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AES Convention, October 9–12, booth 324

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Signature

The JJP Collection, CLA Classic Compressors, The Eddie Kramer Collection, and The Tony Maserati Collection are available separately and in **Waves Mercury**. www.waves.com



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On the Cover: Jason Mraz recently set the all-time record at 71 weeks atop the Billboard Hot 100 with "I'm Yours," mixed by Tony Maserati, pictured at Germano Studios (New York City). For more, see page 38. Photo: Jung Kim.



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FROM THE EDITOR

Understanding Community

e've been talking about "community" a lot lately here at *Mix*. We've been planning for coming changes on our Website, with new functionalities, better search, more services, user-generated content—all the stuff you would expect when Web and media types get together in 2009. It's not the same discussion it was even 10 years ago, when the word "community" was thrown around by marketing types who weren't really sure who their customer was and thought they might as well cast a wide net. Today we know who our *Mix* audience is, and it's not all that different from our readership of 32 years ago. Categories have come and gone (remember cassette duplication?), studios have opened and closed, and technologies have boomed and fizzled. But it's still, at its core, the professional audio community. Folks who love sound.

There are studio owners, producers, engineers, assistants, studio managers, artist managers, maintenance techs, runners and interns. There are front-of-house and monitor engineers, remote recording engineers, broadcast mixers, field recordists, guitar techs, programmers, riggers and A2s. There are re-recording mixers, sound effects editors, Foley artists, music supervisors—for film, TV, games and the Web. There are mastering engineers, studio designers, contractors, publishers, retailers, manufacturers, educators and students of all stripes. And they are all at AES.

The AES convention is the physical manifestation of our pro audio community, same as NAB for broadcasters or GDC for gamers. The paper sessions are not all that different from a Webinar series; the halls are packed with people you might find in a forum (you'll find Fletcher at the center of both!), and the booths themselves become sites and newsletters and e-blasts, with engineers and producers searching and browsing, hearing of hot items virally, and spreading the word at nighttime receptions or in the back of a cab.

Don't get me wrong; I'm no media curmudgeon. The accelerated pace of Internet development has changed the way we send and receive information. It's opened up worlds of possibilities for creative collaboration and extended reach and scale, in both production and distribution. At the same time, it has increased the pressure to reach more people, sell more units, book more time. At less cost and with fewer people. But that's basic business. While the medium of information exchange is forever altered, there's truth in the old chestnut that the more things change, the more they stay the same.

There's real value in rubbing shoulders with your peers. It's just as true inside the studio, in the midst of a project, as it is on the convention floor. For every artist Tweet or Facebook update, there's a new job being offered over a drink at a convention hotel, or an old friend stopping by the booth. The ability to connect on the Internet will drive the engine of growth in our small piece of the high-tech/highly creative world, no doubt about it. But we must remember that the strength and value of any community is in the people who eat, sleep and breathe the culture. And you'll find the real core at the Javits Center this month.

See you there,

Thomas GD Kny

Tom Kenny, Editor

P.S. A special farewell to our former group publisher Joanne Zola, my colleague and friend these past 18 years at *Mix*. She understands community building in all of its forms, which we might attribute to the hundreds of Dead and Phish shows she attended. She will be missed personally and professionally, and we all wish her well.

MIX

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POSTMASTER: Send address changes to Mix magazine. P.O. Box 638. Mt. Morris, IL 61054.

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LIST RENTAL: Marie Briganti marie.briganti@walterkarl.infousa.com CORPORATE OFFICE: Penton Media Inc., 249 West 17th St., New York, NY, www.penton.com.

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TALKBACK

Steve Miller on Les Paul

I've known Les for 61 of my 65 years. He has always been present in my life, always there. He showed me how to hold a guitar and taught me my first chords, explained how to speed up and slow down a tape recorder, and how to overdub vocals and guitar parts when I was 5. The year



Stève Miller (center) with lifelong friend les Paul (left) and bass player Bill Peterson.

was 1949. He showed me how much fun it is to play and sing. He told me I was a musician and to believe in myself, and that I was going to go far when I was 5, and I believed him. He has always been my inspiration and the model for my life as a musician and a human being.

Behind the immense musical talent, magnificent performer and unrivaled entertainer existed a technical genius with such a strong and inquisitive mind that he singlehandedly pushed electric guitar and recording technology further forward than anyone else in the 20th century.

It's amazing that today in 2009 the Gibson Guitar Company spends its greatest energy and resources building Les Paul model guitars exactly as they were built In 1958 and 1959.

When I pulled out my Les Paul guitar at my recent concerts since his death, the crowd started chanting Les' name. It's going to be a less-vibrant world without Rhubarb Red. *Steve Miller*

For more remembrances of Les Paul from leading members of the pro audio community, turn to page 26 for Mix's special Les Paul Tribute and online at mixonline.com/ms/les_paul.

Praise for Bonnaroo Festival Sound

You were spot-on with the review of the audio quality at Bonnaroo ("From the Editor," July 2009). Festivals are always "new and exciting," as I like to put it. In most cases, there is no soundcheck--just plug and play. The [Bonnaroo] system was fantastic, as was the Eighth Day crew [which provided sound for the main stage]. I'd never worked on the [DIGICo] SD8 before, and at that time had only a couple of shows under my belt with Erykah Badu and no rehearsals---"run and gun." (I'm subbing for Gordon Mack; he's currently with John Legend.)

"The three-second rule" was definitely in effect: My belief is that working on any digital console you're unfamiliar with will add three seconds to the execution of any command. Three seconds In live audio can be a lifetime. depending on which side of the feedback chain you're on.

Verta and Chris Berry, the Eighth Day system techs, were able to answer all the questions I had, which allowed me to set up the desk to my preference. Also the fact that they had a few consoles there gave me time to get myself acquainted with the SD8. I thoroughly enjoyed mixing that show. The system, the console and, most importantly, the techs-and all the Eighth Day crew-were the best! They knew the equipment and their jobs, which allowed me to concentrate on my job mixing Erykah Badu.

My hat is off to Eighth Day Sound and Bonnaroo for not skimping on the most important part of a live show: the audio and the crew.

Kenneth H. Williams

Kudos and Thank You

Thank you for "The 'Wrecking Crew' Exclusive" [November 2008], of which I just availed myself at mixonline.com.

In the 1980s, FM radio station KKGO was "the" station for jazz listeners in Southern California. [KKGO DJ] Chuck Niles played Tommy Tedesco's "My Desiree" one afternoon, and I was lucky enough to already be recording the broadcast on cassette.

Now, all these years later, I've really enjoyed recollecting music from my past and Tommy Tedesco is high on the list. To be able to read so much about the man.



the musician, the contributor is very rewarding to this music appreciator. Again, thank you. Pablo Moralez

Vintage Gear Reviews

I'm curious as to whether old *Mix* "Field Test" reviews are available online somewhere. When looking at vintage gear, I am often interested in reading reviews that were put out at the time of release, and *Mix* always did a great job of profiling new gear. Thanks!

Steve Heinke Pure Audio, Seattle

Steve—Mix has archived euch issue ut mixonline.com beginning with the January 1999 issue. To search "Field Test" reviews from these issues to the present, go to mixonline.com and in the Search window at the top-right-hand corner type in the name of the product in which you're interested. —Kevin Becka

DAW Studio Essentials

In the weekly MixLine e-newsletter, we asked readers to tell us about their essential DAW software.

Two software programs that I have found very useful on the Mac are Rogue Amoeba's Audio Hijack Pro recording and utility software, and Iced Audio's AudioFinder audio file organizer and "Swiss army knife." Scott Simons

A suggestion for other DAW studio essentials: Sonic Studio's PreMaster CD, the only pro app for Mac OS that focuses on premastering. Oliver Masciarotte III

Next month, we look at audio education—both in the classroom and online. What advice would you give to a student looking for the right audio program? E-mail us at mixeditorial@mixonline.com.

Some Questions are Easy to Answer

"Where do these lumps in the lower midrange come from? Should I move my furniture or get a smaller display?"

"How can I add more bass trapping in my small room to avoid this boominess?"

> "All this with a 5.1 system! How am I supposed to find the time to calibrate my system accurately?"

"I should just get a Genelec DSP system!"



When you are building or flne-tuning your audio monitoring environment there are many aspects to consider; the design and geometry of the room, loudspeaker placement, acoustical treatments, the type of equipment to use, and making sure everything works well together. When it comes

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Studio Monitors

We offer a stellar selection of passive and active studio monitors, with a range of wattages and speaker sizes. We'll help you find the setup that suits your room best, at a price that's right for you. With monitors from JBL, Genelec, Event, Mackie, and Tannoy (among many others) to choose from, Sweetwater has you covered!





Microphones

We've got an incredible selection of some of the best microphones available for studio and stage alike. You'll find condensers, dynamics, and ribbon models (plus Sweetwater-exclusive mic packages and a wide range of mic accessories), from manufacturers such as Shure, Neumann, Royer, Sennheiser, AKG, and many more!

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stretch your purchase over three easy payments, using your current Visa, MasterCard, Discover, or American Express card.

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CURRENT CORRENT

Beatles Take a Spin

"When we put on the masters and compared them with the original CDs, we all felt, in general, that what we were hearing on the masters was immediately more transparent than the original CDs."



-Abbey Road engineer Alan Rouse on the recently released The Beatles Re-Mastered box set. Read the entire interview at mixonline.com.

Bookshelf

The seventh edition of *Modern Record ing Techniques*, from authors David Miles Huber and Robert Runstein, adds chapters on room acoustics, running a session, mic placement, designing a studio and digital audio topics such as podcasting, surround sound formats,



and HD and audio. Easing reader comprehension are more than 500 technical diagrams, screenshots and product illustrations. A companion

Website (modrec .com) offers tutorials and videos. Focal Press, \$49.95.



Take It to the R&B

Producer/engineer Tony Shepperd (Elton John, Whitney Houston, Kenny Loggins) and R&B artist Shelea Frazier are featured on the second installment of *Master Series* from TechBreakfast. This DVD focuses on how to mix for R&B, and was filmed in high-def video. It is now available as a download, on a custom USB card or on Blu-ray disc. *Master Series II* contains the entire Pro Tools 8 session with all tracks and Shepperd's mix. Get your copy at techbreakfast.com/dvd2.

Gigs on the Rise

Sweet Home New Orleans (SHNO) has released its "State of the New Orleans Music Community Report." This is SHNO's second annual examination of the New Orleans' music community based on data collected by providing services to its constituents. As of August 29, 2009, the organization has distributed more than \$2.5 million directly to more than 2,500 of New Orleans' cultural tradition-bearers, which includes musicians. As the graph below shows, the dramatic decrease in paying audiences following Hurricane Katrina has devastated musicians' earnings, though SHNO clients have reported incremental improvements after receiving support from these programs. Pay per gig declined drastically after Katrina; it has recovered since SHNO did its initial intake.



WELCOME TO AES 2009

AS 09

New Products Guide. Videos Blogs. Nightly newsletters. N.Y. stories. TEC Awards, Post-show wrap-up.

Get all of your AES gear fixes at mixonline.com/ms/aes. Log on now!



DID YOU KNOW?

The term "The Big Apple" was coined by touring jazz musicians of the 1930s who used the slang expression "apple" for any town or city—playing in New York is playing in the big time!

New York, October 9-12



"Dealers and manufacturers are quickly realizing the huge profit potential of incorporating an all-encompassing accessories program

for their businesses. Accessories are what I know best."

--Jeff Moore (gtrplyr36@aol com) on launching 1More Enterprises, which will develop and distribute musical instrument accessories

onthemove

Brian Rund

composer/sound designer/engineer at MindSmack (NYC)

Main Responsibilities: all audio work and maintain/recommend audio gear purchases.



Previous Lives:

- 2005-2008: SoundHound composer/ sound designer/engineer
- 2003-2005: Bionic composer/sound designer/engineer
- 2001-2003: NBC New York

The coolest project I've ever worked on was...a new show on Sundance.com called *Reset*. It centers on teaching computers about human emotion by feeding it different video and audio clips that correspond to different emotions. I had to enhance the audio for a specific emotion, which forced me to think about sound in a more abstract way.

The greatest thing about working in New York City is...the over-abundance of food available for every session. Seriously, it's the access to incredible talent.

When I'm not in the office, you can find me...spending time with my family, on the golf course or gigging with my "toddler rock" band, Baze & His Silly Friends.

Julliard Gets Acoustical Refurb

Built in 1969 as part of the massive Lincoln Center project, The Juilliard School (New York City) was in need of a renovation to bring it into the 21st century, and the architects of Diller Scofidio + Renfro and JaffeHolden acousticians were tapped for the renovations and construction.

Once finished, the school will have gained 39,000 square feet of new space, including a new 3,500-square-foot Rehearsal Hall (opening on October 12, pictured) that can be used by a 100piece orchestra and 150-person chorus simultaneously. The 35-foot-high space was inserted in an existing rooftop courtyard, and the hall's sound has been isolated by massive structures modeled into a floating box-in-box design. Twenty-foot-tall tunable acoustic doors line a large portion of the surrounding walls.

A new 2.000-square-foot Rosemary & Mere dith Willson Theater (opening October 6) features complete sound-isolation constructions and an interior panel system made of perforated wood. Other work included new and renovated teaching studios, classrooms, practice rooms and offices; a 1,100-square-foot Writing and Communication Center; and a state-of-the-art music technology center with two rehearsal rooms and a teaching/ engineering studio that is connected to the Rosemary & Meredith Willson Theater.



CURRENT

New Instrument Listing

Hafez Nazeri on creating 'The Hafez'

"The traditional setar has remained unchanged for hundreds of years, and I wanted to find a way to make a more modern instrument that's accessible and dynamic enough for the younger generation of performers while still respecting its integrity as a iconic piece of Persian culture. The result of years of trial and error is the first modern Iranian instrument, 'The Hafez,' which was built by Iran's best setar makers, the Safari brothers, and named after my namesake, the 13th-century poet. The Hafez has geared tuning pegs to sustain the pitch of the strings with greater reliability and a wider neck to incorporate two new lower strings and allow room for the artist to play chords on the instrument. These modifications give the instrument greater melodic and harmonic range (11 extra pitches possible). I can't wait to see how the U.S. public reacts to hearing it for the first time this fall at my Pantages Theater [October 3, L.A.] and Carnegie Hall [November 14, New York City] shows."



Industry News

ADAM Audio (Hicksville, NY) names Roger Fortier to VP...Todd Barrett joins Walters-Storyk Design Group (Highland, NY) as project manager...Leading EAW (Woodinville, NY) North American sales is Kurt Metzler...Filling the newly created senior advisor, sales and strategic development position at 615 Music (Nashville) is Dennis Dunn...New distribution deals: Techrep Marketing (Nashville) and Sonic Sales (Torrance, CA) join Nashville-based Sound Construction and Supply's rep force; representing the Rocky Mountain region for Symetrix (Seattle) is Signal Marketing (Midvale, UT); Sound and Music is the sole distributor in Switzerland and Lichtenstein for Lauten Audio (San Jose, CA), while Summit Audio (Gardnerville, NV) is the sole U.S. distributor for Lauten; Midas and Klark Teknik (Worcestershire, England) tap Quad Professional for Singapore and Malaysia;



exclusive Canadian distributor for Sabine (Alachua, FL) is Thorvin Electronics; and Quest Marketing (Miami Beach, FL) and AVA Audio Video Associates (St. Louis) join Group One Ltd.'s (Farmington, NY) distribution team.

Healthiest Option?

A recent study by Carnegie Mellon, Stanford and Berkeley Lab (sponsored by Microsoft and Intel) found that, in general, the transition to digital media was healthier for the environment—as opposed to creating hard CDs—as a download consumes far less energy, produces less carbon emissions and results in less plastic trash. However, the study did not take into account portability products such as iPods, iPhones, etc., that are disposed of when they break, require batteries, etc. Read the entire summary at mixonline.com.



Jim Dickinson, 1942-2009

"The North Mississippi Allstars have lost their father, Bob Dylan has lost a 'brother,' rock 'n' roll has lost one of its great cult heroes and Memphis has lost a musical icon with the death of Jim Dickinson."

-Memphis Commercial Appeal on the death of Memphis musician/producer Dickinson



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Audio... as nature intended.

The Aurora family of converters, including the new Aurora 16-VT, provides the audio quality, features, interface options and reliability that you need from a converter.





CURRENT

The CompuSonics/MP3 Connection

By George Petersen

Birth of a Format

Most of us think of the MP3 format and consumer disk-based audio storage as recent phenomena. However, some of the roots of the MP3 date back to a product launched on the AES show floor 25 years ago. The year was 1984. Apple announced the \$2,500 Macintosh. IBM debuted its \$4,000, 80286-based PC-AT. The world was ready and waiting for a revolution.

Yet change can come from an unlikely source. That same year, a musician and Carnegie Mellon University grad named David Schwartz (no relation to *Mix*'s founder of the same name) made good on his theories about digital audio data compression, which enabled storage on limited-capacity media—such as floppy disks or electronic transmission via modem or other connected systems.



David Schwartz, circa 1984

And at the 76th AES convention in New York City, Schwartz took his newly formed CompuSonics company to the audio public. He organized a spate of technical papers that formed the basis of what eventually became the MP3 file format. Among these were "Strategies for the Representation and Data Reduction of Digital Music Signals" by MIT researcher/CompuSonics VP John Stautner, which discussed reducing music file size to facilitate transmission/storage. Another MIT

researcher/CompuSonics engineer, Hyun Heinz Sohn, contributed "High-Speed Telecommunications Interface for Digital Audio Transmission and Reception," suggesting protocols for high-speed data transmission. And Schwartz's own "Specifications and Implementation of a Computer Audio Console for Digital Mixing and Recording" laid out guidelines and specs for computer-based music recording/mixing music.

This may have represented a glimpse of digital audio's future, yet "at the time we were ridiculed," says Schwartz, recalling when Pioneer Electronics VP and AES fellow, the late Bart Locanthi, approached him, Stautner and CompuSonics consultant Gary Schwede at the podium after their presentations. Schwartz says Locanthi berated them for proposing compressed audio, saying they were "destroying the integrity of digital audio," while "commercializing a lossy algorithm was heresy." According to Schwartz, Locanthi was livid. "I didn't know what to say. At the time, people were still critical of the CD at 44.1 kHz and 16 bits; they wanted 48 kHz and 24 bits as the standard. In 1984, we were the bad guys."

Today, MP3 players are built into pocket devices, phones and computer operating systems, and at AES Schwartz debuted the first consumer digital disk recorder. Storing to 5.25-inch, 3.3MB Superfloppy disks, the CompuSonics DSP-1000 was a VCR-sized desktop unit with stereo I/O, 16-bit converters and a claimed 20 to 20k Hz bandwidth. The format never took off, yet the unit laid the groundwork for other CompuSonics products in the fledgling DAW market—certainly well in its infancy in 1984.

In the company's pro line was the DSP-2000 Series console/ recorder/editors, which were announced as 4-track modules that could combine to create 4/8/12/16-track systems with mixing and



on-screen *color*(!) representations of metering, mix levels and parameters—pretty cool for 1984. Perhaps more successful was CompuSonics' DSP-2002 disk-based professional 2-track, which found commercial use in creating and editing sound effects, with the first system going to Vitello & Associates and was used in production on *Voltran*—the first animated series produced in stereo sound.

"We did well in pro audio," says Schwartz. "Our recorders were found in many major post houses, including Howard Schwartz Recording and Sound One; Bob Liftin used them on *Saturday Night Live*; and they were used for the audio post on several Woody Allen movies."

After CompuSonics ceased operations in 1990, Schwartz headed a software group working on the first erasable CD recorder for Tandy's Electronic Research Center, and served as that company's representative at the ANSI and ISO MPEG initiatives, which were incorporated into MPEG Audio Layer 3—the famous MP3.

"The concept of applying data compression to music was radical at the time, but it also had the potential to be world-changing," Schwartz says. That vision sustained him as he brought the concept and the technology to record labels, which—while enjoying windfall CD-generated profits—uniformly dismissed him. He partnered with AT&T, hoping the long-distance giant would provide a ready-made distribution network for music files. But no major label would license content for the "electronic music stores" Schwartz envisioned and the scheme was further doomed by the government's dissolution of AT&T in the mid-1980s, thus removing its potential as a national distribution network.

Schwartz was crushed by the experience. Yet he continued to innovate, designing DSP circuits and software for Atari's Falcon 030 PC, the first home computer that could record/play 16-bit stereo audio and offer onboard DSP effects. Schwartz then headed the audio team for Atari's Jaguar game console, with its 16-bit sound, software audio synth and CompuSonics' audio compression codec for increased storage. Moving to Autodesk's Discrete Systems division in the early 2000s, Schwartz developed new digital audio processing algorithms and worked with engineers in Autodesk's Cleaner 5 group. In 2004, he began to offer his talents and vision as a private consultant through Schwartz Engineering & Design (SED).

Looking back over it all, Schwartz muses, "Leadership is following your vision and engaging others with it. Not everyone agreed with my concepts and not every effort proved profitable. But looking at the cumulative effect of those efforts, you realize that you helped change the world." **III**

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SESSIONS

Sweatshop Studios—Working for Music

The name "Sweatshop" seems less than apt for the environment that owner/operator Shaul Dover and his musician/producer son, Edan Dover, have created in rural upstate New York. Designed by John Storyk of the Walters Storyk Design Group, Sweatshop (Katonah, N.Y.; www. sweatshopstudios.com) is a spacious, upscale addition to the Dovers' home, comprising a two-storyhigh 400-square-foot live room and a 450-square-foot control room.

The opening of Sweatshop in 2008 marked a career change for Shaul Dover, who had been in garment manufacturing for most of his working life. "For me, it's a midlife crisis," he says with a laugh. "I had a background in electronics, but I had been out of that for a long time. Now I have a talented son who is a jazz piano player, as well as a producer, and it gave me the urge to start doing some home recording for him."

Dover also refreshed his technical knowledge with a two-year engineering course at SAE. He hired Storyk to develop a design plan for a dedicated studio and executed that plan with his son's help.



"The structure you see, Edan and I built it from the ground up," Dover says. "We did subcontract parts of the job, but the majority of it we built ourselves, 100 percent to John Storyk's spec."

"This is a full room-within-room design with concrete slabs, IAC doors and lots of glass," Storyk notes. "We recommended highquality wall and ceiling treatments and mid-frequency diffusers. Sweatshop is already working with some interesting new artists, and the material we've already heard out of this room has been impressive."

Equipment-wise, Shaul Dover

says he felt strongly about using a careful balance of analog and digital, so he installed a Euphonix System 5 console, Studer A800 24-track machine (formerly owned by Universal Studios), Digidesign Pro Tools and Steinberg Nuendo, and Dynaudio BM15A 5.1 surround monitoring with a BM12S sub.

"We built the studio to be routed through a patchbay to the 24track machine," Dover says. "We can record to tape or not, and from there we go into one of two systems that we have working in parallel. Our preferred platform is Nuendo because of the 32-bit conversion,



but we also have Pro Tools HD."

The Dovers conceived Sweatshop as a conventional recording studio, but have since changed their business plan to include artist development. They recently held an online "Facebook Idol" competition, which nurtured their relationships with talented new bands, and they've signed one of the Top 10 vote-getters to a production deal.

"Right now, we have Gary Portnoy in the studio, the guy who did the theme song for *Cheers*," Dover says. "We've also had some voice-over sessions, local bands, demos, etc."

