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**On the Cover:** The brain trust of today's Electric Lady Studios, in the iconic Studio A, opened 43 years ago by Jimi Hendrix and as busy as ever. **Photos:** Brad Stein.

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# From the Editor

## BIRTH OF A PRODUCT

**W**hile finishing up graduate school in the late 1980s, I came across a book by renowned journalist Tracy Kidder called *The Soul of a New Machine*, winner of the 1982 National Book Award and Pulitzer Prize for non-fiction. Essentially, it's the story of two design teams at Data General Corporation who are racing against the clock to bring a new mini-computer to market and challenge the new VAX computer from Digital Equipment Corporation. It provides a study in management techniques, insane work hours, and in-house competition. But what I remember most is the complexity involved in integrating software and hardware, and the demands thrust on individuals to deliver a product—now!

I was reminded of the book, and the pressures visited on the teams, these past few months for a couple of reasons.

First, the New York AES convention is just around the corner, and *Mix* will be walking the aisles and taking in the sights, looking for products that are here today and trends that portend the future. Second, I had spent some time recently in JBL's Northridge, Calif., headquarters visiting with the team that developed the M2 Master Reference Monitor. And it truly was a team effort, incorporating the company's most advanced research in both mechanical and electronic processes, as well as the latest in DSP, control software, and test and measurement processes. While the time pressures might not have been as severe as those facing the fledgling mini-computer market of the late 1970s, the delivery demands in an increasingly crowded studio monitor market are every bit as real.

It's easy to lose sight of what actually goes into product development. Whether this is a function of an increasingly software-driven world, where the complexities of code writing are so foreign to most individuals that we click a button and don't know how or why things just seem to pop up, is up for debate. Software development has its own challenges, to be sure, piracy being the most daunting. But bugs can be fixed, updated and sent out to the community. Features are added; revisions are expected. But hardware is different. As first-call chief engineer Art Kelm once said to me, in reference to competing 500 Series chassis, "People just plug things in and expect them to work."

I guess that's what impressed me most in my tour through the making of the M2, which is chronicled in these pages. The level of commitment; the precision and tolerance of materials and assembly; the innovation that can still take place in a design that is limited by the laws of mechanics and electronics; the iterations of component design and the integration of complete systems within a defined enclosure; and the lengths some companies will go to in test and measurement to ensure quality.

JBL is by no means alone in its approach to quality in product development. You could make equal arguments from Manley Labs in Chino or Universal Audio in Santa Cruz, API out in Maryland or Millennia Media in Sacramento, Sennheiser/Neumann in Germany or Meyer Sound right here in my hometown Bay Area. It's just that JBL has been doing this a long time, and they continue to fight the good fight.

So as you walk the aisles at AES and stop by a booth, receiving the pitch from marketing or listening to a demo from a product expert, take a moment to ask for the engineers who designed the product. Then say thanks.

Thomas ADK

Tom Kenny  
Editor

# Mix

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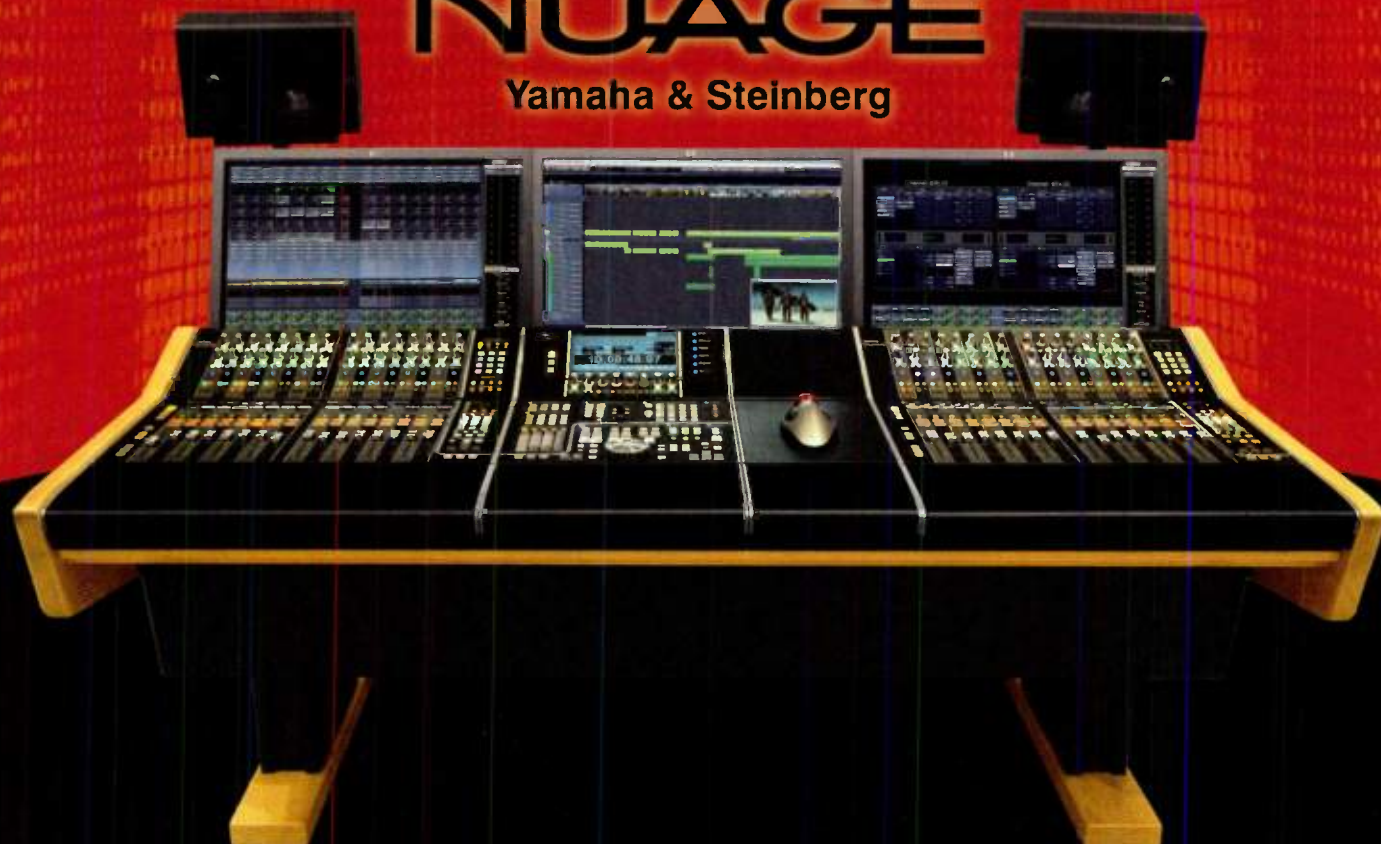
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## Ray Dolby, 1933-2013

On September 12, 2013, Dolby Laboratories announced the passing of Dr. Ray Dolby, an American inventor recognized around the world for developing groundbreaking audio technologies. Dolby died at his home in San Francisco at the age of 80. Dr. Dolby had been living with Alzheimer's disease in recent years, and was diagnosed in July of this year with acute leukemia.

Dr. Dolby's pioneering work in noise reduction and surround sound led to the development of many state-of-the-art technologies, for which he holds more than 50 U.S. patents.

"Ray Dolby founded the company based on a commitment to creating value through innovation and an impassioned belief that if you invested in people and gave them the tools for success, they would create great things," says Kevin Yeaman, president and CEO of Dolby Laboratories. "Ray's ideals will continue to be a source of inspiration and motivation for us all."

"My father was a thoughtful, patient and loving man, determined to always do the right thing in business, philanthropy, and as a husband and father," says David Dolby, son and member of Dolby Laboratories' Board of Directors. "Our family is very proud of his achievements and leadership. He will be sorely missed, but his legacy of innovation will live on."

"Though he was an engineer at heart, my father's achievements in technology grew out of a love of music and the arts," said Tom Dolby, son, filmmaker and novelist. "He brought his appreciation of the artistic process to all of his work in film and audio recording."

Former Mix magazine editor George Petersen expounded on Ray Dolby's life and career accomplishments in his story "Dolby Laboratories at 40," from Mix's October 2005 issue: "Without a doubt, the best-known name in audio is Dolby. It seems to be everywhere, from automobile sound, boom boxes and DVDs to broadcast programming and cinema marquees. The effect of Dolby noise reduction on the audio community—consumer and pro—was profound. It opened the possibilities of narrow-gauge/low-speed recording on formats such as cassette tape and pro video recorders; home VCRs would follow later. But on the pro audio side, Dolby noise reduction helped fuel the fire of a multitrack recording revolution."

Ray Dolby was born in Portland, Oregon, in January 1933 and his family eventually moved to the San Francisco Peninsula. From 1949 to 1957, he worked on various audio and instrumentation projects at Ampex Corporation where he led the development of the electronic aspects of the Ampex videotape recording system. In 1957, he received a Bachelor of Science degree in electrical engineering from Stanford University. Upon being awarded a Marshall Scholarship and a National Science Foundation graduate fellowship, Dr. Dolby left Ampex for further study at Cambridge University



in England, where he received a Ph.D. degree in physics in 1961 and in 1983 was elected an Honorary Fellow. While at Cambridge he met his wife, Dagmar, who was there as a summer student in 1962.

In 1963, Dr. Dolby took up a two-year appointment as a United Nations advisor in India, and then returned to England in 1965 and founded Dolby Laboratories in London. In 1976, he moved to San Francisco where the company established its headquarters, laboratories and manufacturing facilities.

Among Dr. Dolby's awards and honors are: The National Medal of Technology from President Clinton (1997); The Order of Officer of the British Empire (O.B.E.) by Queen Elizabeth II (1987); Honorary Doctorate of Science, Cambridge University (1997); Honorary Doctorate, University of York (1999).

In 1979, the Academy of Motion Picture Arts and Sciences bestowed a Scientific and Engineering Award upon Dolby Laboratories for the development and implementation of an improved Sound Recording and Reproducing System for motion picture production and exhibition. In 1989, Dr. Dolby and Ioan Allen of Dolby Laboratories received an Academy Award of Merit for its continuous contributions to motion picture sound. The National Academy of Television Arts and Sciences presented several Emmy Awards to Dolby Laboratories, including for the invention of the Ampex videotape recorder and his work for Dolby Laboratories (1989, 2005). In 1995, Dr. Dolby received a Recording Academy Technical Grammy Award.

As a former Marshall Scholar, Dr. Dolby was also awarded the George C. Marshall Award in 2003. He was inducted into the National Inventors Hall of Fame in the U.S. and the Royal Academy of Engineers in the UK in 2004. He was also inducted into the TECnology Hall of Fame in 2004.

In 2012, the iconic Hollywood landmark known to the world as the home of the Academy Awards was renamed the Dolby Theatre and the site of the post-Oscars gala was renamed the Ray Dolby Ballroom in honor of Dr. Dolby.

"Ray was generous, patient, intellectually honest and fair-minded," says Dagmar Dolby, Dr. Dolby's wife of 47 years. "Forever curious, unafraid and oh so persistent, whether we were driving overland from India, flying his planes across the Atlantic or driving the big bus around the National Parks, he not only gave us an exciting life, but was a fantastic role model for our sons."

Dr. Dolby is survived by his wife, Dagmar; his sons, Tom and David; their spouses, Andrew and Natasha; and four grandchildren. The family asks that, in lieu of flowers, donations be made to the Alzheimer's Association, 1060 La Avenida Street, Mountain View, CA 94043, or the Brain Health Center, c/o CPMC Foundation, 45 Castro Street, San Francisco, CA 94117.





Al Schmitt (front and center), Steve Genewick (front, right) and bandleader Chris Walden, (to the right of Genewick) with Ryan Hewitt, Dave Pensado, Vintage King Audio's Sherv Shovin, and attendees at Capitol Studios

## Al Schmitt, Steve Genewick Teach Master Class at Capitol Studios

On August 24 and 25, engineers and producers from the U.S. and abroad assembled in Capitol Studios' newly renovated Studio A in Hollywood, Calif., to attend "The Art of Recording a Big Band," a master class in which they could observe producer/engineers Al Schmitt and Steve Genewick recording and mixing tracks for

an album by the Chris Walden Big Band (piano, acoustic upright bass, drums, electric guitar, four trombones, four saxophones, and four trumpets). Attendees had opportunities to ask Schmitt and Genewick about their specific production techniques and career experiences.

The event was presented by Studio Prodigy Master Class, an educational program founded by engineer/producer Ryan Hewitt and studio designer Hanson Hsu, and sponsored by Vintage King Audio, Royer Labs, Mojave Audio, Audio-Technica and Tube-Tech. "We recorded 10 songs in one day, and then Al and Steve mixed three songs on Sunday," Hewitt says. "[The class] was something Al and Steve had wanted to do for a long time, and I just offered my support. Education is something I've always been very excited about, having not gone to recording school; I came up in the business. I think that the best way to learn is to observe and to participate in recordings with the best people in the world."



## GameSoundCon Comes to Los Angeles

The GameSoundCon educational conference on video-game music and sound design will take place on November 3-4, 2013, in the Los Angeles Convention Center. Founded in 2009 by game audio industry veteran Brian Schmidt, who received the Game Audio Network Guild (G.A.N.G.) Lifetime Achievement Award in 2008, the conference focuses on the creative, technical and business challenges that are unique to the game audio industry.

The November conference offers four session tracks: Game Audio Essentials, Game Audio Pro, FMOD Studio Workshop, and Wwise Workshop. Composer Austin Wintory, whose soundtrack for the videogame *Journey* became the first game soundtrack to receive a Grammy Award nomination, will give the keynote address, while FMOD expert Stephan Schutze will present hands-on tutorials.

For more information and to register, go to [www.gamesoundcon.com](http://www.gamesoundcon.com).



The acoustics lab of Fraunhofer IIS was one of 10 labs where the MPEG listening tests were conducted.

## MPEG Selects Fraunhofer's Proposal for 3-D Audio

Following a rigorous testing and selection process that included a total of 10 test labs worldwide, more than 50 listeners and more than 41,000 subjective responses, the standardization body Moving Picture Experts Group (MPEG) selected the Fraunhofer IIS channel/object-based proposal to provide a basis for

the future MPEG-H 3-D Audio standard.

Fraunhofer's proposal comprised an Extended HE-AAC based audio codec and a 3-D rendering engine. This technology supports the efficient transmission of 3-D audio signals and flexible rendering for the playback of 3-D audio in listening scenarios including 3-D home theater setups, 22.2 loudspeaker systems, automotive entertainment systems and playback over headphones connected to a tablet or smartphone.

## SPARS Sound Bite

### 2013 SPARS Legacy Award

By Kirk Imamura



The SPARS Board of Directors is pleased to announce the recipient of the 2013 SPARS Legacy Award: Howard Schwartz, an industry pioneer, recording icon and founder of the legendary Howard Schwartz Recording.

Born in Buffalo, N.Y., Schwartz started playing the trumpet and piano at age 9. He switched to the bassoon at age 11, and by the age of 13 he was ranked among the best bassoon players in the U.S. He won a full scholarship to the Eastman School of Music. After his first year, he entered the pre-law program at the University of Buffalo, with a major in entertainment. In 1993, he received a Bachelor of Music degree from Eastman and has served the college as an ad hoc instructor.

Upon his discharge from the U.S. Army, he settled in Hollywood, Calif., and became a recording engineer, working for the legendary Mel Blanc (the voice of Bugs Bunny and Daffy Duck) and writing, producing and recording comedic radio commercials. He then went to work for Wally Heider at Wally Heider Studios in Los Angeles, where he was an engineer on numerous Gold and Platinum record albums for artists including Crosby, Stills, Nash & Young, Jefferson Airplane, The Fifth Dimension, Stan Kenton, James Taylor, Wayne Newton, Elvis Presley, Barbra Streisand, Leon Russell and Elton John, among others.

In 1971, Schwartz moved to Toronto, joining the production department of CHUM Radio. In 1972 he was brought to New York City as an engineer at National Recording Studios, where he recorded commercials and artists like Ferrante and Teischer. He then moved to 12 East Recording where he continued to develop a commercial clientele. In 1975 he asked for a raise and was turned down, which crystallized a decision to open his own company, Howard Schwartz Recording Inc., with one studio, one engineer (himself) and a receptionist. A year later, he was turning down enough work to warrant the addition of a second studio and a second engineer.

For the next 38 years, Schwartz developed HSRNY to become one of the largest recording studios and post-production audio facilities in New York City.

Kirk Imamura is the President and Director of SPARS, and president of Avatar Studios in New York City ([avatarstudios.net](http://avatarstudios.net)).





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# Music

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Vince Giordano & the Nighthawks

Photo: Paul Goldfinger

## BOARDWALK EMPIRE VOLUME 2

Soundtrack Puts Listeners in a Musical Time Machine

By Barbara Schultz

**I**n HBO's stellar series *Boardwalk Empire*, music may enhance, or undercut, a scene of joyous debauchery, violence or sorrow. But whatever the mood, the songs are always meticulously matched to the 1920s era of the show.

"It's such a period piece, and the filmmakers—Martin Scorsese and Terence Winter—are period-specific," says engineer/producer Stewart Lerman, who worked on the songs for *Boardwalk Empire Volume 2* with co-producer Randall Poster. "When we're recording something from 1924, it has to be right for 1924, whether that's

the instrumentation or the style of the song."

This latest soundtrack includes performances by a varied group of singers—Rufus Wainwright, St. Vincent, Elvis Costello, Patti Smith and Liza Minnelli, to name a few—all backed by '20s-style big band Vince Giordano & the Nighthawks.

"This music is pre-acoustic bass," Lerman points out. "The main bottom instrument was the tuba, and after that the bass saxophone. [In Season 4], we're introducing the bass saxophone, and that's right for the years we're working on, 1924 and '25. Also, no guitars—it's banjo.

"We're very specific about the drums, too," he continues. "They're animal-skinned, old drums. They used to paint the head of the bass drum that you would see from the audience—it would have a palm tree or something—and then put a light in it to bring it up to a temperature where the skin would have the right resonance. It would also look really cool! And then there's wood blocks and a lot of coconut shell-type sounds. Our bandleader, Vince, is a collector of these instruments."

Lerman and Poster record in New York facilities with large, well-tuned studios of similar size





Photo: Charlie Gross

to the speakeasy featured on *Boardwalk Empire*: Avatar Studios, Brooklyn Recording, Electric Lady, Sear Sound. The room tones reinforce the sense of being in Babette's or the Onyx Club.

"What really gives this a certain patina is the musical arrangements and the players," says Lerman, who also engineered and co-produced the Grammy-winning *Volume 1* soundtrack. "You can take an old carbon microphone and record a musician who's playing in a modern style, and it's not going to sound old. Conversely, you get these guys who are experts, right down to their vibrato, and that allows me to capture vintage in a modern way. I'm recording digitally [to Pro Tools], but at the front end of everything I'm using as many ribbon and valve [tube] microphones as I can. The studios we work in have great mic collections."

Lerman has been tracking period music in these studios for nearly a decade, and he says that, thanks to their stellar assistant engineers' familiarity with his work, equipment is all set up before he arrives for a session, including various room mics—typically RCA 77s or Coles 4038s—and close mics on every band instrument. "Close miking allows me to make adjustments if I need to in mixing," he says. "But also if I have the saxophone player on one side of the room and the trumpet player on the other side, those mics can act as room mics for each other. Every mic is potentially a room mic."

At the start of a session, the band runs through the song a couple times before tracking live with the singer. "After we get the take, we'll have the vocalist try a couple more times, take a 15-minute break, come back, and then sing to

the track. Then I can comp if I need to later," Lerman says.

While at Sear Sound, Lerman captured the mournful blues song "Nobody Knows You When You're Down And Out," sung by Neko Case. "At Sear they have one of the sweetest [Neumann] M 49s I've ever heard, so I'll always start with that," he says. "I had that set up, but she said, 'Can we just hear what the [Shure] 57 sounds like?' I put a 57 up next to the M 49, and she just was more comfortable on the 57, so that's what we used."

Lerman was also impressed with vocalist/actress Margot Bingham, who recently joined the *Boardwalk* cast and sings "I'm Going South." "She's unbelievable," he says. "We recorded her at Brooklyn with a U 48; she has a deep voice, but it's very bright. It's a great combination of richness with a really clear top end, and that mic worked really sweet on her. She's probably the only vocalist who's going to be new to the public."

Definitely not new-to-the-public is Liza Minnelli, who sang into a U 47, via an LA-2A and the Neve 8068 board in Avatar Studio A. "She sang with the Rat Pack—Sinatra and Sammy Davis! I was freaking out," Lerman says, "but she put us so at ease. Immediately, she walked in and said, 'Let me just go out and sit with the band.' We gave her headphones, and she just sat in the corner and listened to them run the tune. Then she just tore it up. And she was so easy; she would say, 'Want me to sing some more? Whatever you want. I take direction very well. My father was a director, you know!'"

Lerman mixed the album in the personal

Lerman with David Johansen, a contributor to *Boardwalk Empire* Volume 2

## MASTERING THE '20S AT STERLING SOUND

The vintage musical creations for *Boardwalk Empire* Volume 2 were mastered by Greg Calbi at Sterling Sound. "Greg has mastered so many records for me. It's really good to know that when I'm done being as artistic as I want to be, he's got my back," Lerman says.

The appreciation is apparently mutual: "Stewart's projects are mixed so beautifully," Calbi says. "This was very easy and quick. The main thing on a project like this is just to try to keep the natural sound. Because of the nature of these early 20th-century instruments and arrangements, you don't want to introduce any sonic artificiality. I experimented with different interconnects from my D-to-A converter to my console, because just the transfer into the console or the A-to-D on the way out gives a certain color."

Calbi felt Wireworld Gold Cable and Ayre Acoustics QA-9 ADC converters formed the most neutral path into his custom Muth mastering console. He monitors on the same Proac Response 4 speakers he's used since 1992. "But with a project like this that was mixed so well, where the vocals are always intact and clear, there's not a lot of EQ that needs to be done," he says. "Going song-by-song through my notes, I can see there were a lot of them where I didn't do any augmentation to the midrange at all."

"The technique I use when I'm mastering an album is to constantly compare to the tracks I've already mastered, and keep a consistent presence," Calbi continues. "It's not necessarily to get a consistent level of the bass or of the vocal, but to make sure that nothing comes in where it doesn't have the right kind of impact or feel."

studio he shares with musician/producer Tony Shanahan, Hobo Sound, where he works on a vintage Electrodyne console. "I mainly use what's on the console, but I'll often touch it up with a stereo limiter on the bus, maybe a [ADR] Compex or an SSL stereo limiter," Lerman says.

"One of the things we've considered carefully about old records that we love from the '20s is that they're sonically compromised. We're not trying to actually do this the way they did, because that was not optimal; oftentimes on those recordings, you can't hear half the instruments. Instead, we're trying to maintain the art form as close as possible but update it in some slight but special way." ■



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# THE CLASH 'SOUND SYSTEM'

By Barbara Schultz



**T**he Clash—the seminal English punk band comprising guitarist/singers Joe Strummer and Mick Jones, drummer Topper Headon and bassist Paul Simonon—only made five albums, but they recorded an immense amount of material, some of which is just seeing the light of day on *Sound System*, a 15-disc box that's out this fall.

"The last album that The Clash made, *Combat Rock* [1982], was finished in New York and mixed at Electric Lady," says Tim Young, who remastered all of the material for *Sound System*. "It was originally sequenced for a double vinyl album, but it was felt the album was overlong and unfocused, so they gave the 24-track masters to Glyn Johns and gave him carte blanche to do what he wanted. He condensed it down to the single album that became *Combat Rock*."

