TV are used to a controlled environment, where they know what the shot is ... they're used to sitting down and getting comfortable. Then all of a sudden, the action moves outside and some guys are like, 'What? We're moving??' Also, I love it when an audio mixer will speak up! Some guys don't want to interrupt me when I'm doing an interview ... but I can't hear what you hear... I need you to speak up and let me know we need to stop or wait, adjust something, or get one more for safety. Whatever it is, you're here to get good audio!

JON: Hey, that's good advice!

My own reality

So, my job as a mixer has taken me around the world and across the country, to every studio lot and to almost every corner in Los Angeles. This is the furthest thing from a dead-end desk job. And I have to say working with the crews on *America's Next Top Model* has been a real highlight in my experience.

With reality the stakes are high, there are no second chances to capture the moment, the adrenaline is pumping, there are technical challenges, location changes, but it is fine-tuning my instincts and training me to be more in tune to people's needs. You have to pay attention to both the obvious and the subtle, in the production and in the people. Hearing everyone's stories (not just the stories we are filming) makes me a better listener, which ultimately, makes me a better mixer.

As I have been working on this reality show, I have also been living my real life. My son and daughters have gotten older, my marriage has gotten stronger, and my dear friend, Katherine, has been recovering in and out of the hospital. My job is training me to be a better friend, a better dad, and better husband. I have become more gracious and patient, as I have learned that there is always more going on in people's lives than meets the eye—on, and especially off, camera.

Jon Taylor "JT" lives in Lake Balboa with his wife Sydney and three small kids, London (7), Macy (5) and Lincoln (2), and a few unnamed furry creatures. When not mixing on Top Model, he is mixing and supervising 'behind the scenes' for movies and television, Red Carpet events, commercials, and working on other scripted and unscripted shows.

SOUND FOR TIME CODE 24 Actors, 32 Tracks, No Cuts

It started in October 1999 with a phone call. Gary Marcus, a first AD I know, invited me to talk with Mike Figgis about a film. He wouldn't tell me any details over the phone and, if I had been paying attention beyond the prospect of a job, I might have run screaming in the opposite direction. (But I digress.)

I went to the meeting with an open mind and a desire to get the job. Once Mike and Gary started talking, we veered off into rarely explored territory. Mike explained his vision of the movie as follows: A large ensemble cast, no scripted dialogue (all ad-libs), the entire movie to be shot on digital video, four cameras shooting simultaneously and (this is where I started to wonder) the entire movie to be shot in one take by the four cameras. Each of the four images would run uncut in a quad split screen.

After digesting this, we started to talk about how to match the vision with a usable soundtrack. Since the cameras would all be handheld and roaming about willy-nilly to follow unscripted action, Mike was thinking about an Altmanesque scenario with no booms and the cast all wearing radio mics.

Hearing this, I mentioned that he should really be talking to Jim Webb as Jim and Jack Cashin had designed a protocol to do exactly this for Robert Altman. Mike's eyes lit up and he visibly squirmed; I could tell he was thinking about how he might get me out of the office so he could call Mr. Webb. But I told them that Jim had retired so they had to console themselves that I at least knew the history of the concept. We kept talking.

We began discussing "the how." Mike had already found that using time code for all cameras and sound recorders would sync everything together in post. The sound mix would direct the attention of the viewer to each screen quadrant by emphasizing particular lines of dialog. In practice this worked really well; when watching the movie, it soon became natural. Since the videocassettes were 93 minutes long, this was to be the length of the movie. by Robert Janiger

Now the nuts-and-bolts. I'm thinking a DA88 gives me eight tracks and we're good to go. I asked exactly how large a "large ensemble cast" is and he said, "about 18 actors," but he isn't really sure at this point. OK, so it's going to be a lot more complicated than I had hoped and now I really should have said my goodbyes. For whatever reason (it's a job), we kept talking.

I asked where we were going to shoot, hoping for a stage and sets so we would have some sort of controlled environment. This was not to be. It was a practical location; the set would be the entire ground floor of a high-rise office building in the middle of the Sunset Strip. We had free run of the entire floor and this turned out to become a silver lining for the sound department.

Well, the next question was, where would I and my expanding stack of equipment be out of camera? I was counting on attaching myself to some kind of video village. This led to the next revelation. There wasn't going to be any village as Mike was going to be one of the camera operators. (He joined the camera local for this.) They told me that we weren't going to use video assist. This meant that I wouldn't have any idea of who was on camera at any time. Wow.