"We have four acres of space here," he continues, "and other nice things that come with the session include a great meal. But the best part is we're making great music." —Barbara Schultz



project studio Defy Recordings

Engineer/producer Robert L. Smith's career arc is emblematic of the shifting fortunes of New York City's studio scene over the past 20 years. Beginning in 1987, Smith worked for hit-making facilities before going freelance in '97, as commercial rooms declined. In '07, he launched Defy Recordings (www.defyrecordings.com) to provide recording, editing, overdubbing, mixing and mastering services to a clientele that includes independent, budgetconscious DIY musicians, composers and singer/songwriters. "It seems like if you don't have your own setup, you're not working," Smith says.

Smith's home studio is in Manhattan's Hell's Kitchen. "I can record vocals and guitars here easily, and when I require a facility, I'll go to Avatar, SevenSeas or Pyramid," he says. He estimates that his room is "about 12x15 feet. I put some [acoustic] panels up and I use the couch as a bass trap. I've lucked into the quietest building I've ever heard in Manhattan—with windows closed. I face a courtyard, look out at a tree, and I don't hear anything."

Defy Recordings is outfitted with a dual-processor Mac G5 and Pro Tools





Alt-rockers Porcupine Tree released their latest album, *The Incident*, last month; this project is a cohesive yet complex song cycle inspired by significant "incidents" in the news and in frontman/producer Steven Wilson's life. Sessions for *The Incident* took place at rural Monkey Puzzle House (Suffolk, UK) where Wilson says the band "holed up for four weeks, writing and recording. It's great because you can't even get cell phone reception. You really are very focused with no distractions."

Wilson says he has arrived at a method of creating fully formed demos of the songs he writes. "If I hear something in my head," he says, "I'm not the kind of person who just sits down at the piano or acoustic guitar and bashes out a song. I tend to hear things almost as complete pieces in my head. Then the process becomes the other guys systematically replacing my demo parts and my programmed drums and my feeble attempts to play the bass and keyboards with their real performanoes. But in a way we're always working with a complete picturo, and inevitably we end up using a lot of the stuff we do during those early stages because there was a certain chemistry and freshness we couldn't re-create later. For example, I almost always keep the vocal I did on the demo."

Further band sessions took place at AIR Studios (London), where the group cut acoustic tracks with engineer Steve Orchard. "He was fantastic," says Wilson, who mixed the album in his home Logic/ Genelec-based studio. "I don't know a lot about mic choices and positioning, so I do very much rely on good engineers to know those kinds of things."

—Barbara Schultz

Track Sheet

Classical piano virtuoso **Lang Lang** tracked the score for the upcoming feature film *Project Chopin* (Breakthru Films) in Studio A at **Clinton Recording**

(NYC) with engineer Ed Rak. Also completed at Clinton was Joshua Bell's new album, At Home With Friends; Richard King engineered the tracks, which include guest artists Marvin Hamlisch and Dave Grusin. Sting used Studios and Yuka Honda produced a new album for Yoko Ono in Studio C, also with Allen and Schoenwetter. And engineer Joel Moss recorded Diane Reeves for an upcoming Charles Aznavour album...Keith Urban was in Studio A of Stratosphere Sound



A and B to record his new album, If on a Winter's Night, with engineer Dave Darlington and producer Bob Sadin...UMG/Verve artist Nellie McKay recorded an album of songs made famous by Doris Day. McKay self-produced, working with engineer James Farber and assistant Chris Allen in Sear Sound (NYC) Studio A. Walter Sear's place also hosted Scissor Sisters, tracking a new album with Allen engineering and Stuart Price producing; David Schoenwetter assisted. Sean Lennon to record vocals for a duet on Emily West's upcoming album. Chief engineer Geoff Sanoff tracked the session. Also at Stratosphere, Courtney Love recorded vocals with staff engineer Arjun Agerwala; Adam Franklin (formerly of Swervedriver) tracked songs for his new band, The Bolts of Melody, with Agerwala engineering in Studio A; and studio co-owner James Iha worked on a remix for the Yeah Yeah Yeahs with engineers Geoff Sanoff and Agerwala.

Send "Sessions" news to bschultz@mixonline.com

by Matt Gallagher

HD system with a Digidesign 192 I/O audio interface. Smith relies on premium outboard hardware from API, Focusrite, Manley Labs, Avalon, Chandler, SPL, Empirical Labs, TC Electronic and more. For plug-ins, Smith turns to the Waves Platinurn bundle, McDSP and Sound Toys. "I'll do all my real EQ and compression with the analog stuff and then just add the plug-ins as icing," he notes.

The studio's mic cabinet comprises models by AKG, beyerdynamic, Coles, Groove Tubes, Neumann, Oktava and Shure, as well as a Yamaha Subkick and a Placid Audio Copperphone mic. For monitoring, Smith employs Event Electronics 20/20bas monitors and a Yamaha MS101 II mono speaker: "Get it right in mono and it will translate to everything else." Smith says. He keeps a variety of guitars, pedals and amps on-hand for clients: "It's always helpful to have different flavors around, [rather than] carve up each sound with an EQ."

SrnIth says he often draws upon the technical expertise and professionalism he learned from producers and engineers such as Phil Ramone, Tom Lord-Alge and Neil Dorfsman: "What I miss about the 'old days' are track sheets that



everyone knew how to fill out. It's like the Wild West out there with everyone working on their own systems. Engineers forget that this is a service industry and their work must be decipherable by others." III

L.A. Grapevine

n a hazy late-summer afternoon, I pull into the parking lot of California Sound Studios in Lake Forest, 60 miles south of my 'hood. For some time to come, I'll associate this place with a stop-and-go, two-hour schlep down the always-jammed I-5, but for musicians based south of Hollywood, the facility is a potential godsend.

Compared to Hollywood and the San Fernando Valley, the area is underserved, with a handful of state-of-the-art studios and a number of entities in which recording is a sideline at best. California Sound's modern, 3,500-square-foot space houses two studio/control room suites pairing Digidesign worksurfaces (an ICON Control24 in A, an who headed ABC's Recording division.

After more than two decades of commuting, Wright decided to open the original California Sound. "I figured, what's a better environment to teach the kids this business than to have our own studio and throw 'em into it? I did a lot of the work myself with the guys' help." In the early days, the studio was modestly appointed, but the family drew enough business to make intermittent upgrades, Wright making up a wish list of his favorite analog gear and dispatching Jessie Wright to locate it. The experience served as an apprenticeship for Jessie Wright, who became adept at making use of his acquisitions, both vintage (United Audio 6076, Neumann U87) and



003 in B) with an array of high-end outboard gear and mics. Throw in an experienced staff and competitive rates, and it would appear that the facility has a lot going for it relative to the local competition.

Veteran producer/guitar player Frank Wright founded California Sound in 2001, relocating to this space in a recently constructed business park two years ago. Yes, he expanded even as a lot of SoCal studios were downsizing. But Orange County is a world unto itself, with its own music and its own set of realities.

This is a family operation in the most literal sense: Frank Wright is the house producer; one son, Jessie, is chief engineer, while the other, Nathan, handles the business for the studio and Fontanadistributed incubator label Wright Records. The newest addition to the team is Newport Beach-based producer/keyboard player Ronnie King, who handles projects from hip-hop to reggae to pop.

Born and raised on Chicago's South Side, Wright played society gigs and Rush Street clubs with future members of the group Chicago, and started coming to L.A. in the mid-'6os. During one of his visits, the youngster was befriended by Sonny Bono, who hired him as a guitarist in Sonny & Cher's backing band. In 1978, Wright and his wife, JoAnn, decided to leave the Windy City for SoCal. "Me and the wife looked around and decided there was no place closer to heaven than Orange County," he recalls, "so we moved here, and we've been here ever since." Wright averaged 500 miles a week making the round trip to Hollywood, where he worked as a session guitarist and learned to engineer at the side of the late Brian Ingoldsby, From left: engineer Jessie Wright, owner Frank Wright and producer Ronnie King contemporary (Avalon 737, PreSonus M8o, AKG 414 stereo matched set), while developing his Pro Tools chops.

A lot of the studio's business comes from veteran

musicians who live in the area. "It saves them a trip—and I know that trip very well," says Wright with a laugh. Among those who've made use of California Sound are Snoop Dogg, Warren G, OutKast's Sleepy Brown and 98 Degrees' Jeff Timmons, along with members of Korn, Boys II Men and Iron Butterfly. At the other end of the spectrum are the acts being developed under the Wright Records nameplate, including Long Beach–based hip-hop crew the Indovizualz, reggae group Cyrious & D-Lux out of Laguna Beach, dance outfit Speaker Junkies, Christian rappers Priesthood and Huntington Beach punk group Lifeline.

It was a 2008 Lifeline project that brought King to California Sound. "They asked me to produce a song for them,"

he says, "and I started getting calls from bands in the area about this 'really cool studio up in Lake Forest.' That worked for me, living in Newport and wanting to cut down on the drive time. Plus, I'm used to working with professionals and having a home studio doesn't really fit my needs. So that's what brought me here. I did a couple records here, and the boys were like, 'Hey, let's do more.'"

Says Wright, "One of Ronnie's first comments when he came here was, 'I love it, the group loves it, you got a great-lookin' studio that's kept up and the washrooms are clean.' Part of it is just keeping the place attractive."

King's dream is to lure bigger area acts like the Offspring, No Doubt and Mariah Carey—all of whom he's recorded albums with—into the studio to record. Wright's dream is more ambitious: to update the Sam Phillips/Sun Records model of the stand-alone studio/indie label for the 21st century.

"Since I started the studio," Wright says, "I had the idea rolling around in the back of my mind to find talent and bring them along to the point where we can start selling records with them and then send them off to the major labels. But now the majors have pulled back on doing their own A&R, and what I foresee for the future is everything coming out of a house like this and being sold through indie distribution. Luckily, we got in on the ground floor." In the meantime, he adds, "We just have to keep everything going and keep the lights on. So far, so good." **III**

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NASHVILLE Skyline

by Peter Cooper

arl Tatz's parents used to leave him in the house sometimes when they left for an evening out. That's when the speakers would get shifted around.

"My father had a component stereo," says Tatz, the designer of the PhantomFocus system of optimizing monitor systems. "If my parents went out, my friends would come over and we'd put one speaker on the piano, another on the piano bench and we'd listen to Led Zeppelin. Loud."

Led Zeppelin's music has been blamed for all sorts of societal ills, as people have claimed that exposure to Plant, Page, Bonham



and Jones led to vagrancy, loose morals, hearing loss and other things. In Tatz's case, it led to an adult life spent analyzing, processing, measuring and figuring, all in the service of sound. He talks of apexes, equilateral triangles, proprietary angles and such. Tatz is an exacting, some might say obsessive, fellow.

"The angle I use is a modified 30 degrees, and it's 67-and-ahalf inches from tweeter to tweeter," he says, sitting at the SSL AWS 900 Plus desk at The Grip II, a decidedly upscale home studio he designed for Jay DeMarcus of superstar country band Rascal Flatts. "Every single PhantomFocus system I design is 67and-a-half inches between tweeters and 67-and-a-half inches back to the listener."

Asked what would happen if the distances were, say, 68 inches or 66 inches, Tatz said, "It wouldn't be the end of the world, but I like the consistency."

Tatz moved to Nashville with thoughts of becoming a recording artist, but that notion fell away and he became—well, a different kind of recording artist: one who sees recording as an art. He earned a Grammy nomination for producing a jazz album for Jack Jones, but production wasn't an enduring passion. Tatz was mostly interested in attaining the kind of sound that drew emotional responses from the listener. He owned a commercial studio called Recording Arts for 18 years, and just about every big-time act in Music City worked there at some point. Six years ago, he sold that studio to Sheryl Crow and began designing studios and monitoring systems.

"I can go into the worst room in the world and give somebody world-class monitoring in that one sweet spot. You sit in that spot, and the sound is jaw-dropping and accurate."

The "accurate" part, of course, is as important as the "jawdropping" deal. A system that masks or obscures problems is of no use to a mix engineer. Sit in Tatz's "sweet spot" and listen to

> James Taylor's "Line 'Em Up" through Dynaudio M1s (Tatz doesn't design the speakers, he optimizes them), and the emotional impact of the music is sublime. Throughout the room, the sounds are clear and the audio informa-

Jay DeMarcus' Nashville home studio, The Grip II, features Carl Tatz's PhantomFocus system and an SSL AWS goo Plus. tion is useful, but in "67-and-a-Half-Inch Land," the sound seems to float in a cloud. It feels like a second shot of after-work whiskey. The frequency response

is smooth enough that listening at high volume isn't taxing.

"You really need to turn it up loud if you want to hear the nuances," Tatz says. "If you want to get the thrill, you need to crank it."

To set up the monitoring systems, Tatz comes in with an analyzer and a processor and tunes the speakers. He feeds pink noise into the speakers and fiddles with crossovers and concentrates on getting the near-fields and the

subwoofers in phase.

"You don't have to use pink noise," he says. "I could also do it with a CD, but I'd get tired of listening to the same record all the time. The pink noise soothes me, for some reason."

Tatz's work at The Grip II involved much more than the PhantomFocus system. He designed all aspects of the facility, including a drum room with "space couplers" that help make a room with a 9-foot ceiling sound massive enough for arena-ready music. "The sound goes up, gets confused and then comes back down," Tatz says. "The microphones think it's a bigger room than it is."

Then there's an amp closet with spring-loaded walls that float on dense foam, an iso booth with a pay phone in it and doors that open via push-plates made from Vox bass pedals. If the Devil is in the details, Tatz has likely shaken the red man's hand. Rascal Flatts, Jessica Andrews and numerous others work at The Grip II, and in August the studio was used to record Christian trio Austins Bridge.

"I like building studios," says Tatz, whose creations may be seen online at www.carltatzdesign.com, "but I'm most interested in the speaker thing. Everything is a vessel for my PhantomFocus. That's what distinguishes me from any other studio designer, and I'm batting a thousand with it." **III**

To reach Peter Cooper, e-mail peter@petercoopermusic.com.

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he recording industry and the entire music community owe a debt of gratitude to Les Paul. In addition to being an incredibly creative and gifted musician, Paul was the man who invented the solid-body electric guitar and developed multitrack recording and echo delay. Now he is no longer with us, having passed away on August 13, 2009, at the age of 94.

In 1941, Paul created "The Log," his first prototype solid-body guitar with detachable "wing" body panels. And after doing overdubbing using record lathes, he began experimenting with the new tape technology that was available after World War II, creating soundon-sound recordings by adding a switch to disconnect the erase head on tape decks. Installing an extra playback head led him to using tape echo delay. And, finally, he worked with Ampex to create the first 8-track deck capable of sel-sync overdubbing, leading to the multitrack revolution that continues today.

But beyond the inventor, guitar wizard and innovator, Paul was an amazing human being, with an endless love for the people in his field. It's hard to imagine modern innovators such as Bill Gates or Steve Jobs walking the aisles of a trade show, signing autographs, shaking hands or sharing stories, yet seemingly half of the people in our industry met Paul at NAMM or AES shows, or were warmly welcomed backstage at his many performances in New York City's Fat Tuesday's or Iridium Jazz clubs. He was an unceasing performer and a genuinely nice guy. When great legends pass away, the words "There will never again be another" are so often said that the phrase has become cliché, but in the case of Paul, this statement rings true. Farewell, old friend and rest well.

LES, IN HIS OWN WORDS

Teenage Multitracking

"My first attempt at multitrack recording was back in the late 1920s. My mother had a player piano, and much to her surprise I would take her piano rolls and punch extra holes in the paper to create new intros and harmonies."

The Les Paul/Richard Nixon Connection

As a longtime friend of Les Paul, I have many good memories about him and I'd like to share one here. I once called Les in April 1994, and as we made some small talk I asked him if he heard about Richard Nixon, who had passed away the weekend before. As soon as I mentioned the name "Richard Nixon," Les suddenly became belligerent, screaming "Richard Nixon—that good for nothing &%#\$&#\$!!!!" Once I got Les to calm down somewhat, I meekly asked, "So I guess you didn't like that guy?"

In some very strong words, but in a farcalmer voice, Les finally replied that he hated Richard Nixon. I asked why, and he said it went way back to the days when that &%#\$&#\$ Nixon was VP.

Les explained that back in 1953, he got a phone call from Nixon. Once he heard the

An Industry Pays Tribute

The passing of Les Paul elicited an outpouring of warmth and affection from the recording industry. Here are a few comments Mix received.

Les Paul was not only the musician's musician, but also the engineer's engineer and the inventor's inventor. He discovered that the erase, record and replay heads on a tape machine were not necessarily best placed in that order—thus inventing multitrack recording—and the clincher was that it was on a mono machine. —*Alan Parsons*

I first met Les at my uncle's studio in New York when I was 7 years old, and I've been in contact



voice say, "This is Richard Nixon," Les muttered (expletive deleted) and hung up. A minute later the phone rang again, Les picked it up and the routine repeated. Finally, the phone rang a third time, with Nixon saying, "Les, this is *really* Richard Nixon," thinking the reason for the earlier hang-up was because Les assumed it was a prank call.

Figuring he wasn't going to shake the VP, Les stays on the line, and Nixon asks whether Les and Mary Ford could play a command performance at the White House for President Eisenhower. Les didn't think much of Nixon, but he was definitely in the "I Like Ike" camp and agreed to do the gig.

The day of the show came and everything went fine—until halfway through the set, when Nixon jumps onstage and asks Les to play a

with him through the years. He was like an uncle to me, always patting me on the head. He also had a great sense of humor. I remember at a TEC Awards show, I introduced him to my wife, and he said to her, "You're not the woman he was with last night." I will miss him. —*Al Schmitt*

I can't think of anyone who influenced the direction of recorded music more than Les Paul. Overdubbing, double-tracking and tape slapping defined recorded pop music for the next 60 years and continue to do so. His innovations were only matched by his wit and genuine friendliness. I will remember him almost as much for his ability to crack up everyone in a room. How high the moon, indeed. —Frank Filipetti

Les Paul showed me ways of being musical, yet he was always looking for ways to enhance the *sound*. He never settled, and when he achieved what he wanted, a glint in his eye told you the maestro had raised the bar again. I will miss you, Les. —*Phil Ramone*

When Bruce Springsteen was awarded the Les Paul Award, he was on tour and asked me to accept it for him—an honor for which I am truly grateful. I was at the same table with Les and his

Les Paul, the experimenter, at work, circa 1950 son. Les was 88, and by the end of the TEC Awards show, his son Rusty and I were dragging, while Les was perky and looking for request for the First Lady. At this point, Les is worried because he



and Mary are playing to backup tracks, with Les using a footswitch to trigger the start/stop cues on a tape recorder/amplifier hidden in a box he sits on during the show. The tape has rhythm guitar and Mary's harmony parts sequenced on the tape. There's no way to change the order of the songs during the show, and he doesn't want to reveal that their amazing full stage sound comes from taped tracks—a common practice now, but certainly a rarity in 1953. Finally, Marnie Eisenhower says she wants to hear "Vaya Con Dios." Les clicks on the footswitch and begins playing. Coincidentally, "Vaya Con Dios" was the next song on the tape! —*George Petersen*

the next conversation! What a guy.-Bob Ludwig

I had the honor of going to Les Paul's house to interview him for a documentary. It was like entering hallowed ground, as the great man graciously showed us his collection of wonderful "goodies" including The Log, his "dancing shoes" and a Cadillac flywheel-driven disk cutting lathe. Then he demonstrated his pride and joy—the 1-inch 8-track Ampex machine and he proceeded to crank up all the volume on the outputs. I listened in awe, as he said, "See, no hiss!" —Eddie Kramer

My first *real* guitar was a Les Paul. Still have it. My dad gave up buying a new car so I could have it. I cried when I got it, and it changed my life. I never imagined that I would actually play with him, but it's a memory that I will take with me forever. I am honored to have been in the presence of a *true* genius. —Steve Lukather

When I was a child, my Boy Scout troop was given a short tour of Mr. Paul's studio. I had never seen such as thing. That 8-foot-tall 8-track was something. Years later, a similar machine was in use at Atlantic Studios on Broadway [New York City]. The old Columbia Studios on East 52nd Street had similar machines, too. The last time I saw Les was at the TEC Awards, where Robbie Robertson was given a new Les Paul. Les looked over the guitar and told [Gibson CEO] Henry Juszkiewicz about some ways to improve it!—*Elliot Mazer*

FAREWELL LES PAUL

I remember the day I met Les Paul like it was yesterday. Actually, it was in 1959. I was at Universal Studios at 46 East Walton in Chicago, working with Quincy Jones on Dinah Washington's *What a Diffrence a Day Makes* album. Les Paul's new Ampex 8-track recording machine was just being delivered. The machine was absolutely enormous, based on the big, rugged Ampex Model 300 tape deck with eight Ampex Model 351 electronics units. —Bruce Swedien

I first met Les Paul in 1959. As a guitarist, composer, electronic innovator and inventor, he was beyond genius and there was none other like him. He was a true musical gift from God to the world and spent his life honoring that gift. —Randy Bachman

My favorite memory is when one of Les' friends brought a woman and her son backstage to meet him. Les was told that the boy was a Les Paul fan and that his father had recently died. After a few minutes of conversation with the family, Les asked the boy if he owned a Les Paul guitar, and, if so, did he have it with him. He admitted that he owned a Les Paul guitar and that it was nearby. Les offered to autograph it. Afterward, Les advised him to sell his autographed guitar, buy two more and then bring them to the club so Les could autograph them, too! —Wes Dooley

Unfortunately, I never had the honor of meeting Les Paul, but if it weren't for him, I'm quite sure no one would have ever heard of me. He basically invented everything I know. —*Bob Clearmountain*

A virtuoso musician, inventor and well-loved personality with charm, style and a gift for making people laugh—Les Paul had it all. From electric guitars to sel-sync and multitrack recorders, to effects, including Capitol Studios' echo chambers, to still gigging in his 90s, Les had an incredible career and will remain an inspiration to us all. —Maureen Droney

I well remember the early days of the "track race." Two-track machines were for stereo—in case that ever caught on! In 1958, Decca decided to



record all of its classical music in stereo-expensive and virtually impossible to edit, but one day it would pay off. In the mid-1960s, I was building multitrack mixers with 3-track monitoring for Philips Records. Three tracks? There was something about a "hole in the middle" if you only had two tracks. Ampex then came up with four tracks, which they labeled L, C, R and S. The "S" being for "Spare." Meanwhile, others called it "V" for "Voice."

Once, Philips' London studios asked if I could do a

console with an output matrix that would enable musicians to mix and remix to end up with a multiple voice chorus. From there the race was on, as more uses were found for multitrack recorders and consoles. At the heart of it were Mary and Les, driving new ideas with seemingly endless enthusiasm. We'll never forget them and what they did for our industry. There are few today who share the integrity of this Godly man who earned the love and respect of us all. —*Rupert Neve*

It was truly a joy to meet Les Paul, as well as receive the Les Paul Award. Multitrack recording is something I listened to since I was a little boy. I remember hearing "How High the Moon." I was always curious and excited about it. When I was beginning to do recording at Motown in my teen years, being able to play different instruments and sing different parts was very exciting and with Music of My Mind, Talking Book, Songs in the Key of Life and other albums, multitrack recording gave me a chance to really express my concept of an arrangement. I want to meet all of the great musicians that are accumulating in the band in heaven, and Les Paul's another person included in that great band. -Stevie Wonder

I remember getting a call from Les a few days before a VH1 special he was asked to play at. "You're the only guy I know in that rock crowd

that knows all the standards, so I need you to play bass. Can you do it?" I said, "Of course." I would do just about anything for Les. He was and still is a great role model—the perfect combination of a great player and a tech head. And he did it all with a twinkle in his eye. It doesn't get any better than that. —Jeff "Skunk" Baxter



After a few tunes, Les asks the bass player if he knows "how to play Texas-style." The young bassist looked embarrassed and said "No." Les feigned outrage, and then said, "You have to know how to play Texas-style," and in mock disgust, added, "Let me show you how." He tells the guy to play a walking bass pattern and then tells him to "lower the neck." As the drummer starts grooving, the bassist lowers his standup acoustic bass neck about 5 degrees, and Les says, "No, further." This repeats six or seven times, with the neck going lower and lower until he's whacking his strings with the side of the bass resting horizontally on the stage and standing over the bass' body instead of behind it. The audience is shrieking with laughter by now as the bassist tries to follow the iconic bandleader's instructions. At that point, Les congratulates the guy for being such a good learner with, "Hey kid, you did it! You learned how to play Texasstyle!" and then asks the audience to give the guy a round of applause! -D.K. Sweet

Like everyone else, I was deeply saddened by Les Paul's passing. I always thought of Les in the same light as Thomas Edison. Pure genius. He was the kindest, most generous and thoughtful man I knew. He left a huge impression on everyone he came in contact with and will be missed more than any words can say. —Elliot Scheiner III

For more on Paul, visit mixonline.com/ms/les_paul.



