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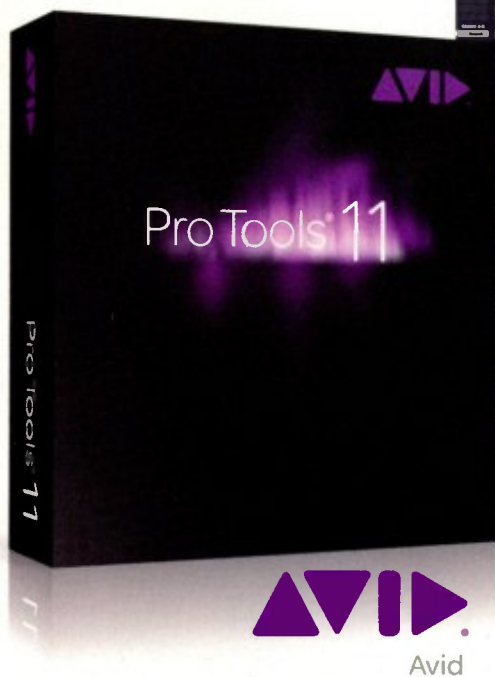
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On the Cover: Producer/engineer Cynthia Daniels and designer Beth Walters in MonkMusic, a Walters-Storyk-designed, Daniels-owned, recording space in East Hampton, Long Island. **Photo:** Cheryl Fleming (cherphotos.com).

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From the Editor

MIX[®]

QUALITY: MUSIC MEETS TECH

Producer/engineer Andrew Scheps has been logging miles of late, flying around the country to local Recording Academy chapters to deliver a talk in association with the national Producers & Engineers Wing. The two-hour presentation, labeled “Lost in Translation,” is all about Quality, and fits in with the Academy’s nationwide drive Quality Sound Matters. Last week Scheps stopped in at Fantasy Studios in Berkeley, Calif., to address the Bay Area pro audio community.

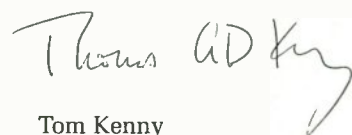
Actually, he presented the talk, which is about half listening session, twice at Fantasy, first for the local tech community, then for producers and engineers. It’s an excellent presentation focusing on distribution formats—Quality on the consumer end. Basically, it’s a presentation on what happens to a track after it leaves the mastering house and is encoded for iTunes, YouTube, Rhapsody, MOG, Rdio, Rhapsody or any other delivery medium making use of lossless or lossy compression, whether AAC, MP3 or Ogg Vorbis. He begins with a brief history of music consumption, all of it live until Edison, the wax cylinder, the 78, the 45, cassette, 8-track, CD, etc., up until streaming and download. Then he puts up charts with 128 and 256 and 384 kbps, he walks the audience through truncation and bit depth, and then he plays back tracks that he pulled from the services as if he were a consumer.

The differences were striking. We heard “Strawberry Fields,” Mahler’s Ninth, “Roundabout,” a cut from George Benson...a wide variety. It wasn’t double-blind listening, there was no real guesswork. In that sense, the talk was anecdotal, designed to get audio engineers and producers to start thinking about what is going on with their music. Scheps peppers his presentation with humor, a few insider jokes, but his passion for quality is evident. He’s tailored his material for engineers, with the assumption that they don’t know math. The difference with the audience at Fantasy was that they do know math.

There were representatives from the Fraunhofer Institute, the developers of MP3, in the audience. And Apple, Rdio, Rhapsody and others. Tomlinson Holman, the man behind THX and a current researcher at USC, was in the house. Scheps opened his talk with a disclaimer, about how he’s usually talking to people for whom much of the material is new, and at times he appeared self-deprecating and deferred to the audience, claiming that he was “just a music guy.” But he more than held his own in a crowd filled with tech minds. He brought the subjective, and let’s face it: Music is subjective.

Yet, music delivery—Quality Music Delivery—is now dependent on highly objective criteria, like sample rates and bit depth and bandwidth. The appearance of the tech community at a listening session led by a top producer was indicative of where we stand in letting the world know that Quality Sound Matters. Any formula that brings Quality Sound to the consumer must involve both communities, along with mobile and search. I only wish YouTube, the number-one delivery mechanism but the worst for Quality, was in the studio that afternoon.

Kudos to the Recording Academy for recognizing that the recording community is dependent on the tech community, and vice versa. On one Saturday in the Bay Area, it was all so clear.



Tom Kenny
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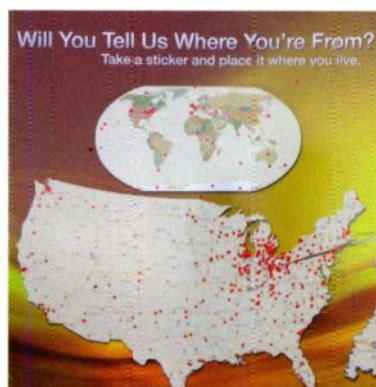
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GearFest 2013 Draws Record Crowds



Visitors, who came from all over the world, were encouraged to place a star on this map showing where they traveled from to attend GearFest 2013.

Sweetwater Sound reports that GearFest 2013, which took place June 21 and 22 at Sweetwater's campus in Fort Wayne, Indiana, was a bigger success than ever, breaking every record established by previous annual GearFest events. There were more than 7,000 participants, up from 6,000 in 2012, and sales trended upward by more than 36 percent over GearFest 2012. This year's event provided opportunities for thousands of musicians, engineers, and producers to participate in the festivities, with customers traveling from all over the world to participate.

Sweetwater founder and president Chuck Surack says, "GearFest just continues to grow and grow. I'm so proud of everyone involved, from our loyal vendors to our dedicated employees, for creating such a remarkable two days of music, education, and fun. GearFest is truly becoming a signature event in the music industry."

Launched in 2002, Sweetwater's GearFest is billed as the nation's largest end-user-oriented music and pro audio festival, featuring exhibits from more than 200 manufacturers of musical instruments, music technology, and au-



dio equipment; workshops, clinics, and seminars; live demos; special performances; a musician's flea market; and more.

This year's featured speakers included record producer Jack Douglas, producer/engineer Frank Filipetti, producer/engineer Fab Dupont, mixer Chris Lord-Alge, live sound engineer Rick Camp, and many others. To celebrate its 130th anniversary, Gretsch provided the festival's closing event, featuring Australian singer/songwriter and guitarist Joe Robinson, and power pop band Fountains of Wayne.

Sweetwater's own Editorial Director and guitarist Mitch Gallagher demonstrated the "Tones of the Pros," from his recent book *Guitar Tone: Pursuing the Ultimate Guitar Sound*.

In total, GearFest included more than 140 workshops and seminars on guitar, recording, and live sound, music creation with computers, acoustics, songwriting, and how to use electronic instruments. In addition, hourly prizes were given away, totaling more than \$54,000 worth of music instruments and equipment.

There were 12 tents full of instruments, live sound and pro audio gear, including one devoted to iOS hardware and music applications for iPad, iPhone, and iPod Touch.

Gino Robair attended GearFest for the first time this summer as technical editor of *Electronic Musician* magazine, *Mix's* sister publication, and says that he appreciated the experience. "The outstanding thing about GearFest is that there is a major educational component," Robair says. "My favorite parts involved the seminars and master classes, the chance to hear Jack Douglas talk about his career, and the product-related workshops such as the ones about Pro Tools 11, which was officially released during the show. It's great to be able to get one-on-one time with designers of the pro audio I'm interested in, particularly the high-end stuff. And, of course, I couldn't help but bring a few things home from the flea market tent!"

For those who couldn't attend GearFest in person, the company posted videos, photos, and hourly updates to its Facebook page, and YouTube and Twitter accounts. Videos and photos from GearFest 2013 are available on Sweetwater's Facebook page: facebook.com/sweetwater.

Additionally, videos from GearFest—including interviews, product demos, and live performances—are available from Sweetwater's YouTube channel, www.youtube.com/user/SweetwaterSound, and available as a playlist.

Treatment or Gear: RealTraps Responds

By James W. Lindenschmidt

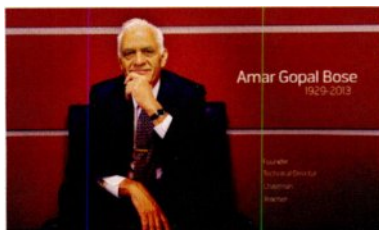
I read Kevin Becka's June 2013 TechTalk column, "Which Comes First: Treatment or Gear?" and was surprised by his assertion that if one has a \$10k budget to set up a studio, one should only consider acoustic treatment "if you think you need it and have the money." Our experience at RealTraps is quite different: We know that acoustic treatment is the most cost-effective improvement for anyone setting up a professional studio, because nothing slows down an engineer's workflow like not being able to hear accurately.

I regularly hear from customers who are astonished and thrilled by their post-treatment improvements. The frequency response is often 20 dB (or more) flatter than it had been. I'm not aware of any other upgrade that will make such easily audible and quantifiable improvements—even speakers, which are much more variable than electronics in frequency response are not likely to have 20dB peaks or nulls. Most studio monitors are pretty flat to within +/-3 dB.

Don't get me wrong, I'm a fan of high-end gear and always recommend to my customers that they use the best gear they have available to them, especially if they need to be able to get certain sounds quickly in a pro setting. But even then, for less than the cost of a single boutique microphone, preamp, or converter, one can install a room full of traps that lets you trust what you are hearing, whether mixing or placing a mic. You can work faster, with more confidence, and ultimately with better results.

If I were setting up a room with a \$10k budget, I'd allocate half the budget to a good set of monitors plus acoustic treatment. Then I would know that I could trust the most important gear we have—our ears.

James W. Lindenschmidt is the general manager of RealTraps.



Amar Gopal Bose, 1929-2013

On July 12, Dr. Amar G. Bose, a former professor of electrical engineering at the Massachusetts Institute of Technology who founded the Bose Corporation in 1964, passed away at the age of 83. Bose Corporation is primarily known for acoustics, but in addition, its inventions have helped to improve loudspeakers, music production, sound in public spaces, home entertainment systems, automotive music systems and much more.

Dr. Bose served on the MIT faculty from 1956 until 2001, and made his mark both in research and in teaching. In 1956, he started a research program in physical acoustics and psychoacoustics, which led to his development of many patents in acoustics, electronics, nonlinear systems and communication theory. Dr. Bose was a Fulbright Post-doctoral Scholar, an elected member of the National Academy of Engineering and of the American Academy of Arts and Sciences, and a fellow of the Institute of Electrical and Electronics Engineers.

Hear It Like I Hear It

A joint presentation of the P&E Wing and the Consumer Electronics Association (CEA) Audio Division, a two-part lecture titled "Hear It Like I Hear It" was held on June 26, 2013, in conjunction with CE Week in New York City at Manhattan's Alison 18 restaurant. Members of the audio community, consumer audio media and journalists from the mainstream press were invited to hear "music as the artists and engineers intended."

Grammy Award-winning engineer Andrew Scheps compared current audio formats using a Genelec 5.1 active monitoring system, showcasing the auditory differences of master recordings played back in different formats such as vinyl, CD, MP3, AAC and online streaming models. Grammy Award-winning engineer Elliot Scheiner and re-recording mixer Tom Fleischman showed clips from their documentary film, *History of The Eagles*, discussing how they were able to remix audio from vintage live recordings of the band for a 5.1 surround sound format.

Photo: Ilya Savenok/WireImage.com



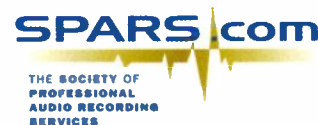
From left: Andrew Scheps, Elliot Scheiner, Maureen Droney (P&E Senior Executive Director), Allyson Pahmer (CEA Member Relations), Paul Stewart (Genelec), and Tom Fleischman.

SPARS Sound Bite

The Personal Touch

By Kirk Imamura

On July 25, a few days after I write this, the first ever AES Conference on Audio Education will kick off at Middle Tennessee State University, co-chaired by Michael Fleming and Bill Crabtree. Among the topics that will be discussed is how well students are prepared to enter the marketplace and what can be improved to make them even more prepared for a career in the studio.



From the industry perspective, the general view has been that most graduates are not particularly lacking in technical knowledge. What they have been deficient in has often been described as soft skills, interpersonal skills, etiquette, proper attitude and common sense (nothing common about it).

A recording session is a very unique and specialized work environment. There are unspoken protocols and a pretty rigid hierarchy in place—a scheme that has evolved over decades. They are in place so that sessions go smoothly. Other than technical difficulties, the root of disruption is conflict that stems from egos, emotions, insecurities, creative differences and all the human messiness that comes with the creative process. Conflicts, if they get resolved, require a decision maker, whether it is an individual or a group by consensus. The key is for those in supporting roles to never get in the way of that process. The apt imagery of one who cannot navigate this minefield is that of a bull in a china shop.

How can we teach these skills? In one sense, the only way to really learn is through experience. There is a high level of awareness and empathy that is required to understand these types of situations. Any seasoned engineer or studio manager can tell you many stories of gaffes and inappropriate behavior. Some of these situations are extremely subtle. What we can do is to collect scenarios of various situations and have students discuss them from different perspectives and through role-playing. It may not completely take the place of on-the-job training, but it may be a first step toward a deeper understanding of what takes place psychologically in a seemingly calm but pressure-packed recording session.