At this point, the interview was over and I didn't know if I had the job or not. Just in case, I did some basic research: How many radios could I get to work in one place at the same time? How many recording channels would I need? What frame rate should the time code be? What kind of mixers are available? How could we sync this mess up so it really worked?

While mulling this over, I called my crew, George W. Scott (boom op) and Tom Fox (utility), to fill them in and make sure they would be available. Again, the phone rang—I had the job.

It was time to get serious. I met with Dustin Bernard, our UPM, and learned that we would all get daily union scale. However, all the gear was to come from Culver Studios. While I lamented the loss of equipment rental, it didn't bother me too much as this required far more gear than I owned.

Working with the sound department at Culver proved a great advantage. Ian Wayne, the Department Head, became my go-to guy because of his encyclopedic knowledge and, of course, the depth of the studio's equipment inventory.



With the location now locked in, I scouted with Mike, Gary, and Dustin. We decided to position me in the middle of the set by building a space hidden by a wall of filing cabinets and other set pieces. This was excellent for radio range but very difficult for cable runs (more about this later). I also suggested to Mike that we run a number of plant mics in key locations throughout the set. He agreed so the track count went up again. Speaking of track count, I still couldn't get Mike to commit to an exact number of actors so I proposed that we run four 8-track machines for a total of 32 tracks and he agreed. We would have 18 radio mikes and 14 plant mikes, and finally, we had a basic plan.

At this point, we had a two-week prep period followed by five days of shooting. Yes, a complete movie every day for five days. Mike would pick the best one and we would have two days to wrap and then it's over. Well, that was the plan.

I spent the next couple of days with Ian at Culver spec'ing the gear. We would use two of his dual Sony PCM8000-based sitcom racks. Each one had a black burst generator and master clock built in. One rack was designated for the master and the other, a slave to it. We used outputs from the master rack to jam both time code and black burst to every camera minutes before every shoot. He also suggested a massive 48-channel mixer. I said OK. (I had no experience with anything past 6–8 channels; I mean it's just more of the same, right?) Radio mikes were my next problem. Culver Studios had Sony radio mics (go fig-

Code 2000" DATE: 11-19-99 SHOOT #15 SEND TO Bug: Rose Ch.6, Berind screw Ch.24 EVAN WANTZ 68-00 A-1 69.30 A-2 780 28 5 Btk 68-24 A-3 4 F-1 -12 0 25 TRAM 148-47 A-4 LESTER MOORE 69-01 A-5 -4030 60 2 TRAM 12 0 30 60 TRAM -12 -15 14 68-20 A-6 4 E-1 B+K 69-23 A -7 -19 -15 28 DARREN FETZER 68-01 A-8 5 60 TRAM -9 -15 19 TRAM 68-29 8-1 -12 -15 14 SANKEN 68-35 B-2 4 F-2 15 -15 27 BUNNY DRYSDALZ 68-44 8-3 4 F-2 60 TRAM -21 -15 15 60 B+K 68-14 B-4 -12-15 20 TRAM 69-11 B-5 -6-15 16 60 TRAM 69-17 B-6 15-15 14 ALEX GREEN 69-36 B-7 60 SANKEN -3-15 16 LAVREN HATHAWAY 69-40 B-8 4 E-2+F. 60 SANKEN 12 -15 15 TRAM SANKEN Log of channel assignments

ure). At least they had enough of them and they were frequency agile, a rarity at the time, I think. The downside was the sound quality wasn't wonderful, but it was enough to get that many radios to work in close proximity to each other, as the RF link was quite good.

We loaded in the gear and built our sound booth in the middle of the set. This went exceedingly well and set the stage for our next challenge, running the cabling for the plant mics and remote antennas for the radio receivers. After poking about and scratching our heads, we decided to run all the cabling overhead in the drop ceiling. This proved to be relatively easy but concealing the wires as they dropped down to their positions was difficult. The art department became our friend with ideas and objects to cover the wires. Tom's construction of a six-foot paper tube to conceal the wires was the best rig; it blended seamlessly into the set. The antennas we just rigged inside the ceiling. This went well but required three days of hot, dusty work.

The screening room had acoustically sealed construction and airlock doors that blocked cable access. We located a patch bay that led into it from the projection booth but the booth was also sealed off. However, the access door for the booth was in an area unseen by cameras so we were able to drop cables from the ceiling and wedge them under the door, thereby, gaining remote access to the screening room itself.

We began to test the system and walk the radios around to reassure ourselves this could work. It all seemed OK. We considered the mikes on the cameras another asset and replaced them with Sennheiser MKH 60s with wind covers. These tracks proved to be very useful; with low cut engaged, the mike went to both tracks, one on auto and the other with the level set manually.