"People loved that album," Young continues. "'Rock the Casbah' and 'Should I Stay or Should I Go' were big hits. But now, people will be fascinated because [Johns] didn't just remix the tracks; he did a lot of musical edits. This box set includes quite a few sections that people haven't heard, even in the songs they know."

All told, *Sound System* includes three CDs' worth of demos, non-album singles, B-sides and rarities, as well as a DVD with previously unreleased concert footage. The project will also yield a five-CD box of just the original albums, and a single hits disc called *The Clash Hits Back*. Frequently present in Young's studio at Metropolis Mastering during the remastering process was engineer Bill Price, who recorded and mixed *London Calling* and *Sandinista*, as well as former bandmember Mick Jones.

"Mick had been a lifelong Beatles fan, and when he heard the Beatles

reissues, he was knocked out with the fact that there was lots of detail in the tracks he hadn't heard before," Young says. "And that was his brief to me: 'I want people to listen to this and hear things that might have been buried before.'"

For example, one of the *Sound System* 'Extras' is the single version of "White Riot," also track 4 or 5 on the band's eponymous debut, depending on whether you have the UK or U.S. version of the album. Fans will have already heard the percussive boot-stomps in the middle of the track, glass shattering, an alarm bell ringing. But those elements are sharper now, without changing the essential distortion and aggression of the track.

"I was working in the copy room opposite [CBS London's] Studio 3 where they were recording [their first album] with our engineer Simon Humphrey," Young writes in liner notes that are exclusive to *Sound System*. "He was a long-haired, 21-year-old prog-rock fan who amazingly quickly developed a rapport with the band, especially Mick. I used to peek through the glass door in the studio when they were laying down their backing tracks; I'd never seen anyone (before or since) attack a Telecaster with Joe [Strummer's] ferocity!"

At Metropolis, his home for 20 years, Young uses a SADiE workstation, Prism converters and PMC monitoring, along with select outboard gear of his own choosing. "I'm a fan of the TC Electronic 6000 MKII, and I used that for a touch of limiting, but I must stress that there's very little of that on this box set; one of the most important decisions we made early on was not to make it louder than the previous set of reissues, which were done in 1999. There's also a little bit of CEDAR declicking, but there's no attempt at hiss reduction. We wouldn't try to make any of this something that it's not."

Young's approach to the project was very much one of a caretaker of The Clash's legacy. He used a modified Ampex ATR-100 machine to play the original reels, and hand-rewound the original source tapes of The Clash, which he says were so damaged that they may have been played for the last time.

"Another thing a lot of people don't know—and I'm pretty confident I'm right on this—this is the first time that the masters on the second

album, *Give 'Em Enough Rope*, have ever been used for CD, because we never had the master tapes at CBS studios in London.

"That album [produced by Sandy Pearlman] was cut in San Francisco at The Automatt. An EQ'd copy tape was sent across to England, and the original masters disappeared into the Sony library somewhere. Of all the five albums, that's the one where people will hear the biggest difference: in the guitar sounds and the whole aggression of the songs."

Read an extended excerpt from Tim Young's mastering notes at [mixonline.com](http://mixonline.com). ■





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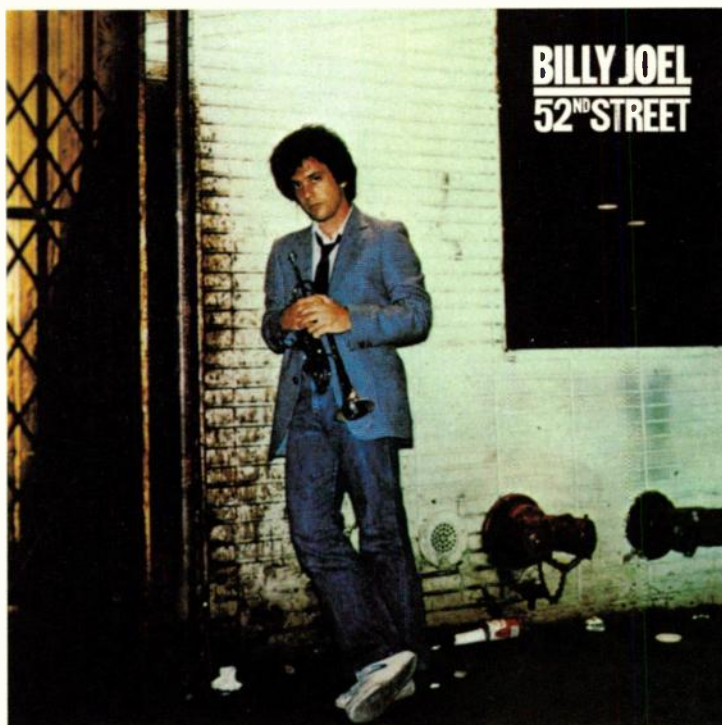


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# Classic Tracks

By Blair Jackson



## "MY LIFE"

Billy Joel

**B**y 1977, Billy Joel's career was finally getting off the ground. The Long Island native had been toiling in the trenches for years and put out four albums, none of which was a exactly a hit, but did get Joel on the radio with songs such as "Piano Man," "The Entertainer" (which cracked the Top 40), "Say Goodbye to Hollywood" and "New York State of Mind"—all now considered classics. His famously energetic live performances added to his growing reputation, but there was still a lingering sense that Joel's albums weren't all that they could be.

That changed in 1977, when Joel hooked up with producer Phil Ramone to make *The Stranger*. Of course, Ramone was already a New York recording legend, having cut his teeth producing jazz albums with the likes of John Coltrane, Gil Evans and Wes Montgomery; seminal bossa nova records with Astrid Gilberto (and Stan Getz); pop artists such as Dionne Warwick, Burt Bacharach and Barbra Streisand; and a slew of top singer-songwriters, including Bob Dylan, Phoebe Snow, Kenny Loggins and Paul Simon (whose *Still Crazy After All These Years* won the Album of the Year Grammy in 1976). Ramone had originally been ap-

proached to produce Joel's 1976 opus, *Turnstiles*, but the timing didn't work out. The following year the stars aligned, and their incredibly productive 10-year partnership began in the summer of 1977 at Ramone's A&R Recording in Manhattan.

Actually, at that point there were two A&R studios—his original facility on West 48th Street (which dated back to 1958), and also a more recent acquisition on 7th Avenue and 52nd Street in an enormous space (60x65x40) that was previously owned by CBS and which had hosted everything from symphony orchestras to some of the most successful pop singers of the '50s and '60s, to the old Mitch Miller television program *Sing Along With Mitch*. Both studios were used on *The Stranger* and the 1978 follow-up, *52nd Street*, which is the source of this month's Classic Track, the hit single "My Life." Tracking was done in the 7th Avenue studio; mixing and some overdubs were at 48th Street. Aiding Ramone in the studio was engineer Jim Boyer, who, despite holding a degree in electrical engineering, had eagerly signed on at A&R as an assistant, at first working primarily on commercials.

"I worked my way up," Boyer recalls. "I started doing some engineering work, and at that point I didn't really know who Phil was; I knew he was the 'R' in A&R. I said to myself, 'I don't really want to do jingles for the rest of my life,' so one day I just went to him and said, 'Can I work for you?' Everybody said, 'You can't do that. You're not allowed to talk to Phil.' I guess it was one of those things where you had to sort of pay your dues before you could approach Phil. I didn't know him, so I had no fear, and he wasn't happy with the person he was working with at the time, so I started working with him. My first credit with him was *A Star Is Born*. I did a lot of the vocal comps for the movie, so I did a lot of work in L.A. at Kenny Rogers' studio. I learned a lot."

Was Phil a good teacher? "Yes, but it was also sort of a baptism by fire. There were moments when he would really teach, and those were always special. But there were also moments where he looked at you like: 'Don't you know what to do?'" Boyer says with laugh. "I loved the guy, and we clicked. I worked with him on most of his projects for a long time, unless he went out of town."

The key to working with Joel, Boyer says, was to get him comfortable in the studio: "Billy and his band were consummate live performers, but the studio was like poison to them, because they felt like they were under a microscope. So before we started *The Stranger* album, Phil and I sat down and said, 'There's got to be some way to create a live environment for them, so they can get that fear out of their heads.' That's when 7th Avenue [studio] was still alive, and A-1 was the perfect place to record them because it was a huge room—an old scoring studio. It was built so all the leakage in it was good."

Joel was thrilled that unlike some previous producers, Ramone was enthusiastic about working with the core of the singer's small but ver-



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satire road band—drummer Liberty DeVitto (whom Joel knew from his high school band days on Long Island), bassist Doug Stegmeyer and reeds player/organist Richie Cannata. For guitars, however, they brought in some top session pros—Steve Kahn, Hiram Bullock and Hugh McCracken for *The Stranger*; on *52nd Street*, Kahn dominated, but there were also contributions on a few songs from McCracken, David Spinozza and Eric Gale.

Boyer says, “Billy always keyed off Liberty, so we had them face each other. Billy was in the center of this big room, and there was a sort of sweet spot for drums, so we placed Liberty there on risers, maybe 15 yards from each other. They were really locked into each other—the accents and the way they played, it was almost like one person playing drums and piano sometimes. The bass player was right next to the drums, and we put the guitars in an isolation booth, but we took the front off the booth so they could feel like they were part of the room.”

The console in the A-1 control room was a pre-automation Neve 8078, and the recorder was an Ampex 24-track, “though sometimes we used two 16-track machines because you got cleaner recordings with less distortion and better dynamic range,” Boyer says.

Tracking was done with the full group live, Joel’s lead vocals recorded at the same time as the piano. “The piano was his prop and his security blanket,” Boyer comments, “so we used mics that had good rejection. Billy played the piano really hard, so that was important. For his vocals, we used a beyer 250, and for the grand piano we used [AKG]

414s and sometimes [Neumann] 87s, with the lid half-stick.”

Ramone wrote in his book, *Making Records: The Scenes Behind the Music*, “To help Billy find the right voice when he was recording, I made him a control box with Echoplexes, MXR phasers and flangers. We labeled the buttons ‘Elvis,’ ‘Doo-wop,’ ‘R&B,’ etc. and put it right on the piano so he could switch the effects around until he hit one he liked.”

As for drummer DeVitto, “He hit those drums really hard,” Boyer notes. “In the regular recording world, the guys who played on jingles hit them really light, so you used a lot of condenser microphones. But with Liberty, we used mostly dynamic mics. I used a D12 in the kick drum, which at that time was sort of a new mic.” He put a Shure 57 top and bottom on the snare, Sennheiser 421s on the toms and 414s as overheads. Bass was captured direct (and put through a Lang EQ), and guitars were miked with Sony C-37s.

Boyer says, “Billy was not a studio person, so weren’t going to get five takes out of him. Phil said, ‘I want you to record everything—record the effects and whatever you’re doing and make sure we have it on tape, because if that’s the take and we have to fix something, you’ll have a recording of what the effects were. So it was like one, two or three takes and that was it. When Billy said that was the take, he sometimes went home! But he knew when he’d gotten it.”

“The biggest problem working in that room,” he continues, “was you had to have a good mix going, because when you took the final tracks over to mix, you had leakage, so if you pulled any of the mics



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out of the live track, you would hear the change. You could only do so much to the mix without changing it pretty dramatically. Also, for guitar overdubs, we did most of the recording in the same room we did the tracks. That way, if we had to repair a guitar track, when you switched tracks you had the same kind of leakage, so you wouldn't hear the ambience change."

Ramone mixed at the 48th Street studio, which had a custom, heavily modified tube broadcast console. "We had some great old EMT plates over there that had been tweaked and hot-rodded so they were really clean," Boyer says. "They were locked in a basement room, and they were only wired to Phil's studio. He loved those."

*The Stranger* was a shocking success when it came out in the fall of '77—it produced four Top 40 singles ("Just the Way You Are," "Movin' Out," "Only the Good Die Young" and "She's Always a Woman"), sold 4 million records in its first year alone and won Grammy Awards for Record of the Year and Song of the Year (for "Just the Way You Are"). It lost Album of the Year to *Saturday Night Fever*. Overnight, Joel went from playing theaters to arenas. Rather than riding that momentum to its natural conclusion, however, he went back into A&R for two months in the summer of 1978 and cut the follow-up album, *52nd Street*, with Ramone and Boyer.

The song that kicks off that album, "My Life," is a churning, mid-tempo rocker that captured Joel's confident and defiant side: "I don't care what you say any more, this is my life / Go ahead with your own

life and leave me alone." It's propelled by pumping bass and drums and Joel's keyboards—"It sounds like multiple keyboards, but I think it was probably only two, the main one a Rhodes which we ran through tape phasing," Boyer says. The obviously Beatles-inspired harmonies by Chicago members Peter Cetera and Donnie Dacus (Ramone had produced a couple of their albums) were added later.

In Ramone's book, he quotes this anecdote about "My Life" from Liberty DeVitto: "[Phil] wanted me to play a very straight beat, and I bucked him. 'I ain't playing that disco bullshit,' I said. Phil got up, slammed something on the console and scolded me like he was my father. 'You've been in this business for what—12 minutes? And you're gonna tell me what you're gonna play? Just get the hell in there and play the way I told you to play.' I grumbled about it then, but every time I see the Gold record I received for 'My Life' on the wall, I mutter, 'F—in' guy was right!'"

Indeed, "My Life" shot all the way to Number 3 ("Big Shot" followed, to Number 4) and *52nd Street* rocketed to Number One on the album charts (a first for Joel), where it stayed for eight weeks. It sold more than 2 million copies in its first month alone (over 7 million total), and it went on to win 1979 Grammys for Album of the Year and Best Pop Vocal Performance.

All in all, it was quite a couple of years for Joel, Ramone and Boyer, and that team would stay together all the way through Joel's 1986 album, *The Bridge*, enjoying many more hits along the way. ■



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# Live



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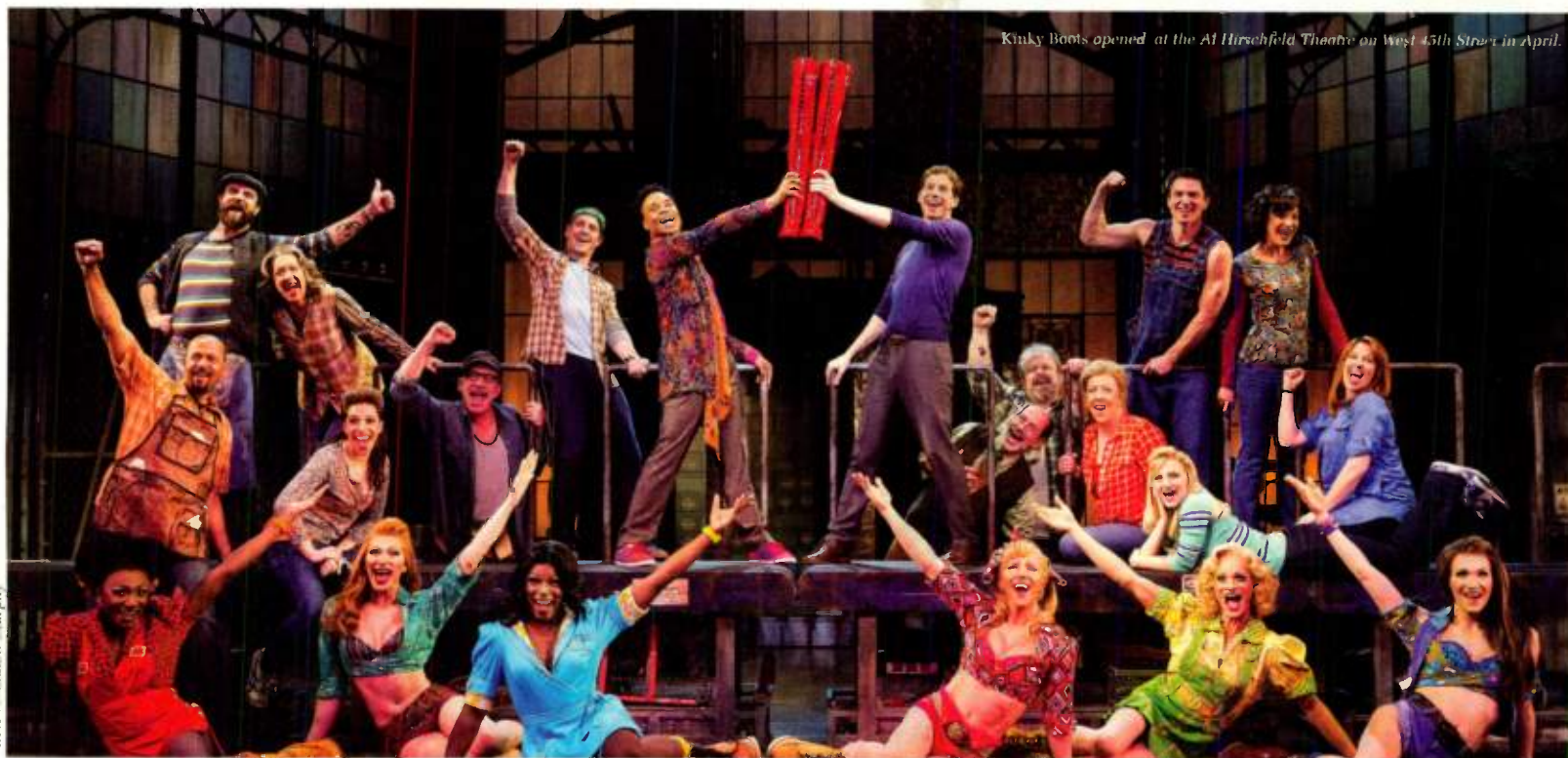
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## 'KINKY BOOTS' ON BROADWAY

Tony Award-Winning Sound Design for Best Musical of 2013

By Matt Gallagher

**T**he new musical *Kinky Boots* made an immediate, triumphant splash in its Broadway debut this year, beginning its open-ended run at the Al Hirschfeld Theater on West 45th Street on April 4 and then garnering 13 Tony Award nominations en route to six wins on June 9. This high-spirited production is the brainchild of the all-star creative team of multiple Tony Award winners Harvey Fierstein (book writer) and Jerry Mitchell (director/choreographer), and Grammy Award-winning pop music superstar Cyndi Lauper, who made her Broadway debut as composer and lyricist and became the first female solo songwriter to win a Tony.

Inspired by a true story, and reimagined

from the 2005 Miramax film of the same name, *Kinky Boots* tells the tale of young businessman Charlie Price (Tony nominee Stark Sands), who is compelled to leave his pursuits in London and return to his late father's bankrupt shoe factory in Northampton, England, to try to save it. At the factory, Price meets Lola (Tony winner Billy Porter), an entertainer and cross-dresser who needs a pair of high-quality stilettos and senses a profitable opportunity in manufacturing ladies' shoes for men. Price and Lola work together to save the family's business and find their common ground in the process.

To help tell this story, Lauper composed a lively pop-rock score performed by a 13-piece orchestra (synths, guitars, drums, strings, reeds

and horns), directed by Brian Usifer. If you are counting at this point, four of *Kinky Boots'* six Tony wins are a testament to the appeal and impact of its music: Best Musical, Best Original Score (Music and/or Lyrics) Written for the Theater, Best Orchestrations, and Best Sound Design of a Musical, which went to veteran sound designer and engineer John Shivers, whose previous Broadway credits include *Bonnie and Clyde*, *Hugh Jackman Back on Broadway*, *Sister Act*, *9 to 5*, *Cat on a Hot Tin Roof*, *The Little Mermaid*, *Tarzan*, *In My Life*, and Billy Crystal's *700 Sundays*.

"My first exposure to Cyndi's score was actually at the reading we did in New York in January of 2012," Shivers says. "I really liked it right



Photo: Lisa Kovarik



David Patridge and John Shivers at the DiGiCo SD7T

from the start; it was unique and fresh. It was also immediately clear that we were going to need to enhance or at least support the pop influences of the score with a solid and punchy reinforcement system. I felt so fortunate to have Stephen Oremus there as the orchestrator/arranger. He is a true talent with a huge breadth of knowledge in many genres of music and he is a great collaborator. We, together, were able to carve out a sound most appropriate for Cyndi's pop/Broadway score."

*Kinky Boots'* producers mounted its first, pre-Broadway production in Chicago at the Bank of America Theatre, where it played in October and November 2012. In Chicago, Shivers specified the house audio system that carried over to Broadway, working with Scott Kalata of Masque Sound in East Rutherford, N.J., a leading theatrical sound reinforcement design and installation company. "I have had an excellent relationship with Masque for nearly two decades," Shivers says. "They offer a combination of excellent technical services and creative solutions to fully support our design needs."

"I've been working with John for many years now, overseeing his specifications and making sure the shop is able to provide all the equipment that he requires," Kalata says. "That in-

cludes anticipating things he might need and getting them all incorporated into his projects. It's a pleasure to work with somebody who is so well organized and knowledgeable."

Shivers' equipment package for *Kinky Boots* includes a DiGiCo SD7T digital mixing console, TC Electronic Reverb 6000, Sennheiser SK 512 transmitters, d&b audiotechnik E-Series small-scale speakers for surrounds, L-Acoustics 108P self-powered compact coaxial speakers for the foldback, and Meyer Sound MINA and M'elodie line array loud-

speakers for left/right/center coverage, as well as a rear delay cluster of five M1D line array loudspeakers, plus six 500-HP and two 700-HP subwoofers. Five Galileo 616 processors handle system drive and alignment.

Shivers notes that when the production moved into the Al Hirschfeld Theatre, he found that "the box seats...pretty much tuck right up against the proscenium, so the seats running along the sides of the orchestra seating section are very much shaded from the side arrays. The team at Masque was able to provide additional speakers to make sure those seats were covered, and to overcome that obstacle.

"The objective was to have equal distribution of sound to every seat in the house, and to be sure to achieve a solid and punchy sound to meet the needs of the pop nature of the show," Shivers says. "The 108P is one of my favorite fill speakers. It provides a great deal of clarity and SPL in a very small package. Meyer products and the MINA in particular were well-suited for our needs. The MINA is a small yet powerful speaker system, and accomplished both the sonic quality we were looking for while remaining unobtrusive enough to meet the visual aesthetic requirements. The Galileo is very flexible, has great EQ, and the seamless integration with the MAPP Online Pro prediction program is quite helpful."

*Kinky Boots'* associate sound designer and front-of-house engineer is David Patridge, whom Shivers has known since 1990 and regularly collaborated with since 2005. "Nobody is better or quicker than David at putting a solid mix together," Shivers says. "Once the rough mix is in place, we work together to refine it and create a dynamic shape to the show."

"Our approach [to the FOH mix] is probably similar to many engineers out there and comes from a number of years doing live music before doing Broadway shows," Patridge says. "Choose great mic positions, establish a sensible gain structure, listen carefully to the sounds from each instrument and maybe re-choose the great mic positions. Building a mix starts with the rhythm section and then moves out from there. We tend to use a bit of stereophony to make a more interesting soundstage, but you need to constantly be vigilant regarding the prime directive, which is to tell the story. The vocals need to be intelligible and have enough space in the mix to be comfortably heard. A musical is the sum of many parts, and nobody will appreciate the sparkle in the sound of the toms or the lush strings if the vocals can't be heard."