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

On the Cover

By Tom Kenny

CYNTHIA DANIELS AND MONKMUSIC

A Versatile Space for a Versatile Producer

Cynthia Daniels talks fast. She answers questions in an elliptical but always focused manner, returning to the core answer at the precise moment you think a tangent is coming. You get the sense that for her multitasking is a way of life, and you have the confidence that she can get any and all jobs done, on time and under budget. She was born with an Extra Ambition gene; in many ways, she is the prototypical New Yorker.

She is also emblematic of the trend toward high-end personal studios, engineer-owned and operated, that has made its way across the U.S. over the past decade. Sometimes these rooms are in homes, sometimes out in the world, sometimes right in the middle of a commercial facility. Sometimes they are single-purpose, as in mixing-only; other times, they are multi-purpose. When Daniels, over the course of several years, migrated her primary workspace from the City to East Hampton, she built a space to accommodate anything and everything music-related.

"I've known pretty single-mindedly that I wanted to be a recording engineer since I was 16," Daniels says. "I went down to the Institute of Audio Research for my first day of engineering school and realized that there was a whole new language, and I didn't speak it! So I availed myself of every opportunity. In college, in Boston, I would do live sound at night, and there I met people recording concerts in mobile rigs, and I worked on that end for a while. When I got back to New York, I was lucky enough to start at A&R Recording and get trained in the Phil Ramone Way, where you start from the bottom and learn every aspect of studio life. I got to start off by observing everything, from jingles and film scores to records made at the highest level of artistry and engineering."

She learned the art of preparation, and she learned to work fast. She left A&R eventually and landed at a smaller studio, both managing and engineering. She fell into more jingles, Broadway cast albums, television and film scoring, live concert recording, more records. Then she went freelance in the early 1990s and has been ever since.

Today, she is still technically freelance as she sits in her new WSDG-designed studio in the Hamptons, a recording wing attached to the home she purchased in 1998 as a getaway (and rebuilt and enlarged in 2011); as a self-described workaholic, she began moving gear in on day one.

"I never planned to build this much," she laughs. "But I began getting work out here, and I had to have a space that matched my clients' needs. I had been living in Auralex foam, making the house work so I could mix. But I live in a residential area, with lawnmowers and birds and airplanes overhead, and I hate noise! Except the noise I'm making, of course."

While she considers herself first and foremost a mixer and record producer, she found that there was a need for ADR in the Hamptons,



Photo: Cheryl Fleming/cherphotos.com/architecture

where many of her A-list clients—Alec Baldwin, Sarah Jessica Parker, Liev Schreiber and others—spend their summers. She needed a professional, versatile space, with a predictable mix room. She called John Storyk and WSDG project manager Matt Ballos, and the team went to work. Nine months later, she had her 650-square-foot control room/studio/vocal booth. And it is dead quiet, with lots of glass and light.

"It's remarkable for a studio to have so many windows, but the sylvan view was so lovely that walling it out was unthinkable," says Beth Walters of Walters-Storyk Design Group. "We had access to outstanding isolation options that enabled us to maximize the surroundings. This became doubly important when we learned that Cynthia does many of her sessions during the day. Because we incorporated a distinctive, acoustically accurate ceiling shape and interior room geometry, there was little need to come up with additional aesthetic treatments."

The two-time Grammy winner (one for the Broadway cast album of *The Producers*) has recently hosted sessions for Beyoncé and Sir Paul McCartney, and has a project with Nile Rodgers on the books for this month. In March, she launched MonkMusic Records.

"I've always had this passion to capture the raw intensity of high-energy rock, and introduce interesting sonic landscapes and textures to that vibe," Daniels says. "For so many years I would help an artist craft their vision, then I would tell them that the easy part is over. Now they have to go sell it. I'm excited about what's going on in the world musically, and there is so much opportunity for records to be heard if you have a fan base. I want to help the artist find their audience."

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By Blair Jackson **18**

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GLEN CAMPBELL

Hits Gain Poignancy on 'See You There'

By Barbara Schultz

Two years ago, Glen Campbell's family revealed that he is suffering from Alzheimer's disease, and his fans assumed that his wonderful 2011 album *Ghost on the Canvas* must be his last. Campbell stopped touring this past April due to progression of the disease. It seemed that a long, brilliant career had reached its end.

However, Surfdog, the label that released *Ghost*, had a surprise in store. During the *Ghost on the Canvas* sessions, producer Julian Raymond and engineer Howard Willing had asked Campbell to perform some of his big-

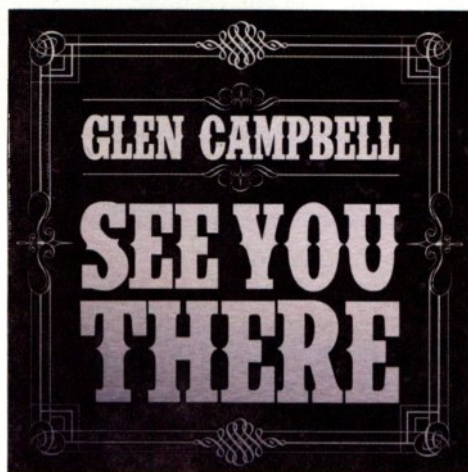
gest hits—"Wichita Lineman," "Gentle on My Mind," "By the Time I Get to Phoenix" and others—as guide tracks, or just to keep the juices flowing in the studio. Now, on *See You There*, fans will get to hear those special performances, set to breathtaking new arrangements.

"There was a key moment when Glen's tour was winding down, I grabbed a CD and put it on for the first time in a couple of years," says label owner/executive producer Dave Kaplan. "I heard the first three words of 'Hey Little One,' and it melted me. I said, 'This is so magical that it deserves to be a record.'"

Kaplan brought the tracks to producer/engineer/guitarist Dave Darling, who's perhaps most famous for his production work with Brian Setzer, and they brainstormed a plan to rearrange those iconic songs.

"Our earliest conversations had to do with Glen's TV show," Darling says. "That was in his mind—the fact that Glen would play a song on acoustic guitar and just sing it, in a folky way, at the end of the *Glen Campbell Goodtime Hour* [1969-1972]."

Darling says he and Kaplan wanted to make the new versions more "rootsy, closer to the



ground,” to show an emotional quality that he and Kaplan heard in the performances. Darling gathered a core band of what he considers very sensitive players. Basic tracking happened in Studio City Sound (studiocitysound.com) with Steve Hodges on drums, Carl Sealove on upright bass and Darling on electric guitar. Studio City Sound’s chief engineer/owner, Tom Weir, tracked the sessions.

“We had the drummer alone in the big room of Studio A,” Weir recalls, “and bass in a side lounge that we use as an iso room.” Weir miked the bass fiddle with a Neumann M 149 down low and a KM 84 higher up to get some of Sealove’s finger sounds. “I used two API 3124 pre’s on those, but no EQ or compression,” he says. “If a bass sounds great, I’ll let that go into Pro Tools naturally. I like to leave acoustic instruments flat unless we’re going for an effect.”

“Steven Hodges is a particularly quiet drummer, so I had him miked up with about a gazillion ribbon mics,” Darling says.

In addition to close-miking each piece of the kit, Weir says, “I also put a Neumann U 47 up—another mono mic in front of the drum set—and, for old-school blend, I put an extra Electro-Voice RE15 in the back, overhead.”

Darling’s electric guitar amp was placed in another iso room, miked with a Royer R-121 and a Shure SM57, with both mics going through a



Tom Weir (left) and Dave Darling



vintage 4-channel Ampex MX-10 mixer. “That old mixer was modified by Steve Firlotte of Inward Connections,” Weir says. “We have two of them at Studio City Sound, and one’s modified with phantom power. I blended the two guitar mics together when he played electric, and if he played acoustic, we’d record him with a KM 84 through an API 3124 pre.”

Studio City Sound is long on API preamps, and Weir used several on drums, along with Neve, UA, EMI and Amek pre’s. “I still have the modules from the Amek Angela I had in my first studio,” Weir says. “Now we have preamps and no console. We put the toms through the A10.”

Some additional sounds went down during basics—Arlan Oscar on keys, Paul Cartwright on viola, Teddy Andriadis on harmonica—and

still more during overdubs/mixing in Darling’s personal studio, Doghouse. Darling and Kaplan agree that some arrangements seemed to write themselves, while others proved more elusive.

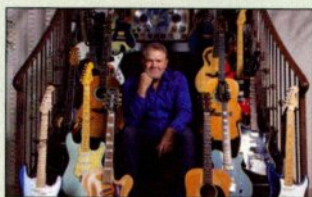
“Rhinestone Cowboy’ was hard,” Darling says. “I did that song five times, but it was an important record, so it was worth doing.”

“For a while, it seemed like everything we did sounded like a lounge act playing ‘Rhinestone Cowboy’ with this brilliant vocal,” Kaplan says. “And it’s tough because you’re not going to get these songs better than the originals; they’re masterpieces.”

Whereas “Hey Little One,” for example, becomes more intense with Campbell’s voice in front of dark but intricate, full arrangements, this new version of “Rhinestone” is simplicity itself: Darling plays a striking, powerful electric guitar part, with some gentle acoustic strumming underneath. It’s almost painful to hear how lonely and full of feeling this song becomes in Darling’s hands, and it will surprise many that the vocal and guitar arrangements weren’t conceived together; it’s seamless.

“If this is the final studio record from Glen Campbell, I’m hoping more than anything that people are moved by it and have a heightened respect for one of the greatest musicians we’ve ever had on the planet,” Kaplan says. “This is not just another collection of hits—it gets to a whole new level of emotion.” ■

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Check out the official video for “Hey Little One” here: mixonline.com/082013

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KYLE ANDREWS, 'BRIGHTER THAN THE SUN'

Nashville-based engineer/producer Chris Grainger has been collaborating with Kyle Andrews on his albums for nearly a decade, and the pair have developed a workflow that yields joyous, synth-driven pop anchored by Andrews' expressive voice. Grainger works out of his personal studio, Undertow, where he and Andrews turn homemade demos into final tracks.

"In the past, Kyle played everything himself, and then we'd do some arranging and programming together, but with this record, he wanted to mix and match organic process with the computer synthesis that he does," Grainger says.

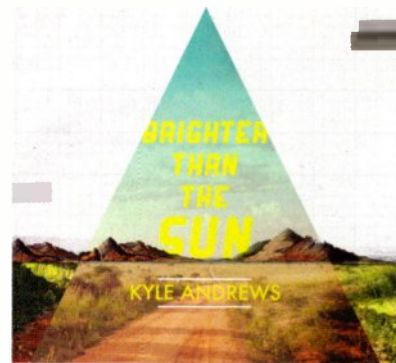
Both Grainger and Andrews have Pro Tools rigs with Universal Audio interfaces. "Kyle and I both use UA stuff a ton," says Grainger. "I also have the 2192 for my HD rig; I use those converters for overdubs and mixing. We also both use the 6176 [analog strip], and Kyle loves the tape machine and 1176 plug-ins to record through. I also lean on my Neve and APs for

drum tracking and guitars."

Whereas most of the songs on *Brighter Than the Sun* fall into the synth-pop category, Andrews had a hit a few years ago with "You Always Make Me Smile." Encouraged to write a similar track for *Brighter*, he and Neil Mason (co-writer on "Make Me Smile") created "Way to Wonder," a romantic confection of bright synths and acoustic strumming.

"Then we set about making a bridge between 'Way to Wonder' and the other songs on this record," Grainger says.

That meant adding electronic sounds to "Way to Wonder," and mixing more acoustic elements into other tracks. "When we recorded drums earlier, we'd tracked some one-hits that we could fly into other songs," Grainger explains. "From the beginning, we were spreading colors through all the songs so that pieces would match up across the board."—*Barbara Schultz*



MANDOLIN ORANGE, 'THIS SIDE OF JORDAN'



The sweet, mournful sound of Mandolin Orange—of Andrew Marlin and Emily Frantz's tender harmonies and strings—is uplifting to roots music lovers despite some gloomy lyrical themes. The duo's third album, *This Side of Jordan*, was made with engineer/upright bass player Jeff Crawford in Mitch Easter's Fidelitorium Recordings (Kernersville, N.C.; fidelitorium.com). Easter's control room is built

around a rather unknown console, a 1978 ABE Apparatebau u. Elektronik Becker GmbH.

"Mitch's place is so big, we can spread out," Crawford says. "We might use a couple of isolation booths, but we can record live with bass, guitar and violin feeding off of each other." He captured Marlin's vocal with an AKG 414 mic, with Frantz singing into a Chameleon TS-2. "I had them through either a Distressor or an LA-2A, depending on the song, via the console into Pro Tools," he explains.

Frantz often plays violin and sings on live sessions, but Crawford says, "Mostly at any given time she either sings or plays. If she plays heavily on a take, we'll have to overdub the vocal, but usually they're not playing and singing at the same time, so it was easy to push the Coles [4038] I had on violin or the Chameleon."

Crawford used the same vocal and string mics during overdubs in his facility, Arbor Ridge Studios. "Emily's voice has a warm midrange quality to it, so the Chameleon made sense for her, but I liked that the 414 made Andrew sound a little crisper and took out a bit of the lows that some bigger-diaphragm mics would have."—*Barbara Schultz*

VINCE GILL AND PAUL FRANKLIN, 'BAKERSFIELD'



The late Buck Owens and his compatriot Merle Haggard get the royal treatment on *Bakersfield*, Vince Gill and Paul Franklin's salute to West Coast country. Gill, Franklin and band recorded this beautiful, heartfelt collection of gems in the personal studio that Gill built with the help of engineer Justin Niebank.