Now, we just had to wrangle 18 actors every day to hang radios on them in time to shoot. This is not a trivial task as many of you are fully aware. We figured about two to five minutes per cast member, yielding a total of 36 to 90 minutes. The time needed was variable because most of the cast members were providing their own wardrobe and outfits





George W. Scott and Tom Fox

could be entirely different each day. Gary and his assistants were phenomenal at getting the cast to line up about an hour before they had to be in position. Yes, you still never get the time you want, oh well. George and Tom would spend the mornings of shoot days prepping the radios, mic mounts, and various waist or thigh belts and clips as required. The assembly line they set up was a work of art; it was an exceedingly smooth process.

I would spend my mornings writing logs, labeling tapes, and loading, toning and slating six machines. I would also jam cameras as the assistants brought them by and listen to each actor's radio for clothing noise and to confirm track assignment. It was a very busy time for all of us.

Oh, yes, I said six machines; the beast had grown. Along with the four 8-track machines, we now had two DAT recorders to handle the two pairs of actors and corresponding cameras that would start away from our main set. We had Jeanne Tripplehorn and Salma Hayek in the limo and Saffron Borrows and Laurie Metcalf/Glenne Headly in the therapist's office several blocks away.

The limo (with Jeanne and Salma) started at a house a few miles away. While the limo was available before moving to its first position, I placed a DAT machine with two radio receivers on the front seat. I would set levels according to my best guess and start the recorder with a two-hour tape loaded. When the take ended, I would go out and retrieve the DAT recorder. It was always a relief to see it was still recording.

Saffron and Laurie's scenes presented a different challenge. After Saffron's scene with the therapist, she would walk to the main set and then later, leave with her friend, Leslie Mann. Tom Fox (utility) had a couple of radio receivers in a bag with a DAT recorder and followed the camera crew roaming with her. When she entered the set, he would reset the receiver assigned to the therapist to pick up Leslie's radio. While she was on the set, she was within range for me and I had a track assigned to her. When she emerged with Leslie, Tom would pick her up. At the end, she took off down the street at a good clip and Tom (and the camera operator as well) had to hustle to keep up.

We also had a cast member who needed to make an entrance on a dialog cue. We set up a Comtek base station transmitter to send a cue mix to a receiver with an earbud.

Things changed as we started shooting and Mike would make almost daily additions to the cast. We scrambled for more radio mikes until we cleaned Ian out and I had to tell Mike, "No more." He seemed to understand. The total became 23 radio mikes for 24 actors. George would wait at the therapist's office until they were done and then pull her mike and race back to the main set to put it on a waiting actor.

For those doing the math, we ended up shooting the movie 15 times over a period of three weeks. We had a couple of non-shooting days for Mike to work out storylines, camera choreography and block out a section of the movie that took place in front of the building. We added a couple of antennas to extend our range for this exterior work, straying outside the RF rules for splitters and cable runs.

Each cast addition required me to pull a plant mike and it was anybody's guess whether it was an important loss or not. I took my best shot. I also had to lose a plant to provide a direct input for a keyboard that a cast member played.

At the end of each take, John Monsour, the video tech, would make copies of each camera tape and then cue the four tapes up so we could all screen the day's work. Of course, the individual soundtracks couldn't be used so Mike would do a rough live mix from the camera tracks. We set up a screening room with four large video monitors and a Mackie mixer and Mike would add music from



a CD as it struck his fancy. I came away with a newfound appreciation of what a camera-mounted mike could do.

The actual shooting proved to be the easiest part for me. All I could do was confirm that recorders were turning and monitor tracks to check levels. I would watch the meters and punch up corresponding tracks to listen for over or under modulation. If the metering looked OK, I would listen at random since I had no idea who was on camera.

Once, an actress was smuggled through the cameras to us to have her mike fixed. She had tried to unplug it by unscrewing the TA5 connector and had pulled the wiring apart. Since everything we had was out (I had given up our backup radio days ago), I had no choice but to re-solder the connector while she was wearing it. We got it done in time for her entrance, but she almost didn't make it because she had to sneak around the cameras to reach her first mark.

I had a distinguished visitor one day. Jim Webb came by on our second or third take and hung out with me while we were shooting. He seemed to think I was on the right track; I also suspect he was very glad just to be observing and not have to sweat out the whole mess.

On two of the shoot days, we shot the whole movie twice in one day. Those were very busy days. This also created an uncomfortable situation because Laurie Metcalf, who played the therapist role 13 times, had to leave before both afternoon shoots to get to the set of her sitcom. Glenne Headly played the role for the afternoon shoots and ended up in the take that was released. This decision was very difficult; after watching takes 14 and 15, Mike asked the cast to vote on which take to use. It was to be number 15 with Glenne Headly.