One key aspect of Shivers' sound design for *Kinky Boots* is achieving isolation and clarity, to allow for mixing control over the musical instruments, which he points out is critical for delivering a pop-music score. At the Hirschfeld, he says, the orchestra is configured in "a pretty traditional layout, with the exception of the drums," which he placed in a room on the building's fifth floor. "While this is perhaps not ideal from a communication standpoint, it does completely negate the bleed from the drums into other instrument mics. Other players are placed in such a way to minimize their effect on each other, as well. In the pit, the winds are house-left, the keyboards and guitars in the center, and the strings house-right." The orchestra pit is outfitted with an Aviom monitoring system; drummer Sammy Merendino is connected to the orchestra via audio and video feeds.

Both Shivers and Patridge note that the two factors that most affect each night's mix are the variations in each performance, and temperature and humidity. "The idea is to generate as consistent a mix from show to show as possible," Shivers says. "The challenge is to make this happen with constantly changing input. So you are really continually dialing in a new mix to one degree or another."

"We try to put it in the pocket for the audience every night but there are always differences," Patridge adds. "We have been fortunate to have had full houses every show so at least we don't need to deal with the differences that occur with the sound between an empty house and a full house!" ■

## more online



Read more  
about the audio  
production of  
*Kinky Boots*.  
[mixonline.com/10/2013](http://mixonline.com/10/2013)



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## SILVERSON PICKUPS ON TOUR

Los Angeles-based alternative rock band Silversun Pickups—Brian Aubert (singer/guitarist/songwriter), Nikki Monninger (bass), Joe Lester (keyboard) and Christopher Guanlao (drums)—is continuing to tour the U.S. in support of their 2012 release *Neck of the Woods* (Dangerbird Records), which was produced by Jacknife Lee (U2, Weezer, REM, Snow Patrol). This past summer, the band visited festivals, amphitheaters and mid-sized venues. Mix caught up with the quartet in August when they visited The Paramount in Huntington, N.Y.

Front-of-house engineer Fritz Michaud—who first met the band members in Los Angeles' Silverlake neighborhood, where they all live—notes the types of adjustments he's had to make while seeing a variety of indoor and outdoor venues. "The way you mix in a shed or festival is so different from the approach you have to take in a theater with a balcony.



Photo: Todd Berkowitz

For instance, today's venue [The Paramount] is all exposed brick and concrete with a flat back wall. Lots of reflections! Getting to a place where you trust your mix and change your house EQ and overall levels, rather than adjusting individual channels, was a big breakthrough for me. I also feel that most venues have an optimal SPL—the sweet spot. Any louder and you lose clarity and definition, while lesser volumes lose that visceral live rock experience." — Matt Gallagher

## THE BOWERY BALLROOM

The Bowery Ballroom ([www.boweryballroom.com](http://www.boweryballroom.com)) has been open in Manhattan's Lower East Side for the past 15 years. Operating under the aegis of Northeastern concert-promotion and venue management company The Bowery Presents, and with a capacity of 550, The Bowery Ballroom is selling out shows every week,

presenting up-and-coming indie rock bands alongside the likes of Arcade Fire, The Pixies and Yoko Ono. In July, the readers of *Rolling Stone* magazine named the Bowery Ballroom one of the 10 best live music venues in the U.S., citing its "consistently great sound and sightlines."

Production manager and front-of-house engineer Kenny Lienhardt has worked at The Bowery since the day it opened, mixing about four headlining acts and most opening acts each week. "The high balcony and 25-foot-wide stage in a 35-foot-wide room guarantee even coverage and great sightlines," Lienhardt says. "The [room] treatments eliminate any standing waves, and to a great degree, [the need for] any bass traps. The P.A. also has plenty of Crown [Audio] power to provide lots of headroom and great coverage straight to the back evenly. The wood floor also ensures the subs will transmit a 'thump' to every pair of feet in the house, even when it's packed. Concrete won't do that."

The Bowery uses EAW KF650z three-way, full range speakers, with a center cluster of KF695z's to cover the 25-foot gap between main L/R speakers. "The system was designed by the late Matthew Kasha, with help from Jim Falconer and EAW," Lienhardt says. "[It was] expertly done by a studio stalwart right down to the TT patchbay that connects our 15 comps, 10 gates and effects units. The consoles are currently Midas Heritage 3000s. This rig will sound great with digital consoles as well, mostly due to the full range boxes and the fact that they are up in the corners of the room where they couple and create power." — Matt Gallagher



*Chelsea Wolfe ignited the Bowery Ballroom in September*

Photo: Todd Berkowitz

## DINING WITH MEYER SOUND



Since its introduction in late 2006, Meyer Sound's Constellation system has found a home in high-end performing arts centers, houses of worship, theaters, museums, and more, including a recent installation at Jazz at Lincoln Center in midtown Manhattan. But a little more than a year ago, the company generated some buzz around a rather unique install in downtown Berkeley, Calif., at a Oaxacan-themed restaurant named Comal.

Comal owner John Paluska managed Phish for 17 years before switching careers. He wanted a festive environment, he says, while not being overbearing. And he wanted to be able to change the acoustic energy by zones so that if the bar is hopping, he can bring down the noise level, or if the restaurant is full but relatively dead sounding, he can bring up the music without stifling the conversation. It works.

Meyer's team established a baseline acoustic signature in the open, airy, exposed-beam, 3,000-square-foot environment by putting up the company's first Libra acoustic panels on the walls, featuring artwork by renowned photographer Deborah O'Grady. Next came Constellation: 38 UPJunior VariO and 45 MM-4XP loudspeakers, 12 MM-10 miniature subwoofers, and 28 microphones. Digital processing is hosted by the Meyer Sound D-Mitri digital audio platform. The restaurant area is divided into three zones, with presets (managed by an iPad) to control the ambient characteristics of each space.

"I use the analogy of a portrait photo taken with shallow depth of field," explains Paluska. "Up close, the image is sharply detailed, while behind it there is a pleasantly textured but undefined setting. That's the sound environment here. We're creating sonic microclimates, where people in proximity can converse easily, yet we still have an energetic buzz in the atmosphere." —Tom Kenny



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# All Access

Photos and Text  
By Steve Jennings

## FUN.



Capitalizing on a huge breakout year, the band fun. was out all summer on a Most Nights tour. *Mix* caught the band—Nate Ruess, vocals; Andrew Dost, keyboards; Jack Antonoff, guitars; Nate Harold, bass; Will Noon, drums; Emily Moore, acoustic guitar and keys—at the famed Greek Theatre in Berkeley, Calif., on September 6.



"I'm mixing the band on the DiGiCo SD8," says **FOH engineer George Reddy**. "It's got lots of handles and it sounds great! All my plug-ins are in the DiGiCo box, and I'm using Smaart 7 to measure the rooms. We're also using Lectrosonics wireless. Our sound company is SoloTech and we have Jonathan Trudeau and Todd Hartman as our system techs.



"My first show with fun. was also my first show on a DiGiCo SD8," says **monitor engineer Dave Rupsch**. "It has a lot of powerful features and a very rich, yet clean sound. Today's in-ear monitoring technology is so good that a monitor desk's sonic characteristics are more vital than ever; every EQ shift or trim adjustment is completely apparent.

We are using eight stereo channels of Sennheiser G3 wireless for IEM transmitters, four channels of Shure UR-4 (main RF, spare, saxophone) and a Professional Wireless helical antenna and combiner. The unique piece is a TC Helicon Voice Live 2 vocal harmony pedal. It runs in-line with the main vocal and returns into the FOH and monitor desks via a stereo return. I really love the way this thing sounds and what it is capable of. Nate does a good job of monitoring it and making it react—he really plays it."





"Nate is singing into a custom gold Shure SM-58 RF," Rupsch says. "We are using a little of everything as far as IEM molds on stage: Andrew Dost uses Ultimate Ears UE-18s, Nate Ruess uses JH Audio JH-16s, Jack Antonoff uses Shure E-215 generic fits Emily Moore uses JH-7s, Nate Harold uses UE-10s, and Will Noon uses JH-10s.

"It can get a little tricky on stage with everyone using different molds and being able to calibrate mixes accordingly. Fortunately, I have my own molds for a lot of these models so I can accurately mix and reference for them."



"Jack Antonoff is currently using a special edition 2003 Vox AC30HWH [hand-wired head]," says **guitar tech Derek Kern**. "It's miked by a Shure KSM 32 and a Shure Beta 56. His main speaker cab is kept in an isolated road case to keep stage volume to a minimum. His pedalboard consists of a Z Vex Fuzz Factory, Fulltone Fat Boost, Ibanez TS808 Tube Screamer, two Electro Harmonix Nano Holy Grails, and a TU-2 Tuner pedal. He is currently playing Epiphone Wilshire Phant-O-Matic guitars. To give Jack a bit of stage volume coming from his onstage cabinets, we power these by using a Crown amp, and a Hughes & Kettner red box."



"I'm using two Apple MacBook Pros, master and backup, two MOTU UltraLite mk3 audio interfaces, a radial SW8 switcher, a MIDI Solutions MIDI thru box and two Muse Receptor VIPs, again master and backup," says **keyboard tech Paul Forgues**. "The

MOTUs are our audio interfaces, running off the FireWire bus. The Radial switcher is sent a 1kHz tone from the master UltraLite for 'automatic' switching in the event of power or other type of failure. The UltraLites also serve as the MIDI interface. All keyboards go through a Radial Pro D8 DI box. We use the Muse Receptor VIP for our piano sounds; in Live mode we can switch piano sounds instantaneously without waiting for the samples to load.

The Meyer P.A system at the Greek comprised 28 LEO mains, 14 per side; 24 LF1100 subs, 12 per side; 24 MICA, 10 per side outfill when needed and two per side downfill; and eight UPJs on the lip, with six UPQs for utility fill.



"The Akai MPK25 is being used as a triggering device for our track playback system," says **drum and bass tech Shane Timm**. "Drum mics are the Shure Beta 52 on kick, Shure KSM137 on snare top, Shure Beta 57 on snare bottom, Shure KSM137 on hi-hat, Shure KSM-137 on toms, Shure Beta 98 on floor toms, Shure KSM181 on ride cymbal and Shure KSM181 on crash. Nate Harold uses an rcb audio 40 Bass Head and r2 cab for stage volume. For the FOH mix, he uses a combination of Boss and Electro Harmonix pedals to achieve his desired tone."



# On the Cover

By David Weiss

## ELECTRIC LADY STUDIOS



Photo: Brad Stein

**Y**ou'd be hard-pressed to find a place anywhere in the world more inextricably connected with its founder than Electric Lady Studios. The name Jimi Hendrix is bound to come up, whether the conversation is about this iconic studio's tomorrow, yesterday or today.

Lee Foster has been the General Manager of Electric Lady since 2004, and it seems that the heavenly approval of Hendrix is never far from his mind. "In general, I have to be thoughtful of, not only the day-to-day operations and cli-

entele, but the history and future of an icon's legacy as well," he says. "I once asked a mentor for advice, and his response was a stern and simple, 'Don't f— up.' It was the best advice I ever received.

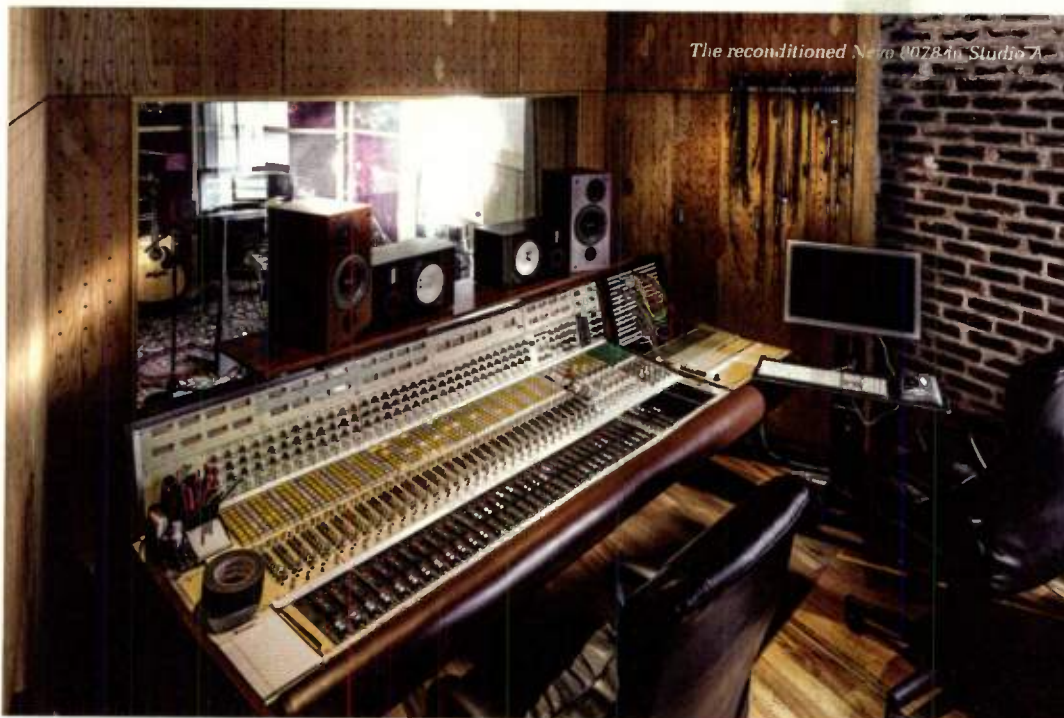
"There has always been a bigger picture in my head," Foster continues, "that goes something like this: 'Someday someone will write a book about the studio, and the recordings made here on my watch need to be respectful and representative of Electric Lady's legacy. Of Hendrix's legacy.' I can't just book sessions

to the highest bidder here, and/or 'first come, first serve.' I have a responsibility to curate my portion of the total legacy. It matters to me."

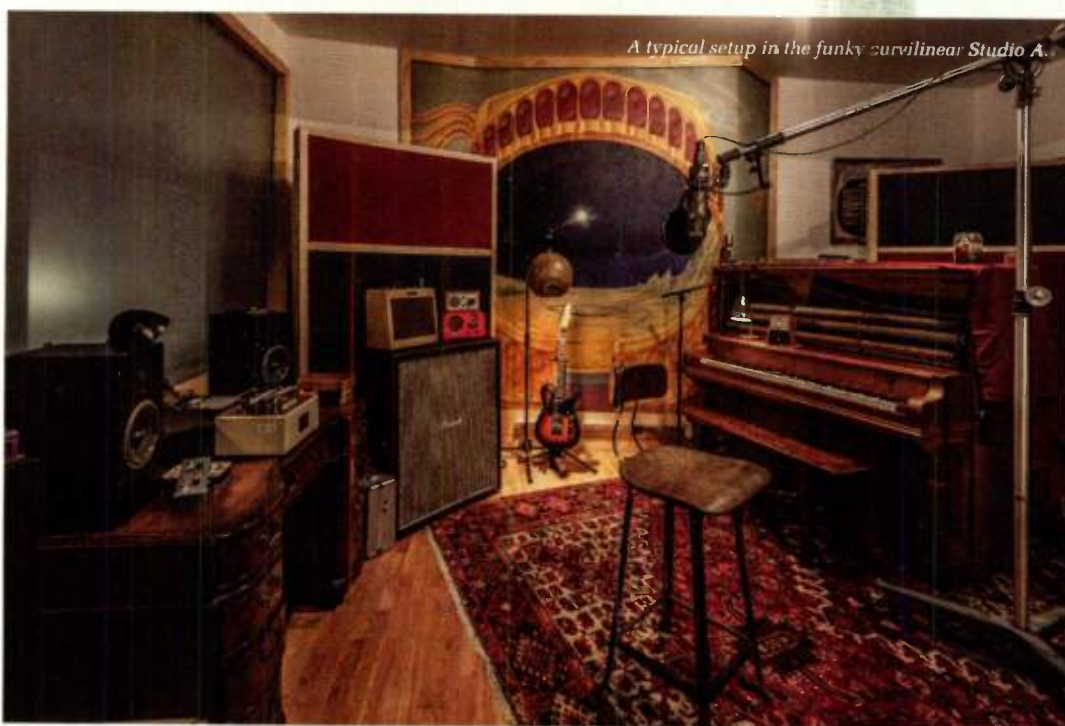
Of course, a big part of preserving Hendrix's legend means knowing when to be adventurous. For Foster and his team, that requires striking a balance between tradition and progress when equipping the John Storyk-designed studios, which first opened for business on August 26, 1970.

"I'm not a technical person, but I like classic things," notes Foster. "The owner likes classic





The reconditioned Neve 8078 in Studio A



A typical setup in the funky curvilinear Studio A

things. We believe in classic consoles, amplifiers, microphones and techniques. I balance it with the modern standards as they happen—software updates, plug-ins and mid-field monitoring options primarily.

"When renovating the facility in 2011 and 2012, for example, the owner and I decided that no two rooms would share an identical desk. We inherited three rooms with three SSL J9000s, which we felt was a mistake. Now, we have a classic, completely restored Neve 8078, a completely restored API 3288, Tom Elmhirst's Neve VR, John O'Mahony's Neve Genesys, and one remaining, custom purple SSL 9080 in Michael Brauer's room. Each desk is ideal for its individual application and studio—we have every flavor."

## A DOZEN CLASSICS FROM ELECTRIC LADY\*

**Jimi Hendrix—*The Cry of Love* (1971)**  
Producer: Hendrix, Eddie Kramer, Mitch Mitchell; primary engineer: Kramer. First posthumous Hendrix album includes several tracks cut at EL.

**Steve Wonder—*Talking Book* (1972)**  
Produced by Wonder, Robert Margouleff and Malcolm Cecil; engineered by Margouleff, Cecil and Austin Godsey. "You are the Sunshine of My Life" and "Superstition" are among several immortal tunes.

**Patti Smith—*Horses* (1975)**  
Producer: John Cale; engineer: Bernie Kirsh. The first great American punk/new wave album; highly influential.

**David Bowie—*Young Americans* (1975)**  
Producers: Bowie, Tony Visconti, Harry Maslin; engineered by Visconti, Maslin, Eddie Kramer. Mostly done at Sigma in Philly, but "Fame" and more was at EL.

**Chic—*Chic* (1977)**  
Producers: Nile Rodgers, Bernard Edwards; engineers: Bob Clearmountain, Michael Frondelli, Tony Savarese, et al. Dance classic from NYC masters.

**The Rolling Stones—*Some Girls* (1978)**  
Produced by The Glimmer Twins; engineered by Chris Kimsey.

**AC/DC—*Back in Black* (1980)**  
Guitar/vocal overdubs and album mix. Produced by Mutt Lange; engineered by Tony Platt.

**The Clash—*Combat Rock* (1982)**  
Producers: The Clash; engineer: Glyn Johns. Epic late-period work contains "Rock the Casbah," "Should I Stay or Should I Go."

**Weezer—*The Blue Album* (1994)**  
Produced by Ric Ocasek; engineered by Chris Shaw.

**The Roots—*Things Fall Apart* (1999)**  
Producers: Questlove, Scott Storch, et al; engineers: Keith Cramer, Todd Fairall, Melvin Lewis, et al. Groundbreaking alterna-rap/jazz/soul/funk whatever.

**D'Angelo—*Voodoo* (2000)**  
Producer: D'Angelo; engineer: Russell Elevado. Neo-soul masterpiece by prodigiously talented musician.

**Daft Punk—*Random Access Memories* (2013)**  
Produced by Daft Punk; engineered by Mick Guzauski, Peter Franco, Florian Lagatta, and David Lerner.

\*and in most cases, other cool studios, too.





While things are humming along at a brisk pace at Electric Lady today, building up to this point took some concerted reconstruction. When Foster took over operations, he found that his client base had shrunk down too narrowly for comfort, a condition that he took methodical action to correct.

"Candidly, the early 2000s was a difficult period for all studios, Electric Lady included," he explains. "I inherited a small, mostly hip hop-oriented clientele, but not much else. I maintained what was there and started building on it locally with East Village artists like Ryan Adams and The Strokes, and continued to expand our network from there. Over time, I was able to reintroduce the facility to Patti Smith, David Bowie and Keith Richards. More recently, I've seen Prince, Arcade Fire, U2, Adele and Daft Punk in our hallways. It's nothing like it was nine years ago. Again, project diversity and performance matters here."

***"YOU HAVE TO MAKE THE BED BEFORE YOU INVITE PEOPLE OVER, AND YOU HAVE TO FIND A TEAM THAT SUPPORTS THE TOTAL VISION...AND IF YOU'VE DONE YOUR JOB, RELATIONSHIPS CAN BE IMMEDIATE AND LASTING."***  
—LEE FOSTER

According to Foster, upgrading the staffing and equipment have come first in accomplishing the critical mission of growing his client base. "You have to make the bed before you invite people over, and you have to find a team that supports the total vision. Once you're ready, you introduce people to the product, and if you've done your job, relationships can be immediate and lasting. Now that we have the right equipment, atmosphere and staff, I'm no longer sheepish about selling it. I think we're great at what we do."

But maximizing a world-class studio today doesn't mean just getting all-star sessions and weeklong lockouts. An important part of the economic model for facilities like Electric Lady is drawing in—and retaining—mixers, producers and engineers in residence. That's a skill that Foster has proven adept at, bringing together an impressive group who are at home under Jimi's roof.

"Starting around 2009, I began speaking to mixer/

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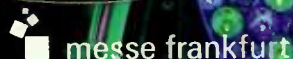
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# A SERIES OF FORTUNATE EVENTS

## John Storyk on the Birth of Electric Lady

by Barbara Schultz

**T**here's always going to be a first one," says architect John Storyk, reflecting matter-of-factly on the first studio he ever designed. In other words, everybody has to start somewhere. Storyk was fortunate enough to start with Jimi Hendrix and Electric Lady.

After graduating from Princeton in 1968, Storyk went to work for a commercial architecture firm in New York City. Evenings, he frequented blues clubs, including one in the basement of the 8th Street Cinema (52 West 8th), where he'd seen greats such as Buddy Guy, Junior Wells and the young Jimi Hendrix.

"I got a very small commission around that time—to do what seemed like a rather insignificant project in SoHo [to design] an experimental 'sensorium' called Cerebrum," Storyk recalls. "It ended up becoming very well known; it got the cover of Life magazine. The late '60s were ground zero for colored, changing lights that changed the environment.

"One night, Jimi Hendrix went to this club. Shortly after, he decided to buy the blues club at 52 West 8th Street and asked his manager to find out who designed the nightclub in SoHo. I got a call from Jimi's manager, Michael Jeffries: 'Would you like to design a club for Jimi Hendrix?' I was 22 years old."

Hendrix was particularly taken with the shifting colors and curved surfaces in Cerebrum, and he wanted Storyk to design a nightclub that incorporated similar elements.

"I went to a meeting with Michael, Jimi and Jim Marron, who later became manager of Electric Lady Studios," Storyk says. "I was hired to design this club for Jimi, which I did, but at the eleventh hour the idea was scrapped. Eddie [Kramer, Hendrix's studio engineer] had recently arrived from England and was more interested in a studio than a club. I was invited to stay on and design the studio. I quit my day job."

Storyk simultaneously found himself an internship with an acoustician who designed radio stations. That way, he learned about acoustics as he went, and had someone he



could consult on the acoustical design. "I had no experience," Storyk says. "A combination of intuition, architectural skill and good old-fashioned luck resulted in the Lady coming to life. Try to remember, in 1968, 1969, there was not really a studio design community, and the idea of an artist having his own studio was just emerging. For a major artist to have his own world-class studio below 42nd street in Manhattan was unheard of."

Looking back, Storyk says that the feel of Electric Lady as an artist-centered studio was, and continues to be, the studio's most essential quality. "Until that moment, most studios were not comfortable for artists," he says. "They came in, they did their recording, they left. They never went into the control room. Control rooms were small; they held equipment, and they were just for engineers.