"About four years ago, Vince said, 'I want to build a studio so I can just make music,'" Niebank says. "He had a room on the side of his house [in Nashville], and we went in saying we would just start making music, and would tweak it once we saw how it sounds—start with the music instead of technology."

The space—mainly one large, open tracking room/control room combo with a drum room and some amp lockers attached—has been part of a very fertile period for Gill; he and Niebank have made some stellar albums in there already, including Gill's production of Ashley Monroe's *Like a Rose* and Gill's record with The Time Jumpers. On *Bakersfield*, "Vince's idea was the vocal and [Paul Franklin's] steel would always be playing off of each other, and guitar and steel would always be playing off of each other. With drums in the booth, Niebank set the other musicians up in a circle, tracking to Pro Tools via the studio's API 1608 board.

"Acoustic guitars went through [Neumann] KM 54 and KM 56s, and Vince's vocal was to a 269," Niebank says. "I love to get people playing acoustic instruments and to find the right angle between facing each other and close-miking; there's beautiful leakage between the two of them."—*Barbara Schultz*

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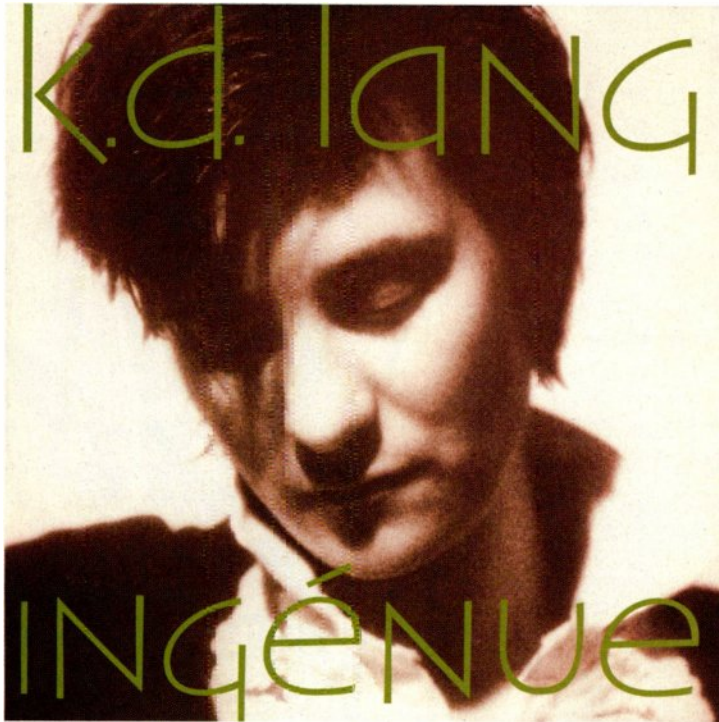
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Classic Tracks

By Blair Jackson



"CONSTANT CRAVING"

k.d. lang's Reluctant Hit

When k.d. lang first emerged in the mid-'80s from the plains of Alberta, with her strong, elastic alto and her androgynous look, it was difficult to categorize her. It was country, for sure, but mostly retro, with affectionate nods back to 1950s/early '60s stars ranging from Patsy Cline (her most apparent influence; lang's band was even cleverly called the Recliners) to Webb Pierce to Lynn Anderson, among others. There was also a raw, rockabilly edge to some of her material—particularly on her 1987 U.S. breakthrough, *Angel With a Lariat*, produced by British new wave/rockabilly icon Dave Edmunds.

She wasn't "cow-punk," but she certainly wasn't mainstream '80s country, either. Even so, her 1987 duet with Roy Orbison on "Crying" made the country charts and earned her a Grammy, and 1988's "I'm Down to My Last Cigarette"—from *Shadowland*, the covers album lang made in Nashville with Cline producer Owen Bradley—made it all the way to Number 21 in 1988. She got back to her own country material—written with co-producer/multi-instrumentalist Ben Mink (whom she met in 1985 and was featured prominently on *Lariat*)—with the wonder-

ful *Absolute Torch and Twang*, which built on the success of its predecessor and also won lang a large new audience, as well. The album peaked at Number 12 on the country charts, fared well on the pop album charts, yielded a hit country single ("Full Moon Full of Love") and won lang a Grammy for Best Female Country Vocal Performance.

Despite that success, Mink says today, "We were chasing the Nashville thing, working off formula, and it just wasn't working. Nashville still had the door closed for us in country, so we figured, 'What the hell, we'll do exactly what we want,' and that's where *Ingénue* was born."

Lang's fourth album for Sire (WB), *Ingénue*, definitely represented a stylistic departure. "It was a conscious choice we made," Mink says, "though I can't say we had a really strong idea about the direction we were headed. We just thought, 'Let's have fun and see what comes up. We started with a palette, like a painter would, of instruments we wanted to use. For instance, I had been playing in a klezmer band and the accordion felt really natural to me. I had an old photograph of my parents after the war, having bottles of wine with their friends, and an accordion player and a violin player. Everyone's kind of drunk and swinging and swaying; very cabaret-like. I showed it to k.d. and she said, 'That is so cool; that's what the album should sound like!' The term we used for *Ingénue* was post-nuclear cabaret. Traditional old-world instruments with a sort of mystical modern twist on it.

"But we also didn't want to alienate fans too much," Mink continues, "so we have some carefully used steel guitar [by the great Greg Leisz] in there as the dovetail instrument between [*Absolute Torch and Twang* and *Ingénue*]. Then, having [vibraphonist] Gary Burton on the album took it in another direction."

Mink and lang's writing/demo sessions for *Ingénue* took place in the summer and fall of 1991, in lang's little rented house in Vancouver's Chinatown area. "We went to a local music store," he relates, "and I rented an AKG 414 microphone, which I did the entire record on, and still have. [A few vocals were also done with a Neumann U 87, engineer Marc Ramaer recalls.] And we rented a Tascam board and we had a Tascam 16-track. I also used a Roland R-8 drum machine on much of it, including for the bass parts—I used a lot of the R-8 acoustic bass sound, which I really love." Another 414 was used for Mink's foundational acoustic guitar parts, and "we had one keyboard; no MIDI." Lang also had separate writing sessions in L.A. with Greg Penny, who co-produced both *Absolute Torch and Twang* and *Ingénue*. "So It Shall Be" is their songwriting contribution to the latter.

Mink recalls that the genesis of this month's Classic Track, "Constant Craving," dated back to the spring of 1991: "It was originally called 'Easter Passover,' because we started writing it on a day when it was both Easter and Passover. We spent three days just on the chorus, because we couldn't decide exactly what notes to use. Sometimes songs come

quickly, sometimes they take a while.” They would get back to it when the sessions for *Ingenue* began in earnest, but it would prove to be one of the most difficult songs on the album to complete.

In the next phase of the album’s creation, a small band was assembled to lay down some basic tracks at Vancouver Studios, where *Absolute Torch and Twang* had been recorded. The group consisted of stalwarts from lang’s band—Mink, keyboardist Teddy Borowiecki and bassist David Pilch—along with L.A. drummer John Guerin, whom lang and Mink admired for his work with Joni Mitchell. “That approach lasted about five minutes,” Greg Penny says with a laugh. “It turned out it was a fine line between the sound of *Ingenue* we were looking for and the sound of a band playing *Ingenue* in a Holiday Inn lounge. It was very weird.”

Adds Mink, “When we tried to cut ‘Miss Chatelaine,’ it sounded like a really bad bar mitzvah group; it just didn’t work. So we had to strip it back. I went back to the click and generally put the [acoustic rhythm] guitar parts down first—just me and a click, and built the whole song back again, almost like we did with the demos. So the parts that were really charming and great performances on the demo, we ended up using, and we augmented and built around those and cleaned up the sound. I’d say 30 percent of the demos are the record.”

At the suggestion of Vancouver Studios engineer Marc Ramaer, who had also worked as an assistant on *Absolute Torch and Twang* and was a musician himself, a local drummer named Randall Stoll was brought in “and he re-tracked four or five songs in a couple of days for the songs that

“I CAN’T SAY WE HAD A REALLY STRONG IDEA ABOUT THE DIRECTION WE WERE HEADED. WE JUST THOUGHT, ‘LET’S HAVE FUN AND SEE WHAT COMES UP.’ ... THE TERM WE USED FOR INGENUE WAS ‘POST-NUCLEAR CABARET.’ TRADITIONAL OLD-WORLD INSTRUMENTS WITH A SORT OF MYSTICAL MODERN TWIST ON IT.”—BEN MINK

needed a full drum kit,” Mink says. “We also had a percussionist, Graham Boyle, who did a lot of the lighter percussion things. He ended up playing drums on the live [*Ingenue*] tour, but k.d. and I didn’t want a lot of drums on the album; a lot of the percussion on there is more subtle.”

The early work at Vancouver Studios was done in their “A” room, equipped with an SSL 4056G and Studer A-800 24-track 2-inch, but after a while producer Bob Rock took over that room, so the lang project moved into a new, unfinished “B” studio, which had an SSL E series in the large control room that became the focus of work, as parts were layered individually, mostly direct into the console, including lang’s vocals, Borowiecki’s accordion, Gary Burton’s vibes, Greg Leisz’s steel guitar and Mink’s electric guitar—the last courtesy of a National Avalon guitar he found for \$175 at a Vancouver music shop. “It was the only electric guitar I used on the album,” he says. “A guitar like that usually has a couple of good sounds, so the challenge is to find them.” Penny says he and Ramaer used two dbx 160X compressors and a two-channel SSL Logic



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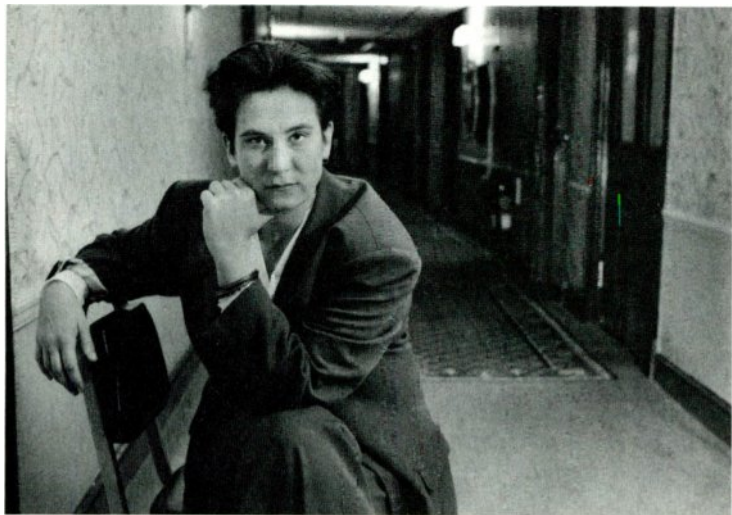


Photo: Jill Furmanovsky

FX G383 mic pre/EQ in a rack to process vocals and acoustic guitar, “and we sometimes used the pre’s in the E for drums.” The studio rented a full rack of Dolby SR noise reduction “which was incredible,” Mink notes, “because the big issue at the time was tape hiss and this virtually eliminated it. Even the cassette tapes sounded amazing.”

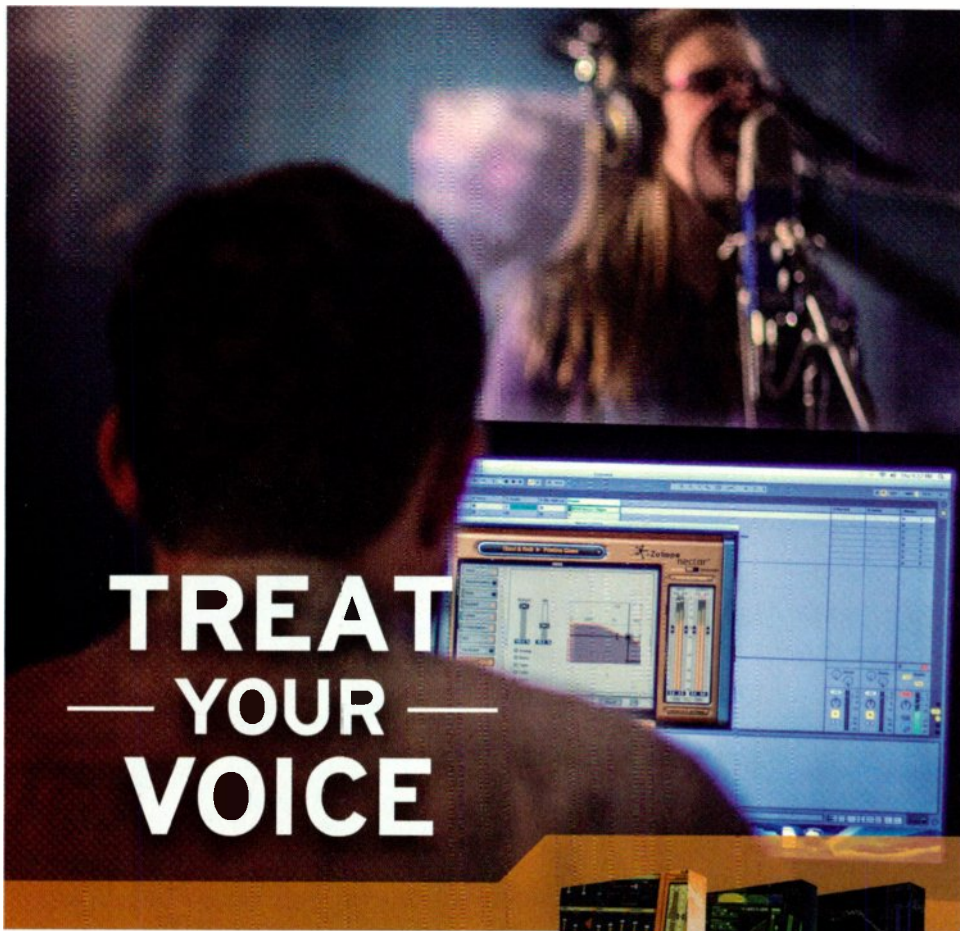
Mink says he used a variety of acoustic guitars on the record, but relied most heavily on Washburn “parlor guitars from the 1920s. ‘Constant Craving’ has two or three acoustics going, including an old mahogany Martin and possibly a ‘50s Gibson.” According to Ramaer, “Most acoustics were recorded with a pair of Neumann KM 84 mics, sometimes mixing in a bit of DI feed. We used [AKG] 451s and 414s, as well, depending on the tone we wanted. The 84s have a nice ‘sheen’ to them which is great for high-strung guitars—like in the choruses of ‘Constant Craving.’”