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THE HANGING NEW YORK STUDIOS

Recording, Mixing and Post Facilities Adapt to Economic Realities

By David Weiss

Is New York City still a place to believe in? Whatever your specialty, the Big Apple remains a very solid draw for the ambitious. But that drive is easy when the big picture is all about hope and potential—how about when the hard realities set in?

Those realities revealed themselves to the New York City-based recording industry long before the globe started feeling the pinch of our current economic crisis. To review, the seeds for the world-money meltdown were sown in July 2007 when securitized mortgages began looking extra shaky to investors, prompting an injection of capital into financial markets that would eventually spike credit risk to extremely volatile levels.

As the house of cards was being built downtown on Wall Street that year, the last New York City AES show was taking place uptown on the West Side. Things have changed on both fronts: Like investment houses and the city's tax base, the local recording industry has taken some big hits in the past two years. The difference is that the people who lead New York City's facilities flagship to personal studio—actually saw the crunch coming and braced themselves.

The result is that while some notable recording rooms have closed since the last AES—including Legacy Recording's Studio A509, Philip Glass' Looking Glass Studios, upstate's Allaire Studios and LoHo Studios in the Lower East Side—a great many others have hung in there, doing what's essential to remain in business. And new facilities and rooms continue to open.

How Are the Flagships?

At West 48th Street, the nonstop buzz of Times Square is just 50 yards from the front door of Legacy Recording Studios. A recent landmark change in the neighborhood's zoning has closed several blocks of the area to traffic, converting this Crossroads of the World into a surprisingly pleasant (if somewhat surreal) pedestrian mall.

Inside Legacy, the fluctuating traffic flow in and out of its studios—and everyone else's—has been a topic of consistent interest since the New York City AES show two years ago.

"What's different in New York City since AES 2007 is that there are fewer recording studios," says Chris Bubacz, Legacy general manager. "What hasn't changed is that there are studios that have been able to hang in there and survive these storms that have come up. So you still have our studio, Legacy, as well as Avatar, Electric Lady, Chung King, Quad, Dubway and the smaller studios downtown; we've all figured out a way to keep it going.

"The record business, in the last two years, is about the same," Bubacz continues. "When the record labels are ready to work, we're busy. When they're not, we have to fill our time with more independently funded projects like Broadway shows, film scores and the like."

At Quad Recording Studios, which now looks out from its tenth-story perch at Times Square, adapting means shaping the studio—literally—around client needs. The facility has cut the live room of its SSL J 9064–equipped Studio A in half to make room for a new studio (currently in development) and lounge within that space. Meanwhile, a smaller Larry Swist–designed production room, Studio F, has also recently come online.

"One thing is obvious: Everyone is feeling the economic crunch," explains Rick Hosn, president of Quad. "It's getting tougher and tougher to get decent rates. The label budgets are shrinking, and our 'COD' clients are looking for better deals. As a studio, we have to make sure we can accommodate everyone without sacrificing the quality of our service. Our clients don't want to spend the big bucks on the big rooms anymore. One way to deal with that challenge is to build the smaller rooms and offer the better deals. We were one of the first people to open a small-format Digidesign ICON room, and it's been a great success."

Uptown, the relative quiet of West 53rd Street makes Avatar Studios feel more like a country getaway—Hell's Kitchen-style. For that facility, the convenience of a comprehensive services offering is key.

"There is a lot of downward pressure on overall recording budgets," acknowledges Kirk Imamura, president of Avatar Studios. "With the different kind of rooms and resources we have in our recording complex, including mastering, we offer a complete set of options for multiple stages of production to match clients' budgetary requirements. We might do basic tracks in the big room, do overdubs in smaller ones, edit in the Pro Tools suite, and then mix and master with quick iterative revisions. By keeping a project under one roof, the flow is not interrupted, the quality is maintained and projects are completed quickly and efficiently."

New York City is undeniably blessed with many of the world's best live tracking rooms, still an essential ingredient for orchestral recordings, Broadway cast albums, symphonic sessions and bands that like to record while playing together in the same place at the same time. Rooms at other larger-scale studios such as Clinton Recording Studios, KAS Music, Manhattan Center Studios and Sear Sound will always have jobs to bid on, albeit with tighter budgets in tow.

"The primary advantage for us is the size and number of our tracking rooms," Imamura states, referring to such spaces as Avatar's 2,496-square-foot Studio A and 980-square-foot Studio C. "There are fewer and fewer large rooms available for large ensembles, orchestral dates and cast albums in the city. These are sessions that you simply cannot do at home or in small project studios."

A Sharper Focus

Both Dave Amlen (Sound on Sound, Legacy Recording Studios) and Troy Germano (Hit Factory) used to be at the helm of huge New York City facilities. Today, however, the two can be found running a much different type of studio than their multi-room complexes of before.

Each now runs a two-room studio—significantly more tightly focused operations closely overseen by these seasoned studio executives. The eponymous Germano Studios, opened in 2008, is in the stylish NoHo neighborhood, featuring a pair of 48-input SSL Duality rooms. Amlen founded Manhattan Sound Recording and opened in June of this year, converting the already-pleasant compound previously occupied





by the Manhattan Producer's Alliance into two extremely well-equipped Digidesign C24 recording and production suites.

"The world has changed and the 'boutique' recording facility is what is most desired," says Germano, owner and president of Germano Studios. "The bands and artists want the highest level of privacy, and that is impossible in a fouror five-room studio. Fortunately, there are not many multi-room studios left, so leaner is the answer. My plan has only been to open numerous smaller studios in different cities—locations that artists would be attracted to, not necessarily locations that musicians have now become bored of. When the [Germano Studios] space in NoHo accidentally came to me, the size and intimacy put my ideas in motion."

Amlen notes that running the relatively compact MSR feels much different than his previous studios. "With a large facility, there are more opportunities to charge for services," he says. "Conversely, there are more monthly obligations in staff and infrastructure costs. I think my new studio is a strong statement about the direction and

Two New Post Players

Everyone wants to be "the post with the most." Even though advertising budgets are in tatters, a plethora of elite options remain in the extremely competitive New York City audio post scene. In fact, fresh mix-to-picture capacity has recently been added to the Manhattan skyline in the forms of two new mix suites at audioEngine (www.audioengine.net), and an entirely new facility called Sonic Union (www.sonicunion.com).

Residing just a tad south of the downtown border at 12th Street and Broadway, audioEngine ordered up its two new suites in 2007, when business was booming and the elite facility was routinely turning down work. Although conditions feel much more threatening today, audioEngine's co-founders—Rex Recker, Brian Wick, Tom Goldblatt and Bob Giammarco have set their company up for maximum competitiveness with their advanced pair of Walters-Storyk Design Group rooms.

"We knew that we needed another Dolbyapproved room for theatrical work," Giammarco says. "We wanted to build high-end rooms that were acoustically correct, and work with a designer like John Storyk, who did the original rooms at audioEngine when it was known as Lower East Side."

Returning to the site of his original 1998 eighth-floor design, Storyk now found himself designing a build-out on audioEngine's seventh floor. For mixer Hillary Kew Martell, the result was "The French Quarter"—aka the minimalist, chic 29x17 Studio E, a 5.1 room with exceedingly clean lines, Digidesign D-Command control, Sony HD projector and 122-inch diagonal Stewart screen, and a Dolby certification for theatrical sound mixes.

"Nothing has changed, and on the other hand everything has changed," Storyk says of the differences between audio post design today and a decade ago, when he first helped shape the facility. "The standards have gotten tougher, and so the environments improve. It used to be that the equipment brokered everything. It was ridiculously expensive and hard to get, but now it's been democratized.

"So what distinguishes one studio from the other?" continues Storyk. "The environments and the people. We're constantly being called on to step up the environments, which could mean daylight in the room, improved acoustics and 5.1 is finally getting some legs." Just across the hall, but seemingly a world away, is an equal and opposite suite created for recently added star mixer Rob DiFondi. "The Cabin," or Studio F, has the feel of a spacious (27x20) and rustic luxury log-cabin complete with fireplace holding a 65-inch Sharp LC flat-screen. DiFondi commands commercial campaign mixes via a Digidesign Pro Tools HD3 workstation, while monitoring via B&W 5.1 speakers with 803D mains, SCMS surrounds and an ASW855 sub.

As welcoming as they are acoustically accurate, audioEngine's two new rooms bring them up to six suites total, backing up their belief that the high end can continue to expand. "I think there will always be room for quality," notes Giammarco. "We're inevitably going to see some players fall away because New York City right now is over capacity. If I had a crystal ball to see the future of this business, I'd be very popular in our company—and with some of our competitors! For our part, we have to continue to be financially smart, keep up relations with our clients and keep working to be the best at what we do."

Meanwhile, a brash counterpoint has set up shop just a few blocks uptown on the West side of Union Square in the guise of Sonic Union. Founded by in-demand mixers Michael Marinelli (formerly of Buzz/NY) and Steve Rosen (formerly of HSR/NY), along with managing director Adam Barone, Sonic Union sports five total rooms. The pleasantly advanced environment takes maximum advantage of a glorious park view, while allowing Rosen and Marinelli to tackle their favorite mixing activity.

"I think that the biggest change in New York City since AES 2007, with regards to the commercial audio post industry, is that surround mixing has gone from being attempted to being expected," says Marinelli. "Well over half of the spots we mix at Sonic Union are being finished in HD and mixed in surround. I have to say that after mixing as long as Steve Rosen and I have, it's been a welcome addition to our daily routine."

Sonic Union's inviting layout feels alive with natural colors, textures and abundant light. "When we set out to design our new home," Marinelli recalls, "one of our main objectives was to not build a place that looked like it was designed by a bunch of audio geeks.



Through some crazy circles we met this brilliant architect, Raya Ani, who had never designed anything like this—she worked on huge projects like the New York Stock Exchange, The Time Warner Towers at Columbus Circle and the first Green School in New York City. Sonic Union was the first project undertaken by her own architectural practice. Because we were planning on using Rich Alderson for the acoustics and technical design, we felt we could push the envelope on facility design and that Richard would make sure that the rooms would sound incredible."

For the main suites, Alderson created two approximately 600-square-foot rooms, each running Pro Tools HD3 systems and bolstered by Blue Sky Big Blue and Genelec monitoring systems. Endowed with a 120-inch projection screen, Rosen's room qualified for and received a Dolby approval.

"Sonic Union's clients have grown up in the dotcom world and are totally accustomed to working in a minimal environment with a small equipment footprint," Alderson says of the open-feeling rooms. "A lot of care went into accommodating the display screens and projector so that they could have very good visual contact. In a typical post session, there can be as many as 10 people in the room, so care was taken with the monitoring to ensure everyone could hear well, no matter where they were sitting."

The design philosophy backs up Sonic Union's 10,000-foot view on what it takes to succeed in New York City's hotly contested audio post scene. "More and more it's not about the tools as much as it's about the talent and the relationships," concludes Marinelli. "We just want to continue to put out the kind of mixes that make our clients look and sound great."

—David Weiss
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THE CHANGING FACE OF NEW YORK STUDIOS



Manhattan Center Studios general manager Matt Carter (left) and president Dave Amlen

needs of my clientele. The new direction is more personal attention. I think once you grow past two or three rooms, you lose the personal connection. Ultimately, many two- and three-room facilities are the goal, whereby each facility will have its own unique personality. The financial beauty will be in the sharing of back office and technical resources. We [Manhattan Sound Recording] are not there yet, but I hope we will be sooner than later."

The final key to running these sonic sports cars is keeping two steps ahead of everybody else—or is it? "As for keeping ahead of the curve," says Amlen, "I think you always need to be aware of the curve, but never on the leading edge because the financial pitfalls are hard to recover from, unless you can force the work during the learning stages while the equipment stabilizes. Most of us are not that fortunate."

We Live in Brooklyn

Brooklyn Heights, Williamsburg, Bushwick, Canarsie, Bedford-Stuyvesant, Park Slope, Clinton Hill, Cobble Hill, Boerum Hill, Carroll Gardens, Prospect Heights, Greenpoint, Coney Island, King's Highway, Dyker Heights, Bensonhurst, Mill Basin, Flatbush. Get the point? There's a lot of room for music to maneuver in the borough whose Dutch name means "Broken Land." With many professional and semi-pro musicians and audio pros—for more than a generation now—in flight from Manhattan's high prices and cramped lodgings, critical mass has been reached and then some in Brooklyn.

Jamin Gilbert opened ishlab, a studio/licensing/music supervision concern in the artsy/industrial neighborhood of DUMBO (Down Under Manhattan Bridge Overpass) in 2000. "There has been a continuous and growing influx of musicians and artists toward New York City, and to Brooklyn in particular," Gilbert observes. "New York has always been one of the greatest music Meccas of the world, and Brooklyn has risen as one of the strongest creative communities. The eclectic space and architectural elements provide a recording scene that inspires collective creativity and healthy competition, both necessary components of a growing artistic and musical environment. Being in the heart of this community for a decade has definitely allowed us to observe the ebb and flow of the music— we're lucky to have been in Brooklyn long enough to fully understand the dynamic of the environment here.

"It's important that the industry find other ways to make money other than as a traditional recording facility," Gil-

bert continues. "By helping to carve out niche music communities that do things differently, we can all work together to promote the local recording industry. We are embarking on a couple of great opportunities right now. capitalizing on the emerging trends of audio sensory branding for commercial activities. Our background in recording, mixing and DJ'ing allows us to understand the local market, as well as trends around the globe, and turn this into opportunities for our artists and commercial clients."

Virtually Existent

Keeping that big globe firmly in mind, and the need to be everywhere at once—beyond the comfy confines of the five boroughs—is another formative factor for New York City music professionals. His company's headquarters are on a SoHo cobblestone street, but Alex Moulton, creative director/partner of busy commercial music house Expansion Team, refers to his M.O. as a "studio without a studio."

Instead of carrying the overhead of a dedicated recording facility, Moulton and his clients are happy with the results from a decentralized global composer network, capable of working efficiently together on projects. "We have a busi-





Alex Moulton, Expansion Team creative director, conceived of a "studio without a studio."

ness model that puts creativity first, and I truly believe that musicians create better music when they work in comfortable surroundings with players and engineers they love," says Moulton. "These days, that means recording at your personal studio and not having to come into the office. Since we work with composers all over the world, we get the benefit of all of those rooms and session players.

"When you add it up. it just doesn't make sense to have a central studio facility in New York City," Moulton continues. "Instead, we have a simple but beautiful mix room that's great for clients, but doesn't require all of the gear necessary for recording. The fact that this business model has kept our overhead down is secondary to me, but it has definitely helped; It's allowed us to grow organically and we're able to pay our composers well. The only challenge we face is in the misconception that not having a studio means that the music-making process is more complicated or slower. In fact, we all share a central server and we're able to keep working around the clock because of the different time zones of our artists."

"Going into 2008, most people were expecting growth, and by the end of the year it was obvious that we'd taken an entirely different direction, to put it mildly," says Moulton. "Rates and fees are down and competition is much higher, and there's no telling when things will level out. But it's not just the music industry it's true for nearly everyone I know. It's a different landscape now, with smaller financial returns but increased opportunities for creativity. And New York City is still at the center of those creative opportunities." **III** MAKE MUSIC YOUR LIFE!

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David Weiss is Mix's New York editor.

TONY MASERATI

project, I did a bunch of mixes at [Troy] Germano's place and it's great—an easy transition to and from my studio. But I think much of what makes the business interesting to me has been retained in L.A.—studio environments where I can chat with my colleagues face-to-face about mixing ideas or baseball scores.

I don't know that I'm going to be a full-time Los Angeles person because I think I'll always have my spot up here.

So you're going to keep that place.

Yeah, I'm going to keep the studio here. I may have to move a chunk of the equipment out to L.A.; it depends on where I hang my hat. I like what's happening out there—*a* lot of recording going on; guys I know well doing their thing in an environment where you can make deals with studios and camp out for long periods of time, essentially creating a home base. I want that again. And being in a major metropolitan area is definitely beneficial for business. Still, I think down deep I'll always be a New Yorker.

Do you have a place or situation waiting for you? I've called the Record Plant "home" for pretty much the whole time I've been in L.A. I've spent as much as eight months at a time there.

I didn't realize you'd spent so much time there.

While I was in L.A. waiting to start the Black Eyed Peas record [*Elephunk*], Ron Fair [producer and CEO/president at Geffen/A&M] had me doing work with Christina Aguilera and a couple of other gigs. Between those and the Peas, I was there a long time. I had also worked at Conway and Enterprise.

With the new way that I work, the sound of the room and the environment are really the two most important things for me because, equipment-wise, I'm either going to bring my stuff or I'm going to rent the stuff I like to make a mix happen.

What do you mean "new way you work"?

Upstate, I have all the same outboard gear I've been dragging from studio to studio, including a giant Pro Tools rig, for the past 20 years. I've



got lots of analog compression-I've got my LA-3As, my 1176, an old ITI and lots of newer gear like the Chandler TG1. I still sum analog using a Chandler 16-channel mixer, a Neve 12-channel sidecar and a Dangerous 2-Bus. I choose which one I'm going to use directly from [Pro] Tools, depending on the sounds. So typically I'll use the Neve for my kick, snare and bass. The Chandler handles most of the vocals, guitars and piano. And the Dangerous will pick up whatever is left-keys, strings, etc. The Chandler eventually sums everything before going to my Lavry Ato-D converter and into [Pro] Tools. I've also got my [SSL] X-Logic rack, with SSL EQs and compressors. Essentially, I've got a lot of analog stuff I use to get my usual analog sounds, but I do all my automation in Pro Tools. And I have a minimal recall time-usually about five to 10 minutes; that's pretty quick to do a recall.

How is that different from what you were doing 10 years ago?

Ten years ago we had a 96-input SSL J, and recalls could take upward of four hours. My assistant would have to sit there and reset 96 channels of the board. Then he had to reset all that gear and all the patches. Now, even the [SSL] Duality is quicker because it allows multiple people to recall the board.

So it turns out to be a nice confluence of record company budgets shrinking but you being more efficient because of technological advances.

That's exactly right. It's helped me be more competitive. I find in meetings that many of my clients like to be able to make changes up until the last minute. I just uploaded files for mastering last night—where the producer is traveling on the road and I'm either streaming to him or sending him MP3s or full bandwidth, depending on how close we are, and he's able to make comments about parts and edits and things like that in a moment's notice. I can do a quick change and re-send files for mastering up until the last day, whereas, going back to when we worked with tape, we had to set aside three days to make sure everything was ready; now it's three hours. **So you're not using analog tape for anything**.

I'm not. I have a half-inch machine, which I can roll out, but the last few times I've recorded to tape, either the mastering engineer decided not to use it or the client decided on an alternate pass that didn't make it to half-inch. It's a lot of extra work for me and my second, and if they're not inclined to use it, what the heck are we doing here? Well, there was that period when some mixers were nervous about completely eschewing that analog tape sound so they brought it in at the end.

That's true. It was very much a part of my



sound—how I manipulated the tape saturation, the compression. I used to call it my "glue," where my last step was gluing it together with the oxide on my tape, and how hard I hit it was part of my sound. And I actually didn't hit it very hard, but I chose my level and my bias and things like that, and now I'm thinking quite differently, as you can imagine.

Are there things you're doing to compensate for not having your "glue"?

Absolutely. I'm doing lots of things. In the days of tape, I was relying on the beauty and electronics of the machine and the things that tape did—the way it all affected my overall frequency content, how the print-through was working either in my favor or against me. So what I tend to do now is I'll add the things that I remember tape doing— I'll put really subtle and minute millisecond de lays on lots of things—just to glue, and then that gets compressed with my 2-Bus compressor. So I'm thinking about things in that way and trying to replicate some of that glue. Parallel compression; things of that nature.

You do a lot of work on "singles" or featured tracks. How has the definition of what that is changed sonically? One used to sort of mix for the radio, but I don't know if that's still the case.

Of course that's still the case! I came up in the days of dance remixes so, in the same way they mixed a song to be "club-specific," I learned to be "radio-specific." I've always taken that idea with me wherever I was going, genre-wise. I often think about exactly where my mixes will be played, and it's very genre-specific. The Lizz Wright record I did was both AC radio and an audiophile kind of thing, so I spent a lot less time listening to it on my computer speakers and a lot more time listening on my audiophile

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system. Whereas the Jason Mraz [*We Sing, We Dunce, We Play Things*] is kind of going across the spectrum—playing on some audiophile stuff, iPods—so I spent more time on my computer speakers.

Would you listen to a mix on iPod earhuds, the way people used to go to their cars and listen to mixes?

I don't, no. I do still go out to my car, though. In the studio I have five sets of speakers. I have my Tan-

noy DMT 1200s. I have ProAc Studio 100s. I have my little Craig Sound computer speakers—these tiny little things with no sub or anything—and my Dynaudio M1s and Snell audiophile towers.

What does mixing on computer speakers tell you as you're doing it?

Mixing on computer speakers and monitoring with a [Waves] L2 on the mix gives me energy indicators.

Jason Mraz Weighs in on Maserati

The Jason Mraz album that Tony Maserati mixed, We Sing, We Dance, We Play Things, was a huge hit last year (and this year), and even carned a Record of the Year Grammy nomination for the song "I'm Yours." We caught up with the perennially touring Mraz in Indiana recently to ask him a couple of questions about Maserati's mixing.

When you were cutting the album with Martin Terefe and Dyre Gormsen, were they doing rough mixes along the way so there was, in essence, a template of how you wanted the record to sound?



Absolutely. If we worked on a song that day, I would go home with a rough mix that night to know what we got. We kind of mixed as we went, so we were always able to listen to the record as we had it in front of us. Then it wasn't until we gave it to Tony that he really tore the whole thing apart and revealed some gorgeous new arrangements.

Iell me about the decision to hire Tony. I don't think he was an obvious first choice.

I know [Atlantic CEO] Craig Kallman and Martin were big fans of Tony; they love the guy! And I think they thought the album might be a little too light, so they thought, "If we send it to Tony, we know he can really bring out the rhythmic aspect of this album." But what they didn't expect was for Tony to be a fan and for him to really take so much care on this record. I think what he really paid attention to were the stories that were being told and the messages that were woven into the music. He gave us a new perspective.

He worked a lot on the arrangements, took a lot of our layers out, moved things around. "I'm Yours" is the best example. The arrangement that you hear on the radio and on the album is really Tony's arrangement. He tried little things like bringing in the drums later, dropping them out again in the third verse and a different use of layering instruments we had added. He really stripped that song down to be more like the original demo, which was just guitar and vo cals. He did a great job of capturing that, maintaining the truth in the song.