"Jimi's idea was completely antithetical to that. He wanted his studio to feel like his living room; it was more or less built as his personal studio—like a home studio on 8th Street. There's a great big A room—that came from Eddie's experience at Olympic Studios, and from the way he likes to record. There's also terrific equipment, but the real trademark is the fact that when you go through the door, it feels very safe, very private, very quiet. It's an artist's studio."

Storyk is the first person to point out that if he knew then what he knows now, he would approach some aspects of the design differently.

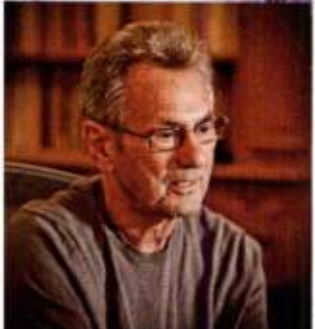
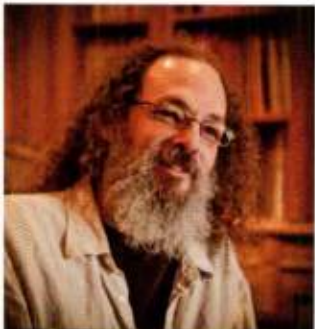
For example, today he probably wouldn't agree to implement those curved surfaces. And with 20-20 hindsight, he might even have chosen a different location. But in the end, the designer is justifiably proud of the history, longevity and continued vitality of the first studio he ever designed.

"Often, I get introduced as the designer of Electric Lady Studios, and I say, 'You know that just means I'm old. I mean, do the math,'" Storyk says. "But it's definitely cool: your first project gets built, and it's famous, and it's not just still standing but it's one of the top studios in the world. I'm not gonna lie; that's an honor. I'm forever grateful to Jimi, Eddie and today its current leader, Lee Foster. I'm even more thankful to be part of the audio community." ■





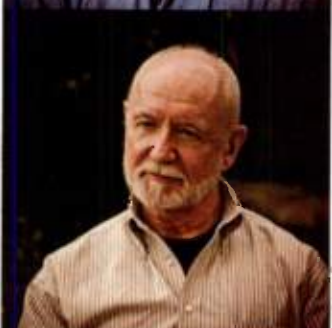
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# EDDIE KRAMER AND THE EARLY DAYS OF ELECTRIC LADY

By Blair Jackson

**W**hen Jimi Hendrix and his manager, Michael Jeffries, decided to buy the recently closed Generation Club in Greenwich Village in mid-1968, the plan was to redesign the space from top to bottom and also have a small 8-track studio on the premises. A young architect named John Storyk was hired, and Jim Marron, who had worked over at one of Hendrix's other favorite clubs, Steve Paul's Scene, was to supervise the transformation.

Engineer Eddie Kramer, who had worked with Hendrix on all his albums, recalls, "I remember walking down the stairs and my first impression was, 'Oh, my God, this is a fabulous space.' I walked around and checked it out, looked at the square footage and finally I said, 'Guys, you're crazy. Why on earth do you want to build a nightclub? Why don't we just build the best recording studio in the world?' And they looked at me like I had four heads.

"Poor John Storyk had already drawn up all these plans for the nightclub, and he was furious; he was not a happy camper," Kramer continues. "But soon he realized that this would be a great challenge for him, and this is what management and Jimi really wanted—a proper recording studio. I think the fact that John was not a studio architect was actually to his advantage, because he started with a clean slate and he had a lot of great ideas and such a wonderful take on design.

"Then we brought in an acoustician, Bob Hanson. We kind of knew what we wanted—Olympic [in London] was my grade-A reference point. It was never too live nor too dead, and that's what I was trying to get at Electric Lady. We also did things like making half the floor covered with carpet and the other half not carpeted." The original walls had white carpeting on them, both for their sound-dampening qualities and to better reflect the colors that a theatrical lighting grid splashed around the room.

The main studio room "was not huge," Kramer says. "The ceiling drops to 13 feet at one end, and is 16 to 17 feet at the other. But it sounded good and it was extremely comfortable, which was very important to Jimi. We wanted to make sure it had the vibe that Jimi wanted"—which explained the psychedelic mural by Vance Jost, the sensuous curves in the studio design, and the lighting.

Kramer's experience recording Hendrix at the Record Plant in Manhattan influenced the choice of custom Datamix consoles for Electric



Lady. "We were convinced by the guy who designed and built that [Record Plant] console that his new board was going to be unbelievable, and he showed us some modules, and it looked pretty cool," Kramer says. Unfortunately, the console builder was in over his head and way behind schedule on making the two boards he promised (one each for studios A and B), and when the first one was delivered, "it was unbelievably badly made," Kramer relates. Then, when word came down that the console maker was about to be shut down by the IRS for failure to pay taxes, Kramer says, "We cleaned the entire place out of every module, every piece of test gear, and took it to Electric Lady. We literally had to rebuild the console. It took us two or three months of heavy work to make that thing come back to spec, and in the meantime, they were building the studio B console in the back.

"When we finally finished the console, we had probably the first fully operational 24-track console: I believe it was 48-in and 24-out and there were 24 buses, graphic equalizers on each channel, six EMTs, a cool monitor section, and we also had quad pan pots with joysticks made by API, because we had API faders. The first machine we had was a 16-track—an Ampex MM1000—but it was wired for 24, so when the first 24-head stack came in, we converted it to 24. We also had loads of 4-tracks and 2-tracks."

According to Kramer, "Jimi had to keep going on the road to make money to support the building of the studio. It took a year and close to a million dollars, but it was definitely worth it. By May 1970, it was pretty much ready to go and we started doing test sessions. Jimi came in and spent three or four intense months there recording some of the best music of his career."

Alas, Hendrix died in England less than a month after Electric Lady's August 25, 1970 grand-opening party, but by then Kramer had already been bringing outside clients down to the studio for a while, with fabulous results. The transition from "Jimi's studio" to a strictly commercial enterprise was surprisingly smooth, if emotionally difficult.

More than four decades on, through changes in ownership and gear (and expansions), it remains "Jimi's studio" in spirit. And to hear Kramer tell it, the original owner still turns up there on occasion: "If I'm working there, I know Jimi's presence is behind me, tapping me on the shoulder, saying, 'Hey, why did you do that?'" he says with a laugh. ■



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\* Session schedule and speakers as of August 2013: Subject to Change; GDCNext EXPO pass must be claimed by Oct 31.



# THE MAKING OF A MONITOR

## AN INSIDE LOOK AT HOW JBL DEVELOPED THE M2 AND RE-IGNITED ITS STUDIO LINE

by TOM KENNY



**A** rich and storied legacy, one associated with integrity, quality, reliability and performance, is obviously a good thing to have for any company in any market. Of course it is. It brings built-in brand recognition, lower barriers of entry to new markets, trusted experience, scale, volume, employee pride and countless other benefits. But having a rich and storied legacy can also be a curse, especially in technology-related industries, where the pace of change has accelerated exponentially in the global market and the pressure from new and varied competitors is constant. Maintaining a legacy in the modern world can be every bit as challenging as building one. The overriding requirements, it seems, are an unceasing drive to innovate and an uncompromised approach to quality.

There are a number of companies in professional audio that meet the criteria; we are an industry built on loyalty, trust and a thirst for vintage gear. But consider JBL: approaching 70 years as a company in its own right, with another 20 years of loudspeaker development and culture tacked on for the founder, James B. Lansing, who began designing horns

and drivers to usher in the age of film sound. A company that straddles pro and consumer, across multiple markets, including cinema, studio, installation, touring, hi-fi and automotive. A company that has risen and fallen with business cycles many times over many years. A company that has virtually "owned" entire

markets for extended periods of time, then lost ground, then boomed again. There are many great loudspeaker manufacturers in professional audio, many with storied histories, but JBL remains unique.

In late 2012, 65 years after the founding of the company with the famed D130 driver and 75 years after James B. Lansing released the iconic, the first real studio monitor, JBL showed what they termed a "next-generation studio monitor" in a seminar at AES. It was a quiet introduction, followed up by an official launch of the M2 Master Reference Monitor at NAMM a few months later. But what it signaled was much larger: a re-ignition of the studio line, based once again on innovation. To put it another way, JBL didn't build a new speaker; they developed new technologies, then integrated them and built a new line of speakers, across multiple markets.



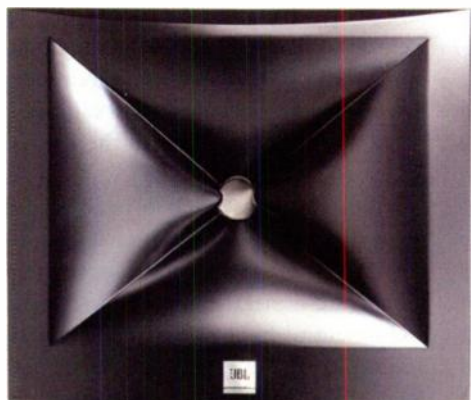
## THE TECHNOLOGIES OF M2

"From the very founding, with James B. Lansing, the company has been about using high-quality materials to deliver high-quality performance," says Director of JBL Technology Mark Gander, who joined JBL in 1976 as a transducer engineer so that he could "apprentice with the masters." "We may integrate the technologies and elements in a unique way, for either studio or live," he says, "but it is still all about sonic accuracy."

"For example, the D2 compression driver, which we feel is a real step forward with two annular diaphragms, was developed as a high-performance element, just like the D130 was designed as a high-performance element," he continues. "We happened to put it first in the VTX line array. It could have just as easily started in the M2, but in a studio monitor we still needed a very specific kind of waveguide to give it very even coverage and low distortion. The D2 does the same job and has the same stringent requirements, live and studio, but it's customized and integrated to fit the application."

The D2 dual-diaphragm, dual-voice coil compression driver was designed by Senior Manager of Transducer Design Alexander Voishvillo, for VTX, the line array system introduced in January 2012. Voishvillo, a Ph.D. who in a previous life designed studio monitors for the Russian Broadcasting Corporation, came up with the idea of foregoing the more traditional dome compression driver and developing a dual-annular diaphragm with dual 3.5-inch voice coils. The result was higher SPL, greater efficiency, less power required.

"We split into two annular diaphragms made out of special high polymers, thermoformed and very light," Voishvillo explains. "Then we have two coils doing the job of one coil. That means there is half as much power delivered to each coil, so we have low thermal compression. It's lighter, more flexible, with lower moving mass, matching phasing plugs and internal damping. And it has ultra-low distortion."




*The revolutionary, patent-pending Image Control Waveguide*

That low distortion led him across the proverbial hallway in JBL's Northridge, Calif., facility to Peter Chaikin, Senior Manager, JBL Recording and Broadcast Marketing. Chaikin actually had a version of the two-way large-format monitor in early stages of development at the time, focusing on the high-end personal professional studio and post-production houses. When he was introduced to the D2, the ultimate design began to take shape.

"We wanted to make large-format monitoring a viable option for a wide range of production spaces," Chaikin says. "We needed high output, extended yet neutral frequency response, a small footprint for a broad range of placements, and it had to be tuneable. Conventional compression drivers act like pistons and high frequencies can break up, leading to distortion. The D2 met seemingly opposing objectives: extended high frequencies,


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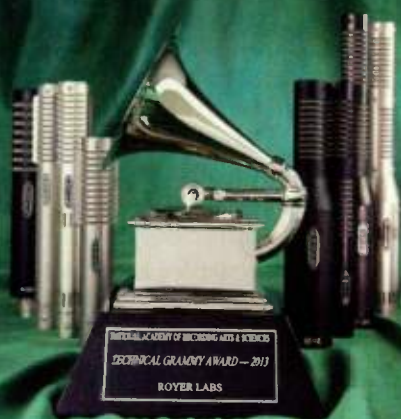
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## THE 3 SERIES

As we went to press, JBL officially announced the 3 Series, which incorporates the patent-pending Image Control Waveguide from the M2, SlipStream low-frequency port design, Linear Spatial Reference design criteria, and Class D amplification. Models include the LSR305 5-inch powered version, with a response of 43 Hz to 24 kHz and peak SPL of 108 dB, and the LSR308, with a response of 37 Hz to 24 kHz and peak SPL of 112 dB.



very low distortion and very high output."

The M2 team—and it really was a team approach, with expertise across the company—then began integration of a new 2216Nd Differential Drive woofer, chosen as the ideal complement to the D2. Based on JBL's Differential Drive dual-voice coil design originally developed in the late 1990s, the new 2216Nd contains five patented technologies, including Low TCR edge-wound wire that allows the woofer to maintain constant impedance regardless of output.

The key to integrating the driver and woofer, then, was the third key innovation: the patent-pending Image Control Waveguide, developed by Senior Systems Engineer Charles Sprinkle, working side-by-side with Harman Corporate Technology Group's Alan Devantier, responsible for system tuning and design of the enclosure, including the patented front ports.

"The Bi-Radial horn that we have had for decades was a 90x60 horn, and not the best match for the low frequency device in the M2," Sprinkle says. "This horn is 120 degrees horizontal and 110 degrees vertical. We knew that if we wanted a good directivity transition between the woofer and the high frequencies, we had to have that amount of pattern, so the waveguide was designed to have a pattern consistent with what the woofer was doing with no discontinuity at the crossover point, which is 800 Hz.

"The second thing we did was use a

blending geometry—there are no straight lines, you'll notice—that has a generally decreasing radius," he continues, "forming an infinite number of reflections, and the net effect is that it smears the reflections coming back down the horn and negates them.

"The third thing we did is bring these 'knuckles,' which is a name that sort of stuck, in from the side so that rather than having this 1.5-inch aperture that we had in the Bi-Radial design, we were able to get the upper pattern control frequency up near 10k, much like it would be with a 25mm dome. You combine that with a high-frequency device that has the internal damping characteristics this driver has, and it sounds like a silk-dome! That nice, sweet, effortless, open sound. In the process, that directivity characteristic in the mid-band went away. Alan was really a champion of doing the right thing with the architecture: driver placement, making the cabinet taller—that opened the door to the work that was done on the waveguide."

From Chaikin's point of view, the new waveguide delivers remarkable high-frequency detail, a true soundstage with natural balance at nearly any listening position, and a neutral frequency response both on- and off-axis, allowing for optimum performance in a broad range of environments, large and small, whether soffit-mounted, free-standing or behind a screen. A product for the professional in everyone.





## PROCESS AND MEASUREMENT

While the D2, 2216Nd and Image Control Waveguide provide the core, many other technologies round out the system. I-Tech 5000HD amplifiers from fellow Harman company Crown supply the power and the floating-point DSP for the system crossover and the EQ needed for room tuning.

But these are technologies, and lots of people are developing lots of great technologies.



*The D2 Dual-Diaphragm Dual-Voice Gold Driver*

What's different about JBL is the integration of the technologies under a single roof, with a commitment to process, measurement and quality. In the development of any product, engineers have access to four anechoic chambers, multichannel listening labs, power test rooms (100 hours at max SPL for new product designs), interferometers, 3-D printers and rapid prototyping for the constant iterations in product development. Rather than measure a single on-

*Continued on p. 76*

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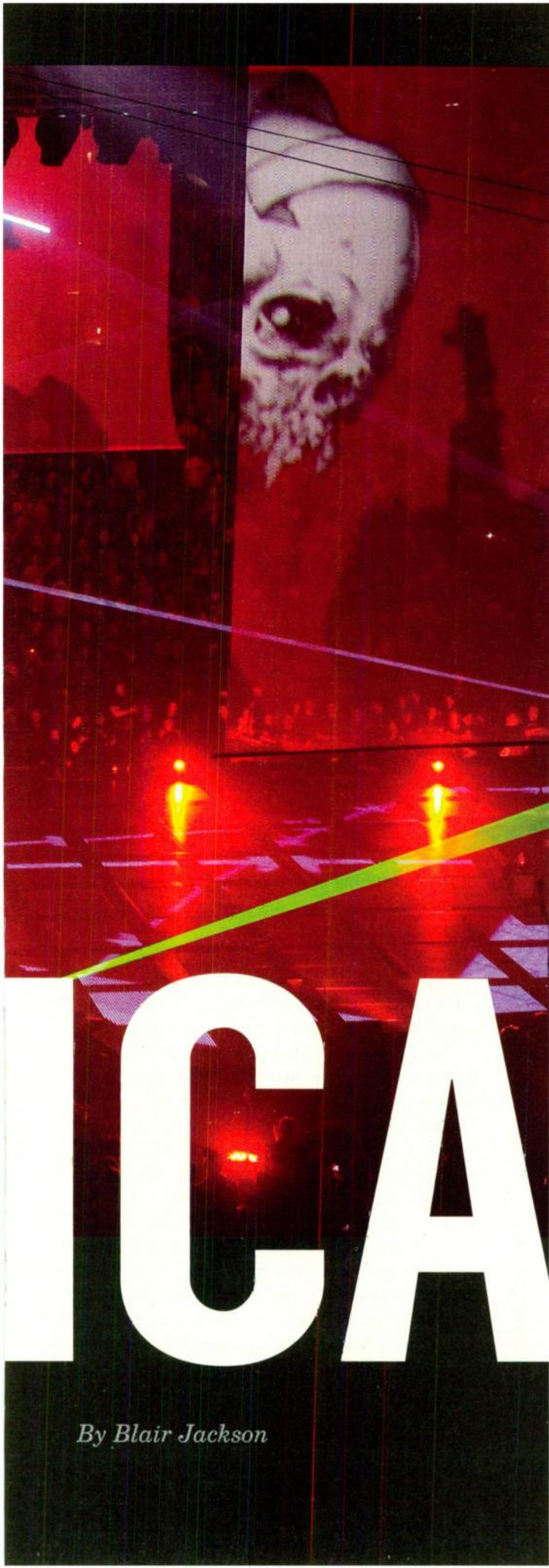




# METALL

*SOUND HELPS TELL THE STORY IN 3-D CONCERT FILM*





By Blair Jackson

**LEAVE IT TO METALLICA**—modern metal monsters with unquestionable integrity and boundless creativity—to come up with a unique twist for their 3-D concert film, *Metallica Through the Never*. Rather than merely presenting the quartet live in an arena, or peppering concert footage with intimate backstage looks at the band, director Nimród Antal's film is interspersed with a dark, impressionistic 24-minute story that takes place offstage, out in the streets, depicting a chaotic and violent dystopian world. A great selection of heavy Metallica favorites—shot with 3-D cameras, the band in-the-round in sold-out arenas—still dominate the 92-minute film, but no one is going to accuse this always dangerous band of playing it safe for their epic big screen debut.

It all starts with the concert, of course. Although a plethora of cameras (and many more microphones) were employed to capture the band live, "The primary shows, of which there were four—two in Edmonton and two in Vancouver—were like regular Metallica concerts," comments music producer and mixer Greg Fidelman, who has worked with the group for the past several years (while also amassing many other credits, ranging from the Red Hot Chili Peppers, to Adele, The Civil Wars and Black Sabbath, to name just a few). "None of the pacing was altered. The band came on and played all the way to the end as if there were no cameras. We also did one other night of pickup shots, where the audience knew that there were going to be some starts and stops. But the great majority of the concert footage is from the other nights.

"When we started putting it together," he continues, "the first thing I did was sit down with the band and say, 'We've got four full shows and a partial show—let's look at it like a live album and pick the best performances of each song, without taking into consideration anything but the best version of the music. Then let's present those versions to [picture] editorial and go from there.' It was like playing tennis with editorial—we'd give them a song and they'd say, 'We're really in a corner for these sections, because we've got a

## THROUGH THE NEVER

great overhead shot from Edmonton, but the musical performance selected doesn't match up. Is there any way you could use the audio from this section based on the visual?' We went back and forth like that, and that went on until the end."

How similar were the versions of each song, from night to night? "Metallica is a real, live rock/metal band and they don't stand in the same place every night, they don't play the same drum fills or guitar solos," Fidelman says. "There are about a dozen vocal microphones on the stage, yet there are only three spots in the whole concert where you know James [Hetfield] is going to be on that mic, and on this song he's going to be on this other mic when it starts. Other than that, he's free to roam the stage as he wants—and it's a big stage—so front-of-house has to keep track of that."

The shows were recorded to Pro Tools with the Music Mix



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Mobile truck and staff. Because Fidelman and the band wanted to capture the full dimensionality of the crowd, they set up 18 audience mics. Fidelman comments, "If you've got the band at one end of an arena, it's obvious where you put the audience mics. But when a concert is in the round it's more of an unusual scenario, so we had one set of microphones on the stage facing the crowd, there was another array hanging from the ceiling that was in the crowd about halfway up pointing down, and then another pair way back as far from the P.A. as we could get. Once we had it, we had to crack the code and figure out what was the best combination of all those elements to capture what it sounded like in the arena."

Those audience tracks became a critical element for veteran Oscar-nominated sound designer Mark Mangini, who was tasked with creating the sound for the largely wordless narrative sections of the film, as well as figuring out how to seamlessly weave from songs to story and back throughout the film.

As far as the design was concerned, "The cars in flames and riots and crowds all have the sounds you'd expect, and we don't disappoint in that regard," Mangini says. "But there were also a lot of ethereal and surreal moments that needed conceptualized sound, and there's where we got into using different reverbs and designing weird noises and various wash-y, drone-y textures I made out of material from my library and fooling around with plug-ins.

"From day one," Mangini continues, "there was always this concern that the connection between the



narrative and the concert is a little oblique, so I felt compelled to have sound help tell that story. The first thing I did was come up with this idea for the opening of the film, which starts with a long aerial shot that goes from space to the parking lot where Metallica is playing. For this one-minute-long stretch I put in sounds as if someone was tuning in through a radio, and every time he lands on a station, we get a little tidbit of information about the plot. You don't know that initially, but the hope is that we've planted little seeds, such that all these ideas pay off as the movie progresses."

Joining Mangini on the post team working at Technicolor Paramount Stage 2 in Hollywood on a Euphonix System 5 were a pair of perennially busy re-recording mixers—Jeff Haboush mixed FX, Foley, backgrounds and crowds; Rick Kline mixed all the music and handled the sync crowds and dialog. Both are multiple Oscar nominees. They had their work cut out for them, too. Besides the 7.1 mix that was their starting point, they also created completely separate original mixes for IMAX, 5.1 for the home theater environment, stereo and, toward the end, a Dolby Atmos mix.

"It would be nice if you could just transfer your mixes across the different formats," Haboush says, "but we found we had to approach each one differently, rebalancing for the different speaker configurations. Like with IMAX, you get a little more girth below, so you have to balance the low end differently than with 7.1, and it's a different surround experience. For the 5.1 near-field you have to raise a few of the very low sounds and get a nicer dynamic range package for that environment. Then we made a left-right [stereo] mix, which is one the band really cares about a lot because it's what a lot of their fans will probably listen to. They're going to take this movie, pop it into a laptop, put their headphones on and listen to it that way. We worked hard to keep the balances, but we manipulated some of the sounds and made sure it played clearly in left-right.

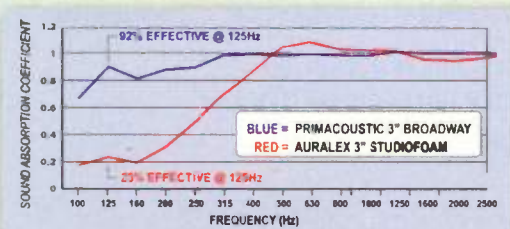
"When we finished that, we went to my favorite format, Atmos," he continues. "This was my first Atmos mix and it was a real treat getting to fill the room with the little details [the format] allows. There's a sequence when Robert Trujillo is playing a bass and he's in this little room that's coated with hundreds and hundreds of speakers, and as you walk by, the camera is shaking, the low end is shaking the theater and there's debris coming from the ceiling. So in that instance, I took a little of the debris—gravel and stones and rattling—and put them up in the top speaker and it created a cool effect. It's nice to be able to take not just big, loud stuff, but also little subtle moves, and put them in the space of the room, and you feel it and you sense it."