“Constant Craving” had a troubled birth. Mink and Penny both say that lang didn’t really like the song, thinking it “too commercial,” in Mink’s words. It didn’t help that it was tracked originally in a different key. “k.d. wanted to trash it quite early,” Mink says, “but Marc and Greg and I really believed in it, and I remember staying up really late one night and re-tracking all the guitars in a different key, and that put the song back in the running. All that was left [from the earlier version] was the R-8 shaker and a click. The next day, Teddy—the piano player—and the bass player came in and added their stuff. The drums were done just after that; then Gary Burton came in. The accordion, which lang had played on the demo, came later, too.” They also tried a version with Leisz’s pedal steel on it but deemed it “too country.” “She wanted it to sound very European, almost like a Marlene Dietrich track,” Penny says. “She was making this movie [*Salmonberries*] in Germany with Percy Adlon and was very excited about European torch singers.”

Mixing and additional vocal and instrumental overdubs took place at Skip Saylor Recording in L.A. “Marc got started in the front studio [mixing on the SSL 4080G],” Penny says, “and Ben and I would be in the back room, which had an API, trying to comp vocals and guitars and finish the thing.”

Ramaer adds, “It was an extremely long record to do, and we had the mixing room booked, but we still had to pick up some strings and backup vocals and other bits and pieces we weren’t able to finish in Vancouver, so when we went down to L.A., Greg overdubbed the finishing touches while I’d be mixing, and we’d stick our heads together, run through the tracks a couple of times.” Ramaer’s main reverbs of choice were the Lexicon 480 and PCM 70.

The backup vocals for the song—probably three or four stacks of k.d. harmonies per side, augmented on the high parts by Reclines singer Sue Leonard—had gone well in Vancouver, but once in L.A., lang struggled to finish the song. Penny remembers,



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"[One day] we're in Skip Saylor's back room, and k.d.'s got her little dog with her and she decided she's finally going to come up with the lyrics for the third verse of 'Constant Craving.' Ben is moving back and forth between the mix room with Marc and the back room with me, and I'm nailed down with her trying to finish off the third verse. She's still playing with phrasing. I'm in the control room and there's no sightline for me to see her, but she says at one point, she says [on the talkback], 'Give me a minute.' I say, 'Sure let me know when you're ready.' A couple of minutes pass: I say, 'How's it going?' Nothing. Ten minutes go by, maybe 15. I call Ben and say, 'What do you think?' And he says, 'Let her have time, let her do her thing.' So I wait another five minutes and then I stand up and look and she's gone! I walk out to the car park and her car is gone. I go into the front room and the phone rings and it her. She's already home. She says, 'I'm not doing it. I can't stand that song.' I say, 'Oh, okay, I understand, we'll figure out something.' So that's how Ben's guitar solo happened."

Instead of that third verse, Mink conceived a bright and tuneful guitar part on the National Avalon—"it was supposed to emulate a 12-string," he says—then added a second part midway through the solo. "I think we put on one more marching fiddle overdub in the chorus [also by Mink] and that kind of finished the song," he says.

Ramaer says, "I mixed it in a very pop fashion, which is how I heard it, and I played it for Ben and Greg and they really liked it. We were sensitive to the fact that k.d. probably wouldn't like it, and I don't think she

did, so I saved everything on the SSL, and then tried a bunch of other things, like taking the drums out again; all kinds of things to make k.d. happy and see if we could turn the track into something else. We went around in circles, but she ended up acquiescing to the fact that we couldn't change the song, and at that point Warners had already heard it and liked the fact that it sounded commercial and had radio potential."

Indeed it did. Upon the release of *Ingenue* in March 1992, "Constant Craving" became lang's first to hit the pop Top 40, it made it to Number 2 on the Adult Contemporary chart, and it propelled the album to the Top 20 and double-Platinum status. The following year, it rocketed to Number 18 on the UK pop charts, and it also sold well in other foreign lands. *Ingenue* landed Grammy nominations for Album of the Year and Best Engineered Non-Classical Album, and the single earned noms for Song of the Year and Record of the Year and won for Best Female Pop Vocal Performance.

Penny comments, "One of the reasons it came out the way it did is we were all really happy together. We ate every meal together, we cooked together, we hung out and we enjoyed each other. We were really trying hard to make it great. We were all doing something we wanted to do, and the only fear at the end was: 'Is everybody going to get this?'"

Mink: "In the end, we were all very, very proud of it and we all sensed that it was something very special."

One hopes that lang eventually came to love the song—because she's had to sing it nearly every night on the road since! ■

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She & Him and their band delighted the audience at the Greek Theatre in Berkeley, Calif.

Photo: Steve Jennings

SHE & HIM

Lush Recordings Come to Life Onstage By Barbara Schultz

She & Him—the musical union of singer, songwriter and actress Zooey Deschanel and artist/producer M. (Matt) Ward—are on the road this summer, sharing songs from *Volume 3*, their latest album of Deschanel-penned vintage-inspired pop. At the show *Mix* caught, on a warm summer night at the Greek Theatre (Berkeley, Calif.), She & Him & band delighted fans with joyous, faithful live versions of their recordings.

Front-of-house engineer Shelly Steffens creates a clean, detailed mix despite the sheer numbers of musicians onstage. In addition to Deschanel and Ward, there are core bandmembers: Scott McPherson on drums, and bassist/multi-string player Mike Coykendall; plus, vio-

linist/multi-instrumentalist Tom Hagerman (also of the group DeVotchKa); Chris Scruggs, who plays violin, pedal steel, guitar or bass, depending on the song; and the Chapin sisters, Lily and Abigail, who sing backup and help Deschanel to realize onstage the lush, beautiful harmonies that she overdubs herself on records. For shows in major markets (New York, San Francisco, L.A.), more strings—another violin and a pair of violas—build the wall of sound even higher.

“I use Snapshots to quickly mute anything that we can, to limit things to mics that actually need to be open,” says Steffens about the feature of her Sound Image-provided Avid D-Show Profile console. “That helps you hear everything clearly, and

helps avoid handling noise as people are changing out instruments or changing positions.”

Deschanel moves between three different positions onstage, sometimes standing at a mic on a stand to sing with or without tambourine or ukulele, other times moving over to sing and play Wurlitzer or piano. Wherever she is, her vocal mic (like all the vocal mics on the tour) is a Sennheiser 935. Steffens uses the ReVibe reverbs within the Profile to emulate the vocal sounds on the records. “I’m using two or three different reverbs at all times on vocals, and broadening the instruments as well, using halls and medium-sized room [settings] and blending a shorter reverb with a longer one.

“On Matt’s vocal, I use a slap delay, and that’s



Front-of-house engineer Sheffy Steffens

consistent with what he likes when he appears as M. Ward, too," explains Steffens, who has also toured with the M. Ward band. "On his guitar, we have a [Sennheiser] 421 on his amp, and I just compress that very lightly with a Joemeek and a little touch of an onboard compressor."

On She & Him's previous tour, Steffens was only able to carry a mic package and backline, so the addition of the Profile boards—at FOH and monitors—is a welcome expansion. They're using house-provided P.A.s; at the Greek they made use of the L-Acoustics V-DOSC system (20 V-DOSC and six DV-DOSC speakers, six ARCS, and 18 SB218 subs, provided by Sound on Stage).

"I brought along two Avalon 737SPs for some outboard processing on the left/right mix," Steffens says. "I also have one Summit Audio CDL200 compressor for front-fill and subs. Any additional sends will most likely come from the matrix."

On the monitor side, however, mixer/production manager Ryan Doordan is carrying a full package: console, Sound Image's proprietary single 12-inch wedges, and in-ear systems for Deschanel, Hagerman and McPherson.

"Zooney's using Sensaphonics, and she tunes her vocal to the bass guitar, so I've been putting a lot of bass and a little bit of guitar in her ears, but it's mainly her vocal with lots of [Re-Vibe] reverb to mimic what's on the records; different songs require different reverbs."



Monitor engineer Ryan Doordan (left) and monitor tech Matthew Anderson

Hagerman's in-ears are Westone. "He likes a more general mix—as much like a front-of-house mix as artists will ask for," says Doordan. "He needs to hear some of everything because his violin ties the stage together; it fills an important space in the music."

"Then the drummer [McPherson] is on Ultimate Ears; he mainly wants drums and guitars, just for timing and pacing onstage, because while he plays to a click on a couple songs, he really needs to take his cues from what Zooney's doing. When she's playing ukulele, for example, that becomes the driving force for the pace of the song, and he needs to hear it clearly." Doordan is also an Ultimate Ears user. He's on UE-18s and notes that he endorses the company.

"Everybody also has a wedge with their own mix, in case someone needs to pop out their in-ears," Doordan continues. "I have seven different reverbs lined up for the instruments, for the way people want to hear things differently. I try to route them just as inserts or to a direct out on the instrument itself, and it changes by song, so I might have a channel that's only used once. I think I'm using 70 channels on my console, even though it's only 40 inputs."

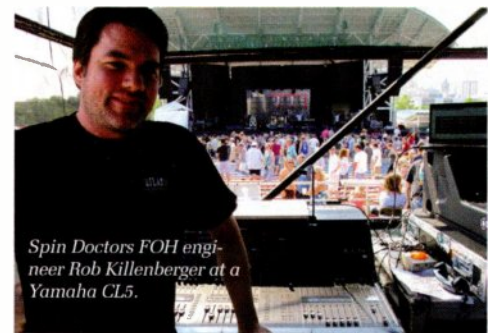
Doordan has a challenging job, doing double-duty for such a large ensemble. Assistance by monitor tech Matthew Anderson from Sound Image has been a great asset, he says. It also helps that the tour is so rewarding musically—something Doordan says he knew from day one.

"The first few rehearsal days, we were doing six-plus hours straight with Zooney singing the whole time, and she would sing every song at full volume," he concludes. "I've worked with other artists who can only sing solid for an hour and a half, and then they need to take it down a little bit. She would go full on every time and always sound great, which is pretty remarkable." ■

SUMMERFEST

Billed as "The World's Largest Music Festival," Summerfest is held annually along Milwaukee's lakefront on Lake Michigan at the 75-acre Henry Maier Festival Park. This year's event took place over 11 days (June 26-30 and July 2-7) on 11 stages that hosted more than 800 acts staging more than 1,000 performances before nearly 900,000 attendees. Headlining acts included Tom Petty & The Heartbreakers, The Eagles, Jason Aldean, Fun., John Mayer and Rush.

Since 1995, Clearwing Productions (clearwing.com) has served Summerfest as the primary provider of audio, lighting and backline.



Clearwing specified L-Acoustics P.A. systems for every stage except the Miller Stage, which had an Outline GTO line-source system. "Depending on the stage you will see KI, V-DOSC, KUDO, KARA, ARCS, and ARCS WIFO," says Clearwing's Bryan Baumgardner, who handles audio operations and logistics. "Over 340 speakers are being used for FOH purposes; that number does not even include monitor systems!"

With support from Yamaha Commercial Audio Systems (yamahaca.com), Clearwing fortified seven of Summerfest's 11 stages with Yamaha mixing consoles for FOH, monitors, or both: four CL5, two M7CL48 (at monitors), three PM5D (at monitors) and one LS9-16.