So on our last day, we shot the movie twice, saw two screenings, were given our crew gifts, and walked across the street to the Rainbow Room, where we had our wrap party. It doesn't get any more efficient than that. After all we had been through; wrap was pretty simple. It took a full day to retrieve all our cables, mikes, and antennas. George and Tom did that while I dismantled the sound booth and then the video screening room. I spent another day with Ian and his crew to inventory everything.

Post was done at Wilshire Stages with Leslie Schatz and Chris David doing the mixing. Mike wrote and conducted the musical score.

Four dialog stems, each corresponding to a camera, were produced along with stereo music and sound effects tracks. Each stem was transcribed and, with Mike's direction, assembled into a script for the mix. (Finally, a script!)

Watching these guys work was a pleasure. Not only did I get to hear tracks for the first time, I got to fully appreciate the scope of Mike's vision. I also became fully aware of the limitations of this process, as there are plenty of warts on the soundtrack—some truly embarrassing mistakes recorded for all to hear. (And available because Mike decided to go with the immediacy of the live tracks and used no ADR.) Fortunately, Leslie and Chris were true gentleman and consummate professionals, meaning they didn't beat me up too bad and were quite complimentary. (If I hadn't been there, maybe the gloves would have come off.)

On a normal movie that would have been the end, but not this time. Mike had decided to take this on the road as part of the publicity tour. The concept was to go to a few theaters, and he would do a live mix for each showing. By remixing the four dialogue stems, a very different story could be told for each showing. Mike made it clear that I had inherited the tech position for these performances.

So I met with Ian again, who put together a Mackie 1604 and PCM8000 in a road mixer case. A Texas Instruments projector handled the video. We went to Toronto, Washington, D.C., San Francisco, the Nu-Art here in Los Angeles, and later, the Getty. At each location we would get to the theaters, meet the projector techs and get all of the cables run while a Dolby tech would check the calibration of the playback chain.

The cable feed was a stereo mix from the Mackie to the house and a time code feed from the video playback machine to sync lock the PCM8000. We used most of the available channels on the Mackie to provide stereo music and effects tracks plus the four dialogue stems, each corresponding to the action on one image in the split screens. Mike, running the live mix, could choose from the available options to shape the direction of the film to the audience. We also fed the release track from the videotape through the mixer so it might be brought in if anything went awry. Fortunately, all went well and we never needed the fall-back.

The audiences enjoyed these screenings although each saw only one possible interpretation. Seeing it a few times, I can appreciate how different the story could be and I hope they had a chance to see the released version and experience the differences themselves. It was a daring experiment in filmmaking and I was excited to be part of it.

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The Magnasync Type 5 series portable recording channel. These recorders were typically used on smaller independent productions that did not operate under the license agreements of RCA or Western Electric. With a capacity of 1600', this system was available in 16mm center track or edge track, as well as 17.5mm and 35mm single-channel formats.

MAGNETIC RECORDING **GOES TO THE** MOVIES

Part 4 of "When Sound Was Reel" covered the rise of magnetic recording technology, notably during the post–WWII years in the United States. Here, we take a look at how that technology would be applied to the motion picture industry.

Few of those currently employed in the area of sound recording for motion pictures can appreciate the amount of labor and materials that went into the production of a typical feature motion picture during the reign of optical sound recording.

Not only was the equipment bulky, it also required significant power for operation. What was called a "portable channel" during this period, usually encompassed an optical (later magnetic) recorder with an AC drive motor, tube-based recording electronics (also AC-operated), and a basic mixer, typically equipped with two to four inputs. Although condenser mikes were invented relatively early on, ribbon microphones were the mainstay for most production work up to the mid-1950s, when condenser mikes became more suitable for production.

A typical production sound crew would include a mixer, boom operator, recordist and cable man. While the duty of these crew members has not changed significantly over the years, the technology has. When optical recorders were the norm during the '30s & '40s, the recordist was responsible for the setup, calibration and operation of the recorder. Sometimes he would also be responsible for loading the 1000' magazines with negative raw stock. There were plenty of ways that things could (and did) go wrong, especially working on location.