Kline explained some of the challenges of the music mix: "In a nutshell, I've got 128 channels coming

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# METALLICA THROUGH THE NEVER



Photo: Michael Coleman

*L-R: Graham Stumpf, post-production supervisor; Mutt Fausak, music editor; Rick Kline, music and dialog re-recording mixer; Sam Kilian, music recording/mix engineer; Mark Mangini, supervising sound editor/sound designer; Adam Ellison, movie co-producer; Jeff Haboush, sound effects re-recording mixer; Jim Monti, music recording/mix engineer; Eric Flickinger, re-recording mix tech; Greg Fidelman, music producer/mixer; David Whittaker, sound effects editor; Bryan Pennington, Dolby tech.*

of the band driving everything.”

Kline also highlights the contributions of Hungarian-American director Antal (Vacancy, Predators): “He brought great filmmaking skills and his familiarity with the music—he’s a huge fan of the band, though that would not have been enough to get him the job. He was so involved with every aspect, yet still respectful of the process. He was conscious of the fact that he had to deliver a full-on concert, but he also had to deliver a story and a thread. He was very hands-on, but he also let us run with it.”

Complicating the project a step beyond the multitude of film formats it required, is the fact that there is also a music-only CD release and a couple of DVD extras that required more work—a version of the concert without the narrative portions; and the narrative without the concert. No wonder the final mix stretched to three months, long even by Hollywood blockbuster standards.

How much input did the band have in the film? “A lot,” says Mangini. “Greg, who has worked with the band over the last seven or eight years, was their voice, to a degree. But they were in the edit room a great deal; they were heavily involved with the edit and heavily involved with the mix. So we heard from them constantly. To be honest, going in I wondered if their hearing might be thrashed from 30 years of 130-decibel concerts. But to the contrary, they all still have really keen hearing and they heard nuances that even I didn’t hear in our mix. That was quite impressive.” ■

into the board of things that Greg and Joseph Magee—who’s credited as the supervising music mixer on the show—groomed so there were a lot of things already summed inside the music rig. I’ve never come across the level of detail and reshaping that I have, working on this film. Greg is so intimately connected to it, and having worked on it for a year, he wants every subtle nuance to be heard in every format.

“Greg’s conscious choice from day one was to set a pan on the array on the band and that would be it [through the movie], so the only way you feel manipulated by space is if there’s an extreme close-up of the bass player, we’ll bump it up a bit.” There is not, however, tremendous volume variation in the music as the visuals shift back and forth from music to narrative. “Those [narrative] scenes are meant to be atmospheric and otherworldly,” Kline says, “so you hear that in some of the sound design, but the music still plays energetically, so you never feel the song is diminished. You may be offstage, but there’s still the energy

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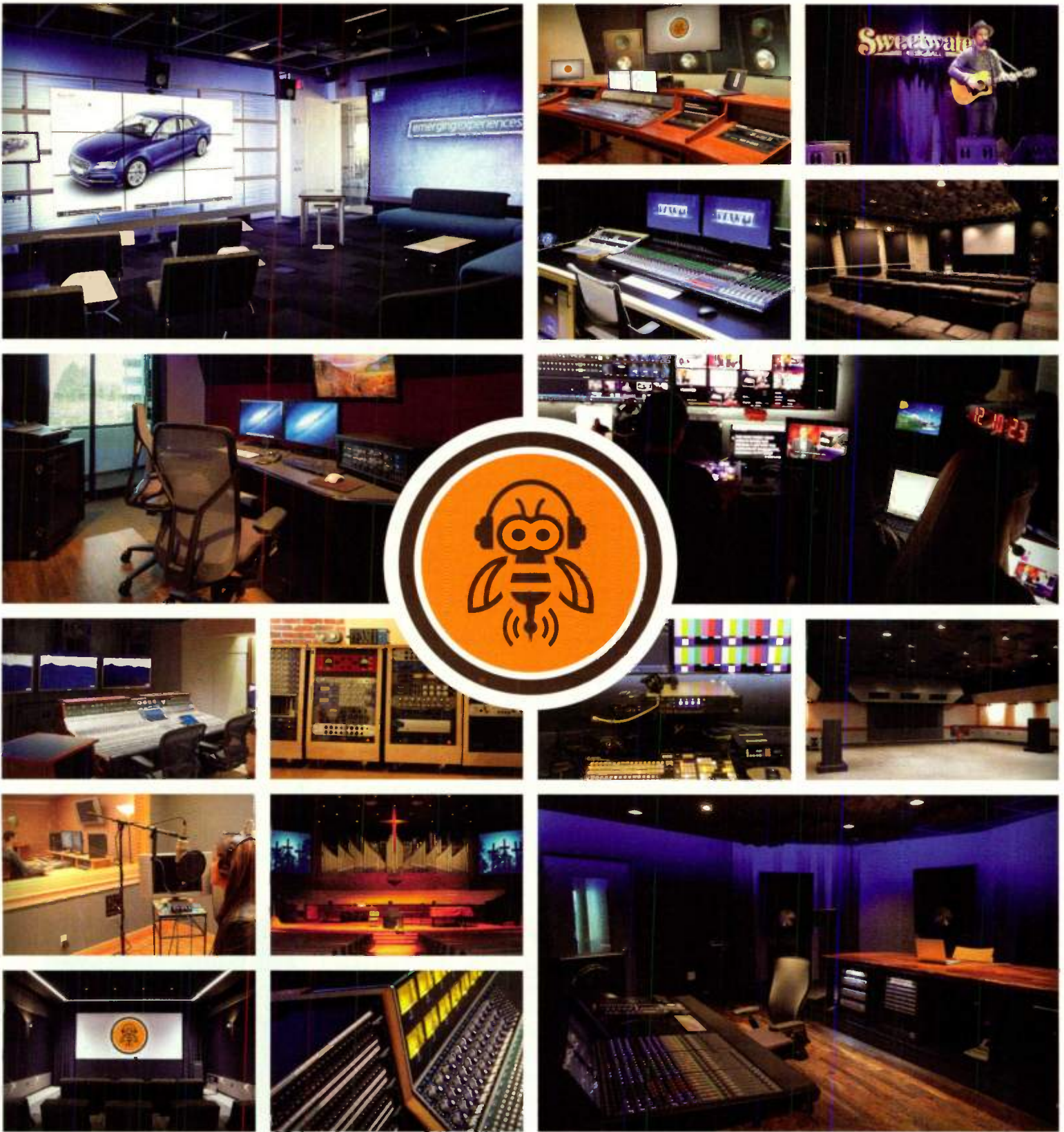
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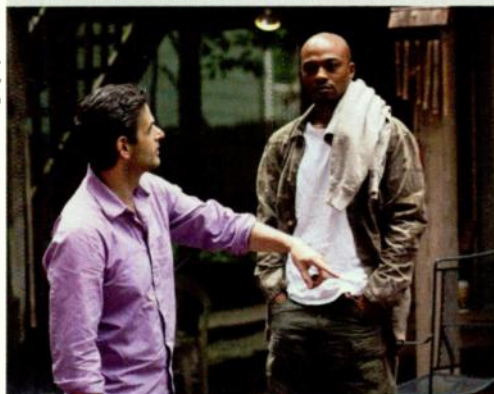
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# MIX REGIONAL: NEW YORK CITY

## MERLIN'S KITCHEN



Producer/engineer/studio designer Chris Tsantilis mixed and mastered the third album from veteran Brownsville, Brooklyn-based rapper/producer Ka, *The Night's Gambit* (Iron Works), which received critical acclaim upon its summer release. Ka self-

produced and self-released this effort, featuring his stark beats and intensely hushed, sometimes understated delivery of deeply reflective and evocative lyrics. Tsantilis and Ka worked together in Merlin's Kitchen, Tsantilis' studio on Staten Island.

"It's a well-balanced room, very cozy and well-tuned, fitted with PMC monitors and mini computer speakers," Tsantilis says. "The first track on the album set the vision, so we focused on that until we both felt we had clinched it. The rest just flowed after that. All sessions were in Pro Tools. I prepped tracks with basic EQ via Sonnox plug-ins and NTI Nightpro and API outboard. [I applied] slight compression with TK Audio and Manley Variable Mu Stereo compressors, among a few other comps, as well. Delays and reverbs were all added in as the mix came to gel."—Matt Gallagher

## Woodstock Gives Musicians a Few Homes in the Country

Last January, *Mix* covered Graham Parker and The Rumour's reunion-album sessions at Dreamland Recording, a converted church



in West Hurley. It's just one of the great spaces New York musicians can call home-away-from-home in and around Woodstock.

Levon Helm Studios, for example, continues to be an inspiring destination for roots musicians such as Steep Canyon Rangers or the David Bromberg Band; both

recently made new albums there with chief engineer Justin Guip.

"It's a modular setup," Guip says of the facility he helped the late great artist assemble. "We have a lot of great vintage and new outboard gear. I'm running a Pro Tools 10 HDX system with Apogee AD/DAs, a beautiful vintage Neve sidecar, outboard compressors, and a great microphone collection." The studio is one open space—no separate control room—which Guip feels improves communication and vibe.

Applehead Recording ([appleheadrecording.com](http://appleheadrecording.com)) is another rural retreat, on a farm in Saugerties. The studio recently hosted the indie band Lucius for a week of sessions, recorded by engineer and bandmember Dan Molad. "We wanted a place that had a Neve console, and where we could sleep and be isolated for a stretch of time," Molad says. "Applehead is a beautiful, open-sounding space; the live room has vaulted ceilings. It's green everywhere outside. It was the combination of an inspiring space and gear that we wanted."

Lucius' sound is synth-heavy but defined by the lush, sensitive vocal harmonies of Jess Wolfe and Holly Laessig. Molad auditioned several mics in Applehead's collection before settling on a Telefunken AK-47 for Wolfe and a Sony C-37A on Laessig, each going through pre's in the Neve 3503 with Purple MC77 compression; the lead singers always cut vocals facing each other in the same room. "For a lot of songs," Molad says, "we sent their vocals through an aux to a tape echo and sent that to an amplifier in the room, so I was able to make the room feel even bigger."—Barbara Schultz

## Capsula: Power Trio Gets Boost from Tony Visconti

Though the hard-rocking trio Capsula—originally from Argentina, now based in Spain—have been around for years, they're getting a lot of attention now because their latest opus, *Solar Secrets*, was co-produced by Tony Visconti, of Bowie and T. Rex fame. And it's a revelation—a dark, deft blend of psych-punk energy, exciting guitar pyrotechnics (courtesy of leader and co-producer Martin Guevara) and enough hooks to make it memorable. The disc was cut mostly live in the studio—with vocals and plenty of guitar layers added later—by Visconti and engineer Tim Price at (since closed) St. Claire Studios in Lexington, Ky., on an SSL 9000. Joining Guevara in the band is bassist/co-songwriter Duchess Duchess and power-drummer Ignacio Solimo.

"Martin is fantastic at getting crazy guitar sounds," Price says. "He loves reverbs and used all amp reverb; he really knows how to work his amps and pedals. I used a [Shure] 57 and a [Royer] 121 on him, just trying to capture what came out of the amp." How about the trippy backwards guitar on "Birds of Wood"? "Oh, that was Tony's idea, of course."

"I was heavy-handed on the compression during tracking," Price continues. "I really wanted to make sure Tony had good sounds and the best possible options. I didn't know at the time I was going to mix it, too. I used LA-2As, LA-3As, various classic boxes—if it had a tube, I tried to run through it." The album was mixed in the box in Visconti's room at Human Studios in NYC. Visconti's goal, Price says, was "to deliver a great aggressive rock album." Done.—Blair Jackson





# SESSIONS: NEW YORK CITY



Avatar Studio A live room

## AVATAR STUDIOS

Folk-rock singer-songwriter Jack Johnson was in Studio A for promo recording, including live ISDN radio interviews and a live acoustic performance (produced by Johnson and engineered by Anthony Ruotolo)...DJ Cassidy with Kool & The Gang recorded new material in Studio A with engineer Elliot Scheiner (produced by Cassidy)...All strings on hip-hop artist/producer/songwriter J.

Cole's new album were recorded in Studio A, with Ken Lewis producing and engineering...Indie-rockers Arctic Monkeys and Franz Ferdinand (separately) were in for promo recording, including live ISDN radio interviews with stations across the U.S. and live performances, all multitracked and mixed at Avatar...Recording for the hit HBO show *Boardwalk Empire* is ongoing at Avatar, engineered and produced by Stewart Lerman, with music supervisor Randall Poster.



Owner Scott Jacoby at Eusonia

## EUSONIA

At Eusonia, owner/producer/engineer Scott Jacoby has been writing, producing and mixing multiple songs for grit-pop band The Kin, and writing for a cappella group Straight No Chaser. Jacoby also mixed Vampire Weekend's single "Unbelievers," wrote a single for jazz/hip-hop vocalist Jose James, produced and mixed an album for pop singer Olympe, and produced and mixed a new

song from adult alt-pop group Wakey!Wakey!



## STRANGE WEATHER

Chris Shaw mixed Bob Dylan's *Live at the Isle of Wight 1969* (part of the most recent bootleg series release). The original tapes had been archived in Pro Tools, but the session was mixed through the studio's 48-channel API 1608 onto a Studer A820 half-inch machine...Daniel Schlett mixed pop-folk singer-songwriter Luke Temple's album *Good Mood Fool*...Schlett also mixed the Hig-

gins Waterproof Black Magic Band, the latest project from TV On The Radio frontman Tunde Adedimpe, tracked with Bill Laswell.



Dirty Projectors at The Cutting Room

## THE CUTTING ROOM

Electro-funk duo Chromeo worked on new material using the SSL Duality in Studio A, with the band self-producing and Tom Gardner engineering...Turntablist A-Trak was in Studio B working on and producing forthcoming tracks with engineer Matt Craig...Nick Jonas was in Studio A with engineer Gardner...Animal Collective was in Studio A with engineers Rusty Santos and Gardener, assisted by Craig...Dirty Projectors was also in Studio

A, with Gardner engineering and Jake Subin assisting.



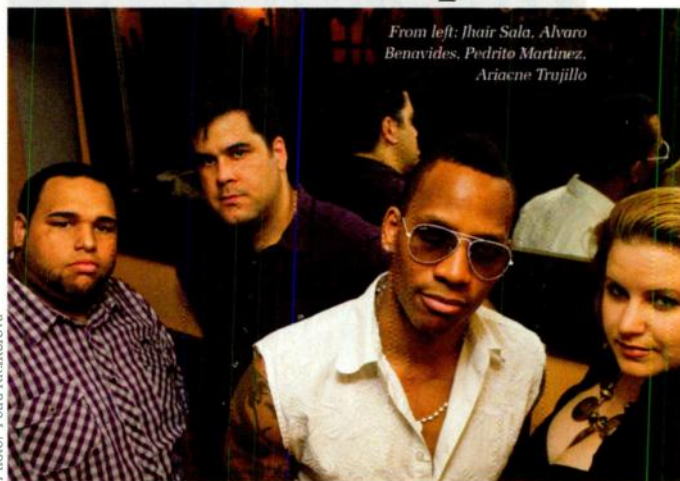
Flux Studios

## FLUX STUDIOS

Flux Studios just installed a one-of-a-kind 1974 fully discrete NBC custom Neve Console in the Dangerous Room. The board received several modifications by Joe Russo from Russo Audio Design, including a built-in Dangerous Monitor ST remote and SSL style tracking and mixing modes...Singer-songwriter Lenka worked in the Dangerous Room with producer/engineer Dan

Romer...Jazz vocalist Cyrille Aimée recorded her album *It's a Good Day* in the Fabulous Room, with Fab Dupont producing and mixing...Alt-folk artist Will Knox tracked his new album in the Dangerous Room, with producer Dupont (who co-engineered) and engineer Meredith McCandless...Cinematic Music Group (Joey Bada\$\$, Smoke DZA, Pro Era) worked on new material in the Revolution Room.

## The Pedrito Martinez Group



From left: Jhair Sala, Alvaro Benavides, Pedrito Martinez, Ariacne Trujillo

Photo: Petra Richterova

The Pedrito Martinez Group's self-titled debut album is out this month on the Harlem-based Motéma label. It showcases the quartet's signature blend of Afro-Cuban folkloric traditions (Rumba, Bata, Yoruba, Sante-ria) with other African and South and North American influences. "New York City is a place where you have the great opportunity to learn different kinds of music, different cultures," Martinez says.

Percussionist/lead vocalist Martinez originally hails from Havana, Cuba, and the group comprises Ariacne Trujillo (piano, lead vocals; also from Havana), Alvaro Benavides (bass; Caracas, Venezuela); and Jhair Sala (percussion; Lima, Peru). The band formed in 2008 and gained a following from its weekly gig at Guantanamera, a Cuban restaurant in midtown Manhattan. The album's special guests are Wynton Marsalis, John Scofield, Steve Gadd (who produced the album), Gary Schreiner, and actor Matt Dillon (spoken word).

The album was recorded to Pro Tools through analog outboard gear at MSR Studios and at Avatar, engineered by Gadd's longtime colleague, Jay Messina, along with assistants Brett Mayer (at MSR) and Tyler Hartman (Avatar). "I set them up so that they all could see one another," Messina notes. "There was some isolation. I had Jhair in a booth. Steve was in another booth and Ari was in a booth because she was also doing some guide vocals."

Engineer/musician Willy Torres mixed the album at his studio in Union City, N.J., while Alan Silverman of Arf Productions in New York City mastered it. "It's different when a musician mixes the record," Martinez says. "If you have the experience of playing onstage with people, you've got a different perspective on what the sound should be." —Matt Gallagher



# THE MULTI-STAGE VMAS

## Firehouse Productions Supplies Zone Coverage

BY STEVE LA CERRA



Production mixer Dan Gerhard at the Yamaha PM1D.

On Sunday, August 26, MTV presented its annual Video Music Awards at the Barclays Center in Brooklyn, the first major television event held at the venue, featuring performances from Justin Timberlake (solo and with 'N Sync), Lady Gaga, Kanye West, Bruno Mars, Robin Thicke, and a rather tastelessly controversial performance from Miley Cyrus. Handling audio production and communications for the event was Firehouse Productions (Red Hook, N.Y.), this being their sixth go-round for the VMAs.

To accommodate multiple stages (one main, four small and one roll-out), Firehouse brought in an impressive array of gear based on a system design by Mark Dittmar, vice president of Design and Engineering for Firehouse, who started work on the configuration three months in advance. "A large percentage of the design was created prior to the other production elements," begins Dittmar, "with the P.A. broken down into

smaller zones that could be individually controlled based upon which stage was in use. For example, the main P.A. hang surrounded the skull and cross-bones stage, but when a smaller stage was in use, the hang closest to that stage could be attenuated a few dB to prevent any sonic artifacts, room excitation or feedback.

"The main P.A. system at the skull stage," he continues, "consisted of 10 JBL VTX Series V25 cabinets per side. These were run full-range down to around 32 Hz. For special effects we augmented them with VTX G28 subwoofers, ground-stacked eight per side."

Firehouse implemented six additional JBL hangs around the circular lighting truss floating high in the air, each consisting of 12 JBL VT4889s powered with Crown MacroTech 12000i amplifiers. According to Dittmar, these hangs "were high enough to stay off-camera yet relatively close [65 to 80 feet] to the audience, enabling us to reduce the overall volume level and avoid exciting the room. During Thursday's

rehearsal we averaged 94 to 95 dB. We didn't have to rely upon the main P.A. to fill the room, in which case it would have been extremely loud. The 4889s allowed us to achieve a very severe angle at the bottom of the array [10 degrees], providing audience coverage almost directly below the speakers. In addition to maintaining clarity for the audience, it avoided room echoes and ambience from reflecting back into the announce mics, reduced chances of feedback and maintained clarity for the broadcast."

Production mixer Dan Gerhard concurs, stating, "Mark's design was highly effective in allowing the production/communication aspects of the show to be heard coherently at minimum volume. This allowed me to create significant room for Ron Reaves' music mix to have impact and volume contrast, without the need for him to push upwards toward spinning the room. The music had life and breathed, but I don't believe there were uncontrolled standing waves all evening."

Continued on p. 67



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*Dennis Leonard, Supervising Sound Editor, Skywalker Sound*

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*Todd Sucherman, Drummer - Styx*

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*John Gatski - Everything Audio Network*



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# DR. LONNIE SMITH OCTET

## ‘In the Beginning, Volumes 1 & 2’

BY MATT GALLAGHER

Photo: Jacob Blickstein



From left: John Ellis, Jason Marshall, Ed Cherry, Dr. Lonnie Smith, Kwame Bell, Ian Hendrickson-Smith, Jonathan Blake, Andy Gravish

**H**ammond B3 organ master Dr. Lonnie Smith teamed up with alto saxophonist Ian Hendrickson-Smith (a former member of the Dap-Kings) to reimagine some of Dr. Smith's earliest recorded songs for *In the Beginning, Volumes 1 & 2*, which comes out on October 15 on Dr. Smith's Pilgrimage Productions label. Following five decades with appearances on more than 70 albums, Dr. Smith revisited 12 original songs from his first 10 years as a recording artist.

"People keep asking me about these tunes," Dr. Smith says, "why I don't play them and how come they can't find them. Basically I think it was time for that. This album was a long time coming."

Co-producer Hendrickson-Smith assembled a band of New York City musicians—Ed Cherry (guitar), Jonathan Blake (drums), Little Johnny Rivero (congas), Andy Gravish (trumpet), John Ellis (tenor and bass clarinet), and Jason Marshall (baritone sax)—and convened three recording dates at Forrest Sound & Vision (FS&V), which was located in a converted Ford Model T factory in Long Island City, Queens; since this album was completed, FS&V has moved into a differ Greenpoint, Brooklyn. The studio and event space in Queens has a 25x75-foot main room, two isolation booths, and high ceilings with skylights. A collection of instruments and amplifiers are available for sessions.

Audiences attended each session. "We set it up like a nightclub," Hendrickson-Smith says. "Lonnie loved it. The way he plays in front of a crowd brings out a certain charisma and fire. We felt that was the best way to capture his music."

Engineer and FS&V owner Glen Forrest recorded the octet through a TL Audio M4 tube console to 1-inch tape on a 16-track Tascam MS-16 using numerous ribbon mics and outboard that included Neve, Altec, Telefunken, Universal Audio and TubeTech.

"We had 16 channels to record an 8-piece band," Hendrickson-Smith says. "We essentially set up like you would play a live show—Doc straight in the center, and then the rhythm section around his left-hand side. Then we just splayed the horns across the other side of the stage, so the band was circling Lonnie. And every guy had his own channel."

"I would say 90 percent of the mics on that recording are ribbons," he continues. "On the drums, believe it or not, we had one overhead, one mic kind of near the snare and the hi-hat, and then one mic on the kick. But the mix of the drum sound is like 90 percent that one mic, just the overhead, a beyer 160. It's an amazing drum mic. Then one mic for the congas, one mic for the guitar, an RCA BK5—it's a [ribbon] mic made shortly after the RCA 77, very directional, lots of rejection. And then on Lonnie we had a direct for the bass and a mic on the bass, then two mics on the cabinet. And then one mic in the room; I believe it was an AKG 414 in omni. And then a vocal mic. But really that's it, essentially a channel for each guy."