At the Uline Warehouse stage, FOH engineer Rob Killenberger mixed the Spin Doctors on a CL5. "Its interface is very responsive and well thought out," Killenberger says. "I first used a CL5 in Spain with this band, so I had a file on my thumb drive from that concert to load for Summerfest. The show had a festival patch, as most festivals do. All I had to do was move the soft-patch of a couple inputs on the desk and I was working in my standard input list. It was easier than any of the festivals I've done, and I've done them for over 20 years worldwide." — Matt Gallagher

more online



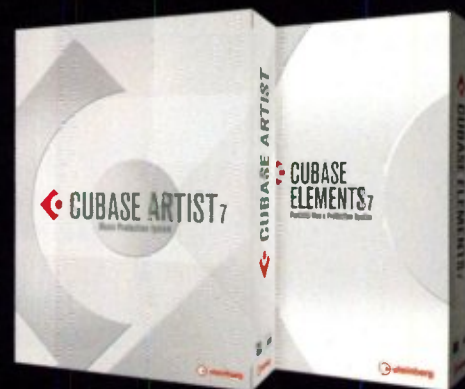
See an online photo gallery of She & Him at the Greek Theatre in Berkeley, Calif. mixonline.com/082013

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BONNAROO MUSIC FESTIVAL 2013

PHOTOS BY DAVE VANN // TEXT BY MATT GALLAGHER //

The 12th annual Bonnaroo Music Festival was sold-out, drawing more than 85,000 fans to Manchester, Tenn., from June 13 through June 16, to be part of the only festival that goes from dusk til dawn. Paul McCartney, Jack Johnson (a last-minute replacement when Mumford & Sons had to cancel), and Tom Petty headlined the main stage. For the 10th year running, Music Allies (musicallies.com) handled marketing for the festival and operated Radio Bonnaroo, building a broadcast center, which is overseen by Tom Hansen, for more than 30 radio stations, including local radio station 101.5 FM, which partners with Music Allies. This year, Radio Bonnaroo partnered with iHeartRadio to expand its streaming component. Plus, 2013 saw the return of Haybale Studios, a custom built on-site recording studio adjacent to the broadcast center that records exclusive performances and interviews for Radio Bonnaroo and partner stations.

ZZ Top's front-of-house engineer, Joe Keiser, is a veteran of Bonnaroo and noted some differences in the audio setup this year. "What made this one a little different was the fact that we couldn't make any real noise before going on, because of interference with the other stages," Keiser says. "We never soundcheck anyway, but on this one I had maybe 3 or 4 minutes to tune the P.A. before starting the show. The P.A. sounded very good without much EQ, so from the start I was able to get the blend of the instruments together pretty quickly. The subs were [arranged] in cardioid fashion. Keeping that sub off the stage is a big deal for this band. Our singer, Billy Gibbons, mainly listens to the P.A. for reference, so too much audio spill back onto the stage can really change things for him as well as me. The stage was covered by a very large tent, as was the mix position, but it didn't seem to cause many issues with sound."

more online: View a Bonnaroo 2013 photo gallery, and read interviews with Music Allies' Sean O'Connell and FOH engineer Joe Keiser. mixonline.com/082013



From left: Elijah Shaw (mix engineer), Sean O'Connell (CEO of Music Allies, which handles marketing for Bonnaroo, and visionary for Radio Bonnaroo) and Tom Hansen (broadcast operations).

ZZ Top—from left, Dusty Hill, Frank Beard and Billy Gibbons—dished out their signature gritty blues-rock on June 14.

ZZ Top's FOH engineer, Joe Keiser, mixed the band on a 24-channel DiGiCo SD8 console

Of Monsters and Men on June 14.

Jim James of My Morning Jacket on June 14.



Jeff Tweedy and Wilco performed on June 14

Paul McCartney and his band brought the house down with a highly memorable concert that was capped off with fireworks on June 14.

Nas electrifies the crowd on June 15.

Jack Johnson performed on June 15 as a last-minute replacement for Mumford & Sons.

Tom Petty and The Heartbreakers performing on June 16.



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THEY MIGHT BE GIANTS



They Might Be Giants (John Linnell, vocals, keyboards; John Flansburgh, vocals, guitar; Marty Beller, drums; Danny Weinkauf, bass; Dan Miller, guitar) is still bringing it after more than 30 years. *Mix* caught them in mid-June, near the end of their North American tour, at The Warfield in San Francisco.



"I am mixing the band on a DiGiCo SD10," says **front-of-house mixer/tour manager/production manager Scott Bozack**. "I love the open architecture. With the new software you're able to build your show in the layout section and now you can multichannel, along with copy to MIDI for recording, and you have the ability to gain share. We multitrack each show into Cubase SX6 with the UB MIDI, which allows us to do virtual soundcheck on those nights we have press obligations."

"We're using all house P.A. systems on this tour," he continues. "TMBG play a lot of different styles of venues and shows, so our needs are different every night. A normal hang for us, and preference, is eight to 16 boxes and four subs a side—either d&b, L-Acoustics or JBL VerTec. The band owns everything else, but we always rent a FOH console package and a Lake processor from SK Systems in Long Island. We have had a longtime relationship with them and they always deliver what we need."

"The majority of mics are Sennheiser—we're endorsed. Lead vocal mics are: for John Linnell, a 945, and for John Flansburgh, a 935 wireless. He travels everywhere on the stage and so we need a super durable mic that can handle the abuse and be able to work when he is out front of the P.A. We use Ultimate Ears ranging from UE75 to 115. With our Sennheiser endorsement we use a mixture of G2 and 35 for transmitter and receivers." A Shure Wireless Workshop helps to find clear channels.



"I mix TMBG on a Yamaha M7CL and got the band to purchase this one," says **monitor engineer Jon Carter**. "The sends on faders makes it quick to make adjustments on the fly. The small footprint fits in some of the more challenging venues. We just started this year using the Midas XL-42 mic preamp with the Distressors for The Johns' vocals; it really smooths out the monitor mixes."



John Flansburgh's amp (shown here with **guitar tech Armondo "Yogi" Garcia**) is an original Matchless HC 30 head and a Xits (custom) 2-12 cabinet. "We use an SM57 off the axis of the cone to balance out the 3k that is prevalent in the mic," monitor engineer Carter explains. "Both Flans and Dan Miller use JDI SGI line drivers to help balance out their signals, then run through Sennheiser G2 wireless systems." Flansburgh's footpedal gear includes the Radial SGI TX

and SGI RX, Boss Noise Suppressor NS-2, Electro-Harmonix micro POG, MXR micro flanger and Semaphore tremolo.

Guitarist Dan Miller uses a Matchless amp and Sennheiser True Diversity Receiver W300 with a Shure SM57 on a Z bar. Bassist Danny Weinkauff uses Ampeg amps with a Sennheiser 902 mic with a Radial DI box.



For Linnell's accordion rig, guitar tech Victor Muñoz built a 3-channel mixer and mounted it outside the accordion to accept inputs from two Sennheiser 908s and a Shure SM98 mounted inside, which are then pre-mixed and sent via a Sennheiser G3 wireless system.

John Linnell plays a Roland Fantom X8 with a Radial JD5 6-channel rackmount direct box underneath. He also plays a bass clarinet miked with a Sennheiser 908 and G3 wireless system.



Marty Beller's drum kit (Beller is pictured at the kit, with **drum tech Jon Brunette** standing) has a Shure SM91 and Beta 52 combo for kick, Beta 56 snare top, SM57 bottom, Beta 87C on the hi-hat ("The best hat mic there is," says Carter), 98AMP for the second snare and toms, and Neumann 184 for overheads.

NASA AUDIO FINDS A HOME ON WEB

THE MISSION TO ARCHIVE THE SOUNDS OF U.S. SPACE FLIGHT

BY BLAIR JACKSON



John Stoll has an audio job that's never going to earn him a Grammy or let him spend weeks on the road staying in fancy hotels in exotic ports-of-call. At parties, he can't say he's worked on projects involving Bono, Jagger or Jay-Z. But Glenn, Shepard and Armstrong are another story, and they are part of the story Stoll is helping to tell America through his tireless work for NASA the past seven years.

As lead audio engineer at NASA's Lyndon B. Johnson Space Center in Houston, Stoll has spearheaded an exhaustive (and exhausting) effort to digitize many thousands of hours of recordings of manned U.S. space flights, from the early '60s to the present. Further, he's been responsible for posting the fruits of his labor on the Internet for all the world to

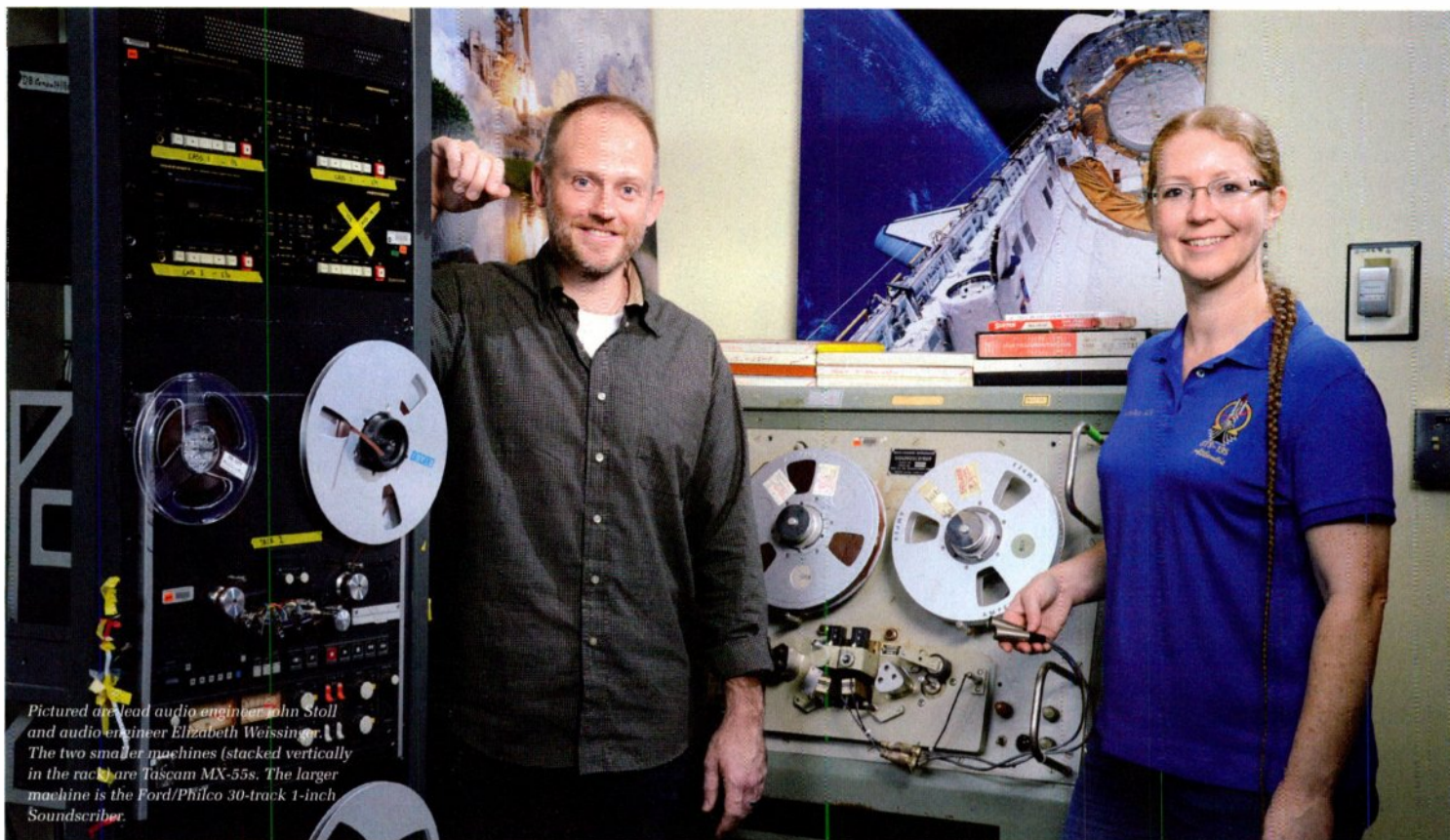
hear, on Archive.org. From pre-launch communications, to thundering blast-offs, to in-flight conversations on the spacecraft and with Mission Control, to splashdowns and landings, there is a fascinating and comprehensive audio record of the U.S. space program, captured on a nearly unthinkable number of tapes (and disks) in a wide variety of formats.

"When I came here [to JSC], we had a vault full of analog reel-to-reel tapes that starts back at the very first manned Mercury flight [by Alan Shepard in 1961] and goes up to the present day on the Space Shuttle and the Space Station," says Stoll, a native of Harlingen, Texas, who got his start in audio running sound for the band he was in and got a more formal audio education at South Plains College in Levelland, Texas, before landing his first job at JSC in 1997. "We also had

a big box of microfiche that had scanned transcripts of everything everybody says from all the early missions—they stopped doing the full transcripts in about the Skylab days and early Space Shuttle days, for budget reasons.

"I thought it would be great to have all this material more accessible to the general public and for everybody from researchers to students, and with Internet speeds increasing everywhere real quick, it seemed like it might be possible," he continues. "To me, it's all about transparency and availability. This is a national resource.

"So we got all the microfiche transcripts scanned into OCR [optical character recognition] PDFs and stuck all that up on Archive.org, and those have been tremendously helpful to many people. Then I started taking a look at the audio, and a lot of it is 1/4-inch 2-track, some of it



Pictured are lead audio engineer John Stoll and audio engineer Elizabeth Weissinger. The two smaller machines (stacked vertically in the rack) are Tascam MX-55s. The larger machine is the Ford/Philco 30-track 1-inch Soundscriber.

Photo: Lauren Harnett/NASA

is ¼-inch full-track. Some of it's ½-inch 8-track, some of it is ¼-inch 7-track. One format is 30-track 1-inch tape. So it's all over the place and it's been a challenge to work with all these formats.

"Media and schools and other groups were always asking us for audio clips—maybe a quote they were looking for—and in the past the way we would fulfill those requests is we'd use the microfiche reader to find the quote and then extrapolate that to a tape. We'd process the clip and send it to them and they'd usually use it once, and then that work was gone. What I wanted to do was digitize the whole clip and put it in a public place where everybody could find it. Now, I can send a link to whoever's requesting, for whatever they're requesting, and they can find it in the PDF file and go get the WAV file from Archive themselves."