Sound recordist Stephen Bass sweating it out on the set of the 3D production of *Bwana Devil* in 1952. The recording system is comprised of a Stancil-Hoffman 17.5mm magnetic recorder, powered by (3) 32-volt batteries, which in turn drove the 96-volt multi-duty camera motors which were in common use during the period. *Bwana Devil* was one of the first commercial 3D productions filmed in the "Naturalvision" process. (Photo courtesy of the Library of Congress/David Oboler)

Optical recording, even now, is a very unforgiving medium. A slight misadjustment of lamp current, bias, focus or track position can render a recording unusable. Worse, problems don't become apparent until the film is processed and returned by the lab. Like digital recording, over-modulation must be avoided at all costs. Even 2 db of clipping will cause intolerable distortion. Compressors and limiters (crude and prone to drifting) were a must.

In this sense, the position of the recordist is analogous to a first AC today. When everything is going well, nobody notices you, but the minute something goes wrong, you're the first one the finger gets pointed at!

Even after the sound negative had been properly recorded, there were still many steps left before the final soundtrack would hit the theater. Negatives could be damaged in processing or developed to the wrong density. After developing, the negatives would have to be selected for "print takes" for dailies (the same as picture). These would need to be printed onto a positive stock for viewing and editing, with the original negatives being stored in the vault. During sound editing, tracks would frequently need to be ordered for re-printing, which could take at least a day in many cases, even at a studio which had lab facilities on the lot.

Prior to re-recording, most tracks would need to be re-printed

3-track Westrex magnetic recorder used for the recording of *French Opera Highlights* by the Detroit Symphony Orchestra. Recorded by renowned engineer Robert Fine at Detroit's Cass Tech Auditorium in March of 1962, this approach was typical of the Mercury Living Presence recordings done during the 1960s. These recordings are highly sought after by collectors for their high quality and unique minimalist miking approach, which yielded a very accurate soundstage. Note the two Ampex 300 machines located to the left and behind. (Photo courtesy of Tom Fine)

(having been beat up during editing), and all splices would have to be "blooped" to prevent a loud thump at each edit, where the light beam would be interrupted by the splice. Each final reel needed to be broken down into individual elements (typically dialogue, music and effects) for the final dub. Each reel would hold 1000' of film, equivalent to 10 minutes of running time. The sound would then be mixed (re-recorded) into a final master sound negative. Unlike the flexibility we enjoy nowadays with non-destructive editing and mixing, there was no going back for fixes. Re-recording systems ran forward-only, and there was no stopping once a reel was started. If any one of the three mixers blew a cue at 900' into a reel, it would typically mean scrapping the negative, rewinding and re-threading all the elements, and starting over again. Not too much pressure, eh?

Understandably, both the sound directors and studio bosses at the major Hollywood studios were anxious to find ways to cut down on both the labor and materials required to produce the typical feature soundtrack. Not only was it time-consuming and clumsy to record optical production tracks, it was also a major headache to try and maintain quality control through all the myriad steps of recording, processing, printing and re-recording.

It was in this scenario, where magnetic recording would first be introduced.



Ad copy showing the newer "lightweight" Magnasync 602 series film recorders. Designed primarily for 16mm non-theatrical film production, these single-channel recorders and others like them would become commonplace for location work prior to the introduction of ¼" synchronous recording. The recorder could be equipped with either a single phase 60 Hz 110-volt motor, or a 220-volt 3-phase multi-duty motor for camera interlock systems.

Magnetic Goes to Hollywood

As discussed in the previous installment, although magnetic recording had been introduced commercially by the Germans in 1935, it would be left to American inventors to put it into a form which could be utilized for film production.

While the demonstration of the Magnetophon by Jack Mullin at MGM studios in October of 1946 is generally considered to be the first introduction of magnetic recording to Hollywood, in fact, there had already been some experimentation with wire recording for production at a couple of studios. Like tape (and the Warner Vitaphone disc), wire recordings had no way of being synchronized to picture, so its use was relegated to non-synchronous recordings, which would then be transferred to optical track for editing.

Mullin (and others) readily understood the issues that magnetic recording would face to be accepted as a medium for film production. He and his business partner, Bill Palmer, headed back to San Francisco to work on the problem.

The Palmer Method

Prior to his association with Jack Mullin, William Palmer had established himself as a film producer and inveterate tinkerer. His accomplishments included developing 16mm film, previously a strictly amateur format, into a commercial medium. He used the technology to produce color training films for the U.S. Navy during WWII, which helped prepare the ground for its use in commercial, industrial and educational films.

He was also responsible for perfecting the kine film recorders used prior to the introduction of videotape, producing a system which eliminated the "shutter bar" problem that had plagued kine recordings early on.



A Magnasync model G924 4 input portable mixer, which would be used in conjunction with a portable magnetic recorder.