"It bears mentioning, too, all the reverb on this record, like for the organ, is going through an EMT 140, which is a big plate reverb. The drums are going through a BK 20, a really old spring reverb. And all the horns are going through a Demeter RV1. That's a pretty new spring reverb. And no computers!" [Laughs]

Engineer Forrest compressed very minimally and let the tape do all the work. Hendrickson took the racks back to his studio in New Jersey and mixed in Pro Tools, making extensive use of Universal Audio plug-ins.

"Because everything was already analog to begin with and we already had the reverbs printed in separate tracks, it was pretty easy to make it sound good," Hendrickson-Smith says. "I'm a hard panner; I tend to mix records that sound the way that my favorite records sound like. So I put the drums all the way on one side, and I put the guitar all the way on the other side, with Doc right in the center and then just peppered the horns and the percussion. I'm always trying to create a picture with the mix so it looks like the bandstand looked, making sure that whoever's trying to be the focal point is actually the focal point. We made sure while recording that leakage wasn't an issue between guitar and drums, so I could spread them. I listened to some old Lonnie records, I listened to some new records, and just went to work."

Dr. Smith characterizes his sound as "a little smooth and dark, and a little edgy with a little noise in there—but not too much. The organ is perfect, but it's not perfect. In other words, the Leslie and the organ have hums and things, and that's a natural effect for the instrument itself, and you want the organ to breathe that, say that, speak that. If you try to take that out, then you're taking everything out of the sound. As long as I hear that they're capturing whatever the instrument is doing at that time—that's what I want."



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## KNOW-IT-ALL



By Gino Robair

**I** recently played a show at a major performing arts facility on the East Coast, which not only had exceptional sound and lighting, and a multi-camera crew shooting in high-def, the venue streamed the show in real time online, where the performance now sits “in perpetuity.” At the end of the event, we were presented with a DVD of the performance (without having to ask), which looked and sounded great. A person can get used to this!

Remarkably, the venue’s production team pulled this off with one less person than usual on the sound team. That may not seem like much, but considering that we had only an hour to sound-check an ensemble of 10 instruments, with a tight schedule of 30 minutes to set up and tear down on either side, you immediately feel the impact of the missing hand on deck.

Impressively, the lighting technician pitched in with the sound duties. She knew her way around the gear, fetching the appropriate DIs and mics for each of the instruments, organizing them, and getting the floor monitors wired and situated exactly as the FOH engineer asked. Moreover, she and the rest of the crew remained affable the entire time—focused, professional and generally upbeat—just as good producers keep their talent creatively positive while they’re under the soul-killing microscope of the recording studio.

I’d like to say, “Of course, the lighting tech knew what she was doing with the sound gear; she’s a pro.” But I can’t say that. I’ve been in a number of situations where the “pro” lighting folks were not only ignorant of every other technology, but on occasion they’ve also been criminally unskilled at their own job. The same goes for the person doing sound (more often than one should have to admit). It’s hard to forget when a lighting fixture drops from the rafters and crashes next to you onstage, or the vocal mic subtly feeds back throughout the set whenever the singer goes near it.

However, I find it more and more common that one or two people are doing the tech, and they handle all the chores with aplomb. They’re often young and part of the “Educated by YouTube” generation that, when they need to know something, they find every available resource online—choosing the genuine over the jive—and figure it out.

A personal example: one of my recording students was intrigued by the fact that our classroom studio used panels in the

wall with XLR and TRS jacks to carry signals to the control room, rather than running cables across the floor. By the end of the semester, he had looked behind the panels, taught himself to solder cables and jacks, and researched how studios and patchbays are wired. Whether he was thinking that this was a great way to earn money was not clear, but I was very impressed that he figured it all out on his own. And audio is his second calling: he’s learning it to enhance his formidable knowledge in video production.

Many of the young people I run across are not approaching the craft like earlier generations, where they looked at it mostly as a way to make a living. They have things they want to do, and they teach themselves how to do it, because they know they can do everything—it’s affordable and within their reach.

When I meet someone, young or old, who expresses an interest in becoming an audio professional, they often ask what skills they should have. I tell them they need to know a little of everything, no matter what they end up doing: Besides experience in recording, editing, mixing and mastering, they should have a basic knowledge of music theory (enough to communicate with a musician) and MIDI sequencing, experience doing live sound reinforcement, enough electronics skill to make and repair cables, and some time logged in shooting and editing video and working with lights.

Those of us who were around before the Internet and the CD like to tell ourselves that, to remain viable in any field these days, we have to constantly expand our skills and stay abreast of the technological advances as they come. True. But we have to stop thinking in terms of differences between fields and look at our skill set in a holistic way.

In other words, we shouldn’t think of it as “expanding our skills” as audio specialists by learning how to shoot and edit video. Rather, we should approach it as a chance to learn another aspect of modern communication technology as a whole, the way our audience experiences it.

Forget that old saw “Jack of all trades; master of none.” You can be a master at anything you put the time into and still be a complete badass in others, all while maintaining a collection of skills that keep you from going hungry (and provide BS detection to know when someone you hire really knows what they’re doing). It just takes time and dedication: that next 10,000 hours, and perhaps another after that. ■



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Avid has released the S6 Control Surface ([www.avid.com](http://www.avid.com)), a modular, EUCON-compatible surface able to control eight workstations simultaneously. Pre-configured S6 M10 (\$21,995) or S6 M40 (\$43,480) surfaces may be purchased with the required faders, knobs, and more already provided, or, with S6 M40, further personalized with different channel control combinations. It can also be horizontally and vertically scaled as a user's client base grows. The multipoint touchscreen quickly and easily accesses plug-ins, large track counts, surround panning and more, while top-lit status knobs and high-resolution OLEDs add operational efficiency. Additional 12.1-inch displays on S6 M40 systems further enhance instant project overview by providing deep visual feedback on key items such as channel names, audio meters, routing, clip names and scrolling waveforms. Ultimate recall enables quick location for last-minute mix changes.



## D16 GROUP SIGMUND DELAY PLUG-IN

### Modular 4x Repeater

Sigmund is a virtual delay ([www.d16.pl](http://www.d16.pl), \$TBA) featuring four independent delay lines, each with its own independent set of parameters. Each line offers complementary modules including a Multi-mode Filter, Overdrive and Amplitude modulator. Other features include separately configured delay times with

tempo sync, delay times down to 0.1 ms, selectable channel mode (L+R or M+S), stereo spread and two multipurpose LFOs. Other offerings include a mixer, master limiter and more than 200 factory presets via a file-based browser.



## MXL REVELATION SOLO

### Fixed Cardioid Tube Mic

MXL's Revelation Solo fixed cardioid tube microphone ([www.mxlmicx.com](http://www.mxlmicx.com), \$799.95) uses the same EF86 tube found in all Revelation mics. Features include a 6-micron, 32mm gold-sputtered capsule, switchable -10dB pad, HPF set at 12 dB/octave at 125 Hz, max SPL of 138 dB at 5 percent THD and a S/N ratio of 76 dB. Revelation Solo ships with an aluminum flight case, shock-mount, Mogami cables and custom power supply.





## NUFORCE ICON DAC

### Portable High-End Listening

Answering a need for high-end listening for portable producers/engineers, NuForce Icon DAC ([www.nuforce.com](http://www.nuforce.com), \$325) and headphone amp features a USB input and support for DSD (PC only) and PCM playback. The unit features an aluminum chassis, 8V headphone amp, 1/4-inch headphone jack plus back-panel 1/8-inch optical/analog, and L/R RCA analog outputs. Inputs include LR RCA and 1/8-inch stereo analog plug. Other features include an audiophile TOCOS volume pot, multiple stage filtering and regulated up-converted 24V rail power supply, and a Toslink optical to 3.5mm mini optical adapter.



## PRESONUS RC 500 CHANNEL STRIP

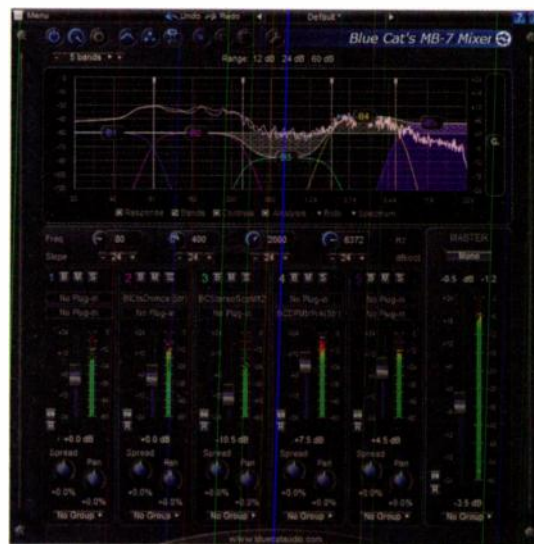
### Solid-State Performer

The RC 500 Channel Strip from PreSonus ([www.presonus.com](http://www.presonus.com), \$999.95) features a solid-state preamp, FET compressor, 3-band parametric EQ and front-panel DI input. The preamp offers 48V phantom power, polarity invert, -20dB pad and a 12dB/octave high-pass filter set at 80 Hz. The RC 500's FET compressor features fully variable attack (0.5 to 10 ms), release (30 to 500 ms), and threshold (-25 to +20 dBu), as well as hardware bypass. Ratio is fixed at 3:1. Each of the semi-parametric EQ's three bands offers Gain ( $\pm 16$  dB) and Frequency controls, with overlapping ranges between the mid and high bands and fixed Q (0.5). The low and high bands

## BLUE CAT AUDIO MB-7 MIXER

### Multiband Tweaker/Blender/Grouper

Blue Cat's MB-7 plug-in ([www.bluecataudio.com](http://www.bluecataudio.com), \$103) splits the signal into several frequency bands and lets you mix and process them as if they were separate tracks. Each band offers common mixer controls, plus bypass, mono, mute or solo on separate bands to isolate frequencies for adjusting gain, width and position in the stereo field. The plug-in also operates as a multiband VST host allowing the same multiband processing of your favorite VST plug-ins. Up to four plug-ins can be loaded on each band, pre or post fader. Latency compensation, presets management, undo/redo integration, and individual plug-in bypass are included for optimal operation. Grouping functions allow linking of bands within a single plug-in or between several instances of the plug-in on different tracks, particularly useful when adjusting the placement or the balance of several associated tracks.



## G-DOCK EVOLUTION SERIES DRIVE BAY

### Thunderous Performance

The G-Dock Evolution Series is a robust, expandable dual-bay storage and transfer solution ([www.g-technology.com](http://www.g-technology.com), \$749.95.) The G-DOCK ev with Thunderbolt is the hub of the system, which ships with two removable G-DRIVE ev hard drives. The portable standalone G-DRIVE ev hard drives feature plug-and-play USB 3 connectivity and transfer speeds up to 136MB/s. Back at your workstation, insert drives into the G-DOCK ev and transfer your content with the ultra-fast, high-performance Thunderbolt interface. Other features include 7,200 RPM hard drives, 2TB storage capacity, smart cooling fan and a three-year limited warranty.





## EASTWEST STORMDRUM 3

### User-Controlled Percussion

Stormdrum 3 features tempo-synced percussion performances directed and played by Mickey Hart, with Greg Ellis, Chalo Eduardo and Nick Phoenix ([www.soundsonline.com](http://www.soundsonline.com), \$395 DVD; \$479 on 1TB USB 3 drive). The collection includes five user-controllable mic positions for each instrument and includes new PLAY 4 64-bit/32-bit software on both Mac and PC. The FX section includes an SSL EQ and Dynamics Channel Strip, Transient Shaper, and SSL's legendary Stereo Bus Compressor; plus an upgraded "true-stereo" reverb.

## FOCAL SPIRIT PROFESSIONAL HEADPHONES

### Cans From France

Known mostly for its speakers for audiophiles, consumers and pro audio engineers, Focal has released its first headphone—the Spirit Professional ([www.focalprofessional.com](http://www.focalprofessional.com), \$349). The circumaural, closed headphones feature memory foam ear cushions for comfortable, long wear; Mylar/Titanium alloy drivers; and a textured black, scratch-resistant finish. Two detachable cables are provided: a straight, 4.6-foot cable terminating in an 1/8-inch stereo plug and a 12-foot coiled cable with a 1/4-inch TRS connector.



# PowerTools for Studio

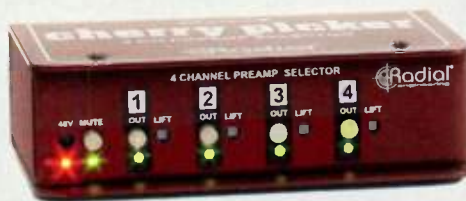


### Gold Digger™ mic selector

Instantly select and compare your four favorite microphones to find the one that best suits a particular vocal or instrument track. The Gold Digger features built-in 48V phantom power generator, trim controls for a fair comparison and solid wire connection to ensure the pure mic signal arrives without coloration.



QR VIDEO LINK



### Cherry Picker™ preamp selector

Plug in your favorite mic and instantly compare between four mic preamps to find the one that best suits the instrument or vocal track. The Cherry Picker features 100% pure copper signal path with gold contact relays for absolute signal integrity. You'll love the way it improves your workflow and efficiency!



QR VIDEO LINK

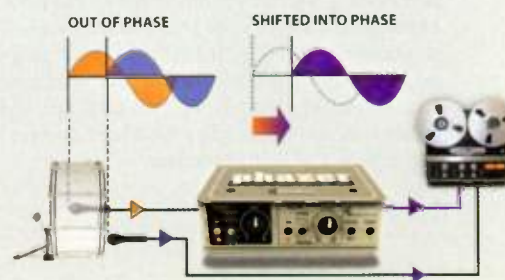
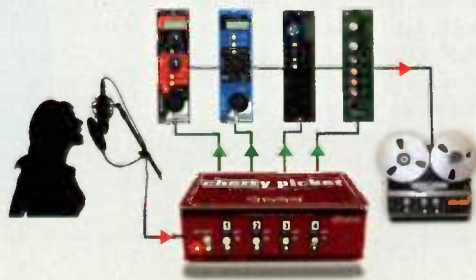


### Phazer™ phase alignment tool

Add realism and depth to every instrument! The Phazer is an analog tool that let's you adjust the phase relationship between two sources such as two mics in a room so that the fundamentals arrive at the same time. Think inside and outside the kick drum, top and bottom of a snare, or near and far with an acoustic guitar.



QR VIDEO LINK





# New Sound Reinforcement Products

## BAG END CD-12 SPEAKER

### Light and Powerful

Bag End Loudspeakers has introduced the CD-12 Time-Align as part of its Venus series ([www.bagend.com](http://www.bagend.com), \$2,860), promising the smallest, lightest, yet most powerful speakers available. Components include the E-12F Neodymium magnet 12-inch cone transducer and the E-806 1.4-inch exit neodymium compression high-frequency driver coupled to a directivity-controlled waveguide. Targeted for clubs, auditoriums, theaters and houses of worship, the speaker enclosure is made of 15mm 11-ply birch plywood and offers fly points, handles and a stand adapter. The enclosure is 25.25 (H) x 14.5 (W) x 13.75 (D) inches with a 14-gauge black powder-coated perforated steel grille.



## VOICE TECHNOLOGIES VT901

### Omni Headworn Mic

The VT901 from Voice Technologies ([www.reddingaudio.com](http://www.reddingaudio.com), \$269) is a single-ear headset microphone promising sonic clarity and a nearly invisible design. The mic uses a super-miniature omnidirectional capsule and a soft and flexible spiral ear hanger for the perfect and comfortable fit with full freedom of movement. The VT901 comes in black or beige.

# Professionals...



### EXTC™ guitar effects interface

Add excitement and uniqueness to every track by incorporating funky sounding guitar pedals to your signal chain. Imagine... adding a wah to a kick drum, distortion to a vocal or a jet flanger to the keyboards. The EXTC makes it easy by unbalancing the signal, adjusting the impedance and then re-balancing it for you.



QR VIDEO LINK



### MC3™ monitor controller

Select between two sets of monitors without adding any form of buffering electronics in between your recording system and monitors. The MC3 features a pure copper connection to eliminate distortion. Turn on or off a sub and adjust the level, collapse the mix to mono and monitor your mix using headphones or ear buds.

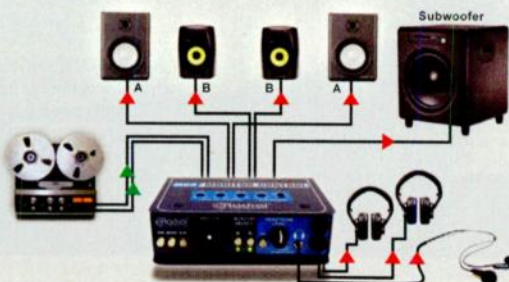
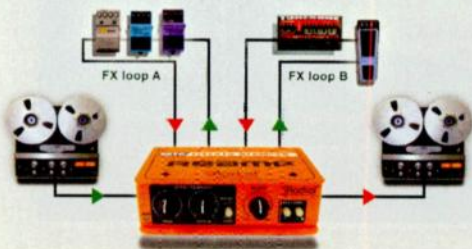


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# New Sound Reinforcement Products



## JOECO BBR1MP RECORDER

### 24-Channel, 1RU Recorder With Preamps

The new 24-channel BBR1MP from JoeCo features 24 high-quality microphone preamps operating at up to 24-bit/96k ([www.joeco.co.uk](http://www.joeco.co.uk), \$TBA). The unit features a range of connection options, including individually switchable mic/line inputs and balanced outputs, video sync, timecode and word-clock inputs, and an optional Dante interface. There will also be an optional 2U breakout box. The BBR1MP runs off a 12V power source. Unused channels and features can be disabled to preserve battery life on location. The unit is controllable via iPad using JoeCoRemote and is capable of creating a simultaneous stereo mixdown and offers full support for iXML data.

## CERWIN-VEGA P-SERIES SPEAKERS

### Portable, Affordable and Powerful

The P-Series family of speakers from Cerwin-Vega ([www.cerwin-vega.com](http://www.cerwin-vega.com)) consists of the P1500X (\$799) with 1,500W peak power, 15-inch low-frequency driver, 1.75-inch high-frequency driver, and built-in 3-channel mixer. Features include a rugged enclosure with multiple handle locations, M10-threaded suspension points and stackable design to maximize storage area. The P1800SX subwoofer (\$999) offers 2,000W peak power and 18-inch low-frequency driver. Other features include a Class D amplifier (2,000 W dynamic, 650 W continuous), XLR/TRS inputs, two XLR thru connections, signal/clip, power, limiter and protect indicators.



A photograph of Kelly Hansen, lead vocalist of Foreigner, performing on stage. He is wearing a white long-sleeved shirt and a dark scarf, holding a microphone.

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Pictured: Kelly Hansen, Foreigner lead vocalist with the HH transmitter.



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Photos by Jeff McCrum.

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# Tech // reviews

## APPLE LOGIC PRO X

New Samples, FX, Plug-ins and a GUI Overhaul



*Logic Pro X features a newly redesigned GUI and extensive iPad integration.*

**I**t's been four long years since Logic Pro 9 launched, and some were beginning to wonder if Apple had abandoned its high-end DAW. Logic has come a long way since its origins on the Atari ST in the 1980s. It gradually evolved into a Mac- and Windows-based MIDI sequencer and eventually into a Mac-only DAW soon after Apple acquired Hamburg-based developer Emagic in 2002. Along the way, Logic's price has risen and fallen dramatically, while its capabilities have continually skyrocketed.

The newest version is Logic Pro X, and it's more comprehensive than ever. Unlike the popular perception of Final Cut Pro X, there's nothing "dumbed down" about it.

The entire package costs the same as the previous upgrade and the same as the discontinued entry-level Logic Express 9.

The initial download from the App Store is 650 MB. You can download as much or as little as you want of the remaining 35 GB of content from within Logic. By default, the content will be installed on your startup drive, so you'll need plenty of space. Once

installed, you can move the largest files, including sampler content, Apple Loops and impulse responses, to a separate hard drive, and then create aliases to link them to your startup.

### LAYOUT AND WORKFLOW

The first thing you'll notice when you open Logic Pro X is the GUI overhaul. Although many of its features and functions are identical to previous versions, its layout improves workflow and new functions abound. Much of what appears onscreen—from tracks to knobs to plug-in windows—is much larger without contributing to screen clutter. The transport is in the

### TRY THIS

Stacking tracks offers new ways of creating splits and layers when you're working with MIDI instruments and soft-synth plug-ins. To stack any number of synth and sampler tracks, simply Command-click on their headers, select Create Track Stack from the Track menu, and choose Summing Stack. Specify each instrument's note and velocity range to enable split zones and velocity switching, as you would when programming content for a sampler. When tracks are stacked, you can collapse them so that only a single track appears onscreen, or expand them to make adjustments to each one's relative level, panning, effects and so on.



**LOGIC'S NEW FLEX PITCH FEATURE LETS YOU MANIPULATE AUDIO DATA TO CORRECT AND TRANSPOSE PITCH. THE SOFTWARE ANALYZES PITCH CHANGES AND CREATES SEGMENTS YOU TRANSPOSE BY DRAGGING THEM UP OR DOWN. EACH SEGMENT ALSO HAS HOT ZONES YOU CAN CLICK AND DRAG TO FINE-TUNE PITCH, VIBRATO OR FORMANT CONTENT, AND TO ADJUST HOW QUICKLY AND HOW FAR A NOTE SLIDES IN OR OUT OF PITCH.**

control bar at the top (as it is in most DAWs), and you can customize which tools appear in the toolbar and what information appears in the display.

To help you learn your way around, enabling Logic Pro's new Quick Help feature opens a window that identifies anything underneath your pointer. It works just like Ableton Live's Info View, displaying the function of tools, areas, buttons, knobs, sliders and displays. (I did find plenty of windows that don't support Quick Help, however.)

Smart Controls let you create an onscreen panel that remotely controls any plug-in or channel strip parameter for the selected track. You can assign any of its controls to any MIDI CC using a learn function. A single knob or button can change several parameters simultaneously.

#### WHAT ELSE IS NEW?

Apple discontinued the audio-editing application Soundtrack Pro almost two years ago, but much of its functionality is built into Logic Pro X. The stereo Audio File Editor window makes it easy to switch between audio displayed in a track and in its associated audio file, so you always have a choice between non-destructive and destructive editing. Control-clicking in the Audio Track window reveals a nice variety of commands for editing, looping, converting, automating and so on.

Regarding new creative tools, MIDI FX delivers nine specialized processors ranging from Modifier, which converts one type of MIDI data to another, to one of the most sophisticated yet easy-to-use arpeggiators I've seen. Modulator supplies an LFO and an ADSR generator you can route to any MIDI

CC destination. If you're fluent in Javascript, Scripter lets you write your own MIDI effects, and if you aren't, it furnishes 27 scripts that perform some very cool tricks like harmonizing and stuttering with MIDI.

Track Stacks allows you to create any number of tracks, group them to function as a single track routed to an aux channel, and then save the entire configuration as a Patch you can recall at any time. Stacking tracks is the easiest way to layer software and hardware synths to respond simultaneously when you play a MIDI keyboard, for example, or to solo, mute, assign effects, or change the level of a group of tracks all at once. Track Stacks is also handy for assigning each drum in a kit to its own track, though you want to collapse them to a single track to save space onscreen. Logic's new Flex Pitch feature lets you manipulate audio data to correct and transpose pitch. The software analyzes pitch changes and creates segments you transpose by dragging them up or down. Each segment also has hot zones you can click and drag to fine-tune pitch, vibrato or formant content, and to adjust how quickly and how far a note slides in or out of pitch. Flex Pitch lets you quickly and effectively perform edits that would otherwise require separate pitch-editing software.