Some might be surprised to learn that tapes from the early years of the manned space program—the Mercury and early Apollo days—"are the healthiest ones we have; solid as a rock," Stoll says. "It's pretty much all ¼-inch 2-track of varying sizes of reels; nothing was standard." One of the tape machines in that era was a ¼-inch 7-track Ampex SP-300 instrumentation recorder, which didn't have a particularly good fidelity "but was a way to multitrack in the early days," Stoll says.

Even though Stoll says that NASA was generally good about labeling and storing tapes, the archiving and digitizing job has involved some sleuthing along the way. Former NASA Flight Director Gene Krantz found a large batch of old tapes—some unmarked—underneath one of the consoles in the Mercury Control Center (in Florida) right before it was torn down. He brought a bag of these tapes to Stoll in 1998 and "we had to sit down and listen to some of them and figure out from the comm what [mission] it was from. Fortunately, he knew what most of them were. But I do still have a box of mystery tapes here at JSC. For one thing, there were a lot of simulations done, and if those were recorded,

it sounds exactly like a mission. In fact, the Apollo 1 tragedy [in which three astronauts died in a capsule fire on the launch pad in 1967] was a simulation. There are also different ways of labeling and even different ways of recording time: GMT [Greenwich Mean Time] is standard, but some were labeled with GET—Ground Elapsed Time starts at zero when a mission starts, so you have to go back, find out exactly when it launched, and make a formula to figure out where you are on the tape."

Some of these early tapes were also quite brittle. "Many required dozens of splices just to play," Stoll says. Still, they produced a bounty of "lost" audio history, including an early Redstone rocket test flight and the original recording of the flight of the space chimp Enos, in the pre-Mercury days.

The most unusual recording format NASA used came during the Apollo days, when it employed a pair of custom 30-track recorders at JSC. "Only two of them were ever built," Stoll says, "and one of them is still here at NASA; the other was used as parts to restore the one that still works. They're all tube-driven and if you look underneath, everything is point-to-point hand-wired on turret boards. It's amazing to see how it was built. They ran at 15/16-inches per second, which is half the speed of a cassette, and one 10-inch 30-track reel of tape held 14 hours of mission."

Why were 30 tracks needed? "There was a lot to be recorded! The cut sheet of what they would actually record would change at different points in the mission because there are different people here for launch and on-orbit and landing operations. They would record the air-to-ground channel that went up to the capsule; the flight director loop, which is the main comm loop that goes on here behind the scenes—anybody who has seen [the film] Apollo 13 will know what that is—and also a ton of other back rooms. There's a room that does the environmental support

The Apollo 11 launches on July 16, 1969, bound for the first lunar landing mission.



systems of the spacecraft, a room that does the communications with the craft from the Earth to the ground. There are people who do tracking and pointing and attitude control. Each of these disciplines has their own backroom communication loop, so all those are recorded simultaneously.

"Back in the middle to late '70s," Stoll continues, "there was a transfer of most of the [30-track] material to 1/4-inch and we shipped off the original 30-tracks to the National Archives, so they could be kept for safekeeping there. But only the air-to-ground channel and the public affairs commentary channel were transferred. There is actually an effort right now to partner with some people to get those 30-track tapes out of the National Archive and digitize them in their entirety. Of course we would need the machine to do that. As it is, you can only play one channel of audio at a time and the way you select the channel is there's a little rotary knob on the front of the head. As you can imagine, with 30 tracks on a 1-inch tape, getting on the track you want is really almost impossible. But we're working with someone to get a custom head built so we can take all 30 tracks out, digitize them

and go from there. Each tape gives you 30 14-hour-long WAV files, one per track. That's a lot of data. And we have probably 150 of those 30-track tapes here that were not transferred off to 1/4-inch, so that's our mountain to climb here."

By the time we get to the Space Shuttle program (technically known as the Space Transportation System) in the early '80s, the 30-track was long gone, replaced with more conventional multitracks, including half-inch Ampex 8-tracks at JSC to capture just the air-to-ground, the flight director loop and the public affairs commentary. "We started paring down what we recorded here," Stoll says.

Unfortunately, many of the later tapes have proven to be more problematic for digital transfer. Stoll notes, "Starting in the late '80s, and especially the early '90s, I pull those tapes out of the vault and they just don't play. The problem with the tape is with the backing, not the audio side—the tape formulation changed. So they have to be baked. You read the recommendation, or maybe you learned in [recording] school how to bake a tape: 14 to 48 hours at 130 to 140 degrees, let it cool all the way before you play it. Well, that doesn't work for these tapes. Our vault is

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in Houston—in Clear Lake specifically, which is near Galveston Bay and the Gulf of Mexico—so its super humid and a lot of these tapes have mold on them. They're all stored tails [out], so in order to get these things to play I have to bake them for about two weeks at 145. I pull them out of the oven and they're still at full temperature, I get Pro Tools running, I stick 'em on the machine and hit Play and play them in backwards; then I just reverse them, because if I wait for them to cool, they won't play. They're so sticky it's amazing. So we're breaking all the rules in how to do it."

Stoll has used a few different archiving formats, including SADiE and Nuendo, before Pro Tools. "From the beginning I've been going 24-bit, 48kHz PCM WAVs," he says. "I guess I could capture them at 96k, but the file size gets so big for I'm not sure what gain. But it's the processing power of computers—and specifically native processing—that really made it seem like we could do this now." Pitch-changing plug-ins have allowed him to deal with speed irregularities in the original tapes, and other in-box processing helped him tame some of the more egregious hums. He's even been clued into some pitch issues by commenters on Archive.org: "The beauty of having the audio there is that the peer review process is now worldwide. I appreciate every comment I get."

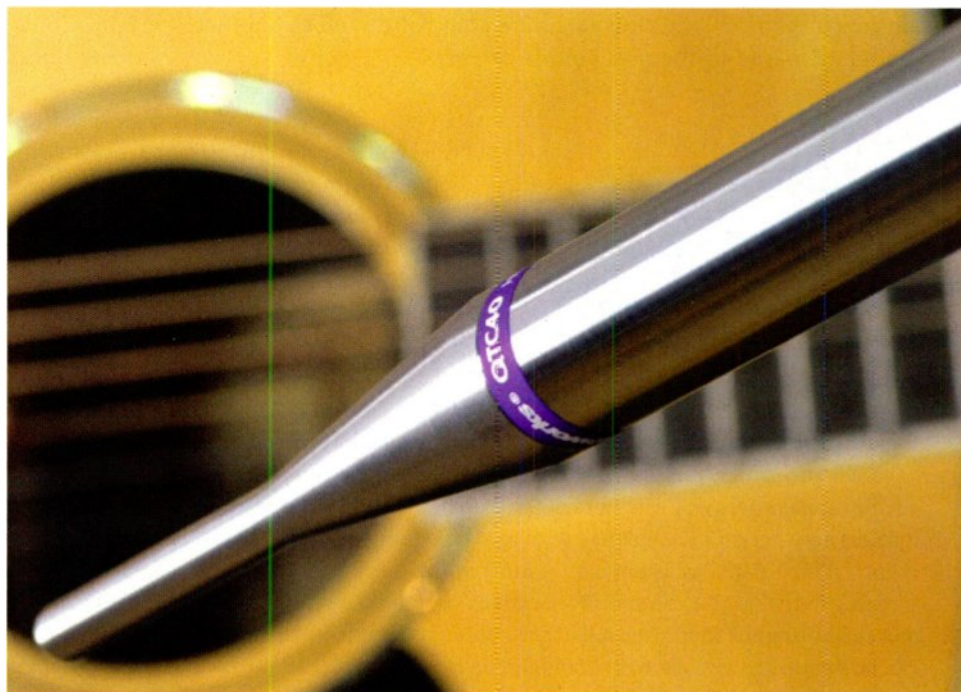
Even with all the work that has been done to get so much material up online the past several years, Stoll estimates that only about 35 percent of the available material has been digitally archived. "Apollo was maybe 10 years and the Shuttle ran for 30 and had more and longer missions," Stoll says. "I've barely started touching into the Space Shuttle audio, and a lot of those tapes are in bad condition. The quality of the recording is better, but the tape formulation really drops off, so that's going to require a lot of time." And this has never been the main part of Stoll's job. Rather, he's fit it in around other work he does around the JSC involving NASA broadcasts and media outreach.

For the moment, at least, Stoll is dealing with a finite collection of space flights that need archiving. The Space Shuttle flew its final mission in 2011, and there are no manned space flights planned for the near future. He is understandably wistful about what truly is the end of an era: "I was sad to see the Space Shuttle end. It was very big part of my life. When Space Shuttle was flying, we were broadcasting 24-7 [over the NASA TV cable channel], we were doing press conferences, briefings, interviews with people on the ground. I was fortunate enough to be able to hook up President Obama with the Space Shuttle [on the final flight]. That was a thrill. The Space Shuttle was a great, great machine.

"Now the attention shifts to the Space Station for the next few years. We [NASA and its international partners] stopped building it, but we're utilizing it and there's a lot of serious science going on there. The science coming back from the Space Station is going to change the world."

Meanwhile NASA's presence on Archive.org continues to grow. You can give your subwoofer a workout replaying a Saturn 5 rocket launch or drift for hours along with astronauts as they orbit the Earth and talk about what they're seeing and doing. Stoll has also helpfully extracted some of the more famous moments into short, easily findable clips—"That's one small step for man..." "Houston, we've had a problem..." and other NASA Greatest Hits. A good place to start is the homepage: <http://archive.org/details/nasaaudiocollection>.

Asked if there's an audio moment that he finds particularly inspiring, Stoll doesn't hesitate: "I can't listen to John Glenn's first launch without getting goose bumps. It still excites me. I stand up when I listen to it; it's a reflex. It's just so cool what they were able to do, and it was truly on a shoestring budget in those days, and these old recordings really get those across." ■



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AUDIO INTERFACES

PLENTY OF WAYS TO GET INTO YOUR DAW // BY THE MIX EDITORS

It's hard to determine just what constitutes an audio interface these days. There has been a boom in feature-laden desktop models in recent years, and there have been high-end units introduced from the likes of RME (Fireface UFX) and SSL (the MX-4 family). The criteria for what any one individual needs can be met by any number of manufacturers; preference generally resides in how the preamps sound. With that in mind, *Mix* surveyed the field and presents here some of the most popular models released in the past couple of years.



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The EIE Pro is a 4-in, 4-out tabletop USB 2 audio interface that features low-latency ASIO drivers and enables recording at up to 24-bit resolution and sample rates of 44.1/48/88.2/96 kHz into virtually any DAW, recording or performance software. The EIE

Pro also houses three USB inputs, in addition to its main USB 2.0 port. Each channel of the EIE Pro has an XLR, 1/4-inch combo jack, dedicated sturdy, gain-pots and mic/line/guitar switches. The EIE Pro features four discrete-design preamplifiers with 48V phantom power. Individual 1/4-inch nickel-plated jacks provide channel inserts for processing audio signals externally. You can monitor sessions on multiple sets of studio monitors using the four 1/4-inch balanced outputs. Both pairs of outputs can be monitored visually with the high-quality analog VU meters. Avid Pro Tools Express is included. (www.akaipro.com/eiepro)



ALESIS iO4

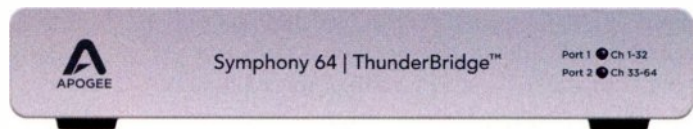
Each channel on this 4-channel, highly mobile USB audio interface has an XLR microphone input, a 1/4-inch TRS insert for external effects units and a 1/4-inch TS jack that works with line-level sources and can accommodate direct connection of guitars. The

iO4 features discrete-design preamplifiers and 48-volt phantom power on each of its four input channels, as well. Four output channels; 1/4-inch TRS headphone output; and MIDI In and Out jacks for playing and controlling software with keyboard and pad controllers, workstations, and other MIDI-compatible instruments. The USB interface is class compliant for plug-and-play operation with Mac OS X and Windows XP, Vista and 7. The iO4 comes complete with a copy of Steinberg Cubase LE. (www.alesis.com)



ALLEN & HEATH ICE-16

ICE-16 records 16 tracks of audio directly to a USB key or hard drive, but also functions as a 16x16 channel interface, streaming high-quality digital audio at 24-bit, up to 96kHz sample rate over FireWire (IEEE1394) or high-speed USB 2.0. Units can be linked when streaming over FireWire to expand the channel count even further. (www.allen-heath.com)



APOGEE ELECTRONICS SYMPHONY 64 | THUNDERBRIDGE

There are a lot of Apogee interfaces available, the most recent being Symphony 64 | ThunderBridge (\$995), a 64-channel interface for connecting Symphony I/O to any Thunderbolt-equipped Mac via two PC-32 ports, at sample rates from 44.1 to 192 kHz, with measured 1.8ms latency. Symphony 64 | ThunderBridge will also connect Apogee's X-Symphony equipped AD-16X, DA-16X and Rosetta Series converters to Thunderbolt Macs for legacy compatibility. The interface works with any Core Audio compatible application on a Mac, including Logic, Pro Tools and Ableton Live. It requires a Thunderbolt-enabled Mac computer, including MacBook Air, MacBook Pro, Mac mini, or iMac; a Thunderbolt cable; and Mac OS 10.7 or later. (www.apogeedigital.com)