Working in conjunction with 3M engineers, Mullin and Palmer investigated methods to apply a magnetic coating to 16mm film, which could subsequently be used to record audio signals in the same method employed for tape recording. Using an extra set of heads from the Magnetophon recorder that Mullin brought from Paris, they built a 16mm film transport driven by an AC synchronous motor, which could then be synchronized to other sources. Later versions using three-phase interlock motors would allow the system to be used for traditional film mixing, which up until this time employed 35mm optical reproducers for re-recording.

During this same period, others were working on the same problems of applying magnetic recording technology to film. Notable among these individuals were Marvin Camras, Semi J. Begun, Col. Richard Ranger and Loren Ryder.

Camras, who worked at Armour Research Institute (later IIT), had been doing a significant amount of work related to sound recording technology for consumer and military applications. He is largely credited with bringing together a variety of technologies and methods (especially AC bias) that would prove crucial to advancing magnetic recording technology to commercial acceptance.

S.J. Begun, working at Brush Magnetics, was also cognizant of the issues surrounding the possible use of magnetic recording for motion pictures and, in 1946, he submitted a formal query to the Motion Picture Academy's Basic Sound Committee asking whether magnetic recording could serve as the basis for a new technology to replace optical sound. The Academy Sound Committee, at that time chaired by Loren Ryder (who was head of the sound department at Paramount), responded with a list of 21 recommendations. Chief among these was that:

- 1. The technology had to fit in to the same workflow and equipment considerations as optical sound.
- 2. It had to have specifications which were equal to or better than optical soundtracks.



Far left: Cover of Westrex (Western Electric) sound recording equipment catalog ca. 1948 visually depicting the change from optical recording to magnetic.

Left: Close-up view of the Davis tight-loop system as employed in a Westrex recorder. This unique film-handling system, designed by C.C. Davis in 1946, would become the basis of nearly every optical and magnetic film transport up to and including the present day.

3. The cost to implement the technology and the related production costs needed to be reasonable enough to convince both the heads of the major studio sound departments and the studio bosses of its efficacy.

Ryder, in particular, was an ardent proponent of magnetic recording. Subsequent to serving in the Army Signal Corps during WWII, he had seen demonstrations of the Magnetophon and was convinced that the technology had direct applications in the recording of motion picture soundtracks. While head of the Academy Committee, Ryder produced a study on the cost savings that could be had by moving to magnetic recording throughout the production chain; these amounted to 82%. The studio bosses quickly took notice.

By late 1946, Camras had developed a working model system utilizing magnetic oxide applied to a base of 35mm film that was compatible with the transports used in typical film recording operations.

In 1948, Col. Richard Ranger introduced a system which used ¼" magnetic tape, with a 60 Hz pilot signal (dubbed "Rangertone"), which would allow the recorder to stay in sync with a camera or other system using AC drive motors. However, while this technology proved fairly suitable for production sound recording, it was useless when it came to re-recording and editing operations, due to the inability to maintain the tape in "sprocket sync" with picture.

The major manufacturers of motion picture sound recording equipment were by no means sitting by the sidelines during this period. RCA, working in conjunction with DuPont, had developed their own magnetic recording system, which could be retrofitted to their existing optical recorders and reproducers. Westrex (Western Electric) was doing similar work. All of these systems relied heavily on a series of cross-licensed patents for the various technologies which were required to produce a state-of-the-art (for 1948) sound recording, hence, the long list of patent numbers that can be seen on the identification plates of studio equipment during this era. By 1949, nearly every major studio operation had converted its production sound and re-recording operations to magnetic, mostly by utilizing retrofit kits offered by RCA and Westrex. At the same time, these manufacturers also introduced related system components that were designed to take advantage of the new medium.

The Naysayers

As with all new technologies, the methodologies and practices utilized for the recording and editing of optical soundtracks were not entirely compatible with those of magnetic sound. Most notably, sound editors complained that they could no longer see the modulations of the soundtrack as they had when working with optical sound. In response to these complaints, engineers at Paramount developed a "scriber" system, utilizing an electromagnetic transducer along with a scribing pen to inscribe the modulation of the magnetic soundtrack on the base of the film. (It's interesting to note that 40 years later, the editor's wishes would be granted in the form of the digital audio workstation!)

Some studios used an "electro-printing" process, whereby an optical soundtrack was recorded directly on to positive film stock that could subsequently be used as a work track by editors. This method quickly fell by the wayside, however, as it required duplicate work and commensurate expense.

Despite the objections of the editors, magnetic recording continued to make inroads, and by 1950, nearly every major studio had adopted magnetic recording as the primary medium for both production sound and re-recording operations.