#### ONBOARD INSTRUMENTS

For years, Apple's outstanding suite of software instruments has given Logic Pro an edge over DAWs with less stellar offerings. Alongside top-notch classics like Sculpture and Ultrabeat, Logic Pro X introduces some new plug-ins. All instruments come with an excellent variety of professionally designed presets.

The new Vintage B3 plug-in replaces Logic



The MA-301fet is a sleek, black, cylindrical multi-pattern FET condenser microphone. It features a silver-colored grille at the top and a silver-colored XLR connector at the bottom. The Mojave logo is printed in white on the front. A gold circular seal with 'TEC' and 'NOMINEE' is visible on the side.

**THE MA-301fet**  
Multi-pattern FET Condenser Microphone

"Congratulations, David Royer. You have built the mic that I had designed in my head — and it sounds as wonderful as I had imagined."  
**Dr. Fred Bashour**  
(Everything Audio Network)

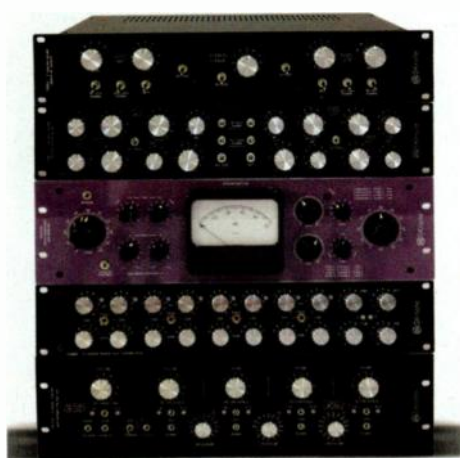
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## PRODUCT SUMMARY

**COMPANY:** Apple  
**PRODUCT:** Logic Pro X  
**WEB:** [apple.com](http://apple.com)  
**PRICE:** \$199

**PROS:** Unbelievable bang for the buck. Easy on the eyes. Includes dozens of excellent software instruments and processor plug-ins. Tons of loops and sampler content. Hundreds of mixer channels. 24-bit, 192kHz support.

**CONS:** Requires Mac OS X 10.8.4 (Mountain Lion) or later. Works only with 64-bit Audio Unit plug-ins.

Pro 9's EVB3 Tonewheel Organ. It emulates the sound, controls and functionality of a Hammond B-3 with a Leslie. You can specify the organ's age and condition, along with other parameters that enhance its realism. The plug-in's look is far superior to its predecessor's, and all the controls are at least twice as big. Likewise, the much-improved Vintage Electric Piano replaces EVP88 Electric Piano, and Vintage Clav replaces EVD6 Electric Clav. Both have larger and more useful controls that entice you to get in there and tweak.

The all-new Retro Synth lets you switch between four types of synthesis—Analog, Sync, Table and FM. In look, sound and feel, Analog and Sync resemble a polyphonic Minimoog, Table resembles a PPG Wave, and FM resembles a Yamaha DX7. All of them share the same envelopes, effects and other functions; they only differ in their oscillator sections.

Drum Kit Designer is more than just a new instrument plug-in; it's a collection of sampled drum kits you can customize by specifying the gain, tuning and dampening characteristics of each drum and cymbal. Choose from three kicks and three snares for each stereo kit, and adjust the gain of instruments such as shaker, tambourine and cowbell. Multi-output drum kits give you additional routing and processing options, as well as a much larger selection of drums and cymbals.

Drummer isn't an instrument, per se, but a type of track that plays drums using what Apple describes as a "virtual session player." Apple has captured the performances of 15 real drummers playing rock, pop and R&B grooves and converted them to MIDI data. You control the loudness and complexity of the beats

and fills by positioning a puck on a 2-dimensional pad. Each virtual player comes with presets that affect the player's focus on different parts of the kit and specify parameters such as swing, ghost notes and how much it plays behind or ahead of the beat. You can create your own presets, too. Apple isn't the first company to develop an iPad app for controlling a DAW via Wi-Fi, but Logic Remote (free) is one of the most comprehensive I've seen. Use it to control transport, access tools, perform mixer functions and trigger key commands.

Use Smart Controls to adjust a plug-in's parameters without opening the plug-in. Any movements you make using Logic Remote's control can be automated in Logic Pro, and Logic Remote's Touch Instruments function lets you play software instruments remotely on your iPad.

## WHY WAIT?

Working in Logic Pro X is definitely faster than in any previous version. Something about its layout just seems more, um, logical than ever before. The new Logic is so packed with features and functions that I barely have space to even mention latency compensation for plug-ins and external instruments, multiple layers of autosave, comprehensive score editing, 7.1 surround support, and the Pedalboard plug-in's 35 stompboxes, as well as the ability to import and export AAF, OMF, Open TL, and XML files.

Logic Pro X's lack of support for 32-bit Audio Units doesn't mean you'll have to forego your favorite plug-ins, because Logic Pro 9 can peacefully coexist on the same computer as Logic Pro X, and you can easily import any projects from as far back to version 5 once you've bounced any audio tracks that use 32-bit plug-ins.

If you're looking to replace your studio's current DAW, Logic Pro X is well worthy of your consideration. If you use a lot of software instruments especially, consider Logic to supplement your current DAW. And if you're a Logic user wondering if you should upgrade, the answer is definitely yes. ■

*Studio synthesist Geary Yelton is the former senior editor of Electronic Musician.*





Music mixer Ron Reaves at the DiGiCo SD7.

Music mixing responsibilities were handled by Reaves, who used a DiGiCo SD7 to manage roughly 168 inputs across three 56-pair splitters. As he reveals, "Two of these 56-pair splits resided on the main stage to accommodate some fairly large input lists from the talent. The third one was used to accommodate inputs originating at the satellite stage and remote locations around the venue. I believe that our biggest act in terms of inputs was Justin Timberlake, who ended up with 96 inputs at front of house, but many more than that at monitor world due to some elaborate talkback requirements. Dan Gerhard had another splitter with the 'production' elements in his Yamaha PM1D. He mixed all of the award show presentations, and took my mix to distribute to the various P.A. clusters.

"We used the DiGiCo A/D converters, and the inputs were distributed to the house and monitor music consoles via the DiGiCo OptiCore system," Reaves explains. "The monitor desk [also an SD7] was the master preamp controller, and my desk was the slave. We did not use gain tracking, preferring to just use the enormous amount of digital trim on the SD7, and then storing our settings in snapshots."

Simon Welch mixed monitors for the event and elaborates on the signal routing: "Production inputs were split analog to the PM1D and the production truck. RockNet

was used as the drive and distribution system for the P.A. outputs via RockNet cards in the PM1D DIO, with gain controlled by the RockWorks software since the PM1D cannot access the preamps. The drive on RockNet over fiber was solid and allowed flexibility as we had amps and drops in multiple locations in the catwalk and on the arena floor. The system worked flawlessly as ever.

"In addition to the hard-wired sources, over 70 channels of wireless IEMs and roughly 40 channels of wireless microphones [Shure, Sennheiser and Audio-Technica] were used among the various bands," adds Welch. "Frequency coordination between the wireless mics, IEMs and intercom was a challenge but expertly handled by Vinny Siniscal and Brooks Schroeder.

"It was a challenge to integrate all the bands' very different setups into one overall system to achieve a seamless show. This was accomplished with a lot of pre-production work and a lot of cooperation from the bands' engineers. It was a very big technical project with many moving parts and potential pot-holes, executed flawlessly by a top-drawer audio team. Gear, parts and equipment are one thing," concludes Welch, "but the team is what pulled off the job." ■

*In addition to being Mix magazine's Sound Reinforcement Editor, Steve La Cerra mixes front-of-house for Blue Öyster Cult.*



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## ANTELOPE AUDIO ORION 32

Multichannel AD/DA with MADI and USB I/O



*The Antelope Audio Orion 32 offers USB, MADI, ADAT and S/PDIF I/O*

I/O with analog signal passed through the eight D-sub connectors on the back of the unit. It sips power at 20 watts via an IEC connection, keeping the unit at lower heat levels, and runs quietly for those who are working in the same room.

**I**'ve been getting many clients asking if I can come to them and create a great-sounding recording environment in the comforts of their project studio, live show and other places. While I do have a stable and reliable mobile rig, I'm not motivated to tear apart my studio system, pack it up and take it on the road.

For this purpose, I've always wanted a great-sounding multichannel rig with a small footprint. Wouldn't it be great to have multiple channels of I/O that are easy to set up and tear down, with no compromise in audio quality? The Antelope Orion 32 just may be the bridge to this endeavor. Yes, the future is here, and it sounds really, really good.

### BIG THINGS, SMALL PACKAGES

Antelope has been known in the pro audio community as a company that creates uncompromising master-quality clocks and converters for the high-end user. When I first heard about the Orion 32 and its price, I was a bit skeptical about how well the unit would compete with others in its range, units that typically offered half or even less than half the I/O.

The Orion 32 is a sleek, cleanly designed interface that provides 32 channels of high-quality low-latency AD/DA (the custom-built USB chip provides USB 2 Hi-Speed; streaming data up to 480 Mbits/192 kHz, 32 channels I/O, Type B). Antelope's well-known 64-bit AFC (Acoustically Focused Clocking) technology contains four word-clock outputs and one word-clock input that rely on Antelope's proprietary Oven Controlled Oscillator.

The back panel also provides eight D-sub connectors, one fiber-optic MADI, two fiber ADAT, and one S/PDIF and USB connections. The USB slot allows for easy interfacing with a DAW on a Windows or Mac laptop, iPad or standalone computer. The 32 channels at 96k can be achieved through its MADI connection. Orion also includes ADAT connectivity, offering 16 channels of

### FLEXIBILITY IS A CLICK AWAY

The front panel provides an LED interface with an easy view of your sample rate but the metering is very small. It's visually pleasing, but difficult to read the actual levels on 32 channels of metering when in use. Antelope has provided a versatile desktop software application for Windows and OS X (I had OS X format) that allows the user to create flexible routing of the I/O inside the unit, click-and-drag options and the ability to save setups for access off of five front-panel buttons.

The metering and buttons are mirrored on the control panel but are much more reliable in the application. I found myself keeping it open when I was using the unit with my tower and had another screen available. On my laptop I had it running in the background behind Pro Tools and referred to it when getting levels to check against my calibration settings.

There was a bit of a learning curve with the software, but once I spent some time with it, I was able to move efficiently within the application to create a few presets I could rely on for different sessions. Some presets used the internal clock, others clocking off the dedicated master clock in my studio. The first version of the software I downloaded worked well with my laptop, but it didn't play quite as well with the desktop, requiring at least OS X 10.8. (I found an update on the site that allowed me to correct issues and was quickly running soon after.) I accessed a few helpful videos on the Antelope website that helped me understand the capabilities of the routing on the control panel and how powerful the application can be in helping set up the I/O.

### DISCOVERING ORION

For the first test session, I set the clock to the Orion 32's internal clock to 44.1k via the desktop software and USB. Then I checked the calibration with the test tone oscillators provided in the software to match the settings of the converters in my studio. I first



recorded a guitar/vocal through a pair of Rupert Neve Portico 511 preamps, which I am very familiar with, as I am with my UA 2192 and Lynx Aurora 16.

The converters sounded very clean, the upper and lower midrange of the guitar was well-proportioned, and the presence and top end of the vocal was detailed. I then plugged in a keyboard to add a bass part and a drum loop to fill out the track. The flexible routing of the I/O from the desktop application made it easy to keep my routing in place without having to change any cabling on the Lunchbox that housed the preamps. The bottom end was full, tight and punchy, even in the sub-octave range of the keyboard bass below the kick drum I had chosen. Now that I had a basic track going, I wanted to compare it to my converters and repeat another pass I had recorded through the Orion 32 on the laptop.

I repeated the same tracks once with the 2192, and then again through the Lynx converters. Keep in mind that the two channels on the 2192 cost around \$2,400 when I purchased it, and the Lynx is a 16-channel unit that comes in around \$2,695. The Orion and the Lynx tracks were almost indistinguishable upon several listens—too close to notice any major differences even when even soloing out the individual tracks. The UA tracks were decidedly different, the bottom and top end being more detailed,

## PRODUCT SUMMARY

**COMPANY:** Antelope Audio

**PRODUCT:** Orion 32

**WEBSITE:** antelopeaudio.com

**PRICE:** \$2,995

**PROS:** 32 channels of affordable high-end converters in a single-space unit, super-stable clock, low-latency inserts, portable and easy to interface with a laptop, iPad or desktop.

**CONS:** LED meters hard to read, sample rates above 48k weren't as clean via USB, initial connection to tower cleared my default I/O settings.

more precise on the top end and the bottom end had more punch and definition.

I then brought in a few reference stereo tracks of mixes I had done in the past and listened on all three converters that I typically will use when getting used to working in a different room. Again, the results were very similar between the Orion 32 and the Lynx, with the UA providing a little clearer picture overall. I added a couple of hardware inserts via the patch bay with all three tests and was pleased to hear that the Ori-

on 32 works very well with external processing applications. I could easily see mastering rooms using the Orion 32's stable clock and the converters for their projects, while using the flexible routing for using outboard gear. The low latency levels (ranging from 1ms to 6ms based on the DAW platform) of the I/O competed equally well with my other units.

## IPAD RECORDING

Orion is fully iOS compatible, so I next tried connecting the Orion 32 with an iPad via the camera adapter. I opened Auria by Wave Machine Labs to record a multitracked drum set to some existing tracks in my tracking room. I wanted to see how the unit would perform being in the same space where I

*Continued on p. 82*



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# Tech // reviews

## ELYSIA XFILTER 500

### Clean, Double-wide 500 Series EQ

**E**lysia's latest 500 Series module is an equalizer that draws from the concepts of both passive and active equalization. The majority of the circuitry is a modern, active, 4-band equalizer. To that, however, they've added some bells and whistles that users of elysia's museq equalizer will find familiar. Then they added the "passive massage" circuit, which provides a little passive EQ flavor for the top end. Altogether, this makes a solid equalizer to apply finishing touches to a mix bus or master, while also offering the versatility to enhance the personality of any individual instrument.

The xfilter 500 is a double-wide module that, like elysia's xpressor 500, fits into a normal API 500 Series or compatible frame. On the front panel are eight knobs providing frequency select and boost/cut for each of the four bands. I was pleasantly surprised to find that each potentiometer was stepped for the sake of easy recall. Given the fact that stepped pots are usually pricey and rather large, I haven't seen a lot of them on 500 Series modules. Unlike some stepped rotaries, though, which have a stiff feel when switching between positions, these turn very smoothly and have so many steps that they feel almost like a continuously variable control, until it comes time to document the settings.

#### MIRROR IMAGE

Even though the xfilter 500 affects two channels of audio, there is only one set of controls. elysia believes that attempting to match control settings between a left and a right channel of an equalizer, which is filtering truly stereo information, will always be tedious and inaccurate. Though combining the controls for the two channels rules out the possibility of splitting it up and using it on two different mono sources or for mid-side processing, the tradeoff definitely pays off when using this unit on stereo sources. Setting controls once and not having to perform two-handed adjustments feels more like dialing in a plug-in. There is definitely a modern comfort to it. The entire inner workings are designed to be perfectly stereo matched.

Two of the four bands are sweepable midrange peak filters, while the other two provide high and low shelving. The midrange filters are not fully parametric; however, they each offer two preset Qs: a wide and a narrow. The wide has a smooth, broad character, but narrow isn't so much narrow as it is simply less wide, with more spread than a surgical, truly narrow



equalizer. In most cases, this produces very musical results. It's really hard to produce unnatural sounds because of the smooth filter curves. The character is different from anything I can think of. It doesn't have the in-your-face coloration of a Neve or API EQ, and while I would say it sounds more like an SSL EQ, there's a bit more color than that. The roundness of the curves gives it a feel almost like a passive EQ.

Shelving frequencies range from 20 to 900 Hz and 700 to 28 kHz. The midrange EQs range from 45 Hz to 2.2 kHz and 300 Hz to 16 kHz, so there is enough overlap

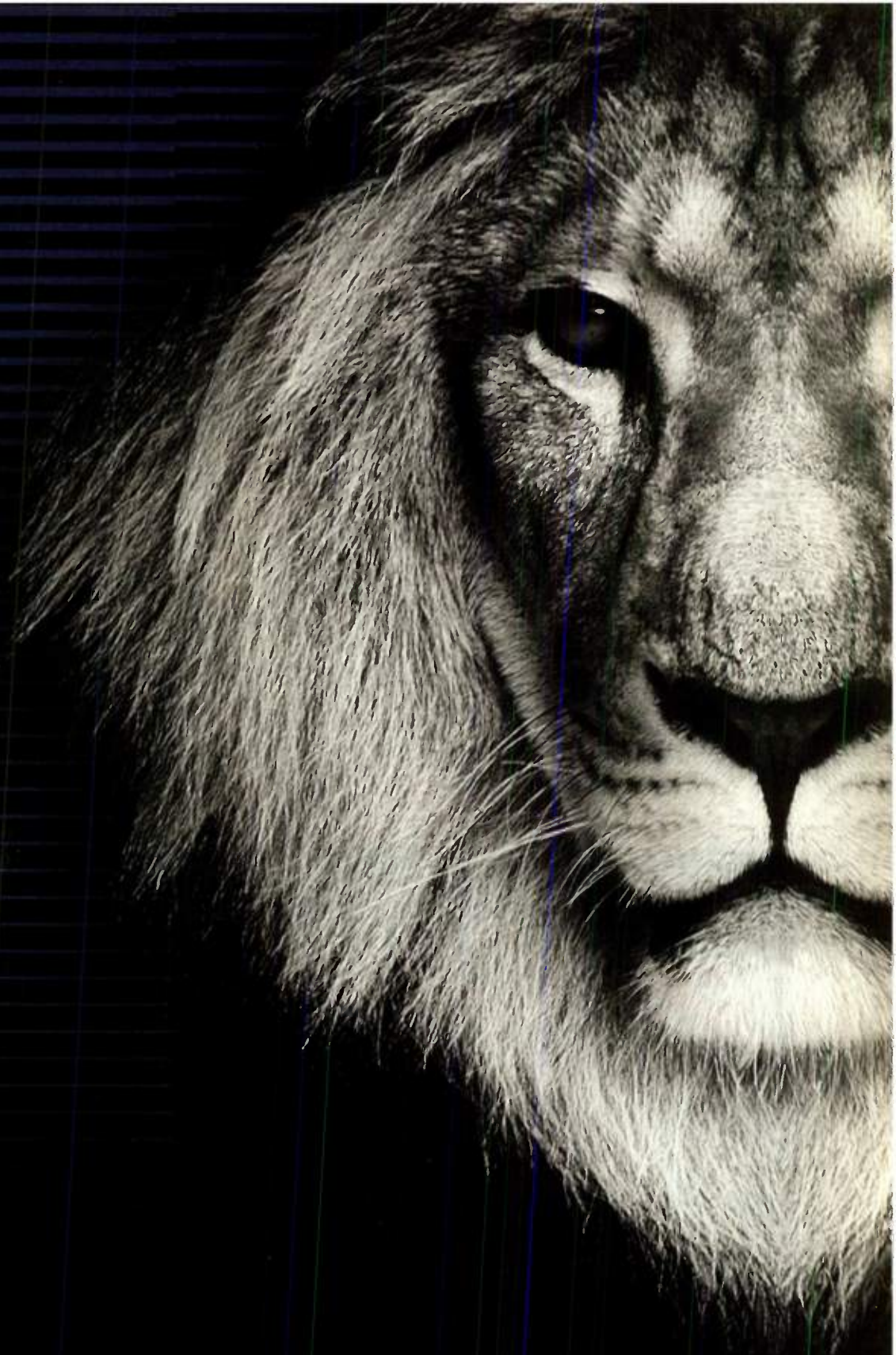
#### TRY THIS

When balancing audio elements in a mix, there should always be a focal point, or certain elements that take priority over others. In a pop song, kick, snare and vocal should generally take the spotlight. Rather than just turning down synths, pads, organs or acoustic guitars, try taking off a little top end or losing some of the proximity effect in the bottom end. EQ can effectively push things back into the space without making them so quiet that they are inaudible.



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to cover all bases. While the shelves offer 16 dB of gain boost or cut, the midrange equalizers offer 13 dB of boost and cut. Numbers aside, unlike some equalizers that provide barely audible changes even with a boost of 4 or 5 dB, the xfilter is sensitive enough that appreciable changes can be heard even with very subtle boosts or cuts.

### BELLS AND WHISTLES

A great-sounding equalizer with a personality all its own and true stereo operation would be enough for many, but it's the little extras that really make this unit a head turner. For one, each of the shelving filters can be switched from their default functionality to instead become highpass and lowpass filters. The slopes are about 12 dB/octave, which is enough that they can be used as mere problem-solvers, cutting out subsonic information, tape hiss or other extraneous information while still preserving a natural sound.

What really makes the xfilter shine is the resonance bump centered at the roll-off frequency point, which can be introduced when the lowpass or highpass mode is engaged. Effectively, it's like having a peak filter boosting exactly where the lowpass filter begins working, except that it feels and sounds a bit different than that. In this mode, the low-band gain control stops performing boosts and cuts, and instead only boosts the amount of resonance. As the resonance increases, the filter tightens up with a steeper slope. The effect feels like you are taking energy that is detracting from the clarity of the signal and repurposing to enhance the

desirable frequencies of an instrument. Ditching ring-y lows from a kick drum while boosting the actual pulsing tone of the shell is accomplished with such a round pleasant tone. It's very impressive.

### PASSIVE MESSAGE

Stop there and the xfilter 500 is a pretty attractive equalizer, but then there's one more gem that the xfilter 500 provides: the Passive Massage circuit. Though many consider passive equalizers to be clean and transparent due to their power supplies and amplifiers, elysia plays on one of the more colorful characteristics that capacitors and inductors produce. With a single button to engage it, and no settings to alter its preset functionality, this band provides an additional lowpass filter centered around 12 kHz. When engaged, it doesn't replace the active high-cut/shelf—it's an additional, fifth band. The purpose of it, though, is to exploit the way a passive inductor resonates, which is a decidedly different sound than the resonance of the active lowpass filter.

Though it is technically a lowpass filter, it really boosts around 12 kHz, and doesn't even start rolling off until around 17 kHz and is only down 4 dB by 20 kHz. The sound it produces doesn't necessarily sound like it's boosting top or rolling it off; it just alters the characteristic. It keeps punchy top-end transients while eliminating fatiguing sheen around them. Ultimately, it pronounces things, without making them harsher. To that end, it almost acts like the high-frequency component of a multiband compressor, but does so with such a pleasant analog fla-



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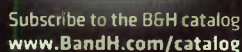
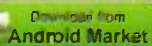
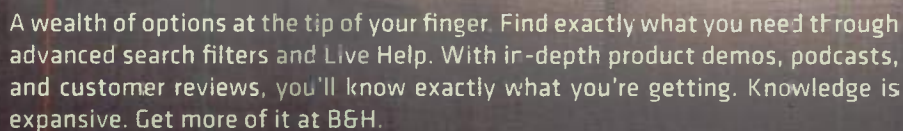
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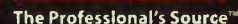




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### PRODUCT SUMMARY

**COMPANY:** elysia

**PRODUCT:** xfilter 500

**WEBSITE:** elysia.com

**PRICE:** \$975 street

**PROS:** Great, unique sound. Easy operation and recall.

**CONS:** No dual-mono operation.

vor that, in extreme circumstances, produces a focused, musical, harmonic distortion.