Was it shocking when a mix comes back to you and all of a sudden a part is missing?

No, I was relieved. It could've been a shock, but I was so in love with the way Tony was mixing the record and really taking control of these songs as, ultimately, the first listener. He was taking liberties that were extraordinary.

And he said you were frank with him when you didn't like something.

I remember getting into a little debate with him one time—there was this scat in "Butterfly" that I wrote with the song. Well, on his first mix, the scat was gone, it was just an instrumental section. I said, "No, no, no, we can't have that!" And he was pretty adamant about why it was important to drop that out because then when my voice comes back later, it's even bigger and stronger. We went back and forth, but finally he left it in there. I won that one [Laughs] But all in all, he was fantastic to work with.

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TONY MASERATI

Kensaltown-to work with him on a Craig David record, and we became friends. Martin is just amazing-I can't say enough good things about him. He's super-musical. He has one of those big lofts, not far from Portobello Road, and a crew of musicians who are around all the time. There's no control room-he's got an old API right in the room, and there are buses going by outside from time to time. Martin's engineer-Dyre Gormsen-recorded the Jason album pretty much live right there. There might have been two or three takes on Jason's vocals-maybe a punch here or there- but very, very little. Anyway, Martin thought I'd be right for the Jason project. I did a couple of mixes for them, and they loved it. So we went forward with it and I ended up mixing the entire record here at my place.

That must've felt like a change of pace for you.

Well, I had just finished a Lizz Wright record with [producer] Craig Street, which was dramatically and sonically complex, requiring tremendous focus. But with the Jason record, no one attended; it was just me and an assistant. I was sending MP3s or full-bandwidth files to Martin and to Jason, who is on the road perpetually. Martin was in the middle of who-knows-what production at the time. We got the whole record mixed and then [Atlantic Records CEO] Craig Kallman and Sam Riback, the A&R guy, wanted to be present and do some tweaks on three or four songs. So I went down to my buddy Hector Castillo's studio-after maybe 20 minutes of recall time, I was able get back exactly where I was on those four songs. Then Craig and Sam were able to come in and give me their comments and tweak it in a studio environment. So those four songs were ultimately mixed there. But the rest was done at my studio upstate.

I have to admit, I was a little nervous about making alterations—when you get something from someone like Jason, who's clearly a great writer and performer, you're always a little leery about making changes, like cutting out part of his vocal or doing an edit, where I hold the drums out till the downbeat of the second verse. It's a little risky. But if you show that you know what you're doing, and you've got a clear direction for the song, they may just say, "I love that idea!" On one Jason song, there were a couple of vocal parts I tried to nix with an edit. I sent it to Martin and Sam, with a note saying, "I dig it this way. What do you think?" Then I sent it to Jason. I got a single-word e-mail back: "Nope!" [Laughs]

Oh, well, it's worth the risk, I trust. Absolutely! You have to take chances. III Its multipattern versatility and clever shock mount make it a natural for M/S setups. With more settings than any microphone that I've used (in recent memory at least), and a low street price the CS5 represents good value in the (more crowded than ever) marketplace...

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-Richard Salz Pro Audio Review



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Blair Jackson is Mix's senior editor.

BROADWAY SOUND

Four Shows, Four Dramatically Different Designs

By Gaby Alter

While most tourists flock to New York City to gaze upon the Statue of Liberty, see the metropolis from the Empire State Building's observation deck or traverse through the throngs of people milling about Times Square, taking in a Broadway show is always high up on their to-do list. And there are plenty of shows to see—from newer performances like *Billy Elliot* to revivals such as *Hair* and *South Pacific* many of which are continually sold-out, a boon despite the current economic climate.

Mix checked in with four Broadway sound designers, each of who are tasked with creating a sonic symbiosis with the show's performers and audience, an energy that these engineers seek to harness and communicate.

Tap Your Way Through 'Billy Elliot'

Billy Elliot, which cleaned up this year with 10 Tony Awards including Best Musical, features quite a lot of young people in the cast and, as you'd guess, a lot of dancing—particularly tap. Paul Arditti, who won a Sound Design Tony for the show, says that amplifying the tap dancing over the orchestra presented one of his biggest challenges. For example, the actor playing Billy already wears two wireless mics throughout the show to pick up his vocals. Just before "Angry Dance," Billy pulls on a pair of track pants that contain another sewn-in wireless pack connected to two mics, one down each leg of the pants. These mics pick up his tap-dancing for this number. However, this setup proved impractical for all the other tap sections in the show because the dancers had bare legs or quick costume changes.

"So I developed the idea of a tap floor, in which the entire stage is peppered with pickups, set into the deck just underneath the parquet flooring," says Arditti. "There are actually 96 piezo-electric pickups, which are painstakingly wired back to a Yamaha DM2000 under the stage. This console provides phantom power, EQ, compression and gating, and allows us to split the stage up into tap zones. So parts of the stage can be live and other parts not amplified at all. The output from this console feeds a stereo pair of channels in the [DiGiCo] D5T [the show's main console]. The advantages of this system are that the tap sound is entirely independent of the vocal and musical sound, has huge gain before feedback and is surprisingly immune to non-tap-foot noise."

The show is mixed on a 128-input DiGiCo D5, a departure from the 132-input Cadac J-Type used on the London and Australian shows. "Much as I love the analog sound from the Cadac, I opted for the programmability, reliability, future-proofing and size of the DiGiCo," Arditti says. "It's worth bearing in mind that the actor playing Billy Elliot changes every show—sometimes during the intermission if he's injured or unwell. So a console where each individual's mic EQ can be recalled from a library, adjusted live and resaved at the end of the performance is a good thing to have."



Another issue Arditti and associate designers John Owens and Tony Smolenski faced was the imperial Theatres low stage, which meant that the Meyer UPM-1P front-fills hit the audience at chest level. "Effectively, this means that the front-fills are useless for row B and anywhere further back. I use the downfill [11 Meyer M elodies] from the center hang in the center of the orchestra to provide the main vocal coverage, whereas I would normally prefer to rely on the front-fills to pull the image down. Similarly, at the sides of the orchestra, most of the vocal energy comes from the main vocal line arrays on the prosceniums [also M'elodies], whereas I would have preferred the front-fills to pull the image toward center."

Down in the pit, the set machinery took up a fair amount of space. The musical director wanted to keep the band in one place to maintain good communication, so there was no "remoting" of instruments as often happens on Broadway. "The stage extends asymmetrically over the pit, too," Arditti explains. "Not too much live sound gets out, and we ran the risk of trapping all the



The Broadway production of Hair is infused with a rock 'n' roll energy, as designed by Acme Sound. Pictured from left: the company's Mark Menard, Tom Clark and Nevin Steinberg. Not pictured: Sten Severson.



Trent Kowalk (Billy) and Stephen Hanna (older Billy) perform in Billy Elliot, which was sound-designed by Paul Arditti (right).



BROADWAY SOUND

sound from the instruments in a confined space. So I designed the pit to be more like a sound studio than a live performance space. We employed a lot of acoustic absorption and screens between sections. We also created two sealed booths for the percussion and drum kit."

The musicians have Aviom A-16R personal mixers, which are submixed with a Yamaha M7CL-48 under the stage. Arditti is pleased with the band's sound quality. "Needless to say, it's not the natural, unamplified sound of a classical orchestra, or even a jazz big band, but it works for Elton John's music and Martin Koch's arrangements," Arditti says with a laugh.

A Rock System for 'Hair'

Maintaining the energy of a rock concert while keeping sonic clarity was job Number One for Nevin Steinberg and Sten Severson of Acme Sound Partners LLC, designer and associate designer for the Tony Award–winning revival of *Hair* at the Al Hirschfield Theater. This version actually began as a concert in Central Park in the summer of 2007 to celebrate the show's 40th anniversary.

"The concert vibe and aesthetic never left the piece; it became part of its DNA from the moment it began," Steinberg says.

Part of that vibe involves maintaining contact between musicians and cast. Unlike many other Broadway shows, the band is situated onstage and the actors are often found dancing on the bandstand or playing percussion. In addition, the cast moves about the house, inciting protest, asking for money, flirting, etc. "It's about people interacting with one another," Severson adds. "The fourth wall, forget it—there's no separation between audience and cast."

The Hirschfield Theater was chosen with



this in mind. It is built in such a way that the actors can get directly from the stage to the box seats and the balcony without leaving sight of the rest of the house. Also, the audience has access to the stage, where they are invited to dance with the cast at the end of the show.

Acme wanted a high-definition, high-powered system to generate the rock concert energy while preserving clarity of vocals and lyrics. To this end, the center cluster above the proscenium (covering front of house) comprises highpowered L-Acoustics ARCs and high-powered dV-DOSC, additional ARCs for band reinforcement and Meyer Sound CQ-1s. "All the supplemental systems are also capable of high SPL and high resolution," notes Steinberg. Rounding out the system are Meyer 600 HP subs (floor, rear balconies), L-Acoustics ARCs (proscenium, covering the upstairs audience) and Meyer MICA line array systems (middle of the theater). Hanging off to the sides of the balconies, filling the box seats and areas beyond them, are L-Acoustics MTD108s and MTD112s.

JF80 speakers are used as surrounds, filling in from the sides and rear. These are used for sound and special effects, as well as to sweeten the acoustic signature of the room electronically with reverb or delay. "Also, because some of the action takes place in and amongst the seating areas, we sometimes reinforce the signal from those speakers in a mix with the main sound system to envelop the audience in the sound of the vocals," Steinberg says.

Because of the show's loud rock sound, there is an entire subsystem of speakers pointed toward the cast and band as monitors, including Meyer UM-1s. But as stage space is limited, Acme also uses many smaller speakers, some built into the floor of the stage, some flown over-

> head and from the sides, and some distributed in and among the band.

> Every cast member has a DPA 4066 headworn boom mic with Sennheiser SK5012 and 5212 transmitters mated with Sennheiser EM3532 receivers. The mics are fairly small and lightweight, which Severson says helps withstand the intense choreography. It also frees the mics from interaction with hats, unlike head-worn lavalier mics. And because the vocals are sent back to the stage (a somewhat un

usual practice for Broadway), the headworn mics put themselves close to the sound source, decreasing the chances of feedback.

Un-Reinforcing 'South Pacific'

Uptown at Lincoln Center, audiences have been flocking to the Vivian Beaumont Theatre for the lavish revival of Rodgers and Hammerstein's classic South Pacific, complete with the show's original 32-piece orchestration. "[The production team] wanted to feature that and feature it in a way that harkened back to the old style of doing musicals, pre-reinforcement," says designer Scott Lehrer, who won the first Tony for the show's sound design in 2008. "Everybody wanted it to be a quieter, more intimate show than is typical on Broadway these days." Lehrer points out that today's audiences expect a sound that's far beyond what can be achieved without reinforcement. So the goal was to use available technology to make the audience perceive the sound as more natural than most Broadway shows.

One trick was in miking the orchestra. Lehrer and associate designer Leon Rothenberg used one set of microphones to close-mike the instruments—the typical Broadway procedure for the big production numbers. But they used a second set of area mics to get a more lush, natural sound on many of the other songs. Sometimes the two sets were mixed for various effects. For instance, in a highly dramatic moment during the overture, production mixer Marc Salzberg switches from the area mics to the close mics as the stage opens to reveal the orchestra to the audience, making the sound feel suddenly more present.

The area mics are mainly Sennheiser MTH8040s, similar to the Sheffield CM Series used for classical miking. The close mics include Royer 121s on the brass, Sennheiser MKH40 condensers on the reeds and Sennheiser MKH800s on the strings—"a medium-diaphragm, multipattern microphone with a beautiful sound," Lehrer describes.

Another of Lehrer's techniques is his extensive use of surround reverb. The Beaumont is a fairly dead house acoustically, so 15 years ago Lincoln Center installed the SIAP artificial reverberant system, with more than 100 speakers placed on the theater's ceiling and rear walls. Lehrer bypassed the SIAP system and wired the speakers to the 10 outputs from two Lexicon 960 reverbs in surround mode. "I was feeding somewhere around 85 speakers with two different surround room algorithms," Lehrer says. "It was a very rich sound."

The 1,100-seat Beaumont has a thrust stage rather than a proscenium, creating an added challenge with the delay systems as the actors are being tracked in more 3-D space. "There's literally hundreds of cues that mixer Marc Salzberg runs to change the delay times on the actors so that the audience perceives that the sound is coming out of their mouths as they move around the stage," Lehrer says. For delay and EQ, Lehrer uses Yamaha DME64s: "It has delay matrixes so you can delay every point of the matrix - every group can be delayed to every output. So a vocal group can get delayed separately to every speaker in the theater." On most shows, Lehrer uses two DMEs, but the number of speakers used in the show was so big that for the first time he used four DMEs. (Lehrer estimates that the average Broadway show has 50 or 60 speakers, but he's working with about double that number, including the SIAP speakers.)

The actors employ headworn DPA 4061 lavalier inicrophones with Sennheiser 5212 transmitters and 3532 receivers. "For the woman who played Nelly, because she has that famous song, 'Wash That Man Right Out of My Hair,' we had to get a water-resistant microphone," Lehrer describes. "Countryman makes a lavalier that is very water repellant. So we have two transmitters on her, both with Countryman lavaliers, which resist water much better than the DAP 4061s. At least one of them generally works when she comes out of the shower." Lehrer also double-mikes the character of Emile, an operatic baritone, with a second lavalier on his chest to capture the rich bass frequencies that the headworn mic misses.

Lehrer favors d&b audiotechnik C7 speakers, which comprise the center cluster. "These are my favorite speakers to use," Lehrer says. "They're incredibly neutral, beautiful-sounding speakers." He also chose d&b Q-Series amps for left/right and main delay systems.

A 'Wicked' System

Wicked, the early story of the Wicked Witch of the West from *The Wizard of Oz*, continues to be one of Broadway's most popular and longrunning shows, a best-seller since its opening in 2003. Fitting the size of its popularity, the show is in one of the largest theaters on Broadway, the 1,933-seat Gershwin. Designer Tony Meola has a lot of air to move, so he chose larger Meyer loudspeakers to reach the back of the house. He finds Meyer speakers and the Meyer SIM equalization system get him the most real and natural sound. "I'm known as the more



Wicked sees sound designer Tony Meola spec'ing a Meyer system and two Cadac analog boards.

natural sound designer of my peers," says Meola. "I believe that the strongest thing we do in the theater is live, and the more technology we put between the actor and the audience member, the farther away we get from what we do the best."

The P.A. is split into two systems, one for the vocals and another for the orchestra, as he has found that each group sounds better with different loudspeakers. Also, Meola wanted the instruments' sounds to come from the orchestra pit rather than over the proscenium, and the vocals to come from center stage where the actor stands rather than from left and right. "I blend the line arrays over them and the frontfills under them, and sometimes a little bit from left and right so that the image is more on the stage," Meola explains. For vocals, he hangs Meyer M1D line arrays at the center cluster, and places M2D split line arrays up and down stage left and -right for the orchestra. Meyer UPM1Ps and 2Ps are hung to provide fills under the balcony. There are additional UPM2Ps used as delay units for the vocals hung in the balcony. In the past, Meola would have used numerous Meyer UP-As or CQ-1 or 2 speakers to reach the back of the theater, but line arrays have a further reach, rendering the extra loudspeakers unnecessary. To EQ the system, he uses Meyer Galileos, and the Meyer RMS system to monitor the cabinets.

Meola uses two analog consoles for mixing—a 58-slot and a 32-slot Cadac J-Type. The console is highly flexible because the output modules are a VCA, a submaster above that, and a dual matrix. "The move into using VCAs is very easy the way it's cued," says Meola. "You can change aux send, pre, post, change EQ all with the push of a button. And the windows

World Radio History



that open and close are very user-friendly."

Meola uses the first Cadac console for the vocal mic, the computer control modules, 14 VCAs that change during the show and reverb returns. The second has mostly orchestra and sound effects. Drums and percussion are submixed on a Yamaha DM-1000.

The orchestra's monitors are mixed on a 56-input Yamaha DM2000. It's a big show, so many of the musicians, particularly those with electronic instruments, are using individual Aviom monitors that allow them to control their own mixes. The pit lacks space because there is scenery in it, so Meola has the percussionist and harpist miked remotely in two separate dressing rooms. (Also, it's very difficult to mike a harp without picking up everything else in the space.) "Very often, scenic designers take orchestra pit space as if it were stage space," Meola says. "You can weigh what's worth it and what's not. In the case of *Wicked*, it certainly helps the story."

And helping the story and its plotline—as well as its connection to the audience—are demanded to keep show running. Therefore, it's no easy feat what these sound engineers are able to accomplish—despite small theaters, demands from actors and directors, and competing with set space—using their own artistic creativity and technology provess to create compelling and exciting sound designs. **III**

Gaby Alter is a New York City-based writer.

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music

Rosanne Cash on The List: "We wanted to acknowledge the original and most definitive versions of the songs, and with respect to that, kind of let it go."

by Elianne Halbersberg

Rosanne Cash and John Leventhal

COUPLE PUTS NEW SPIN ON CLASSIC COUNTRY

John Leventhal makes no secret of his disdain for gear talk. It is, he says, "one of the least interesting things about the recording process." So uninteresting, in fact, that the above quote was pulled from a prepared statement that he issued to accompany press materials for his wife, Rosanne Cash's, new album, *The List*. That statement also includos a rundown of what Leventhal used to record the album. (For the curious: Steinberg Cubase, "with an assortment of mic pre's, compressors and microphones that I have gathered over the years," including a pair of Coles 4038s, a Neumann CMV563, an AKG C-60, a Gefell UMT-70, "an AKG dynamic mic from the '80s used on my Fender Vibrolux Reverb" and a Neumann U67, which is his standard for Cash's vocals.) So it seems almost fitting,

given this aversion to discussing gear, that the couple's 10-year-old son would walk in during Leventhal's interview to request use of his father's digital camera. "He also set up my iPod Nano," Leventhal confesses.

It's not so much that Leventhal is against gear; it's that he'd much rather discuss the organic side of recordmaking: the songs and the sounds. "I think whatever gift I have as a pro-



John Leventhal focuses on his musical gifts rather than technology.

ducer is that, first and foremost, I'm fairly musical," he says. "My main instruments are guitar and bass, and I appreciate the language of most instruments, and the languages and genres of a lot of music. I'm still passionate about it and moved by music like I was when I was 12. At the same time, I have taken the time to understand what it is about music that moves me: voices, arrangements, harmonies, melodies. compressed, I just hear it the way I hear it. First and foremost, it's music and not technology for me, and that's why the whole thing of gear... People tend to fetishize gear and obsess about it, and at the same time we all know that it has nothing to do with gear, with this mic pre, that plug-in, that compressor. It has nothing to do with that."

"It wasn't a grand

intellectual enterprise, but I thought about it,

processed it and inter-

nalized it, and I bring that to my productions.

I want to be moved by

the music at the end of

the day, and I'm look-

ing for how to feel

moved and for the attist to be moved. More

than wrestling every

bit and binary code to

have them all lined up,

in the box and over-

Leventhal *does* know his way around a studio, of course, and for a number of years he's done much of his work at New York Noise. This studio was formerly on Gansevoort Street in the trendy meatpacking district, but since *The List* was completed, it has relocated uptown a ways on West 20th Street.

For The List, Leventhal's main studio foil was once again New York Noise co-owner and creative director Rick DiPofi, who coproduced, co-engineered and contributed a few musical parts-horns, piano and bass clarinet. In its Gansevoort incarnation, New York Noise was a homey single-room (i.e., no separate control room) facility with a great, warm vibe and lots of vintage and modern gear-everything from a Neve 8816 summing mixer to LA-2As and Distressors. (The new New York Noise has a dedicated control room for the first time, but retains a homey atmosphere.) As usual, Leventhal played all manner of guitars, basses, mandolin, keyboards (ranging from Wurlitzer piano to a harmonium), harmonica and even some drums. There were other musicians involved, too, including upright bassists Tim Luntzel and Zev Katz, drummers Shawn Pelton and Joe Bonadio, fiddlers Larry Campbell and Jenny



Scheinman, string players The Mels and various backing singers. Some tracks featured a small group laying down a basic track live, while others were constructed around Cash/ Leventhal duets.

Leventhal says he went into *The List*— 12 songs selected from a list of "100 Essential Country Songs" as presented to Cash by her father when she was 18—with three objectives: to focus on Cash as a singer vs. the usual emphasis on her songwriting; to bring a "first-time" listening experience to traditional songs; and to do these things via simple production.

"I think I succeeded with those goals," he says. "Rosanne sounds phenomenal. I had been thinking about doing this record for a while. A lot of her identity is wrapped up in her songwriting, as it should be, but she has never embraced the spotlight as a singer, and it's a different framework for her. I also feel that my other strength is as an arranger, and I think I've done a decent job making songs that have been covered extensively sound fresh."

Leventhal and Cash agree that he had to "push" her to try certain songs, not so much because of the arrangements, but because of their classic status. "She's Got You' intimidated me because Patsy Cline's voice is so lconic and in my ear," says Cash. "At the beginning, I thought, 'I can't do this,' and I set myself up, but John kept pushing. It was like we had to denude ourselves of these versions and figure out why they are great songs. 'Girl From North Country'—my dad and Bob Dylan's version is such a part of my formative life, and I said, 'I can't; it's almost sacrilegious.' So John said, 'Go to Bob's original version and approach it from there.'

"We wanted to acknowledge the original and most definitive versions of the songs, and with respect to that kind of let it go," she continues. "There's no need to rewrite these songs, so we were respectful of melody and form, why they were on the list and what I could bring to them as a singer. A great song deserves many interpretations. For example, the sultry undertow and twist that John put into 'Take These Chains' brought urbanity to it. I'm honored to stand alongside Ray Charles' version, although 92 percent of people will prefer his and eight percent will say, 'Oh, she did a nice job!'"

Four of the tracks—"Sea of Heartbreak," "Heartaches by the Number," "Long Black Veil" and "Silver Wings"—feature guest vocalists Bruce Springsteen, Elvis Costello, Jeff Tweedy and Rufus Wainwright, respectively. Costello's track was recorded in the studio— "He's a good friend and lives around the corner," says Cash. The other three were done via Internet files, something Leventhal had dealt with on occasion, but never to the extent involved in making *The List*.

The irony of using the latest technology to record songs that date back as far as the 1920s is hard to miss, but Leventhal says it wasn't even a thought. "I wasn't trying to make the record sound like 'old classics,'" he says. "But if it's perceived as having that dimension, I would love that because it's how my mind works. I have a deep love of so many genres of music, and nothing makes me happier than listening to two hours of George Jones. But I'm not interested in doing a stylized homage to any of it, and I don't like when people do it because you can never re-create an old classic. So the fun part is how to re-imagine them in a respectful way of the old tradition without trying to reconstruct it. Sometimes it's as specific as how to do a Merle Haggard song like a Jimmy Webb song;





sometimes it's just to jar yourself out of predictability, and with 'Silver Wings' it worked. Or to take 'Miss the Mississippi and You' and make it swing, or a Hank Cochran song like 'She's Got You' and ignore the chord changes for half a verse. I have lots of tricks and pathways. That was the challenge and fun, and for it to still have that sense of timelessness to it would be great. "Hand in hand with that, I don't let technology take over," Leventhal continues. "I use a little compression and a little reverb, like they had when the record was made. I'm not trying to capture the old sound, just that old spirit, and again it comes down to Rosanne's vocal performance."