ART DUAL TUBE PRE

The Dual Tube Pre is the first true 2-channel tube preamp that is also a professional-quality USB audio interface, allowing direct connection of

any microphone, instrument, or line level source directly to your computer via USB 2.0 or S/PDIF input. The S/PDIF output is selectable between 44.1k and 48k sample rates, and an advanced optical output compressor prevents overload. Balanced XLR for 10-Z applications and 1/4-inch hi-Z inputs for instrument DI applications. (www.artproaudio.com)



FOCUSRITE SCARLETT 18I20

The USB 2 version of the company's Saffire audio interface, Scarlett 18i20 represents the top end of the emerging Focusrite Scarlett line. Featuring eight Focusrite preamps, the 18i20 has 18 inputs and 20 outputs: six combo XLR/jack mic/line inputs plus two front-panel XLR/jack mic/line/instrument inputs with 10dB pad buttons; 10 analog line outputs; two independent headphone outputs on the front panel; and ADAT and S/PDIF digital I/O, plus MIDI I/O and Word Clock out. The ADAT interface can be used to bring in digital sources or to add extra preamps. Conversion is at sample rates up to 96 kHz, 24-bit. (www.focusrite.com)



8x8 ADAT and word clock I/O provide easy integration into any digital or analog setup. For more complex sessions, the powerful Blackbird Control DSP Matrix Mixer allows for quick mix creation and routing of any input to any output. There are a plethora of I/O options, or Blackbird can serve as the front end to your DAW using the FireWire connection. (www.mackie.com)



LINE 6 POD STUDIO UX2

POD Studio UX2 incorporates 44.1/48kHz, 16/24-bit recording (88.2/96 kHz with sample-rate conversion), and includes analog and digital ins and outs; S/

PDIF digital output; two 1/4-inch guitar inputs (normal or pad); two balanced XLR inputs with high-quality mic preamps, phantom power and gain knobs, assignable VU meters, and more. It comes with POD Farm 2.5 and Propellerhead Reason Limited virtual studio, with access to more than 80 fully adjustable guitar amps, bass amps, preamps and more. Exclusive latency-killing ToneDirect monitoring. (www.line6.com)



MOTU TRACK16

Track16 from MOTU is a 16x14 desktop studio interface with mixing and effects. The compact device connects via FireWire or high-speed USB 2 to a Mac or PC and features optical digital I/O, MIDI I/O and SMPTE time code sync by way of the included breakout cable. Features include a 16-bus digital mixer with reverb, EQ, compression, audio analysis tools such as an FFT

with spectrogram "waterfall," and an instrument tuner. The base unit (approximately 5x8x1 inches) is constructed from solid aluminum cast metal and provides a large multi-function knob, 10 backlit buttons and four pairs of 7-segment level meters. The front panel provides a hi-Z guitar input, 1/8-inch stereo "mini" line input and two mirrored headphone jacks. Track16 can draw bus power from the FireWire port, which is enough to drive 48V phantom power for two independent mic preamps. (www.motu.com)



LYNX HILO

While it fits more neatly into a converter category, the Lynx Hilo Reference A/D D/A Converter System offers extensive I/O capabilities and utilizes the latest FPGA technology with vast resources for control, routing, and signal processing capabilities AES/EBU inputs and outputs have transformer-isolated balanced XLR connectors. S/



PDIF input and output are available via transformer-coupled coax or optical (TOSLINK) connections. The Optical ports can also be used for up to eight ADAT channels. The ADAT input and output channels are completely independent from the AES/EBU or S/PDIF coax channels. The Lynx LT-USB LSlot accessory is also included, for computer connectivity. In total, Hilo has 12 total inputs, 16 total outputs plus 32 channels possible via its LSlot port. (www.lynxstudio.com)

MACKIE ONYX BLACKBIRD PREMIUM

The Onyx Blackbird Premium 16x16 FireWire Recording Interface includes eight boutique-quality Onyx preamps and high-end 24-bit/96kHz conversion in a rackmount design. Two front panel "Super Channels" feature true analog hardware monitoring, in both mono and stereo, for hassle-free zero-latency recording. The additional mic inputs, onboard



PRESONUS AUDIOBOX 1818VSL

While the StudioLive digital mixers are audio interfaces, a couple of years ago PreSonus released the AudioBox family of interfaces—22VSL, 44VSL and 1818VSL—a series of compact, rackmountable USB 2.0 interfaces with integrated software that provides the dynamics processing and EQ of a StudioLive Series mixer. All three AudioBox VSL Series interfaces incorporate Class A XMAX preamps with 48-volt phantom power; 24-bit, 96 kHz converters with 114 dB dynamic range; and PreSonus' loud (150 mW), clean, clear headphone output. All three models also provide MIDI I/O and zero-latency monitor mixing. The 1818VSL sports 2 mic/instrument inputs and 6 mic/line inputs; 8-channel ADAT I/O (4 channels at 88.1 or 96 kHz); stereo S/PDIF I/O; MIDI I/O; and word-clock output. With the included VSL software, the 1818VSL provides a computer-based 26 x 18 (22x14 at 88.1 or 96 kHz), ultra-low latency mixer with two stereo effects buses for the reverb and delay plus the Fat Channel processing from the StudioLive 16.0.2. (www.presonus.com)



PRISM SOUND LYRA

Prism Sound debuted the Lyra family of audio interfaces (Lyra 1 and Lyra 2) last year, based on the Orpheus audio path and clock circuitry, but in a smaller package. Lyra is based on the new ARM Cortex-based processor design, which offers class-compliant USB and Ethernet AVB interfacing, plus DSP and local mixing capacity. Lyra offers up to four monitoring

outputs, digital inputs and outputs as stereo AES3 or S/PDIF or up to 8 channels of digital I/O on the ADAT optical format, plus stereo headphones. The co-axial digital I/O port can be switched in the Lyra 2 controller applet between S/PDIF and AES3 formats. This control changes the operating voltage and the Channel Status format and is complemented by two in-line adaptor leads that provide external XLR connections for AES3 devices. The optical digital I/O ports on Lyra 2 can also be configured as ADAT I/O. Other connections include wordclock sync I/O on BNC connectors (Lyra 2 only). (www.prismsound.com)

ROLAND QUAD-CAPTURE USB 2.0 AUDIO INTERFACE

The latest in Roland's line of affordable interfaces, Quad-Capture includes premium VS Preamps, 24-bit/192kHz quality, ultra-low latency,



and USB bus power. I/O includes two combo XLR/TRS inputs, two TRS outputs, coaxial I/O, headphone out, and MIDI I/O. Phantom power, ground lift, and Hi-Z switches. It comes bundled with Cake-walk SONAR X1 LE. (www.rolandus.com)



TASCAM US-322, US-366

At NAMM 2013, Tascam introduced the US-322 and US366 audio interfaces, incorporating onboard digital mixing and DSP effects, plus improved HDDA mic pres. Featuring 24bit/192kHz recording, the 2-in/2-out US-322 features 1 Mic XLR/Line-Guitar TRS input, 1 Mic XLR/Line TRS input, 2 Line TRS and 2Line RCA outputs. The 6-in/4-out or 4-in/6-out US-366 adds 2 Line RCA inputs and 1 Digital RCA/Optical input/output. Both come bundled with Cubase LE6. (www.tascam.com)



UNIVERSAL AUDIO APOLLO 16

Universal Audio's Apollo 16 Audio Interface features 16x16 analog I/O, flexible routing and UAD-2 Quad processing onboard, providing real-time processing with UAD Powered Plug-Ins. Analog connections are via DB-25 with the ability to cascade two units via MADI for up to 32x32 analog I/O and eight processors. Other features include dedicated XLR monitor outputs, stereo AES-EBU digital I/O and compatibility with Intel's high-bandwidth Thunderbolt technology via a user-installable dual-port Thunderbolt Option Card. (www.uaaudio.com/apollo)



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World Radio History



SEVERN RECORDS

PRECISION DESIGN FOR ROOTS-BLUES PRODUCTION

BY JOHN MONFORTÉ

Now entering its 13th year as a blues and soul label, Severn Records recently completed construction on its new offices and recording studios in Annapolis. The new studios contain many unique features—including Faraday-shielded recording spaces and direct-current lighting—and they are adapted to accommodate the recording methods and workflow used by the label.

David Earl founded the label in 1997, and from the beginning he had a firm hand in the entire recording process, producing or engineering the majority of the label's releases. In those days, Severn recordings were made in commercial facilities, and business was handled from his house, but Earl always had a desire to be self-contained. Ultimately, he acquired the label's first formal address, which was a house in an area rezoned for business. The house was fitted with offices and warehousing upstairs and a studio in the basement.

Over the years, Severn and its artists have enjoyed numerous W.C. Handy/Blues Music Award nominations and gained respect in the worldwide roots-blues scene. The label also branched out a bit with rock, jazz and zydeco titles. Throughout this time, Earl upgraded and added to his equipment, at one point picking up the

API Legacy console originally built for Bearsville Studios. That console has gone through several upgrades and additions that integrate DAW workstation controls and seamlessly combines the Studer A800 multitrack with the Pro Tools HD workstation in the mixing process. Continuously adding more electronics and musical instruments, it eventually became apparent that larger, more optimized spaces were in order. The timing was ideal, occurring during a slump in the commercial real estate market. A new space was acquired near Annapolis.

I have been involved in the project since the early days of the label, handling technical support in the studio, as well as the IT for the business. Along the way, we tackled some projects that included building some recording spaces, a custom tube microphone, and a 1-inch 2-track mastering machine.

When the time came for Earl to configure the new space, he felt most comfortable working with me in the functional layout and in determining the relationships of sonic performance versus costs. He was well aware that the time to solve problems is when pencil is against paper. Especially important to him was consideration of the acoustic feel of the recording spaces.

"If you hear recordings by Motown, Stax or Chess, you recognize that each have a 'sound' that identifies the label," Earl says. "Of course, each record sounds different, but there are threads of



similarity that tie them together. I want an identifiable sound for Severn Records, which comes from the equipment, techniques and musicians. But it also comes from the sound of the studio.”

Having a great-sounding main studio was key to the design—he wanted it to be lively and reverberant, not muffled and anechoic like many commercial studios. As he explains: “I usually record basic tracks with all the musicians in the room except for any scratch vocals, which are done in an iso room. Often the electric instruments are captured with a direct box and simultaneously miked in remote spaces, so I can use the room mics to capture the drums’ room sound exclusively, and I can use that freely in any mix.”

Guitars and keyboards are usually captured direct, as well as miked, when tracking. If the large room sound or another amp sound is needed, that can be captured later as an overdub in the main room using the direct track’s performance as a source, providing all sorts of sonic possibilities.

Beyond having a pleasing sonic character, the rooms must have low ambient noise and a high degree of sonic isolation among the spaces. Earl settled on an NC15 noise rating and separation that would exceed STC56. As any designer

can tell you, each subsequent decibel improvement is much more difficult and expensive than the previous decibel. This level of performance dictated double-wall construction with three layers of 5/8-inch drywall on each wall, glass that is almost 3/4-inch thick, and some rather costly doors. Each room rests on its own concrete slab. The air conditioning system consists of a single compressor feeding coolant to four separate air handlers. This removes any ductwork as a source of flanking noise that would allow sound to pass across spaces. The air handlers use large squirrel-cage-style variable speed fans. They are essentially in constant motion, stirring air around at a low velocity. Ductwork and registers are custom-designed to preserve laminar flow and prevent that “dragon breath” sound that typical systems emit.

CONTROL ROOM

The depth of the control room was fixed by the overall width of the building. The first round of plans had specified ATC SCM300 loudspeakers, and, based on the listening triangle, a control room envelope was determined. After some discussions with the manufacturer, ATC offered to make custom wedge-shaped cabinets that arrayed the drive units in a vertical configuration. This allowed the loudspeakers to fit more snugly to the front wall of the room, moving them away from the listening position and proportionally further apart. After applying all the cascading

criteria, the revision of the room was 20 percent larger. This small change in cabinet shape vastly improved the ergonomics and traffic pattern of the control room, not to mention the low-frequency character.

STUDIO & ISO

In order to banish hum once and for all, the two recording spaces are each enclosed in a Faraday shield. Between the first and second layers of drywall, a layer of galvanized steel sheet is screwed into the metal studs. The added mass figures into the wall’s isolation performance, but its most important function is to divert electromagnetic fields to ground. Windows are a necessity, but they present an obvious entry point for electromagnetic fields. In select locations, the hole gets electrostatically “plugged” with a special glass that contains an electrically conductive pyrolytic coating. This glass is normally used in commercial refrigerator doors because it resists condensation. In this application, it’s the conductivity that makes it useful. The coating is chemically passive, so the coated side can be on an external surface, which is then oriented to complete the electrical contact inside the frame. It is also completely transparent so it won’t be visible like a screen or metallized surface.

The main target of the shielding is hum, but Wi-Fi and cell phone signals are effectively shut down as well. A Wi-Fi transmitter hooked into the company network is located in the studio to restore that function when necessary.