Magnetic—How It Got Done

Studios varied somewhat in their approach to adopting the new medium. Some sound departments used sprocketed magnetic film for both production sound and re-recording, especially since they already had significant "sunk" costs in existing optical film equipment. Others were quick to adopt synchronous $\frac{1}{4}$ " recording for production work, utilizing cheaper $\frac{1}{4}$ " tape stock (although it still needed to be transferred to 35mm work tracks for editing).

Further savings were achieved by reusing expensive fullcoat stock, which was typically employed as mastering stock for re-recording and various dubbing operations. Once a film was completed, and the final elements copied, the studio would bulk erase and reuse the master stock on the next project. (Unfortunately, this approach led to the permanent loss of master soundtracks for many feature films.)

Some major studios, like Universal, also operated their own mag coating operations. For non-critical work, studios would use reclaimed stock (typically print stocks) and remove the emulsion to reuse the base mate-

rial. Referred to as "washed base," this stock would typically be used for dailies or temp tracks, and would cost about half that of new base stock.

However, despite the advances made in equipment manufactured by companies like Westrex and RCA, it was still bulky and had significant power-consumption needs. A recordist was still required to load and monitor the mag recorders and running time for the "portable" recorders was typically limited to 10 minutes (the length of a 1000' roll of film). To address this issue and further cut costs, some studios adopted 17.5mm film with a mag stripe, which ran at 45-feet-perminute, half the speed of standard 35mm film (90 FPM). Although this approach saved on stock costs, it made the life of the editors a bit more complicated, as special Moviolas and gang synchronizers needed to be used to sync the film to standard 4 perf picture stock running at 90 FPM. Dubbing operations also required special dubbers running at 45 FPM. Due to these factors, the practice of using 17.5mm mag never caught on in a big way.

Advances continued throughout the '50s & '60s. The most notable of these was the introduction of reversible ("rock & roll") interlock systems for dubbing, allowing the mixers to "punch in" at any point in the reel. Refinements in magnetic film oxide formulations permitted a wider dynamic range, far in excess in performance compared to a standard optical track.

With the advent of magnetic stereo release prints in the '50s, manufacturers were quick to respond with equipment that was capable of up to six channels of recording on a single piece of 35mm film. However, along with the additional channels and increasingly more sophisticated sound editing and mixing techniques, came the problem of noise. Like many technologies employed in film sound, the solution for this would come from outside Hollywood. @2010 Scott D. Smith, CAS

Next: Stereo and the post-war years in Hollywood.

The author of "When Sound Was Reel" would be interested in any historical photos or documents that our members could provide for future articles, specifically for the period covering the late 1940s through the late 1970s. Photos relating to both set operations and re-recording are desired. Email to: 695photos @film-mixer.com.

Credit will be given where noted.



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Everyone knows the basics of antenna selection and use. High-gain antennas yield more range. Two antennas are better than one, but they need to be spaced apart for diversity advantage. Beyond that, it's all speculation and mystery. We set out to make some careful tests to evaluate how much additional range different antennas vield, how far apart they need to be spaced and which configurations give real advantage.

Since there is a lot to test, we'll run the results in more than one issue. This first series of tests establishes baseline expectations and the additional performance available with a good dipole over the 1/4-wavelength whips. Later, we'll look at sharkfins and helicals and we'll check the relative performance of cheap sharkfins, like the Ramsey, versus pro designs like the PSC or Lectrosonics. We'll also compare performance in vari-