The last time Cash and Leventhal spoke to *Mix* (June 2003, regarding the album *Rules of Travel*), Cash had just been through a series of career and personal ups and downs. Six years later, much has changed but again there has been adversity, including her 2007 brain surgery and, between 2003 and 2005, the loss of

her parents (Johnny Cash and Vivian Liberto) and stepmother (June Carter Cash). Cash explored loss and grief on her last album, *Black Cadillac*, and decided to step away from those themes with *The List*. The new album, however, still retains a certain sadness.

"I think that's definitive of those songs," she says. "There's not a whole lot of happy ones. From Delta blues to Appalachian music, it's all fraught with melancholy, and that's why country music plays such a great service. We can relate it to our own lives, into our art and music, and it can be helpful to us. I see no upside to avoiding the sadness of these songs. 'Motherless Children' is the most painful song and also a period piece, so approaching it was like stepping into a time and place that don't exist anymore. A lot of them are period pieces, even 'She's Got You'—the list of things, class rings, records—are dated to a period in time, and I loved mirroring that content in the context of a list."

Lists are a connecting thread on the album: the list of songs her father gave her, the list of songs that made the album, the list that every family has and how that list becomes its legacy. "That opens a question," she says. "What is important enough to pass on to our children? Do I save this list and pass it on to my children or make my own list? What is my list? My albums? They're the list I made without knowing I was making a list. We devalue those lists but they are important. It's who we are." **III**



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ĖAN TAKE





Traveling Light A MEDITERRANEAN RECORDING ADVENTURE

By Jeff Wolpert

It all started with an innocent enough question. A call came from the office of Loreena McKennitt, the golden-voiced purveyor of Celtic-based world music. Would I be interested in tagging along on a tour of the Mediterranean and recording several live concerts? Loreena and I go way back to her earliest recordings, so it was no surprise to learn that she was pursuing her interest in the origins of the Celts with a tour through the Mediterranean region. We had already been to France (*Live in Paris and Toronto*, 1999) and Spain (*Nights From the Alhambra*, 2006). The Mediterranean was the next logical step *backward* along one of the paths the music had taken to get to Ireland and the UK.

For this project, I was asked to record six shows. Transportation was via commercial airline so could I please keep the equipment weight down. "Sure," I said. "Looks like a blast." I did a quick inventory of what I would need for a 48-track recording and came up with roughly just 100 kilos (about 220 pounds) of gear. At this point, the tour manager, the experienced and unflappable Roger Searle, informed me that I could have a maximum of 100 pounds spread across two cases of no more than 50 pounds each. Otherwise, the extra baggage charges would be excessive. So let's see: I had to put together a recording package including 48 mic preamps, a 48-track recorder, 2-track recorder, ambience and additional stage mics, word clock generation and distribution, power distribution and all internal cabling into two cases that didn't weigh more than 50 pounds each, including the cases. Man, one of my road cases weighs more than 50 pounds empty! We were scheduled for nine flights in 11 days!

I put together my inventory by function, quality and weight. There were several ways to go, but availability was a big factor. PreSonus provided six DigiMax D8 8-channel pre's with ADAT digital outputs. I chose the ADAT Lightpipe interface because the optical cables used to connect them to the recorder are very light. Tascam provided an X-48 48-channel recorder with ADAT interface. The latest operating system saves your data every eight seconds, so if the power goes out, you're in pretty good shape. All the equipment was provided through Long & McQuade Musical Instruments in Toronto. I added to this a Rosendahl NanoSync master clock. I also needed to record live stereo mixes of the concerts. The X-48 recorder comes with a built-in software mixer that can be routed out a separate S/PDIF output on an RCA connector. I used an M-Audio MicroTrack II mobile recorder connected via the S/PDIF input, and also used the unit's headphone output to monitor the recording. I added eight mics I thought would be useful-including a couple of shotgunsheadphones and all the AC, word clock, Lightpipe and S/PDIF cables I would need. For disk drives I used a LaCie 2big Quadra RAID array running in safe (RAID 1) mode. This makes a copy of the files to a second drive simultaneously with the original recording. You never know when the power will be cut after a show, and having a backup of the data is crucial. And speaking of power, although 1 specified 110 VAC at each venue, I brought along socket adapters for all countries. Anyway, add up the weights of all this stuff, divide by two and I still had 13 pounds left over for each case.

I found a couple of not-too-expensive hardshell suitcases with the dimensions of 26x19x11 inches. I lined them with one-and-a-half-inch closed-cell plank foam like the kind used in road cases and cut it to accommodate the gear. I could fit everything but the disk drives, which I put in my carry-on luggage. Then came the moment of truth. The first suitcase weighed in at 50.2 pounds and the second 50.4. Close enough!

The shows were an adventure in themselves, of course. When we arrived in Byblos, Lebanon, the temperature at the historic seaside fort where the gig was scheduled was 100 degrees with absolutely no shade. The rider requested tents, but there were none on site. Out came my gear, looking still intact. I found and tested for 110 VAC, set up and turned on. Everything worked-until everything started to overheat from the blazing sun. Why do they make equipment black? I borrowed a reflective camping blanket, and using a couple of mic stands and some gaffer's tape, I constructed a passable tent and was back up and running. We line checked, then the band arrived and we soundchecked. When Loreena arrived, there was an hour-long rehearsal that I recorded. During the dinner break, I set up a mix using the X-48 software.

The sun went down and the show went on. Everything worked, and after a couple of encores the house lights came up and it was a mad dash to pack up and leave. Remarkably, everything fit back into the cases, and in an hour we were back in the van and driving back to the hotel. We arrived at about 2 a.m., but with a 3 a.m. lobby call there was only enough time to grab a shower and change before it was off to the Beirut airport where I was hit by a \$400 overweight baggage fee because the airline's standard was lower! Oh, well. Live and learn. Getting good recordings was the important part. Then it was on to Hungary...

The album Wolpert recorded, From Istanbul to Athens, is part of the two-disc set A Mediterranean Odyssy, due out October 20. For more of Wolpert's adventures on this tour, go to mixonline.com. III **OCCUPYER OF THE STUDIOS** Nominated for The 2009 Outstanding Creative Achievement Award by MIX Foundation







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CLASSIC TRACKS



Patti Smith

By Blair Jackson

It's one of the most haunting openings of any debut album. Soft, almost mournful piano and bass set up a slow rhythmic foundation. Then a woman's voice sings/speaks:

Jesus died for somebody's sins, but not mine meltin' in a pot of thieves, wild card up my sleeve thick heart of stone my sins my own they belong to me, me...

The rhythm picks up, guitars fall in and the singer continues with her narrative, which she intones, slurs, hiccups and rasps in almost equal measure. Musically, it's clearly based on Van Morrison/Them's "Gloria," but it's been turned upside down and stretched out, and that song didn't have anything about "a sweet young thing humpin' on the parking meter/ Leanin' on the parking meter." The song accelerates some more, and the excitement of the prospective encounter becomes palpable, and this time it *is* a variation on Morrison's original, as the singer's would-be conquest is "Comin' through my door...Crawlin' up my stair...Waltzin' through the hall...Knockin' on my door... " The spark of the first passion is there, "She whispers to me and I take the big plunge..." and the guitars are galloping now toward the inevitable chorus: "And her name is, and her name is...G-L-O-R-I-i-i-i-i-i-G-L-O-R-I-A Glooooo-ria..." Whew, this rock chestnut has never sounded like *this*—and it's only halfway done.

In retrospect, it's difficult to remember the impact that Patti Smith's first album, *Horses*, had upon its release in the fall of 1975. Unless you were actually living in New York at the time and knew about the fresh, young bands that were playing in dives like CBGBs and Max's Kansas City—idiosyncratic groups like The Ramones, Talking Heads, Television and Blondie, none of whom had released debut albums yet—chances are you hadn't heard anything remotely like it. Sure, there were glimpses of the "new wave" to come in late-'60s bands such as the Velvet Underground and The Stooges, and flashes in some of the rock 'n' roll churned out in the early '70s by David Bowie, the New York Dolls, Lou Reed and others. But no one had quite put together the combination of elements that Smith and her band did: freewheeling poetry, nods to '50s and early '60s rock, vocals that could sound tossed off and insistent in the same *line*, slashing power chords, a bit of reggae. It was quite an assault, all unified by Smith's unique vision.

She grew up in a working-class town in southern New Jersey, and like so many people who become great artists, she never quite fit in with her peers. Growing up she loved black music, and in the mid-'60s she fell hard for the Rolling Stones after seeing them on The Ed Sullivan Show. Her mother bought her a couple of Dylan albums and that opened her eyes in other ways. The music and poetry of Jim Morrison and The Doors affected her deeply, as did the work of French visionary poet Arthur Rimbaud. In 1967, she left New Jersey for New York, gravitating around the art scene at Brooklyn's Pratt Institute. There, she met an artist named Robert Mapplethorpe (who, much later, would become renowned for his homoerotic photography), and it was he whom she credits with encouraging her to explore her interest in drawing and writing poetry.

After spending some time with her sister in Paris, she returned home to New Jersey briefly but then moved into Manhattan's famous Chelsea Hotel with Mapplethorpe. In those days, the Chelsea was an incredible energy center for artists of every stripe-Janis Joplin lived there (when she was in New York) and befriended Smith, as did Beat icon William Burroughs, Dylan's buddy Bob Neuwirth, playwright Sam Shepherd and various members of Andy Warhol's scene. To earn some bread, she worked in a bookstore, and also became a rock journalist for a spell-writing for Rock magazine, Crawdaddy and other outlets. She befriended rock critic Lenny Kaye, and when she started doing poetry readings in the early '70s, Kaye frequently accompanied her on guitar.

Within a couple of years, encouraged by friends, Smith started singing and then

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formed a band based around Kaye. Kaye and Mapplethorpe produced her first independent single in 1974: "Piss Factory," a poetic ramble about her time working in a factory as a teenager, backed with "Hey Joe," which combined the oft-covered rock song (popularized by Hendrix) with thoughts about the thencurrent story of heiress Patty Hearst's kidnapping by the Symbionese Liberation Army. As Smith's following grew and she started receiving glowing notices in the New York press, she was courted by a few labels, and in the spring of 1975 she signed with Clive Davis' Arista Records. Shortly after that, she entered Electric Lady Studios in Greenwich Village to cut her first album with producer John Cale, an Englishman who had been an original member of the Velvet Underground, put out a few albums of his own and also produced albums for The Stooges and former VU chanteuse Nico.

"In my mind, I picked [Cale] because his records sounded good," Smith told *Rolling Stone* in a 1975 interview. "But I hired the wrong guy. All I was really looking for was a technical person. Instead, I got a total maniac artist. I went Ladyland was not recorded there—it was cut at the Record Plant—and, in fact, Hendrix only got in a couple of months of recording at Electric Lady, which opened in the summer of 1970, before his death.) Engineer Bernie Kirsch, who started at Electric Lady as an assistant in 1971, got the assignment to work on Smith's *Horses*. Kirsch says that he had heard of Cale back in 1975, but not Smith; still, the singer immediately impressed him.

"She was always *very* professional," Kirsch remembers. "She had a particular point of view as an artist and she was very concerned about making the kind of art she envisioned. There was not a lot of compromise in that area. And from what I could see, the record company let her do what she wanted."

The sessions for Smith's *Horses* stretched over a couple of weeks in Studio A during the late summer of '75: "We would start late at night and work into the morning hours," Kirsch recalls. "It may have just been 'musician's hours,' and that's what they wanted, but also the studio was divided into slots with a day slot and an evening slot, so it may have simply been that."

It was unusual to have a singer improvise with lyrics in those days. *—Bernie Kirsch*

to pick out an expensive watercolor painting and instead I got a mirror. It was really like *A Season in Hell* for both of us. But inspiration doesn't always have to be somebody sending a dozen American Beauty roses. There's a lotta inspiration going on between the murderer and the victim. And he had me so nuts I ended up doing this nine-minute cut ["Birdland"] that transcended anything I ever did before."

Electric Lady was a large basement space, which had been a country and western club for 30 years, and also briefly a rock venue called Generation Club before Jimi Hendrix bought the building in 1968, intending to operate it as his own club. Instead, he was convinced by his engineer, Eddie Kramer, to turn it into a recording studio—this became the first project designed by fresh-out-of-college John Storyk. (Contrary to popular myth, Hendrix's *Electric*



Both control rooms were equipped with Datamix consoles—part of Kramer's legacy, as he'd used them extensively at the Record Plant before Electric Lady was built.

"You don't hear much about them anymore, but they were great-sounding consoles," Kirsch says. "Simple, very nice EQs." Monitors were Altec 604s, and at the time *Horses* was cut, the tape machine was an MCI 16-track. (Kirsch says that 24-track heads for the MCIs came in right after *Horses*—his first 24-track project there was Chick Corea's *The Leprechaun*, which began Kirsch's lifelong association with the jazz piano great.)

Kirsch notes of Studio A's tracking space, "The live room was divided into soft-surface and hard-surface areas—a hard floor on one side of the room and a carpeted area on the other. The side where the hard surface was had a white material on the wall that was like a carpet. Then there were lights above that threw color on that wall. At one end there was a drum area that had built-in baffles in front about chest-high that you could see over when you were playing, but nothing above it; it was open to the ceiling, which was relatively tall—maybe 18 feet or so. There was also a grand piano my recollection is that it was a Yamaha."

Playing that Yamaha was Richard Sohl. The rest of the band comprised Jay Dee Daugherty on drums; Lenny Kaye on guitar (and some bass); and Ivan Krall on bass, guitar and keyboards. Allen Lanier added some guitar and keys, Tom Verlaine added more guitar, and producer Cale some bass.

Kirsch believes he miked the piano with either a pair of Neumann U86s, or one 86 and one 87. "On the drums we probably had an Electro-Voice 666 on the bass drum, a [Shure] 57 on the snare and 87s overhead. I may have used ribbon mics—Beyer M160s—as overheads; I don't recall. Guitars were 87s on the amp; we had a [Sennheiser] 421 on the bass speaker, plus a direct. For Patti's vocal I used an 87." Reverb came from the studio's EMT 140 stereo plates.

The tracks were cut, Kirsch says, "all totally live, with Patti in a booth, but everybody else in the room. The band was a live group; they were playing in the clubs and they had the songs down, so when they went in the studio it was mostly a matter of picking which performance was best. There were not a lot of fixes I can recall—maybe a few fixes on the vocals from different takes where she'd improvise or do different poetry things. It was unusual to have a singer improvise with lyrics in those days." (One track, the epic "Land," featured some studio machinations—multiple Smith vocals overlapping and playing with/ against each other.)

As Smith revealed in interviews when the album came out, Cale was an intense presence in the studio, and Kirsch notes today, "I'm not sure what occurred, but he didn't complete the project. If I recall, he wasn't there for most of the mixing. I don't know what the politics were—it wasn't in my domain. So I basically took over and did the mix with Patti. I think we mixed it in both Studio A and Studio B."

Horses didn't produce any "hits" per se, but both "Gloria" and "Free Money" got significant airplay on college and other progressive radio stations, and by the time the punk/ new-wave floodgates really opened up during '76 and '77, the entire album was regarded as a classic progenitor of the movement. **III**



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By Carolyn Maniaci

Kenny Chesney

When you're the reigning Academy of Country Music Entertainer of the Year, it's only natural that you'll be selling out stadium shows. And while this touring success is a great boon for the artist, and the industry in general, getting a great amplified sound out of a venue that was originally designed for sporting events can be a chore for the sound crew. But Kenny Chesney's crew—which comprises front-ofhouse engineer Bryan Vasquez, vocal monitor engineer Phil Robinson, band monitor engineer Bryan "Opie" Baxley and systems engineer Matt Naylor—are up to the challenge. drawing on their longtime experience working with this artist.

Vasquez and Robinson admit that they wouldn't be inclined to go hear a show at a stadium. Vasquez explains. "Since football stadiums are built for sporting events, they're designed to amplify the crowd noise [from the stands]



From left: sustems engineer Matt Naulor, front-of-house engineer Bryan Vasquez and vocal monitor enginer Phil Robinson.

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and project it down to the field. When you get a loud band and a loud P.A. setup in the middle of that, the sound gets focused right back down onto the field." But would this crew rather be playing only sheds instead of mixing it up with the stadium gigs? No, says Vasquez, "That would be boring!"

As the tour is self-contained, carrying everything they need and renting only some rigging when shows are too close to allow time for road transport, the crew is fully equipped to meet the acoustical challenges inherent in stadiums. They rig up Electro-Voice X-Line speakers for the mains and XLCs for sidefills, and Dynacord VL262s frontfills, all powered by Electro-Voice amps.

Systems engineer Naylor starts his day measuring the room, using range-finding binoculars to gauge the depth and height of the fills. He then runs that data through Electro-Voice's LAPS (Line Array Prediction Software) to set the angles and curve of the arrays. "With stadiums, it's basically a flat, tight pack

for a long throw," Naylor explains. The next step is employing Smaart to set the delays between the arrays, working with five different zones: the mains, 240-watt sides, 270W sides, front-fills and subs.

With the P.A. in place, Naylor receives a stereo matrix from FOLI that he then customizes for each array. He sends a stereo mix to the frontfills, while he sums the mix to mono for the sidefills. The center fill is a heavy vocal mix with just a bit of the band beneath it, aimed to balance the band's stage sound hitting the area right in front of the stage.

In the FOH booth, Vasquez mans a Midas XL8 and does not require outboard gear. The only rack he sets up contains a hard disk recorder and a CD player. They don't track every show in its entirety, but Chesney advises him to be ready to hit Record if something interesting comes up. Vasquez says, "Sometimes Kenny will stray off the set list and do what we call a 'kegin-the-closet set.' That's where he'll do a bunch of cover tunes and they could pull anything out. I'm always set up to record in case something special happens, guest stars might show upthere's no tellin'!" Robinson adds, "We've got a good idea what song we're starting with, and from that point on it could be anything."

Up onstage, most of the mics are from Audio-Technica, which has an endorsement deal with Chesney. "They're generous with their endorsement," says Robinson. "They give us what-

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ever we need, and if they don't have something that fits the bill, we can use whatever else we want." For vocals, Chesney sings through the Audio-Technica Artist Elite Series 5400; backing vocals are mostly Audio-Technica models and a couple of Shure Beta 58s. All the instrument wireless and drum miking are Audio-Technica: the dual-element AE2500 (kick), ATM 650 (snares), AE3000s (toms) and AT4050s (overheads).

"[The] Audio-Technicas worked out well," Robinson continues. "They've been super-cool with helping us design stuff, helping us build things that don't exist yet, even design capsules that sound better. And wireless transmitters we wanted to use one receiver with multiple packs, and they helped us design a system where you just hit a button, and it changes the frequency inside the receiver, so we have guitars A, B and C on buttons on the receiver."

The show includes a four-man horn section (saxophonist Jim Horn, trombonist Chris Dunn, and trumpeters Steve Herman and Scott Dukaj), all using Audio-Technica's AT-M350cW clip-on high-SPI. mics. As the horns are on- and offstage several times during the show, their wireless packs have a built-in Mute switch.

In addition to drums, Sean Paddock also plays a cajone. Miking the instrument turned into an experiment in placement, but Vasquez eventually found a spot for an Audio-Technica 4055 to pick up the low end where it wouldn't get too much of the slap from the top. A \$hure SM57 delivers the high end. Percussionist Drummy 7eb plays behind a Plexiglas screen to shield his sound. Vasquez mikes the percussion with Electro-Voice 468s and Shure KSM 27s and SM57s.

Fiddle player Nick Hoffman runs his Zeta electric fiddle direct through an Avalon U5 preamp into a Fishman Aura Acoustic Imaging Blender to replicate a miked acoustic sound. It is then routed through TC Electronic's G-Major for effects processing, adding chorus and some reverb before sending out a stereo signal.

Welcome to Stage-Left

Behind the scenes, both Robinson and Baxley work on Midas Pro 6 consoles. Setting up Chesney's vocal mix, Robinson dials up his vocal most prominently. with reverb, and backing vocals slightly under him. He prefers the band at only about half his level. Robinson is mainly cueing instrument solos that Chesney needs, pushing them at the right time and the right amount not to block his vocal. He cups the mic, putting his hand around the diaphragm, and the engineer has to tell Chesney not to do it without "pissing him off. Sometimes he listens, sometimes he decides not to listen," Robinson says.

The band's monitoring is all but invisible. All except the horn players wear Sennheiser inear monitors. Robinson explains, "When horn players play, they're vibrating their lips and their heads, so when [the sound] gets back to their ears, it's out of phase. I haven't met a horn player yet that uses ears." So the horn section has wedges, and the only other wedges onstage are one for the drummer and one for the bass player's sub. After some debate, the crew has decided to forego using monitor sidefills because, while they may cure some problems, they just cause others. They have the potential to create the need for more wedges to boost each player's own mix, as well as a long list of cues for the engineers to manage. Of course, in-ears can create some challenges, too. For example, Chesney sometimes will pull out an earphone so he can hear the crowd. "He'll have the mic right beside it," Robinson says. "so he'll get the really high-end feedback that you can barely hear, that makes your eyeballs hurt. He can't



live kenny chesney



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Nonetheless, getting tied up with a lot of speakers onstage complicates things both from an engineering standpoint and aesthetically. Chesney is adamant about having an uncluttered, clean look onstage, so the ultimate solution has been to keep things in the in-ear realm as much as possible.

When you go to a Chesney concert. don't bother watching the stage when showtime arrives. Kenny gets lifted up from the FOH booth on a sort of trapeze chair, performing his first



number as he dangles above the heads and reaching hands of his faithful followers. During his airborne approach to the stage, he's far enough from the P.A. that it's out of time with his in-ears. "We couldn't get his monitor loud enough to cover the P.A. and the crowd noise," Robinson explains, "so we took this blinking light, which converts a click track to a flashing light, so he can find the downbeat and know he's in sync with the band." This clever workaround was so successful that Chesney now uses it throughout the set whenever he comes out onto the catwalk. "Bryan will keep moving it around so Kenny can see it from wherever he is. We've got a nine-dollar 'blinky light' taking care of a million-dollar show."

Carolyn Maniaci (nee Engelmann), formerly an assistant editor for EM magazine, is now based in Chicago.





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SOUNDCHECK

It Was Only 40 Years Ago

Celebrating its 40th anniversary, the 1969 Woodstock Music and Art Fair would have sounded a lot different if it weren't for sound engineer Bill Hanley, who designed and ran the sound system for the three-day festival. At last year's AES convention, Hanley described his sound system design. With this month's AES show and the anniversary of the music festival, we thought it would be fun to take a peek through the way-back machine. Information courtesy www.billhanley.org.

-Sarah Benzuly

"We built our front-of-house mixing station on a platform about 75 feet from the stage so we could see the stage and hear the mix through the stage-left lower speaker cluster. On the stage, we used custom microphones I had built from Shure factory parts. They closely resembled what Shure Brothers would soon sell as the popular

live



Shure SM58, the most noticeable difference being that mine had a brushed-chrome finish like the older Shure 'bird cage' mics.

"Under the stage we had our McIntosh amplifiers, both transistorized and tube models. Transistors were new and a bit risky, but we needed all the power we could get.

"In a nearby trailer, we had two 8-track Scully recorders catching the show. Those are the tapes everyone knows through the album and for Martin Scorcsesc's Wondstock movie, which was nominated for an Academy Award.

"Because most of the audience would be perched high on the hill, I decided to build two speaker towers, each with two levels of speaker clusters: one hill, and one much lower for the near audience. "This geometry sent the

high, about 70 feet to reach

the middle and top of the



music directly to everyone's ears without causing any backslap because all the grass and soil...and the bodies of half-a-million fans would absorb the sound, climinating the unwanted resonances and reflections that we have to deal with indoors."

tour log

Naturally 7

Seven-part R&B vocalists Naturally 7 is out on the road supporting *Wall* of *Sound*. *Mix* caught up with tour manager/front-ofhouse engineer Andrew Lefkowits.