### IN USE

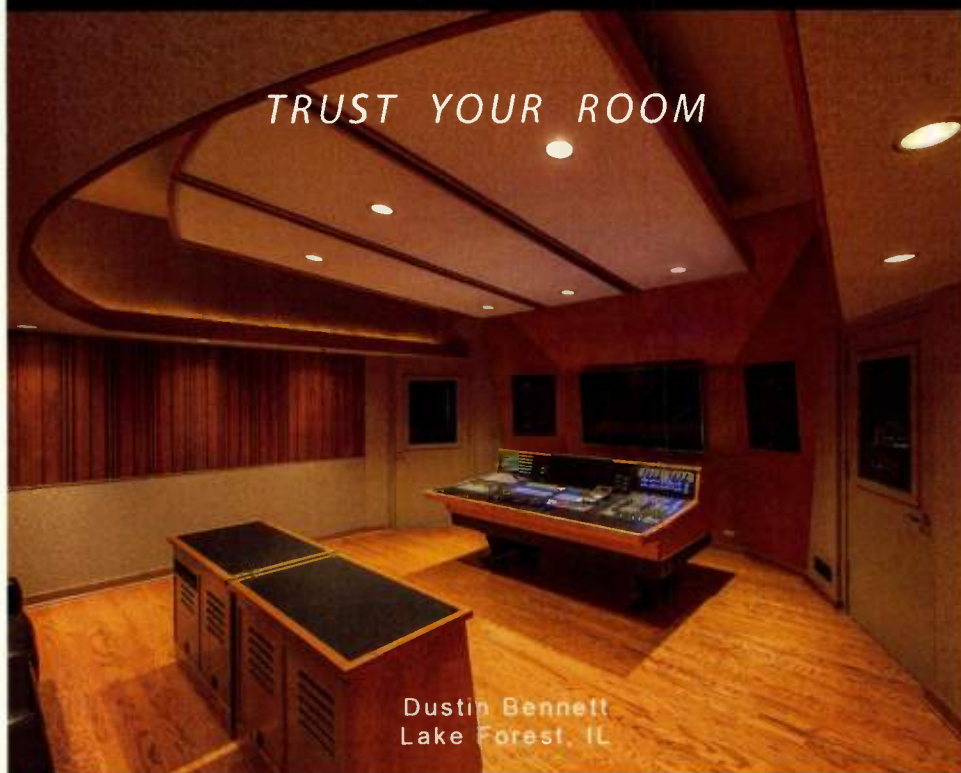
I first tried the xfilter 500 on a track in which the drums were loops of recorded acoustic drum kit. Because they were loops and not actual multi-tracks, I was essentially mixing a drum stem. My hands were tied when I tried balancing kick versus snare versus toms and cymbals. Likewise, I was unable to process the elements individually. The xfilter 500 came to the rescue. The drums were failing to cut through the distorted bass, acoustic and distorted electric guitar in the track. During the chorus, there was also a thick bed of synths competing for space. Again, using the low cut with a resonance peak at 60 Hz, I was able to get a powerful kick sound. A narrow boost around 4.5 kHz got the snare popping. To excite the cymbals, I tried a shelving boost of the highs but found the high cut with a boosted resonance around 10 kHz helped pronounce them while keeping them under control at the same time. The overall effect was tight drums that cut much better than before.

Because, I still was looking for more attack, I decided to try the xfilter 500 in tandem with the elysia nvelope 500. I tried switching the order back and forth a few times before I decided what really benefitted the track the most, but ultimately taking the sound from the xfilter, which was close to what I wanted already, and feeding that into the nvelope 500. It really sealed the deal. Because the kick and snare were already out in front of the overall drum track, it only took a little splash of extra attack to make them really punch through in the mix. Also, because the xfilter 500 had cleaned up the drums so nicely, adding a little room with the nvelope 500 did a good job of livening up the track without cluttering up the midrange.

On a stereo acoustic guitar, the xfilter 500 did remarkable things. In the recording, the top

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end was dull, as perhaps the strings were in need of replacement. There was also a ringing resonance that muddled up the sound of the body of the instrument. Using the low-mid band, I scooped out the nasty resonance. I then used the low-cut filter at around 80 Hz to remove rumble, but boosting the resonance gave the guitar a warm body that was tight and pleasant, unlike the unprocessed, muddy-sounding original. Peak and shelving filters added brilliance to the strings, and though I was already content with the completely transformed guitar, I had to try the Passive Massage. The best explanation was that it created an effect that was reminiscent of acoustic guitar on vinyl, where the strums are hyped and sizzling, with rich harmonics.

I noticed the same kind of sound when mastering an electronic dance tune. The snare, clap and hats played from a drum machine came together with the edgy top-end resonance of the lead synth, leaving the highs sounding crowded and harsh. The Passive Massage cleared away the clutter and accented the timing of the drum elements. They were left with a little bit of grit, which didn't sound like fatiguing digital edginess but instead was very musical.

I also fed a pair of doubled, soft-panned distorted electric guitars through the xfilter 500. The guitarists were playing loosely grinding low chords—just a heavy bed of distorted noise. A shelving boost to the top end significantly increased their width, creating a much more musical character. Clearing some low-mids while boosting some bite in the upper mids helped a lot, too, and a low shelf helped exaggerate the scooped mids even more. The result was big, wide and meaty and made the track a lot heavier.

The market for stereo equalizers is largely dominated by passive Pultec re-creations and high-priced boutique models geared toward mastering. There are only a handful of serious, professional, trustworthy stereo EQs below the \$1,000 mark. There is certainly a need for this new tool, and with the ability to find the best in any piece of audio and exploit it, it's hard to imagine any future competition outdoing what elysia has already done here. A whole rack of these would be a welcome addition to any studio, and if elysia ever released a standalone Passive Massage box, I'm sure those would be a hit as well. ■

*Brandon Hickey is a recording engineer who works on independent film audio in the great Southwest.*

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Continued from p. 43

axis frequency response, engineers measure the entire sphere radiated into the listening space—data gathered at every ten degrees and reflecting 1296 times the information of a single-point response curve.

Dr. Sean Olive has been with the company for 20 years as director of acoustic research. He credits Dr. Sidney Harman, who purchased the company in 1969, with “bringing science to the process of speaker development. He didn’t want to sell speakers based on marketing and sales. He wanted the science to back up the claims, and he hired Dr. Floyd Toole to lead the effort.”

In 1993, Olive, working under Dr. Toole, began setting up a system for subjective evaluation of loudspeakers and the correlation of subjective responses and objective measurements. It’s not an easy task, considering one could argue that all aspects of music production and consumption are sub-

jective, speaker preference most of all. By 2004 he had perfected his double-blind listening setup, making use of a pneumatic speaker shuffler that removes the “nuisance variables” that affect perception of the loudspeaker, such as visibility of the brand logo, the size, shape and industrial design of the speaker and awareness of its price point. His papers on the subject are widely circulated; he maintains an active blog that is worth reading.

“What we’ve found in general, across age, culture, genre and experience, whether the subject has ear-training or not, is that most people prefer an accurate, neutral monitor,” he explains. “One that maintains the perception of timbre across the frequency spectrum, in the combined direct and reflected source. In developing the speaker, then, the research can get the engineers 90 percent of the way to their goal, which is an even, accurate, neutral listening experience.”

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*Tom Kenny is the editor of Mix.*



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taves or shift it within only the source note's octave. Alternatively, the slider can be constrained to move a note toward the nearest octave, or the octave above or below the source note's. This is your ticket to creating chord inversions and far-flung extensions. Pitchmap also includes a global tuning control that allows you to shift the entire program from A438, for example, to A440 (concert pitch)—or vice versa.

Pitchmap allows you to remove individual notes from a mix by muting them. You can also bypass processing below and above a specified note range; that helps when you don't want kick drum and cymbals, for example, to be transposed.

The Threshold control sets how detuned a note must be from the plug-in's input reference (for example, A440) in order to be processed. Setting the Feel control high preserves vibrato and glisses, while a low setting triggers your inner Cher. The Purify control amplifies (low setting) or attenuates (high setting) the noise component embedded in a note. You can even create polyphonic portamento effects of varying durations using the Glide control. Crank the Electrify control to produce unnatural coloration, or nosedive it to improve processing quality.

## PRODUCT SUMMARY

**COMPANY:** Zynaptiq

**PRODUCT:** Pitchmap

**WEBSITE:** zynaptiq.com

**PRICE:** \$299

**PROS:** Great for remixing, composing and sound design. MIDI control allows performance-oriented transpositions that astound. Snapshots can be automated.

**CONS:** Pitch transposition creates audible artifacts, sometimes unpredictable. Pitch correction and note removal don't work reliably. Snapshots can't be recalled via MIDI. Steep learning curve.

## AUTOMATION AND MIDI

It would be daunting to dynamically automate so many parameters, so you may execute numerous and complex harmony changes throughout a song. For this reason, Pitchmap instead offers eight snapshots you can save and recall in turn to make sweeping changes instantly. Snapshots can be recalled by mouse-clicking on them or using DAW automation. I wish they could also be recalled using MIDI Notes; Zynaptiq is working on implementing this.

A highly innovative MIDI Map mode makes incoming MIDI Notes the sole target

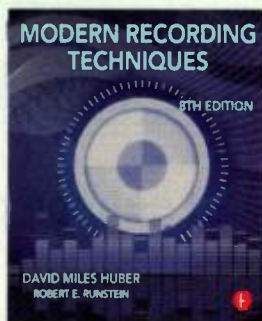
pitches for audio fed into the plug-in. This empowers you to dictate pitch transpositions on the fly by playing your MIDI keyboard. Each note in your audio track is automatically transposed to the nearest note played on your keyboard. (Three alternate key-edit modes affect to which octave range—or ranges—notes will be transposed, creating either small transpositions or long-haul shifts.)

## I TOOK NOTES

Instantiating Pitchmap on a full mix, I mapped the 3rd tone of the song's native scale (D major) to the 4th note and flattened the 6th across

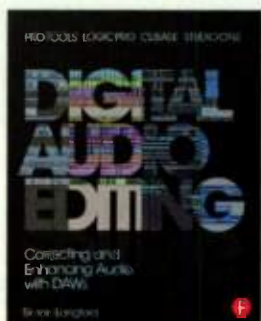
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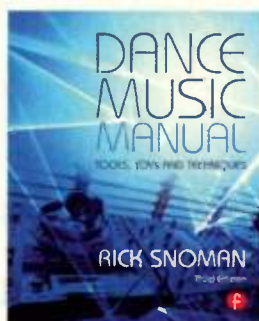
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all octaves, using the plug-in's pitch-mapping sliders. As a result, the band voiced a D sus4 chord where it had played a D major in the original mix, and a G minor where G major had previously held court. An F#7 temporary modulation became G diminished. The lead vocal adapted to the pitch-mapped harmony arrangement, and a new, exotic melody was born. If you ever feel you're stuck in a rut writing stock melodies and predictable arrangements, Pitchmap could be your ladder out of the trough.

If I wasn't convinced that I liked some of my transpositions, I could temporarily bypass pitch mapping on a note-by-note basis (see the green keys in Fig. 1). On the downside, I couldn't consistently make the vocal in a processed mix lock to its mapped pitch, the pitch-mapping occasionally created wildcard pitch shifts, and—even on whole-sale transpositions up or down a whole tone—I sometimes heard both the source and destination pitches at once. The processed mix—especially the vocal—sounded phase-y and sometimes warbly and watery, making it unusable for commercial release.

Next, I activated the plug-in's External MIDI and MIDI Map buttons, and I routed MIDI from my Roland A-37 keyboard controller to Pitchmap via a new MIDI track in DP. Playing chords on my A-37 forced all notes in the pre-recorded mix to the notes I was playing, instantly as I played them (see Fig. 2). Cranking the Purify control weeded out lingering unprocessed signal that was tainting the output and simultaneously made notes resonate beautifully, creating an angelic timbre evoking a synthesized organ. Remix engineers and DJs, this is your

tool to make jaws drop.

Pitchmap is optimized to correct out-of-tune notes in very complex signals such as a full mix, which it did fairly well in my tests. It couldn't correct intonation in an electric guitar vamp (a mono track), and it cut the signal level a few dB. I also tried removing a couple notes repeatedly sung on a full mix by selectively muting them on Pitchmap's lower keyboard. The rogue notes were greatly attenuated but still audible, and I could hear their levels—along with the rest of the mix—pumping.

#### **PITCHER PERFECT?**

No other plug-in can do what Pitchmap can. It doesn't sound pristine, but its polyphonic pitch-transposition capabilities are nevertheless truly groundbreaking.

The plug-in's main applications are remixing, composition and sound design. The GUI's note-based paradigm makes it operate the way musicians think—a plus—but the embryonic documentation leaves open sinkholes along the road to learning the plug-in. (A comprehensive manual is in the works.)

Version 1.5 should be out by the time you read this and will be a free update to current owners. It will support VST 2.4 (32- and 64-bit), RTAS and AAX Native formats on both Mac OS X and Windows. V1.5 will also sport the same preset manager as the company's excellent Unveil 1.5 plug-in. I can't wait! ■

Mix contributing editor Michael Cooper is the owner of Michael Cooper Recording in Sisters, Oregon ([myspace.com/michael-cooperrecording](http://myspace.com/michael-cooperrecording)).



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would be recording. The I/O saw the DAW right away and ran the preamps right into the unit via the one D-sub connector on the back of the unit off to the D-sub of an API Lunchbox. Talk about a portable rig! The drummer remarked that he could not believe we were recording into an iPad, and that it sounded like a record. I got it back to my studio, imported the WAV files and was really impressed by the sonics that I had captured.

Orion had been performing really well with my laptop in both the studio and remotely, so I then wanted to test it with my Mac Pro tower and HD rig. I plugged the USB cable (I don't have MADI compatibility with this setup) into the back of the computer and powered up the unit. All of my I/O preferences and computer outputs then changed to reflect the Orion 32, which was not what I anticipated. I spent some time chasing the defaults, and finally found a workaround in downloading the latest driver from the Antelope website. The problem is that Orion reset the audio settings, Digi core audio preferences and caches. Once I learned this, I was able to reset my usual computer outputs to my preferred settings and I was back to normal.

I set out to multitrack local Nashville rock band The Blackfoot Gypsies with different sample rates, recording all tracks at the same time. The 44.1 and 48k tracks sounded stellar—very close to what I was used to hearing in my room. Once I moved up to 88.2 and 96k, the tracks sounded a bit cloudier on the top end, and there wasn't as much detail throughout the whole frequency range. The next day I tested the signal-to-noise ratio at different sample rates and found that the noise increased slightly when the sample rate increased via the USB connection. Since I typically record most

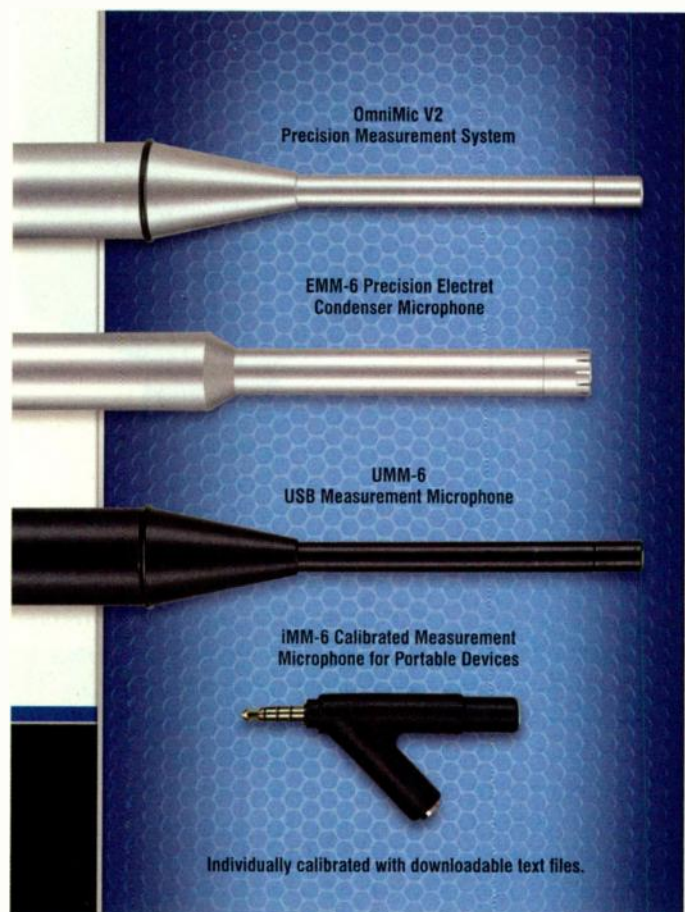
of my projects at 44.1, this wasn't a major issue for me. The internal clock performed extremely well on both the laptop and desktop—so much to the point that when I went to apply my own dedicated clock back to a session on the desktop, I thought I had already done so after listening for some time. The differences at the lower sample rates were very similar, and only when I got above 48k did the dedicated clock start to show its difference.

### PROOF POSITIVE

After testing Orion 32 in a variety of situations and applications, I walked away with a different perspective. I thought that having 32 channels and dedicated clock in a unit of this size might sacrifice quality of the audio conversion. I expected the clock to be great, as that is what we all have known Antelope for in the past. The conversion did not disappoint; in fact, it was highly competitive with units that would cost twice as much to have as many channels.

The flexibility of the routing, which took a little time to master, provided easy solutions for most situations. Adding the iOS compatibility, users can create one of the best-sounding and most portable recording packages for multitrack recording I have come across. The Antelope Orion 32 has raised the bar for this level of integrating audio quality and cutting-edge technology, and I can only hope to see others taking advantage of what the Orion 32 has to offer. ■

*Chris Grainger is a producer/mixer/engineer and owner of Undertow Studio in Nashville. [www.itsgrainger.com](http://www.itsgrainger.com); @itsgrainger.*



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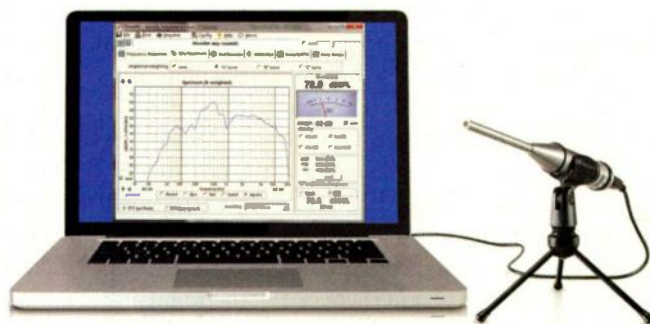
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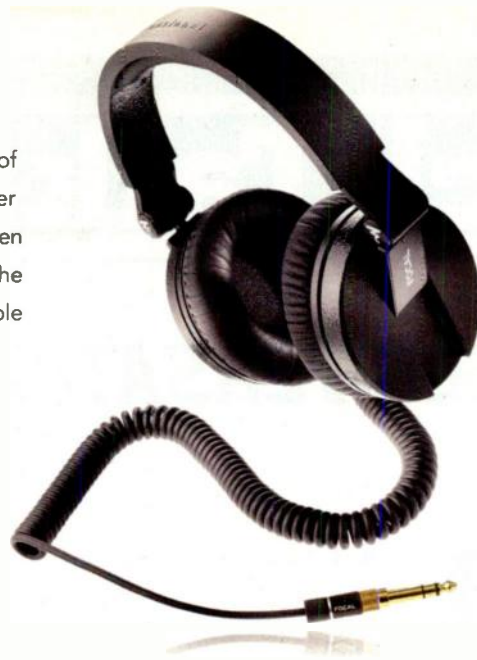
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# TechTalk

## THE CONVERSATION IS CHANGING



By Kevin Becka

**I**'ve talked about quality more than a few times in this column. I'm a firm believer that quality is cheaper when buying gear, and that great gear can help make great-sounding records. I'm not fooling myself, I know that the best tracked and mixed recording of badly performed or written music will always be an awful experience. But that's not the point here—it's the quality mindset. I recently had a conversation with engineer Tommy Vicari, who believes just that. His philosophy is to make records that will stand the test of time, so they'll sound as good in the future as they do now, no matter the source.

Tommy's sentiments were echoed in a recent *Mix* webcast I moderated with Michael Bishop, Ed Cherney and Gregg Field, three industry pros at the top of the game. Michael Bishop has been experimenting with new converters operating at ultra-high resolution using 11.2 MHz 1-bit Direct Stream Digital technology. All three participants talked about their favorite mics, preamps and converters, and dropped a few tips they've learned over the years. But no matter what this generation of pros is doing, unless the consumer drives the push toward quality, the next generation of engineers will have no incentive to keep the ball rolling. But I think the conversation is changing. I'm a blog watcher and trade show junkie, and you can always tell there's something stirring by the buzz at the poles.

At one end, Sony is pushing a new range of High Resolution Audio (HRA) audio gear, and bloggers responded with a range of reactions. Gizmodo's "What Is High Resolution Audio" took a broad approach, quoting Neil Young in support of higher resolution and Monty Montgomery (Xiph.org), saying just the opposite. Then there's Sessionville's "This Just In: High Resolution Coming, Your Money Going," saying, "Good music is good no matter what gear you play it on. And less than 1 percent of the population has good enough ears to discern higher sampling and bit rates from the generic stuff in a blind taste test." I put a lot more faith in the listening public and believe I could easily prove that view false.

What got me thinking about the quality conversation was a silly ad on TV. It was for a set of headphones you could pull off your head, hang around your neck and they'd double as speakers. As ridiculous as it looked, it was the language I was more interested in. It wasn't the typical lifestyle ad where college-age Joes/Josettes, celebrities and/or sports figures are wearing \$400 headphones to a hip soundtrack—in this ad, the users were talking about quality.

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ALO Audio RxMK3-B	Yes	Yes	No	No	\$649
CEntrance HiFi-M8 4XL	Yes	Yes	Yes	Yes	\$699
Sony PHA-1	Yes	Yes	No	No	\$599
Ray Samuels Audio Emmeline	Yes	Yes	Yes	No	\$700

As in all fads and product cycles, the saturation point for "cool" has waned. So the next logical step is to make quality cool, and with that comes the next step. If you just spent \$400 for headphones, why not slap some more money down on your personal listening system by buying a better DAC and headphone amp? This works for consumers and pros as well. Who wouldn't want a better portable solution for listening, producing, recording and whatnot? It's already heading there at the front end. In this issue, read Chris Grainger's excellent review of the Antelope Orion 32 AD/DA with USB, MADI I/O and more. I see the iPad as an up-and-comer in audio production, and if pros are going to edit, evaluate and even record to this format, the only thing lacking is the poor I/O and headphone outs. There are some great higher-end solutions that work in this regard.

At Summer NAMM, I saw the Sony PHA-1 portable DAC and headphone amp (\$599). Great for consumers, but lacking some critical features that pros might use for portable production. With the help of intrepid *Mix* reviewer/researcher Bobby Frasier, we went on a hunt for portable DAC/headphone amps that an audio producer/engineer would embrace. Wish list? It would have to work with iOS (30-pin or Thunderbolt to USB), run on batteries, have a headphone amp, line outs and a digital pass thru. Here's what we found. Note: The AlgoRhythm SOLO -dB and ALO Audio RxMK3-B must be used together to satisfy our operational wish list, making it the most expensive option on our list.

No matter where you fall in the discussion, in the consumer and pro world, portable quality is the new trend. You can see it in live production, computers, small footprint I/O like the Orion 32 and more. The key for me is to keep talking about quality. It's a healthy conversation to have. ■





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