A pair of Letrosonics SNA600 dipoles





The test area has over 1000 feet of unobstructed range

ANTENNA TEST RESULTS

TRANSMITTER	SETTING	ANTENNA	RECEIVER ANTENNAS	RECEIVER ANTENNA HAG	DISTANCE
Lectro SMQV	100 mW	1/4 whip/ trans on belt	1/4 whip	4 feet	518 feet
	50 mW	1/4 whip/ trans on belt	1/4 whip	4 feet	518 feet
Lectro SMQV	100 mW	1/4 whip	1/4 whip	2 feet	626 feet
	50 mW	1/4 whip	1/4 whip	2 feet	558 feet
	50 mW	Short whip	1/4 whip	2 feet	414 feet
Lectro SMQV	100 mW	1/4 whip	1/4 whip	4 feet	627 feet
	50 mW	1/4 whip	1/4 whip	4 feet	518 feet
	50 mW	Short whip	1/4 whip	4 feet	300 feet
Lectro SMQV	100 mW	1/4 whip	1/4 whip	8 feet	598 feet
	50 mW	1/4 whip	1/4 whip	8 feet	562 feet
	50 mW	Short whip	1/4 whip	8 feet	358 feet
Lectro SMQV	100 mW	1/4 whip	SNA 600 -1/4 whip	8 feet	750 / 1075
	50 mW	1/4 whip	SNA 600 -1/4 whip	8 feet	570 / 752
	50 mW	Short whip	SNA 600 -1/4 whip	8 feet	390 feet
Lectro SMQV	50 mW	1/4 whip	SNA 600 -1/4 whip	8 feet and 90° phase	400 / 555
Lectro SMQV	100 mW	1/4 whip	2 SNA 600, 6-inches apart	8 feet	740 / 938
	50 mW	1/4 whip	2 SNA 600, 6-inches apart	8 feet	670 / 743
	50 mW	Short whip	2 SNA 600, 6-inches apart	8 feet	381 feet
Lectro SMQV	100 mW	1/4 whip	2 SNA 600, 4-feet apart	8 feet	860 / 1045
	50 mW	1/4 whip	2 SNA 600, 4-feet apart	8 feet	646 / 868
	50 mW	Short whip	2 SNA 600, 4-feet apart	8 feet	390 feet



Bar graph showing range in feet of the various configurations

ous combinations of sharkfins, helicals and others. We'll check the actual performance liability of using 75-ohm cable when 50-ohm cable is specified and investigate whether diversity spacing beyond four feet provides any advantage.

Since the transmitters are normally clipped to someone's waist, we made a test with an SMQV set at 50mW and 100mW and, with clear line of sight, measured a range of 518 feet to our 411a receiver. About 500 feet is our baseline expectation for a professional radio set with clear line of sight. For this test, the transmitter was clipped to the side so it was visible at all times.

For all the other tests, we mounted the transmitter on a short pole and held it about a foot away from the walker. This yields substantially more range, up about 100 feet from 500+ feet to 600+ feet, but also takes the relative size of the person "wearing" the device out of the equation. We made tests at 50mW setting and the 100mW setting and also made a run with an antenna cut down from Block 21 length to half the recommended size. Results with the "shorty" antenna are not very instructive in these initial tests but we thought we might need some sort of handicap when testing the helical receiver antennas; otherwise, the walker might have to go all the way to Arizona before we heard dropouts.

Although the numbers we logged are very precise, 598 feet with this rig, 740 feet with that, actual experience was less precise. As the radio came near the end of its range, the system became vulnerable to hits and dropouts. If there were a single hit or momentary dropout and the signal was steady afterward, we disregarded the event and kept walking. At the end of the range, hits and dropouts occurred frequently. Typically, there was a clearly identifiable place where things would go bad. Sometimes, especially with higher gain antennas, we would experience a few hits and then the signal would be good afterward. In those cases, we logged two numbers, one to record the first vulnerability to trouble and the other the limit of range. We used a Black & Decker measuring wheel to accurately record the distance but the exact spot where we had trouble would vary a bit from one test run to another.



The Black & Decker measuring wheel ensured accurate distance tallies

Although these are just the early tests, we can already make some tentative conclusions:

- We found that the height of the receiving antenna did not make any significant difference in performance. We ran these tests without any people around so we had the advantage of completely unimpeded line of sight transmission. Obviously, with a scrum of crew people, there is an advantage to placing the receiving antennas high enough to get over the obstructions. But, once good line of sight is achieved, there does not seem to be any advantage to being higher.
- 2. Bumping transmitter power from 50mW to 100mW yielded range improvement from 10% to 20%.
- 3. Wide diversity is better than narrow diversity. Spacing the receiving antennas four feet apart instead of six inches yielded a range improvement of nearly 20%. (One wave-length in Block 21 is about two feet.)
- 4. Best results were achieved with matching antennas. Observing the antenna orientation graphic on the 411a display, we noticed that the system would often switch antennas even when well within range. If the weaker antenna also had a good signal, no harm was done but, when the system was at the limits of range of the weaker antenna, the switches occasionally yielded hits and dropouts. With mismatched antennas, there was a large, spongy area where the system was compromised but, because of the strong antenna, still produced usable results.
- 5. As expected, use of the SNA600 dipole improved the range substantially. At 100mW output and widely spaced receiving antennas, range improved by more than 200 feet from just over 600 feet to at least 860 feet.

This is good information for the first run of tests. Please remember that, with transmitters directly affixed to talent, you will have less working range but data about relative performance should hold. Watch this space for updates and coming attractions. We'll strive for a little more plot and excitement next time.