What gear are you carrying?

We're picking up stacks and racks, so I'm only traveling with mics, in-ears, my Pro Tools LE rig, a Boss RC-20 loop pedal with a wired Sennheiser 935 and a Boss OC-2 pedal.





What are you mixing on?

I'm picking up the Digidesign Profile and mixing entirely "in the box." Slowly but surely, I've replaced all my outboard stuff with plugins I really love the Sonnox stuff –Inflator and Trans-Mod are killer on my beat-boxer. The guys do lots of instrumental imitation. I supplement that with some plugs like Voce Spin, Amplitube and Recti-fi.

What is key in your mix?

The bass and drums. The act is seven vocalists, so without good vocal drum and bass sounds it doesn't really feel like a band. I've got an octave pedal for the bass that fills out the spectrum down low. With vocal fundamentals running from 100 to 450 Hz, there is no shortage of those frequencies. Also, knowing the arrangements is crucial. I have guys going from lead vocal to part of a trio singing an organ pad to singing lead guitar lines. I've got to route him to the right plug-ins at the right moment.

When you're not on the road, where can we find you?

San Francisco is home---I just wish I had more time to enjoy it.

fix it Engineer Scott Bishop on Using Soundcraft Vi6 Console for Numerous Festivals



Four monitor mixes are mixed from FOH with up to six extra zones, three analog external effects units (for a visiting dub band), with eight record output groups, talk-to-stage and shout boxes between me and the stage. I use a 30-channel festival patch that covers a diversity of acts—from singer/songwriters to African drumming bands to 10-piece funk bands. With 32 output buses with parametric and graphic EQ on each one, I have an endless ability to zone different areas, set delay times, assign record groups and monitor sends. The two stages of EQ allow for a much more precise and musical approach to monitor and FOH mix EQ. All processing is available on every channel and bus at all times.

Nexo Celebrates 30 Years

In addition to marking its 30th year in the pro-audio market, NEXO (nexosa.com) also celebrated its first year of transition to becoming a wholly owned subsidiary of Yamaha Corporation Japan.

Since opening its doors in 1979 by Eric Vincenot and Michael Johnson, NEXO has been spec'd in both the touring and install markets, including its first install (1984) at the Maison de la Culture in Grenoble in southern France. In the live performance area, NEXO has been a name on riders since the debut of the TS system in 1991, and subsequent introductions of the Alpha line (1996) and GEO Series (2001).

In 2007, after 27 years at its original Roissy location, the company moved into new headquarters, a wholly owned campus capable of housing the

entire manufacturing resource, located 30 minutes north of Paris. The new site allows Yamaha and NEXO to implement an automated production line that reduces overall manufacturing time.





line array has been spec'd for numerous system installs, Left: The sidewall of the RS (Ray Sub) Series RS 15 bass cabinet (where the rigging systom is attached).

load in



Nobert Randolph & The Family Rand FOH engineer Sean Quackenbush uses Auratex GRAMMA isolation risers to decouple the guitar and bass amps from the stage.

A total of five DiGiCo boards are in use on the Aerosmith/ZZ Top tour: SD7 (Aerosmith FOH Jim Ebdon), CS-D5s (Aerosmith in-ear mixes by Brad Johnson and Tony Luna) and two SD8s (ZZ Top FOH engineer Toby Francis and monitor engineer Jake Mann). Tour production is provided by PRG (Aerosmith) and Clair Global (ZZ Top)...The Minnetonka, Minn., Performing Arts Center's facelift includes a new NEXO GEO S8 system in a L/C/R/ sub configuration, courtesy Electronic Design Company...A new concert hall at Dresden University of Music (Germany) features a Studer Vista 8 used with a D21m I/O system...Miami-based systems integration firm Multi Image Group has purchased 10 Crown I-Tech HD amps.

AES 2009 Live Sound Events



Here's a selection of SR panels that will be taking place during AES (October 9 to 12, 2009, in New York City). For a full list, visit aes.org.

- AES Education Committee Vice Chair John Krivit will present "The Greening of the Band: Green Touring Solutions for the Live Engineer." A panel of experts, advocates and artists will discuss ways to reduce a tour's carbon footprint.
- "White Spaces & TVBD Update," presented by Chris Lyons, Joe Ciaudelli and Edger Reihl, will address the impact of the DTV conversion and related FCC decisions. A session on comprehensive wireless applications will follow.
- James Stoffo will oversee "Practical Advice for Wireless System Users." This panel will address the elements of successful component selection, designing systems and setting them up to minimize potential interference and maximize performance.
- Mary McGregor, chairing "Microphone Dressing," will provide hands-on demonstrations of basic techniques and share some time-tested "tricks of the trade."
- In "State of the Art Loudspeaker Design for Love Sound," Tom Young will clarify the capabilities of modern-day loudspeakers/systems and consider where they need to go.

• For "Microphone Selection and Techniques for Live Sound," Dean Giavaras and a panel of experts from mic manufacturers and sound reinforcement providers will discuss tips and tricks for getting the job done at the start of the signal path.



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Photos & Text by Steve Jennings

OH engineer ohn Kerns

World Radio History

To the delight of No Doubt fans worldwide, the band has returned to the stage after a half-decade hiatus. Running through their hits from Rock Steady and Tragic Kingdom, as well as some Bside material, the band (lead singer Gwen Stefani, drummer Adrian Young, guitarist Tom Dumont and bassist McNair (keyboard, programming, horns) and Stephen Bradley (keys, horn)-are winding their way through the U.S. Mix caught up with the tour in late July at the Sleep Train Amphitheater in Wheatland, Calif.

:: ve

Front-of-house engineer John Kerns is mixing on a Digidesign Show Profile, spec'ing it because of its audio quality, flexibility, reliability and size. "For plug-ins," he adds, "I use [models from] McDSP, Crane Song, TC Electronic and TL Labs' Space. The only outboard pieces that I use are a Buzz

> The Sound Image-supplied P.A. for arena dates comprises three hangs of 4889 per side (60 boxes total) and 16 4880 subs (eight per side, flown). When the group performs in sheds, the P.A. is two hangs of 4889 per side (54 boxes total) and 16 4880 subs (eight per side, flown). Additionally, there are four 4880 subs stacked per side and eight Sound Image Powerlines for front-fills.

Audio SOC compressor, a Distressor and a Metric Halo ULN-8."





According to Matt Young (right), drum tech for Adrian Young, the kit is miked with Audix D6 (kick 1), AKG 518 (rack, floor tom), Sennheiser 901 (kick 2), Shure SM57



Amps for Tony Kanal's custom Yamaha basses include Gallien Krueger 800RB heads into two Ampeg 8x10 SVT cabs miked with a Sennheiser 421. Bass tech David Bernson (above) says they substituted one of the 800RBs with the new GK Fusion Egn.



(snare top, timbale) and Beta 56A (Remo RotoTom), and Audio-Technica AE3000 (snare bottom), AE450 (hi-hat) and 4050 (overhead L/R). Drum electronics take Countryman DIs.

Tum Dumunt's Hamer guitars are amped by Divided By 13 models miked with an Audio-Technica 4047 and 4050. "For rack gear, we use Eventide Mod Factor, Time Factor and Tone Freak," says guitar tech Donnie Spada (below). "He also has a GCX audio switcher with a ground control pro pedal board with an A-T wireless system. The effects rack was built by David Friedman at Rack Systems."





Eric "TBC" Harris—keyboard tech for Gabe McNair (stage-left, also programmer) and Stephen Bradley (stage-right)—says that McNair uses a Moog Little Phatty that runs through a Line 6 M13 Stompbox Modeler pedal for effects and "sometimes uses it to record real-time loops with its Looper feature. His other keyboard is [Apple Logic Studio's] MainStage hooked up to an M-Audio Pro Keys 88 controller." McNair uses virtual synths such as the Arturia Jupiter-8V and GForce Software's M-Tron. To control his effects, he uses a Korg nanoKONTROL. "We split the MIDI signal with a MIDI Solutions Thru Box," Harris adds. "The MIDI from the keyboard goes to two MOTU UltraLight interfaces. We use MIDI instead of USB so that we can have a backup rig. For the few instances of playback, Harris uses Onstage and Logic with a Mac Pro (A rig) and a Mac Mini (backup playback rig); both programs are used so that all songs can be called up with a single program-channel command.





Sitting alongside monitor engineer Jon Schimke's Midas XL4 board are racks containing Summit DCL 200s (vocals, bass and acoustic guitar), BSS 504 gates, BSS 402 comps (keys), an Amek 10-channel compressor (bass, horns and background vocals), BSS FCS-960 EQs, AMS RMX 16 reverb, Eventide H3000, Lexicon PCM 91, Yamaha SPX-990 and a TC Electronic D2 delay. "Gwen uses an Audio-Technica 6100 for her vocal mic," Schimke says. "All of the background vocals are singing on AKG D7 RFs. For ear monitors, it's all Ultimate Ears. Gwen uses the UE-10s; everyone else is on UE-11s. We are using AKG IVM-4 transmitters and receivers for everyone except Gwen. She uses an older Sennheiser unit that has 16 fixed frequencics."

Drummer Adrian Young is on two Sound Image single 15-inch wedges, an EAW 850 Sub for his drum sub and a Butt Thumper, all of which (including wedges and side-fills onstage) are powered by QSC PowerLight amps with BSS crossovers.

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SOUND FOR PICTURE



By Gary Eskow

Sync Sound Turns 25 N.Y. POST GIANT REFLECTS ON INDUSTRY'S GROWTH, CHANGES

Ken Hahn and Bill Marino may not have vowed to stand by each other in sickness and health, but they did make a meaningful commitment: They co-signed a pricey real estate lease in mid-Manhattan. Sync Sound, the enterprise they established in 1984, turned 25 recently, and *Mix* thought it fitting to sit down with the owners and talk about their careers, the company and the audio post industry.

"I got into the business right out of college," says Hahn. "I graduated from Wagner College in 1977 with a music degree, but I pretty much knew all along that I wanted to get into the engineering side of the industry. Todd Rundgren was an idol of mine, someone who wrote the songs, played and was deep into the technical side of recording. I was the guy in the band who adjusted the P.A. system!"

Marino's dad, Frank, was the guitarist in *The Tonight Show* band. "I spent a lot of time in the control room." says Bill Marino. "Kids under 14 weren't allowed in the audience so I'd hang out in the sponsor's booth. This was going back to the days when Jack Paar was the host. Bobby Bugg was mixing *The Tonight Show* at the time, and I remember thinking to myself that I could do it, too!

"I was also a musician," he continues. "I started out taking lessons from my dad, then joined a group called the Hillside Singers. Our claim to fame was the record 'I'd Like to Teach the World to Sing,' which came from the jingle that was so popular."

Marino and Hahn crossed paths at Regent Sound. one of Manhattan's early audio post facilities. "I was coproducing records for our group with Bob Liftin, who owned Regent Sound," says Marino. "I came to him with a record idea, but the conversation turned to this new thing, sound for television.

Bob was working on *The Howard Cosell Show.* Saturday Night Live was just ramping up, and NBC hired Bob as a consultant. It became pretty clear that he had little interest in producing our record. Instead, he offered me an entry-level job at the studio."

While still in college, Hahn was logging upward of 60 hours a week at Regent as a second engineer, and that's where he met Marino. "I became a great second engineer," Hahn says. "If you needed a razor blade, I was reaching for it before you asked for it! I studied engineering. Equally important, I studied people and how they got along.

"Sound for television was awful back then," he continues. "Accurate sync was nonexistent, and audio was being cut in mono by video guys who didn't know what they were doing. Audio post took off in the 1980s when stereo became the standard. We did a lot of work for the emerging cable companies at Regent Sound. I recall us mixing a Charlie Daniels Band concert for the first commercially released laser disc. Bill and I worked on a Todd Rundgren project that was one of the first stereo VHS tape releases to hit the market. People were experimenting back then; audio post for television was a new world, and a lot of the tools we take for granted todayparticularly in the area of synchornizationsimply didn't exist. We took the best studio console technology from the recording industry and married it with the new videotape machines and sychronizers that were being developed."

"Ken's exactly right," adds Marino. "Postproduction audio was just being defined. EECO's timecode had recently been adopted by SMPTE [1973], and the first audio tape machine synchronizer [the EECO 450] had just become available. Until this time, sound for television was being laid to 2-inch Quadruplex videotape during the video online session. Additional audio source material was usually 'fired-in' on ¼-inch tape cartridges. Younger engineers may have a hard time imagining what a typical session looked like—everything was being done manually, with stop watches and your reflexes being the most important tools of all."

Hahn and Marino both credit Bob Liftin with helping usher in the new era in audio post. "Regent Sound had a reputation for being able to fix things, especially problems related to sync," says Marino. "Some of my biggest contacts came through our clients' need to solve sync problems—particularly producers and directors working on projects where music was critically important.

"By the time we started Sync Sound, in 1984, we were keen on Adam Smith synchronizers, but realized that what was missing was a good control system to glue everything together. I teamed up with a friend of mine to develop a softwarebased control system that could handle all of the tape machines we used. Ken's input, as to how he liked to work, was crucial at this time. We had a series of STD bus computers sprinkled throughout our facility, and a proprietary network system that handled communications between all of this equipment. Eventually, we integrated 9-pin machines into the equation. We had a high-speed data link operating on 75-ohm co-ax that could be as long as 2,000 feet. This gave us panache and a genuine advantage in the industry. We could do things other studios were not capable of.

"For example, we were the first studio to lock a pair of Sony 3324s to a video machine. I remember we tried this out on a Peggy Lee concert film this was our first paying job at Sync Sound. Sony couldn't help us; neither could the folks at Adam

Sync Sound Selected Projects

Since opening its doors in August 1984, Sync Sound has provided sound editing and mixing on projects for every major network, studio and music label. A partial project list includes: 30 Rock (NBC)

The Barbara Walters Specials (ABC) OZ (HBO) Damages (FX) Stephen King's The Stand (ABC) Homicide: Life on the Streets (NBC) Beavis and Butthead (MTV) The Hours (Paramount) Fantasia 2000 (Disney)



Smith, so we invented a way to make it work on our own. Shortly after that, Laurie Anderson produced the first all-digital feature film, *Home of the Brave*. It was recorded and edited digitally. We did the audio post on that project."

"See, I told you Bill was the genuis!" adds Hahn with a laugh. "Part of what made Sync Sound was having the know-how. The other half is knowing how to make clients happy. Understanding that a given client wants to be extremely involved in the technical process, and that someone else just wants to enjoy a good cup of coffee and give some editorial input at critical points is essential. The technology has changed enormously over the last 25 years. The human part of the equation hasn't."

Hey, all you young post engineers, now gather 'round and hear what it was like to spend \$100,000 on a workstation! "Let's put this in perspective," says Marino. "We cut spot effects for *Pee Wee's Playhouse* on a Synclavier II. That unit came with a 10-megabyte hard drive—enough to store 100 seconds of mono audio!

"We saw a demo of the AMS Audiofile at an NAB show and were impressed. The original Audiofile was a 4-channel editing system. You stored to hard drive, but there was no backup capability—everything had to be output as audio. Then they integrated a data RDAT backup system. We had 10 Audiofile systems at one point. Our first held two hours of audio and cost 90k. Then we bought a four-hour system for 110k an extra hour of storage capacity cost \$10,000! By the time we installed our Synclavier Post Pro SD with the extra optical drives we incorporated into the system, we were spending almost \$200k on a single system."

Sync Sound began working with Pro Tools in the early 1990s. "Ray Palagy, an engineer who worked with us, liked Pro Tools, and we became intrigued with the possibilities," Marino recalls.
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"So we bought a Pro Tools 2 system and ran it on a small Mac. We also had a Digidesign SampleCell system."

Sync Sound currently has Pro Tools systems in all 10 of its editing rooms, four mixing studios and the facility's mixing theater. "Some are on [Version] 7.3, others 7.4, some on 8," says Hahn. "Eventually, they'll all be on 8. We also have a variety of control surfaces—everything from HUIs up to ProControl. D-Commands and C Control. Funny, though. despite having all of these hardware options at their fingertips, most engineers use the faders for level control and the mouse for everything else.

"The ultimate goal of the recording industry is to make the difference between listening to a recording and listening to the same material live in a room indistinguishable. I always thought that was the promise of digital: the full dynamic range of human hearing with all spatial elements intact. Unfortunately, we didn't foresee the expediency of portable devices, the convenience of downloading MP3s, the success of iTunes. These things derailed the pursuit of quality audio. Whatever happened to 24-bit/96kHz becoming the standard release format? All interest in executing higher and higher quality was terminated by the success of lower-fidelity downloads."

A few grumblings aside, Sync Sound's proprietors are sanguine about the future of the audio post industry. "I still have our original rate card on my desk," says Hahn. "We laugh about it sometimes—we charged more for some services back then than we do today! And, sure, it can be difficult to make a buck in network television these days. Budgets are tight, audio is always the caboose on the train, and while the cost of equipment has gone down, labor costs have risen dramatically.

"But I still enjoy mixing as much as I ever did, and I know Bill feels the same way. My job is essentially just as it was back when we first opened the doors at Sync Sound. I want to get inside a client's head and tweak an audio clip just the way he or she wants it before they even ask for it. The sunset in this scene wasn't shot perfectly: Can I massage the audio to give the feeling that a director wants? How much reverb should be applied to a solo violin? These are subjective decisions. Bill and I. and our staff have developed relationships with clients based on our ability to come up with creative solutions to their problems. We look forward to many more years of service to them, and remaining an important force in the audio post community." III



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'Bored to Death' HBO COMEDY SERIES TAKES TO THE STREETS

By Blair Jackson

Bored to Death is a new HBO comedy series about an aspiring writer in Brooklyn who, as a lark and as a way to meet women after the breakup of a relationship, puts an ad on Craigslist claiming to be an unlicensed private detective. This leads this fan of Raymond Chandler and other noir writers to become involved in actual cases he probably has no business tackling. The series (which had its debut on September 20) is the brainchild of Brooklyn-based writer Jonathan Ames, and in the series Ames is played by the witty and versatile Jason Schwartzman. Ted Danson (Cheers, Becker) and Zach Galifianakis (The Hangover) co-star in this ensemble series, which Danson describes as "sweet, innocent and perverted." The show was shot almost entirely on location in Brooklyn, and posted at Soundtrack Film & Television in Manhattan-it's New York through and through.

Handling the challenging production

sound for seven of the initial eight-episode run of the series was Griffin Richardson, an Emmy winner last year for his work on 30 Rock, which has been his main gig the past four years, and "the best job I've ever had in my life." Griffin joined the Bored to Death team last spring after the pilot had been shot and 30 Rock shut down for the season. (Mathew Price, production mixer for The Sopranos and many other shows, did the pilot.) "Jonathan Ames, who's the main creative force behind the show, used to write a column in a newspaper here in New York and he's really funny," Richardson says. "Then, once I heard the cast, it sounded way too good to pass up.

"They warned me on the phone: 'Look, just so you know, we're going to be on location 90 percent of the time.' A lot of times in a movie or TV show, they'll say the scene takes place here, but you really shoot somewhere else where it's more convenient. But Jonathan was really insistent that we shoot at these specific locations. He really wanted to get the feel of this Brooklyn that he knew and loved and that he'd written about."

A native of Duxbury, Mass., Richardson moved to New York originally to attend NYU film school: "I play music, and thought taking a sound class would be funand it was! There weren't a whole lot of people in film school doing sound, so it was kind of easy to get experience quickly. Then, once someone finds out you know what you're doing, a friend of a friend recommends you and ... It happened kind of effortlessly, though obviously it's a lot of effort because low-budget shoots are really hard." He started as a boom operator but quickly moved into production sound mixing, plying

his trade mostly on indie features and then episodic television. He also worked on the hilarious Web series *Wainy Days* (wainydays .com; check it out!), starring comedian David Wain. These days, he has a crew of two helping him out—boom operator Chris Fondulas has been with him for eight years; his utility/second boom. Bryant Musgrove, for about five.

Like nearly all current production mixers. Richardson uses a combination of boom mics and RFs worn by key cast members to get a full and accurate picture of each scene, and to provide plenty of options for the post mixer(s). "I prefer the boom mic whenever I can get away with it because it sounds fuller, more real and you have more of a sense of the physical place within the scene," he comments. "But the radio mics these days work great and they can save your ass. They tend to flatten everything a little bit." When he can, he'll double-boom and sometimes also keep off-camera characters wired "because I've learned that in comedy, more often than not, it seems like when people are off-camera, they tend to relax and say a lot of funny stuff. When you have people like Jason and Ted Danson and Zach Galifianakis who are

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THEY WANTED IT TO LOOK AND SOUND REAL. WE WERE SHOOTING IN TINY LITTLE BARS, UNDER BRIDGES, OVER AT BRIGHTON BEACH, ALL OVER THE CITY.

—Griffin Richardson

so good at improvising, you want to make sure you never miss anything."

Richardson's sound cart, "which has a lot of mileage on it," is centered around a Fostex DV824-"an 8-track that records simultaneously to a DVD-RAM and to a hard drive, so that's good for backup. If somebody drops the DVD-RAM, or stomps on it accidentally, or maybe there's a corrupted file on there somewhere, you're okay. I'm a little excessively paranoid about backing everything up. Digital is such a great thing in so many ways, but files can get easily corrupted. I also have a Sound Devices 788T [as backup], which is fantastic. It's incredibly compact and portable-I can easily go over the shoulder with it. For 30 Rock, we had to shoot a scene in the middle of the Brooklyn Bridge and we weren't allowed to bring any carts-it was whatever you could carry. The 788 is like the size of a hardcover book, so it was just perfect for that."

The mixer in Richardson's cart is an Audio Developments AD 149. "It's a great-sounding machine—expensive, but really solid; it can handle being out in crappy weather and dust and being bounced around in trucks." As for the boom mics, for interiors he and his team rely mostly on the blue Schoeps CMIT 5U shotgun and some Sennheiser MKH 60; exteriors will usually be handled by a Neumann KMR 81 shotgun. He runs the booms wireless using Lectrosonics transmitters.

Not surprisingly, some locations for the series are more conducive to gathering clean audio than others; alas, the production mixer rarely gets a vote. "You know going in that there are going to be places that are really difficult," Richardson offers. "If it's a place that looks great and everyone wants to shoot there, you have to figure out a way to make it work, sound-wise.

"A couple of times I had to beg them, 'Please go in and loop this scene!' [Laughs] There was a shot right next to the Williamsburg Bridge with this subway passing through, which they really wanted to see because it's a very striking image. That's fine, but you're going to hear it, too. In a case like that, if it sounds a little rough, it's okay because at least it's got the visual to go with it. They wanted it to look and sound real, and it does. We were shooting in tiny little bars, under bridges, over at Brighton Beach, all over the city."

Then there was the skateboard chase in one episode: "Jason Schwartzman is trying to recover a stolen skateboard, and this gang of kids chases him down a hill on their skateboards. They had a Steadicam rig mounted to an off-road kind of [vehicle], and we originally thought of going over-the-shoulder for that, but instead we put the boom op on there wireless, and the range was good enough we got almost all the audio—this great sound of one skateboard coming down the hill and then eight or 10 coming behind it. It sounded so cool."

At each locale, in addition to shooting all of the dialog scenes, Richardson would also capture upward of a minute of room tone or ambience "to capture the general sound of each space so they can loop it and layer it in [in post], maybe use it to cover any edits they need to make."

As he worked each day, Richardson would "put a rough mix on track 1 of my machine, and then have every mic on its own track, 2 through 8, and I'd send that rough mix through a Cat-5 Ethernet cable to the HD video decks that are on set [being viewed by the likes of Jonathan Ames, producers from HBO, the writers of that particular episode and others]. Then, since they have that mix on the tape, they can start cutting the picture with that. Once it goes over to post, I turn in my DVD-RAM that has all of my tracks for every single take, identifying who's on what track, what mics were used and what takes were good and bad as far as I was concerned. Then they have to sift through that mountain of stuff and make something usable out of it." (At Soundtrack, the post team included mixer Bob Chefalas; editors Louis Bertini, Dave Ellinwood, Nick Renbeck and Dan Ward; ADR and Foley recordist Doug Murray; and Foley artist Leslie Bloom.)

It's too early to tell whether this series will have life after its first eight-show run, but count Richardson among those who would love to be part of it again if it does survive. "All the people involved with this series were *amazing* to work with—funny, creative. It was also pretty stressful at times. There were days when we were shooting all night and it was raining. But then you get that one good take and it makes all the headaches worth it." III

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2009 AES NEW PRODUCTS

500 Series Module Master

Radial Engineering Workhorse 5000

Best described as a 500 Series module housing with an integrated and independent summing mixer is the Workhorse 5000 (\$999, street) from Radial Engineering (www.radialeng .com). In addition to providing ± 16 VDC and 48V phantom power for each of its eight module slots, and input, direct out and summing connections on 8-channel D-25 sub jacks (for direct-to-DAW or P.A. feeds), each module has ¼-inch and XLR I/O, mono/stereo link switches and a mix/feed switch



for internal patch routing of the output to feed the next module or to the master output section. OmniPort connectors on each input provide module designers with custom options, such as integrating "keying" inputs, a footswitch port or a tuner output on a direct box/instrument preamp. Designed to allow on-the-spot mixing or stereo recording, the mix bus section has pan/level pots and mute switches for each module, rotary main out and aux out controls, and a headphone monitoring section. The rear panel has XLR and ¼-inch aux and transformerisolated main outputs, insert jacks for the master outs and bus in/out jacks for connecting additional sources and/or multiple Workhorse units. **AES Booth: #166**

Ribbon Mics, Active Electronics

Audio-Technica AT4080 and AT4081

Audio-Technica (www.audio-technica.com) unveils its first ribbon mics, the AT4080 and AT4081. These hand-built, rugged side-address mics are active ribbon designs with onboard phantom-powered electronics that bring their output to near-condenser levels, allowing for use with any pro preamp. Both the larger AT4080 and the low-profile AT4081 feature powerful-grade N50 neodymium magnets and innovative dual-ribbon construction for smooth bidirectional response with high SPL handling. The company's patent-pending MicroLinear[™] ribbon design minimizes lateral flexing for durable performance and freedom from ribbon distortion. Applications include miking vocals, horns, strings, acoustic instruments, drum overheads, orchestras, ensembles and guitar cabinets. The AT4080 lists at \$1,245, with shock-mount, dust cover and carrying case; the AT4081 is \$895, with isolation clamp mount and windscreen. Shipping begins in November. **AES Booth: #419**





Sonic Evolution

ADAM Audio SX Series Monitors

ADAM Audio's (www.adam audio.de) S Series steps up the evolutionary ladder with a new name and new components. The SX Series comprises six models ranging from small near-fields to larger mid-field models, all with redesigned transducers, drivers and electronics, promising the most transparent reproduction possible. The monitors feature the new X-ART tweeter, offering 4dB higher efficiency, 3dB greater max SPLs and expanded bandwidth to 50 kHz. Also new is an ultralow-distortion, broadband Class-A/B amplifier with 1MHz internal bandwidth and HexaconeTM woofers for more linear excursion. Prices (each) range from \$1,295 (two-way. 5-inch woofer) to \$4,795 (three-way, dual 9-inch woofers). **AES Booth: #373**





Add-On Generator

Audio Precision AG52

The AG52 (\$1,000) analog hardware generator option for Audio Precision's (www.audioprecision.com) APx Series of audio analyzers can generate exceptionally clean square waves with a rise time better than 2 ms. The AG52 can also generate all popular DIM test signals to complement a corresponding new DIM distortion measurement capability in the software, ideal for power amp test and measurement. Other benefits include a 2dB improvement in THD+N (to -no dB typical) and an increase in maximum output level from 21.21 Vrms to 26.66 Vrms (balanced). The AG52 is supported by APx's 2-channel APx520/521/525/526 models. AES Booth: #442

DAUJ Facelift

Cakewalk SONAR 8.5 Producer

The latest upgrade of Cakewalk's (cakewalk.com) SOINAR Producer, Version 8.5 (\$499), offers new beat-creation and arrangement tools, a new drum instrument, enhanced audio quantizing and new multistage effect plug-ins for vocals and percussion. Other added features include Matrix View for simple and flexible cell-based, nonlinear audio and MIDI arranging; engine optimizations and stability improvements for recording audio while looping; the ability to hot-swap audio and MIDI devices without restarting SONAR; and access to up to 128 GB of RAM. Among its VST plug-in compatibility improvements is BitBridgeXR, which lets users run 32-bit plugs in 64-bit environments. AES Booth: #261



When Stereo Just Isn't Enough

mh Acoustics em32 Eigenmike

The em32 Eigenmike® from mh Acoustics (www.mhacoustics.com) is a unique, scalable microphone array with 32 capsules embedded into a rigid sphere. Individual mic outputs are processed with a beam-forming algo-

rithm for capturing/ playing accurate 3-D spatial audio. The mic's directivity pattern (shape and direction) can be controlled in real time or stored for post-soundfield processing. It also fea-



tures electronic steering, remote-control mic pre's and 24-hit ADCs inside the spherical array, and a single Cat-5 cable carrying power, digital mic data and control/status settings. An external interface converts the digital stream to standard FireWire (ASIO drivers supplied) so the mic array appears as a standard 32-channel soundcard. AES Booth: Demo Room TBA.



Dual-Domain Audio Analysis

Stanford Research Systems SR1

The SR1 (\$6,900) dual-domain audio analyzer from Stanford Research Systems (www.thinksrs.com) is a stand-alone instrument that delivers cutting-edge audio measurements, with specs such as -110dB THD+N, ±0.008dB flat response and 24-bit/192kHz resolution. With its high-performance generator and analyzers operating symmetrically in analog and digital domains, the SR1 handles analog audio, digital audio and cross-domain audio signal analysis. Measurements include level, THD+N, harmonic distortion, IMD, FFT, frequency response, multitone, crosstalk, histogram, jitter amplitude, spectrum and more. Options include a digital audio carrier digitizer with eye diagrams and carrier spectra, multichannel I/O switchers and an atomic rubidium system clock. AES Booth: #767



Outstanding in the Field

The HS-P82 (\$4,999) from Tascam (www.tascam.com) is a high-quality, 8-track digital field recorder for music, TV and film production. Features include eight mic preamps, XLR inputs, eight AES/EBU inputs and outputs (DB-25 connector), and recording with timecode up to 24-bit/96kHz (8-track) or 4-track at 24-bit/192kHz. In addition to the eight independent channels, a stereo mix can also be recorded for a total of 10 channels. The unit has no moving parts, using dual Compact Flash slots for recording with backup. The HS-P82 is housed in an alu-

minum chassis with a TFT color touchscreen. Power options include AA batter-

ies (x10), NP type, AC adapter, external DC input and optional V-mount adaptor for Endura batteries. **AES Booth: #219**

Transistor Multipattern

Wunder Audio CM7 FET

Distributed exclusively by Vintage King Audio (www.vin tageking.com), Wunder Audio's CM7 FET (\$2,495, retail; \$1,995, MAP) microphone is a multipattern version (cardioid, omni, figure-8) of the classic but single-pattern U47 FET. The CM7 FET features a new K47 dual-membrane capsule, wooden mic box, historic-style shock-mount and one-year warranty. AES Booth: #541



Jensen-Equipped Condenser

Mojave Audio MA-101fet Microphone

New from Mojave Audio (www.mojaveaudio.com) is the David Royer–designed MA-101fet, which offers interchangeable cardioid and omni capsules. The MA-201 features ultralow-noise electronics with custom resistors and a military-grade FET combined with a large Jensen output transformer, which accounts for the mic's unusual tapered shape. A -15dB pad switch is standard, and the ½-inch–diameter diaphragms are 3 microns thin for fast transient response. **AES Booth: #560**

More Features, More Channels, More Fun

Daking FET III Compressor

The TransAudio Group (www.transaudiogroup.com) introduces the Daking FET III stereo compressor/ limiter. In addition to adding another channel over the mono Daking II, the new model has variable highpass filters at the detector stage to customize the behavior of each limiter channel—ideal for finetuning limiter behavior on bass-heavy material. The Geoff Daking–designed unit

can be used independently in dual-mono or linked for stereo operation via

a continuously variable control for tying operation of each limiter channel together to a greater or lesser degree. Retail is less than \$2,000, AES Booth: #555





Collaborative Plugs

The latest in the Waves (waves.com) Signature Series, the Eddie Kramer Collection features five application-specific plug-ins, with dedicated tools for guitar, drums, vocals, bass and effects. The plug-ins feature intuitive graphic interfaces and a retro-modern look with optimized control ranges that deliver Kramer's distinctive, unmistakable sound. All five plug-ins feature complete all-in-one processing chains with 24-bit/96kHz resolution: RTAS, AudioSuite, VST and Audio Units support; and Mac/PC compatibility. The collection is available separately (\$800) and in the Waves Mercurv bundle. The Eddie Kramer Collection is Native only, and it requires iLok authorization. **AES Booth: #249**

V89

Digital Domain M/S Miking

Neumann KMR 81 D and KK 120

Neumann (www.neumannusa.com) has expanded its range of digital microphones. Making their U.S. debut at AES are the KMR 81 D digital shotgun mic and the KK 120 figure-8 capsule head for the company's KM D small-diaphragm digital microphone body, already offered with five other capsule choices: free-field EQ'd omni, wide cardioid, cardioid with LF roll-off, diffuse-field EQ'd omni, cardioid and hypercardioid. The mics operate from 44.1 to 192 kHz, have standard AES-42 digital outputs and allow creating digital M/S stereo recordings in an integrated digital workflow. Expanded accessories adapt the line to uses ranging from field recordings to installed sound applications, and Neumann plans to debut a portable version of its 2-channel DMI-2 digital mic interface next year. **AES Booth: #330**



Three-Way Coaxial DSP System Genelec 8260A Studio Monitors

Genelec (www.genelecusa.com) expands its 8200 Series of DSP-driven monitors with the 8260A, a three-way design incorporating a proprietary Minimum Diffraction Coaxial (MDC[™]) mid-high driver on a Directivity Control Waveguide for smooth, flat on/off-axis response. With the MDC, the midrange driver cone forms a continuous surface for the tweeter output, coupling both drivers into a single coincident point source. The rounded edges and curved front of the enclosure's Minimum Diffraction Enclosure[™] substantially reduce diffraction artifacts. Genelec Loudspeaker Manager software manages crossover filters, driver EQ, driver alignment, room-response correction, calibration filters and distance-compensating delay, so the 8260A can be used with other 8200 Series

DSP monitors and 7200 Series subs in the same setup. Genelec's AutoCal automated room-calibration/system alignment provides accurate response for multichannel audio systems in varying room environments. **AES Booth: #254**

Studio Cardioid Condenser

MXL Microphones' (mxlmics com) V89 is a largediaphragm condenser mic with a custom design that minimizes body resonance and a tuned grille cavity to help eliminate standing waves and reduce harmonic distortion. The fixed-cardioid pattern V89 has a goldsputtered diaphragm and offers high sensitivity and low-noise circuitry. Retail is \$599, with three-year warranty, wood case and shockmount. AES Booth: #527 III





Apple Logic Pro 9 Professional Audio Production Tools Now Available at the Mall

The evolution of Apple's professional media applications continues with the new Logic Studio. This upgrade brings the audio editing features to parity with competing pro-level DAWs while wooing guitarists with a robust collection of amp and stompbox emulations.

Logic Pro 9 is a part of the \$499 Logic Studio bundle, which also includes a revamped MainStage 2 (reviewed on page 92), Soundtrack Pro 3 and the entire library of Apple Jam-Pack content. Apple is extending the upgrade option back to registered Logic Big Box users.

Digging In

The application ships as multiple DVDs with the option of installing some bulkier items on separate drives or simply omitting them. When you first launch Logic 9, a slightly newer version of the plug-in Validator launches, scans the AU folder and verifies compatibility. In my rig, every plug-in (Native Instruments' Komplete 5, UAD-2, Arturia, etc.) I used with Logic 8 and OS Version 10.5.7 passed without a hiccup.

For test purposes, Apple sent a 3.06GHz MacBook Pro with 4 GB of RAM and a 500GB hard drive, but I did most of my testing on a slower 2.8GHz MacBook Pro with 4 GB of RAM and a 128GB solid-state drive where the bulk of my plug-in collection resides. This release is end of the road for Apple PPC machines as Logic Pro 9 is officially only compatible with Intel-based Macs.

It Looks the Same, But Wait!

The look and feel of Logic is largely unchanged from V. 8. You can still choose to work with the

PRODUCT SUMMARY





single integrated workspace or toggle through the various Arrange, Mixer and Editor windows. If you're already familiar with the Warp functions in Ableton Live or Elastic Audio in Pro Tools, you'll be very much at ease with the new Flex Time. There are five modes for Flex Time, and each corresponds to the source material and/or intended results. The options include Slicing (where the audio is sliced at the transients but not compressed or expanded), Rhythmic, Monophonic, Polyphonic (a more refined and CPU-intensive method of editing chords and complex material), Tempophone (for sound design-type tasks in which granular artifacts are desired) and Speed (alters both tempo and pitch at the same time). For newbies, the overall implementation of Flex Time is so straightforward

> and intuitive that most people will be able to dive right in. (Be sure to view our interactive Flex Tool demo at mixonlinc.com.)

> You can work with Flex Time in two ways: with the Flex tool in the Arrange pane or by activating the Flex View for more detailed edits. In both instances, the tools that come into play are the new Flex tool (found at the bottom of the Tools drop-down

menu) and Marquee. To simply use the Flex tool in the Arrange pane (think of this as the "easy" view), simply select the desired Flex Time setting in the Region Parameter box in the upper-left corner of the Arrange window. Once selected, Logic will analyze the file, and you're off and running. The Flex tool lets you click and drag within an audio region and move transients at will. With the Marquee tool, you can grab an entire phrase that you'd like to keep intact and move it within the region; all time stretching and compression will happen on either side of the Marquee selection. All movements are governed by the global snap settings, which can range from bars down to samples. To quantize an audio region, select the desired grid resolution in the same Region Parameter box and Logic handles the work for you. The major limitation of using the Flex tool in the Arrange pane is that it is difficult to undo edits (save Command-Z) and perform more surgical fixes. Activating the Flex view, however, makes all of this a snap.

Within Flex view, you can view, edit and delete the actual Flex markers. Move Flex markers in either direction (again, governed by the global snap setting), and the corresponding audio regions turn orange or green to show time expan-

Oxford Plugins



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sion and compression, respectively. Flex Time is a godsend for Logic users—what used to require hours of tedious slicing, time stretching and crossfading (or opening another application altogether) can now be accomplished on the fly.

Control-clicking on the Transport pane reveals Varispeed, another addition to Logic. Varispeed lets you alter both the tempo and pitch of an entire project. There are three versions of Varispeed: speed only-this alters the tempo of the entire project while keeping the pitch locked to the original key; Varispeed, which changes both pitch and tempo; and Varispeed and MIDI for adjusting both pitch and tempo while leaving MIDI drum tracks alone. Overall, Varispeed performed as advertised within realistic limitsit's very liberating to be able to preview a project at a different tempo or kick it up or down a few steps. Be warned, though: Varispeed does pull some CPU cycles and it doesn't work as fluidly as just sliding the normal session tempo up and down. I found it much less taxing on the system (and my ears) to stop playback, enter a new Varispeed bpm and resume playback.

Going to "11"

The next major Logic additions are Amp Designer and Pedalboard. Amp Designer works similarly to many of the guitar amp-emulation products currently on the market. It includes a wide selection of amp and cabinet emulations, including several options in the spirit of Fender, Marshall, Mesa, Orange and others. Each of the models sport the Logic name, and the gain, EQ and effect controls are unified across all of the models, but the graphic treatments should be enough to clue in most users. Amp Designer gives you free rein to mix and match cabinets and amps at will. There are three mic options (dynamic, condenser and ribbon) and there are controls for moving the mic on- and off-axis, as well as closer or further from the cabinet; imagine a 4x6-inch square of virtual wiggle room.

Pedalboard offers up to 30 stompbox emulations and a fairly slick interface where you can drag/drop effects from the virtual locker and arrange and re-order them on the pedal board, with capabilities for creating and blending between parallel processing chains. The stompbox offerings lean heavily toward distortion and fuzz, but chorus, phaser, tremolo, ring modulation, echo, delay, wah, reverb and compression are covered in one form or another; all of the time-based effects sync to host. It's worth noting that Pedalboard is a closed



system, meaning that you can't pull in other Logic or third-party effects. For instance, if you want to drop in a higher-end compressor (one of the weaker effect offerings in Pedalboard) at a certain point in the chain, you'll have to open up a second instance of Pedalboard under the compressor to continue the chain.

You'd be hard-pressed to find any discernable difference in tone and quality between the new offerings in Logic and any of the major guitar workstations like Native Instruments' GuitarRig or IK Multimedia's Amplitude. Both of those third-party products do offer more in terms of stompbox effects, bass amps and routing options, and if you're already heavily invested in those products, this probably won't change your mind. But for new users and non-guitarists, Amp Designer and Pedalboard are fantastic additions to an already massive feature set.

Off the Grid

The Take Folder Editing feature was revised to make use of the new Flex Tool and to improve region editing. Now you can toggle Quick Swipe Editing on and off, make edits to any of the regions (cut, replace, Flex Time, etc.) and then reengage Quick Swipe for comping. A new Track Import feature lets you open up any Logic project on your system from the Media tab, expand the contents and import all or some of the components of a track, including regions, insert effects and sends. Should you choose to import audio regions from another session at a different tempo, selecting the appropriate Flex Mode setting for the track forces all the associated regions to conform to the current host tempo. The included impulse library for the Space Designer reverb is enhanced with a set of "warped effects," such as models of moving spaces, textures, speakers, analog circuits and more.

APPLE

The Logic Node application now supports third-party plug-ins. You can network your desktop and laptop via Ethernet and gain some extra DSP processing for your entire plug-in collection. This might cause many to take a second look at the lowly Mac mini as a way to squeeze in a few more high-end, CPU-killing plugs.

Is It a Must-Have?

As a longtime Logic user, this is clearly one of the best dollars-to-features updates in a long time. Honestly, I was a tad underwhelmed with what Logic 8 offered vs. its predecessor, but, thankfully, almost all of the major feature requests the Logic community had begged for are addressed with Logic 9. The Flex Time and Varispeed functions deliver the same features as some much more expensive applications. The new guitarprocessing tools provide all you need to lay down some very convincing guitar tracks. The huge quantity of loops, samples and music beds offer a great starting point for new compositions, as well as a ton of free licensed content that film and post users can hit at will. Furthermore, Logic 9's numerous under-the-hood enhancements make it snappier and less bogged-down by its own weight than Logic 8. And with the release of OS 10.6, we're bound to see even better performance moving forward. III

Robert Hanson is a former editor at Mix and Remix. These days, he works for the Internet.

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MainStage 2

MainStage 2 is part of the newest Logic Studio package. MainStage lets you map hardware MIDI controllers to parameters that control their sound, but rather than directly tying MIDI controllers to sound parameters, most MIDI messages are first routed to a customizable visual layer of onscreen controls. You can create screen controls with virtual knobs, faders, meters, etc., to mimic their MIDI hardware controllers, or additional screen controls can be manipulated via mouse.

Each screen control can then be mapped to sound parameters on a per-patch basis. Patches are recallable collections of channel strips containing the plug-ins that collectively make a sound. MainStage 2 also offers new screen controls like VU meters and classic Hammond-style drawbars, while predefined groups of screen controls—from simple setups that mirror stompboxes to full-fledged mixing consoles—can be dragged into the layout.

Once your layout is designed, you attach screen controls to sound parameters using Edit mode. For example, in Layout mode I created a single-screen control knob and named it Lush. (Screen control labels can automatically be labeled according to the parameter they're controlling, or you can give it a custom name as I did.) In Edit mode, I mapped the screen control to the main channel volume of a delay return and to both the wet and dry parameters of the Space Designer reverb plug-in inserted directly on my guitar channel. I inverted the screen control curve going to Space Designer's dry volume. With this mapping as the Lush knob was turned up, the dry signal was gradually removed while the reverb and delay effects were increased. Back in Layout mode, I mapped a physical volume-style MIDI pedal to my custom Lush screen control so that getting more of an ethereal sound didn't require taking my hands off my guitar.

Recording, MIDI, More

MainStage 2 offers recording on a limited scale by letting you record a single stereo file that mirrors a selected audio interface output. MainStage 2 can also route MIDI messages to external devices, whether integrating hardware synths or controlling external signal processors in a live performance-management system. A new channel strip-type called External Instrument works with your Mac's AMS (Audio MIDI Setup) configuration, so integrating external MIDI gear with MainStage's internal sound generators is a simple matter.

Also new is ReWire support. Getting access to synths in programs like Propellerhead's Reason is an easy process that's identical to working with external MIDI gear. I simply created an External Instrument channel strip, and all of Reason's rack synths appeared as MIDI destinations and the return audio input menu displayed all of Reason's audio outputs. Unfortunately, MainStage only operates as a ReWire master, so it can't follow tempo changes via ReWire protocol. Although MainStage can send tempo changes to slave applications, if you're running tempo-centric programs like Ableton Live, you may find it frustrating to jump into MainStage to do real-time tempo changes.

Guitar Spotlight

Logic's new Amp Designer is a massive jump beyond the functional but limited Guitar Amp Pro plug-in offered in MainStage's earlier version. Many new algorithms audibly (and visually) model vintage and modern amps from companies like Fender, Marshall, Vox, Mesa Boogie and even Orange. Cabinet emulation is also provided with mic positioning that now includes distance control and ribbon mic emulation.

The Pedalboard plug-in can quickly create effects chains by simply dragging pedals from a menu that includes colorful stomp boxes such as Rawk, Monster Fuzz and Roswell Ringer onto a carpeted pedalboard. The signal flows from left to right, but click on the name above a pedal to set up a parallel routing scheme that even adds an A/B mixer into the chain. Pedalboard comprises some new and some repurposed Logic plug-in effects and provides a familiar, fun and inspiring format that is optimized for guitarists.

Looping Back Around

The Loopback plug-in is a real-time phrase sampler for creatively building backing tracks as you play. Loopback's slick user interface immediately displays your recorded audio in a scrolling waveform found just above the transport, tempo, metronome and count-off controls.

To see how Loopback fits into a live performance, I created a new Concert (Main-Stage's name for a project) using the Single Amp & Looper template. All patches in the Concert feed into Loopback via an aux send. This let me start a loop with one guitar sound and continue to dub more guitar parts using other sounds from different patches. The provided layout makes it easy to map physical MIDI footswitches to Loopback controls for hands-free operation.

I liked Loopback, but some of its operations felt counterintuitive. For instance, I wanted to lay down an 8-bar rhythm part and immediately start solo'ing over the top of it. Clicking Record started the recording process, and clicking Record again immediately started to loop what I had just recorded. This was fine, but it left me in Record mode. Clicking Record once more dropped me out of record, but by that time the first note of my solo was now part of the loop. I tried using the Play button to drop out of Record and it actually stopped playback. I wasn't able to discover a workflow to accomplish what I wanted.



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Play It Again, Sam

Nothing ruins a backing track performance more than when the unexpected "insert catastrophe" happens. With MainStage 2's Playback nonlinear audio plug-in, you can jump to the outro or take a second crack at that third verse as you please. Playback resembles Loopback's interface but does not record. Audio files are imported and rely heavily on identifying sections of the audio file with markers.

If you bounce audio files from Logic, any marker and tempo information is embedded into the metadata and Playback automatically loads that marker list—a cool trick. Buttons are available to jump to previous and next markers, and a Snap To setting can make the jump action happen immediately when the current marker is done playing or at the next beat/bar. And you can make audio tempo changes with the same algorithms used in Logic's new Flex Time feature.

For me, Playback's most impressive feature is that multiple instances can be set up on different channel strips with their transport functions grouped together. By bouncing stem mixes and loading each stem into a different instance of Playback, you can mix nonlinear multitrack material live.

I've played with backing tracks for 15 years, and my ultimate goal has been to be in a section like chorus 1 and---while it's playing-make the decision to jump to any other section of the song when chorus 1 is done. In Playback, it seems that the obvious choice would be using the Previous/Next buttons to jump to different marker positions. These functioned as expected when stopped, but when playing they became "unavailable" if I had the Snap To parameter set to Wait for Next Marker. And trying a concert template having screen controls with Previous/Next marker buttons only let me go back to the beginning of the current marker. Apple recommended I customize a layout and dedicate screen control buttons to locate to specific positions. This approach worked but required

a separate physical button on a controller for each section of the song. None of this felt intuitive. The biggest problem was using multiple instances of Playback for synchronized stem mixes, when one track would occasionally and inexplicably stop. Not exactly what you want to see from a live-performance tool. Apple is aware of the problem and says that a fix is on the way.

Is It Showtime?

MainStage 2 definitely shows Apple is committed to this app and has been listening to its early adopters. The Amp Designer and Pedalboard features are impressive, but some bugs and workflow issues in the Loopback and Playback plugs leave room for improvement. When MainStage 1 was released, Apple was fast to fix problems and even quickly modified that version's operation based on user feedback with sub releases. If history repeats itself, MainStage 2.1 should make the grade. —Robert Brock





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UpState Audio Sonic Lens SL20/20-2 2-Channel Mic Preamp Offers Stunning Realism, Solid Design, Simple Operation

The Sonic Lens SL20/20-2 mic preamp is the flagship product of Matthew Lesko's company, UpState Audio. Lesko's goal of creating an audiophile's dream of a straight wire with gain took him on a 10-year journey and resulted in a 2-channel preamp housed in a sturdy, 18-pound single-rackspace unit with simple and solid controls.

The SL20/20-2's meager documentation provides a roadmap of gain settings provided by the unit's four-position gain and multiposition finetuning rotary knobs, both of which are detented for easy recall and adherence to a balanced signal path throughout. All of the unit's parts—including the incredibly overbuilt power supply under the hood—speak to Lesko's "quality first, cost be damned" philosophy. The lengths to which Lesko went to achieve his goal resulted in some incredible specs. The SL20/20-2 promises to deliver no greater than +0/-3dB deviation between 0.3 and 270k Hz. I put this claim and more to the test with an Audio Precision APx525 system; to see these tests, go to mixonline.com.

I Can Hear Clearly Now

The first job for the Sonic Lens was adding gain to a spaced pair of BLUE Omni Mouse microphones placed two feet over the cymbals on a drum kit. When soloed, this mic/preamp combination sounded excellent: The stereo picture was wide, while the transients from sticks on the cymbals and toms sounded like my head was above the kit. The true surprise came when I incorporated the overheads with the rest of the mics on the kit. The SL20/20-2 acted like glue by ably providing the majority of the stereo mix, which was bolstered by the other mics. I can't say enough about the temporal (time-domain) accuracy that this preamp provided. Two-channel recordings

PRODUCT SUMMARY





are lush, wide and true to any off-axis information provided by the mics.

During different sessions, I listened as the Sonic Lens powered a variety of other pairs of mics above drum kits, including a Royer SF24V stereo tube ribbon mic, a spaced pair of SE Electronics SE-3s and BLUE Bottles. The Royer's stereo image, transient response and ribbontube personality made it the perfect pairing with the Sonic Lens. The SE-3s and BLUE Bot-

tles also sounded exemplary. Keep in mind that these mics vary in price by more than \$4,000 each, which brings me to an important point: Over and over again, I found that the SL20/20-2 made good mics sound great and great mics sound spectacular. It was always a pleasant bonus to hear the surprising miking results over a range of situations.

I couldn't wait to hear the SL20/20-2 in as many other situations as possible. An electric bass through a Radial Engineering passive DI sounded rich in overall tonal content and full at the bottom end. Male vocals through a Shure SM7 offered rock-solid results, with the Lens giving up plenty of clean and quiet gain. The Royer SF24V powered by the SL20/20-2 provided a great stereo recording of a blazing guitar amp; high SPL was

not a problem with this mic/preamp combo. (Listen to the results at mixonline.com.)

Neumann TLM 103s placed over a drum kit had excellent sonic clarity and presented a natural-sounding picture of the kit. Even mics that are considered on the affordable side shined when paired with the SL20/20-2. The SE Electronics SE3s were excellent over another kit with plenty of great transjents from the well-tuned toms and a very musical rendition of the cymbals.

A Revelation

Hands-down, the Sonic Lens is the most true-tolife mic preamp I've ever heard or tested. You may disagree with the clean machine design philosophy, instead wanting a preamp that offers color, but you can't argue with the SL20/20-2's superb implementation and results. I had the chance to sample a variety of mics in stereo over differ-



listening tests, which the APX525 bench tests confirmed. Second-order harmonic distortion was below 90 dB with 3rd through 6th orders diminishing between -110 dB and -120 dB.

ent drum kits and quickly decided that before the SL20/20-2 I hadn't been hearing my mics to their full potential. The unit's sonic integrity and superlow noise floor will step up the game of any mic in your collection, especially in pairs.

If you're looking for the preamp for your collection, this is the one. Yes, the price is dear, but not when you're paying for an instant classic. **III**

Kevin Becka is Mix's technical editor.

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KRK Systems ERGO Affordable, Powerful Room Correction for DAWs and More

KRK's Enhanced Room Geometry Optimization (ERGO) is a stand-alone room acoustic correction system built into a hardware monitor controller unit. Its proprietary RoomPerfect^{**} technology corrects a room's phase and frequency anomalies with the clear aim of realizing an acoustic space where crucial mixing decisions and overall sonic balances will translate to the outside world.

Simple, Yet Powerful

The ERGO unit includes a volume control and A/B speaker-selector buttons; a lighted thumbwheel level control for headphones is mounted on its side. The Focus/Global button toggles between Focus, which focuses correction on the mixing "sweet spot." and Global for a wider area of correction. Holding the Focus/Global button triggers Bypass mode. ERGO's rear panel has 1/4-inch TRS jacks for balanced analog inputs and A and B speaker outs; a S/PDIF RCA jack input; a headphone jack; two FireWire ports; a Calibrate mode button; and the measurement mic's input.

The ERGO system applies electronic corrections in the band of frequencies from 20 to 500 Hz by using 1,024 dynamic filters running at up to 96 kHz. By narrowing the focus of frequencies and by using all available DSP, ERGO achieves greater precision in both the measurement and subsequent correction processes. To measure a room using the included measurement microphone, ERGO requires a FireWire connection to either a PC or Mac running the ERGO Cal software. Once a measurement is made, its data is stored inside of the unit with no further computer connection required.

At the Proving Grounds

Here at my Tones 4 \$ Studios, I have huge low-

PRODUCT SUMMARY	
COMPANY: KRK Systems WEB: www.krksys.com PRODUCT: ERGO PRICE: \$799 (MSRP)	
PROS: Small size. Pro- vides excellent room acoustic correction and AD/DA converters.	CONS: Volume control has "zipper" noise. Could use more inputs.



ERGO uses 1,024 dynamic filters to correct audio playback for two separate monitor systems.

frequency issues. To try to reign in the problem, I installed bass trapping, diffusion and absorption panels. Afterward, I still heard so much bottomend information in the 300 to 500Hz range that I (wrongly) compensated for it, which resulted in mixes that sounded very thin and spectrally poorly balanced when played outside of my room.

After installing the ERGO Cal software and connecting ERGO, I followed the onscreen steps and measured my room at different points. Each mic position adds to the system's "Room Knowledge." This process takes about 15 minutes.

I normally monitor my Pro Tools HD Accel rig digitally using the Digidesign 192 I/O's AES/ EBU enclosure output and the D/A converter in a Crane Song Avocet monitor controller. So I connected ERGO between the analog stereo monitor +4dBm line outputs of the Avocet's speaker set 1 and my ADAM Audio S2.5A powered monitors. In this way, all connected monitor sources

> (CD player, 2-track deck, video, etc.) benefit from ERGO's correction.

I also used ERCO's S/PDIF input and preferred its D/A conversion (using an AKM AK4396 chip) to the Avocet's conversion. The disadvantage of this hookup is that only the audio coming out of a DAW gets room correction. But if you need a monitor controller, by using ERGO's D/A or FireWire I/O you avoid using an extra pair of AD/DA conversions for the most pristine monitor path possible.

Ergo, My Mixes Improved

ERGO has made a marvelous change in the accuracy of my monitors. With the LF problems ironed out, the individual tracks within the mix are clearer, making it easier to discern problems and make more accurate EQ decisions. Stereo imaging is the best I've heard, which makes precise pan positioning easier and the application of stereo-width effects—reverbs, delays, micro-delays and phase trickery—more exact. The only downside to using ERGO was "zipper" noise when adjusting volume. (KRK is aware of this problem and is working on a solution.) Also, there should be multiple monitoring source selection switching.

My clients report that my mixes are now "dialed in" and "spot on." There is solid low end without tubbiness and clarity without excessive treble boosts; vocals sit correctly, and dynamics respond accurately. I've been using ERGO mixing every day during a two-week period, and it has improved the quality of my work. **III**

Barry Rudolph is an L.A.-based recording engineer/ mixer. Visit www.barry1udolph.com.

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Tech's Files

Do You Hear What I Hear? Optimizing the Listening Position in Your Recording Studio

This month, I'll explore the relationship between high-frequency drivers and their next of kin (midrange or woofer)—essentially, how to optimize your monitor listening position.

Back in the day, a friend and I spent hours in local hi-fi shops checking out gear we couldn't afford. As geek teens attempting to help the adult



Fig. 1: An Anthony Gallo orb placed atop an Auratone Cube retrofitted with a newer driver. The two "cabs" are wired in parallel, receiving the same information with no crossover. The Green-Red-Blue (GRB) color separation details the directivity.

world to get it right, one of our favorite pastimes was discovering miswired stereo systems.

These days, allowing time for such creative technical distractions may be harder to justify, but the process can still be very rewarding. My desktop has a pair of 3-inch "full-range" drivers that are well above average as a system, but rather forward in the presence region and a bit shy from the lowmids on downward. This is an impractical range for a subwoofer to cover so I augment each channel with a 4-inch driver in a cube cabinet. Some might think this is a waste of time, but geek diversions have a way of turning into moments that can be taught.

While adjusting the physical placement (see Fig. 1),

sliding the orb from front to back would vertically steer the sound up or down. This is a mechanical phase adjustment that changes the arrival time between the drivers and the ear—an easy "lab exercise" that's worth sharing. Speaker designers use this technique to optimize the phase between the tweeter and its mate. In live applications, phase is electronically manipulated to steer line arrays. After the fact, we do it instinctively—the audio version of preening in front of a mirror—by bobbing up and down, and shifting left and right to find the sweet spot.

Fine-tuning the monitor orientation assumes that the majority of the control room acoustics have been tamed. There's no shortage of books and articles about minimizing reflections, de-coupling monitors from the console meter bridge or pedestal, creating a symmetrical listening environment and living within the sweet spot. Each loudspeaker system is unique, and therefore each should have a specific orientation.

For example, take the Yamaha NS-10M, a unit that nearly everyone admits is neither accurate nor a studio monitor. It makes sense that the NS-10M should be vertically oriented so left-to-right console excursions don't change the woofer/tweeter relationship. That said, the majority of users seem to prefer the sideways (bookshelf) orientation. Being off-center exaggerates the NS-10M sound that we don't like, which is especially problematic on a large-format console but less of an issue when "mouse-mixing" (i.e., staying in one place). You will find that the sweet spot width (focus) varies from monitor to monitor—some are wide, some are narrow.

Honky-Tonk

There's some merit to the majority's NS-10M solution, although it contradicts geek intuition. It is *one* solution and there are alternatives, as this simple test may prove. The sound source should be pink noise, which is very good at emphasizing any comb filter effects.

To optimize monitor placement, listen to one monitor at a time while shifting position from tweeter-center to the center of the next driver (woofer, in many cases, but midrange driver for other monitors). There should be one region that yields the smoothest, clearest frequency response. Conversely, if the drivers are miswired, there will be a null where optimum *should* be.

If our results concur, "NS-10M optimum" places the ear in-between the two drivers, so keep this in mind if you try the vertical orientation. As the tweeter is offset, the vertical center is offset to that driver and not the woofer. The comb filter effect between woofer and tweeter was less on the NS-10M than I expected, but was more obviously "wrong" if listening from the woofer's center. The "power focus" (the strength of the signal inbetween the drivers) was pronounced, almost hypercardioid.

The low-frequency response seems to benefit most from the bookshelf orientation (tweeters on the outside and offset high, rather than low). The NS-10M is bass shy below 200 Hz, emphasizing the familiar midrange honky-ness. Now I know why horizontal placement works for so many.

Reading the Manual

I don't review or buy monitors with any regularity, so I'm not sure how



Fig. 2: PMC's orientation instructions for its MB1-XBD dual-woofer, threeway system. Notice the downward 10-degree angle: The engineer sits *below* the midrange driver by "x" distance, the listening position is just forward of "D" and the console edge is 500 mm forward of "D." PMC's Golden Rule for this system is that when standing, the listener should be no higher than the midrange driver. Hardware | Software | Apple Computers | Synthesizers | Bundles | Mixers | Interfaces | Studio Monitors | Drum Machines | Controllers | Mics





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Tech's Files

many manufacturers take the time to power-assist their customers. That said, a trip to a local mastering house was yet another educational diversion. Greg Reierson, at Minneapolis-based Rare Form Mastering, has a pair of PMC MB1-XBD main monitors. By itself, the MB-1 is a three-way system, but is augmented for larger spaces by a duplicate low-frequency driver in a separate cabinet. This rather tall system puts the midrange driver at ear height when standing---the tweeter is above that---contrary to what you might think of as optimum when sitting.

As shown in Fig. 2, PMC provides very specific details to optimize its monitor for your listening pleasure. It is a teachable moment that can be extrapolated to other monitors. At minimum, we should all go back to our monitor manuals to see if, in our unpacking haste, we missed something. If no information was provided, then you now know how pink can work for you.

The Alt-Universe Tape Measure

Genelec's Acoustic Tape Measure is another example of a manufacturer's effort to improve the monitor-listener experience, especially in smaller control rooms where nearby wall reflections can hurt bass and low-mid response. It outwardly resembles a standard measuring tape, but the tape's top side is calibrated in quarter- and full-wavelengths between 115 and 10k Hz. The bottom side is a centimeter/inch rule. The instructions are written on the tape with an example.

Consider the first two bass guitar octaves. Open E-1 = 41.2 Hz; E-2 = 82.4 Hz (also open E on guitar); and E-3 = 164.8 Hz. Small rooms and small monitors don't support low frequencies very well; the low-frequency limit on Genelec's 6010A monitor is 74 Hz (hence its companion 5040A sub). Thankfully, bass is a harmonically rich instrument, especially when the cabinet is miked, so let's consider E-3, the end of the second octave at 164.8 Hz.

A monitor's "face" is 659.24 Hz away from the wall behind it-that's 20.57 inches = 0.522 meters = $\frac{1}{4}$ -wavelength of 164.81 Hz. The round-trip, with reflection off the wall, is 329.62 Hz, now the half-wavelength and the reverse polarity of 164.81 Hz. For those without the tape, there's a useful wavelength/distance calculator at www.mcsquared.com/wavelength.htm.

Two waves of opposite polarity will cancel rather than combine. This is why the distance between the monitor and the wall behind it can interact in a negative way, messing up the bass response. If you play bass (or want to hear all the bass notes), those two octaves are critical. The small-room rule of thumb is that monitors should be as close to the wall as possible; the distances to avoid are 17 inches (around 200 Hz) to 43 inches (78.75 Hz).

Tweak Party, Anyone?

Like any social relationship, getting accurate sounds from your monitors requires an investment in thought and time. This can result in a more focused and 3-D sound, reduced ear fatigue and an improved end result with less guesswork. So why not invite a few friends over tonight and tweak away? III

For more Eddie Ciletti, visit www.tangible-technology.com.



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It's 24 inches of gorgeous display — and a convenient dock for your MacBook or MacBook Pro and other essential desktop devices, such as your iPod, iPhone, USB printer, and camera. The handy 3-in-1 cable connects to your MacBook's DisplayPort, USB 2.0 port, and MagSafe power connector. Just plug it in, and you've instantly got more screen

real estate. Includes iSight camera, microphone and speakers.

Euphonix Artist Series High-end console for your MOTU studio MC Control, MC Mix and the new MC Transport bring

Euphonix' high-end console technology to your MOTU desktop studio in a compact design that fits perfectly in front of your Cinema display and keyboard. MOTU DP7 natively supports Euphonix' EuCon protocol for seamless, tactile control over almost all major DP features and transport-related controls.

MO



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Toontrack Superior Drummer 2.0 Virtual drummer engine with legendary sounds

With everything you need to take your drum tracks from concept to completion, Superior Drummer 2.0 from Toontrack is quickly becoming the professional industry standard in drum production tools. With amazing samples, built-in effects by Sonalksis, and an on-board mixer for limitless routing inside Digital Performer, this is your one-stop rhythm shop — guaranteed!

BIAS Peak Pro 6 Evolution of an award-winning standard

Whether you're a musician, sound designer, audio editor, multimedia producer, or mastering engineer, Peak Pro 6 offers more creative potential than ever before. Used side-by-side or launched directly from within DP7, Peak Pro 6 streamlines your workflow with industryrenowned sonic quality and precision. For additional mastering, restoration, and DDP 2.0 delivery power, step up to Peak Pro XT 6.



Neumann TLM 67 Set Z Large-diaphragm condenser microphone

The TLM 67 is Neumann's contemporary development of the studio classic U 67. Closely reproducing all the sound characteristics of the famous 1960s staple, the TLM 67 incorporates the same K 67 capsule as the U 67, with the TLM 49 tube circuit. The "Set Z" comes with its own professional shockmount. Bring a bit of Neumann — and recording — history into your MOTU studio with the TLM 67.

TO

Focal CMS 50 Compact active studio monitor

It's not often you get more than what you paid for. At \$1300 a pair, the Focal CMS 50 is the most accurate and flexible nearfield monitor money can buy. As Pro Audio Review reported in its July 2009 issue: "...the CMS 50 approaches perfection... my mix was spot on with nearly perfect balance top to bottom." It's no wonder that CMS 50 won top honors and was voted Studio Monitor of the Year by 100 international journalists!





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Malcolm Toft

Trident developer is still making consoles with engineers in mind.

Tell us about your early career as an engineer.

I was a recording engineer at [London's] Trident studios when it opened its doors [in 1967], and prior to that I was with CBS Studios as an engineer. I worked with Tony Visconti and recorded three albums with T-Rex, which Tony produced, engineered James Taylor's first album and David Bowie's Space Oddity album, and was lucky enough to have worked on the mixing of "Hey Jude" by The Beatles, which was recorded at Trident studios. It was a great place to be at the right sort of time; there was a whole lot of stuff going on at Trident. My approach as an engineer was always, as an analogy, like a race-car driver: If you want to get the best out of a car, you have to know a bit about the mechanics. I felt if I could understand what headroom is, what signal-to-noise ratio and equivalent input noise are, I can better record.

How did you progress into console design and manufacturing?

I've always been interested in what went on under the hood. From about my early teens, I'd built little consoles and messed around, always interested in putting stuff together. I always thought my career path would be that I'd end up some day owning my own studio. To do that, I had to get equipment, so I built my own.

Around 1970, I became [Trident's] studio manager, and we needed a new console for the move up to 24-track. We weren't happy with the second console from Sound Techniques, who supplied the first couple of consoles at Trident. So we researched the market, and at that time there were three major players: Neve, Cadac and Helios. We didn't like the ergonomics of the Helios, and the Cadac was way too big to fit in our control room. After a meeting with Neve, I was with Barry Sheffield, one of the owners of Trident, and he asked me what did I think. I said, "I don't think we're going to get what we want from Neve."

So I asked, "What about we build our own?" I said I'd been dabbling around and we had this tech at Trident named Barry Porter who had been helping me design a mixer. So I said, "We've got Barry on staff, I know all the systems and engineering, we've got good engineers; surely between all of us we could design a console." After various meetings, they said to me, "If you'll manage the project, Malcolm, we'll give you a year and room at Trident and Barry to design a console." When you think back on it, I was 26 years of age, I had never designed anything really, and here we were building a 28-input, 24-bus superconsole. It was just over a year to finish the first A Range console, and that was the start of Trident [consoles].

How did it grow from there?

While we were building the console, other people who used the studio got to hear about it. A friend of Roy Thomas Baker's was a guy called Dave Grinstead, and I'd worked for a guy named John Kongos, and they were both building their own studios. So I went back to management and said we could have a couple of orders for consoles and why didn't they start a console company. So we started Trident on the basis of a couple of orders that came in and we never looked back. In the first couple of years, we hardly had to advertise: It was word of mouth and the orders just kept flooding in. That's how Trident started back in 1971 until I sold the company in the late '80s.

How did Trident consoles come to America?

I remember going to my first AES [convention] when they were at the Waldorf Astoria in New York with an A Range module in a suitcase. I went to the show, had a look around, spoke to a few people and I had people banging on my door asking if I was the guy from Trident Studios in London who was making a



console. I literally showed them this module and we got orders on the back of that. America really took Trident to their hearts very early on. We became probably better known in America than anywhere else.

I came up with the Series 80 in 1979, and that became a runaway success. We were in Nashville, New York—everywhere. It was a good rock 'n' roll console, and I designed it with a feature set of how I would want the console to be. The success of Trident really was based on the fact that it came from a company that was a recording engineer–based company. I knew what it was like working on a console at 3 in the morning and the talkback being in the wrong place and having to lean across the producer. When you've been working for 11 hours, stupid little faults become a major bug-bee.

What's new that you've been working on?

As you're probably aware, we got the Trident name back at the end of last year. We are launching as the first new Trident product: the original A Range EQ and mic pre that, as a tribute to Barry Porter, who passed away a few years ago, is absolutely built to the classic and original circuit diagrams. It's a rackmount 2-channel unit that is basically the A Range turned on its side with a 4-band EQ, output level control and transformer in and out. Then there's a new Trident console coming out that will be a turbo-charged Series 80, but again with features more in line with what today's engineers want. We're also going to be releasing a Series 80 B in rack form. **III**

Grace Design A/D Converters: Superior Performance by Design

A/D converter quality is the sum of its parts: the analog input the converter, and the clocks. Our total attention to all three results in what many of the world's leading audit evolveers believe to be the most musical, transparent sounding A/D converters available.

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