Lighting must be powered from direct current to avoid reintroducing 60Hz fields into the room. We designed converters that go into each circuit for that purpose. Code inspectors are somewhat uncomfortable with the use of electrical components such as diodes and capacitors, and are unsure of the suitability of wire, switches and techniques that are normally used for AC. Fortunately, the earliest codes date back to Edison’s day when DC was the norm. Much is permissible within existing standards. While DC switching could be done in the room, the light switches in these rooms are actually Crestron controllers that signal back to the





Crestron rack back near the breaker panel on the AC end of the circuits. This provides both dimming and remote control. Because the instrument amplifiers are typically not in the same space as the instrument pickups, there is very little opportunity to pick up stray noises from the amp's electromagnetic fields. Now the humbucking configuration is an artistic choice and not a solution for a problem.

Having a Crestron system provides other features than the ability to dim DC-powered lighting. The equipment can be powered up and down in a predetermined sequence, and the thermostats can be controlled and programmed remotely. Lights are intuitively controlled where a person would expect a switch to be. Besides a master controller, there is also "an app for that" in the iPhone and iPad.

All of the electrical receptacles in recording rooms have exterior-grade metal covers, so the unused outlets remain shielded at all times.

Testing the performance of the shielding for hum removal turned out to be rather simple. Two devices were built that plug into a guitar amplifier and can be used to locate the source and determine the type of interference. One, the electromagnetic detector, is simply a single-coil guitar pickup mounted inside a PVC electrical fixture. For electrostatic fields, an aluminum plate covered in a pair of self-adhesive floor tiles is attached to a

PVC handle. With these detectors, it is very easy to identify the source and nature of any interference.

WIRING

The perimeter of each of the recording rooms has a wainscot that offers several useful advantages. They are stuffed to provide some absorption. The front face is made of fabric-covered pegboard, so equipment and walls are protected from the indignities of small collisions. The top is a wood "shelf" about six inches deep to accommodate those small things that musicians need on hand, such as tuners, phones or drinks, that would be otherwise somewhere in the middle and in the way, only to be stepped on or knocked over. Most importantly, the wainscots provide a path for all the wiring and locations for the panels in the rooms. The front face is easily removed to make changes.

The penetrations for wiring are done in a minimum of locations, and the contractor was careful not to break the envelope of the room without consultation. Most audio signals pass in and out of the room below the floor in small pits that are filled with sand. Each access point feeds into the wainscot. It is much easier to control flanking sound when the penetrations are limited to a handful of locations.

Studio Essentials... by Radial

ADDITIONAL SPACES

David Earl's office was also designed with sound quality in mind, although to somewhat relaxed specifications compared to the main spaces. Beyond the obligatory phone and desk, he has a pair of near-field speakers for audition. There is a Sonic Solutions mastering system and a smaller Pro Tools rig to allow for some simple editing and mastering that doesn't require the heavy iron. It has basic trapping and reflection controls that make the space useful for critical listening. This room, like every other space right down to the loading dock, is equipped with audio tielines. Any space can be easily tapped for the recording effort. This includes having the ability to support a Leslie cabinet with its multipin input and all the mics that it would require. If past experience is any guide, each of these spaces will be used for an amp when tracking or for its unique sonic character or reverb fingerprint.

RESULTS

All of this careful designing and planning would be meaningless if it were carelessly constructed. The contractor, Winchester Construction, was meticulous throughout the process—not doing anything that might compromise the performance of the design. It cannot be stressed how important it is to have a contractor that realizes the unique tolerances required of a professional studio. They would always ask before doing anything they felt might have sonic implications. In one case, the county added a fire suppression system to the building, and the subcontractor began approaching the installation in the same manner they normally do. This would have resulted in envelopes being compromised and wall systems being coupled. The contractor quickly recognized the potential for disaster and convened a group to properly integrate the system in the design.

In the end, all design goals were met or surpassed. An example that gives an idea of the performance of the sonic isolation occurred during the wiring phase. As it happened, a category 1 hurricane visited at the same time we were installing panels. Inside the studio, with the door closed, the loudest audible sound was the thermostat in the soldering iron.

The new facility was quickly applied to several projects that were put on hold during the transition. So far, Severn has completed projects for Lou Pride and Tad Robinson, and then began new releases for Bryan Lee, the Nighthawks and the Fabulous Thunderbirds. Many more projects are still in the planning stages, so expect to hear much more from Severn Records in the future. ■



"The ability to quickly switch between mics, the cleanliness of the circuit and Radial's dedication to preserving the integrity of the input signal make the Gold Digger a great choice for any studio."

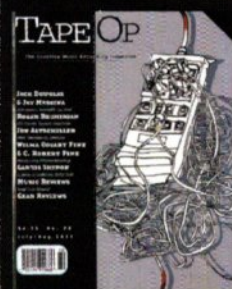
"The CherryPicker was an eye opening experience. It revealed details I had never noticed before. After use, I've never felt more confident that I had the right pre for the job."

Brandon Hickey ~ MIX



"It's quite remarkable how useful a product like the Gold Digger actually is. The Cherry Picker is a superbly versatile little unit that works extremely well, with glitch-free instant switching."

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"Built to Radial's impeccable standards... If you have more than a couple of mics and preamps in your collection, I cannot recommend the Gold Digger and Cherry Picker enough."

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A CONVERSATION WITH BT

ON COMPOSING, SAMPLING AND A SONG ACROSS WIRES // BY GARY ESKOW



Sampling has altered the course of music in obvious and subtle ways over the past quarter-century or so. Integrating snippets of well-known recordings with new ones set off a series of legal ground fires. Jingle demos evolved into full-blown productions, thanks to emulated ensembles. Composers of “classical” music—some—adjusted their techniques to include the new technologies, working with hybrid scores of real and virtual instruments.

For all its virtues, sampling has a pronounced sonic weakness. Samples can’t “hear” each other, and as a result overtones—even if they are present in individual sounds—don’t combine in the ways that help make the experience of listening to “real” instruments pleasurable.

Consider the above an introduction to our interview subject, BT. Once an *enfant terrible* who turned pop music in a new direction and helped define trance, Brian Transeau finds himself entering the middle phase of his career. Madly adored by the fans who turn out by the tens of thousands to watch him spin at live events, BT is a thoughtful, curious guy. His ability to dig down to the individual sample level and create a rich, dense and thoroughly individual sonic palette places him in rare recording territory.

BT’s ninth album, *A Song Across Wires*, will be released this month. We spoke to him recently about the new record, technology and art. If you’re interested to hear what this voluble artist has to say on a broader musical level, please check out the blog post at mixonline.com.

When you began work on *A Song Across Wires*, did you have a specific goal in mind?

This album is a return to dance music for me. For many years—I’d say between 2002 and 2007—everything went into this blasé, minimal tech-house area that I found boring. There’d be one stabby sound with no development at all. I can deal with Philip Glass, but using machines in this way—no!

My love of electronic music surged when I heard what was happening in the UK; garage music transformed into two-step and early versions of bass music, ghetto tech—all of this interesting material began to merge into an interesting new style. I’d been cutting and pasting audio for 20 years, but people were applying this technique to new sounds, and it reinvigorated my love for electronic dance music. This cut-and-paste aesthetic applied to new sound modalities and signal processing techniques is incredible. This record is my compositional and production effort applied to electronic dance music as it exists today.

Have the improvements in live venue sound systems changed your performances?

Absolutely. The interesting thing is that until you see this kind of music performed contextually in a massive spot, you haven’t really heard it. You can’t appreciate it by listening over a great set of headphones in your studio. It’s all about being surrounded by other people, experiencing the communal moment of listening to music you love over a perfectly tuned sound system. The composition is what takes place on one single night, from the beginning to the end; that’s the symphony of dance music. To extend the metaphor, the sound system is the violin and the records are the hands of the players and the bows. If the right person is leading the event, a magical experience takes place that will never be repeated.

Take Bassnectar, for example. He brings a mastering engineer with him to his dates, and his own subwoofer. They resample the room and analyze the refractions, all the way down to F1, the 36Hz range. They tailor what they do to the possibilities of the room itself.

If we can shift gears, do you think that digital recording technology has reached its full maturity?

With 96kHz recording and the fact that many DAWs operate in the 32-bit realm, honestly, we’re getting close to the limit of the refresh rate of our brains. We can perceive more than we’re given credit for, though. It’s generally assumed that we hear in the 20 to 20,000Hz range. I believe that, on a subconscious level at least, we perceive more informa-

tion than that. If you think about aliasing, which occurs in the 16kHz range, we can't hear it, but we do perceive it.

The state of recording technology—the plugins, the power of DAWs—we're about as far as we need to go in the area of reproducing sounds that exist in the real world. That said, we're sorely lacking in terms of reproduction. I know that people say the battle is over, that we have a lost generation who are perfectly content listening to crappy MP3s on earbuds. But I'm hoping there will be a transcendent moment where people hear supersonic speakers, a concentrated sound beam, and they will crave the experience of air molecules moving in a compelling way around their bodies.

You're in the process of revamping your personal studio. What's going on?

My studio has been in bits and bobs, spread out over the living room floor for the last 10 months. All of my gear had been in a small, modest room out in the middle of the woods, a kind of compositional man cave. It's very quiet out there, with loads of animals running around. Along with my analog synthesizers, DAWs, computers and outboard gear, I had an Ikea wraparound desk that was too high for me. I ended up injuring myself at that desk, so I decided to find a carpenter who could help me build a studio from scratch.

I found a retired carpenter and begged him to make me a wood desk. We looked around and found a naturally felled maple tree that had been struck by lightning. It's 250 years old, hardwood. I bought and cut the tree, and that's what we're using for the desk. The edges are live wood, which is the hardest material for a carpenter to work with. The design is beautiful. I have an EAR compressor and a bunch of exotic old tube compressors and EQs. The desk is built to hold them all perfectly.

Did you work with an acoustical designer?

I have an acoustician, Garrett, who has worked on all of my studio installations; the two of us handle the design work. I'm a fan of IK Multimedia's ARC System—we used that to help us tweak the room.

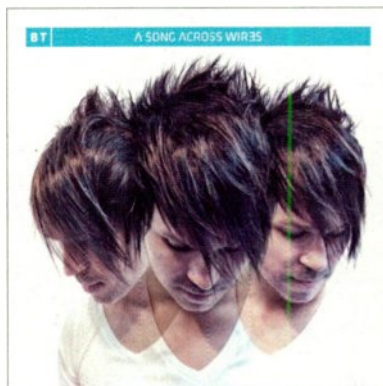
What DAW do you use?

I have a Pro Tools system, but my main rig is Logic 9 running on a 12-core G5. I also run FL Studio on a PC. Some people underestimate FL Studio, but it's the most incredible DAW on the planet. You can do things with it that no other DAW even attempts, like route an LFO to the master clock—sit with that for a minute! It has a deep sequencer, and the Harmonic additive synthesizer blows my mind.

Is your PC an off-the-shelf computer?

No, I built it myself from scratch. I initially put this computer together to do video editing using Vegas, which is a fantastic program. I create molecular tonal events inside the PC—that's my sculpting palette. Then I pull these sounds over to my main Mac and work on a composition.

Are you familiar with Composers Desktop Project? They've been around for more than 25 years, developing software that works on sonic material. My favorite tools for composing are high-level DSP operations that run offline. One of the songs on my new album, "Must Be The Love,"



used some crazy granular DSP operations that I did in CDP on a Mac terminal. Everything has to be done in code; whatever interpolations you want to perform—stretching a single wave cycle, for example—you have to type in all this data and then hit execute! I sometimes work for days on a single sound file, shredding it in every way I can think of. This is a huge part of my compositional style.

You still rely on a rig of analog synths, don't you?

Yes, I have a lot of synths, but I'm paring down to my favorites, which include a Jupiter-8, Prophet 5, an ARP 2600 and a custom 4-voice Oberheim synthesizer. I also own a pair of Frostwave step sequencers and a Roland TB-303. All of this stuff is over 30 years old—my ARP was originally owned by Pink Floyd!

You mix many of your own records. Do you prefer to work inside the box or with a dedicated console?

I'm a mouse mixer; I don't use a control surface. As I indicated earlier, a lot of the audio material exits my main DAW. I split everything out as stems, which I give to the mastering engineer.

I have a bunch of old M-Audio BX5 speakers sprinkled around my room, and some fancy custom near-fields that I just bought. A speaker maker in Canada built them for me; we'll have to see how they work out in the new room.

My favorite microphone of all time is the Neumann U 87, and I have an old rebuilt AC30 from the 1960s that I love, as well as a Line 6 amp and an old Ampeg bass amp that I pull out when needed.

Kind of boomy, that old Ampeg, isn't it?

Yes, boomy! ■

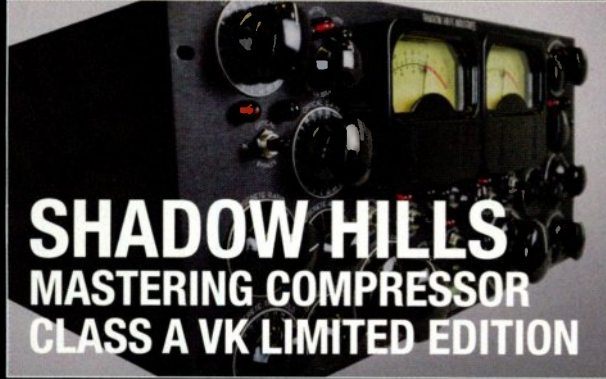
MASTERING WITH EMILY LAZAR

A Song Across Wires was mastered by Emily Lazar at The Lodge. The two have worked together several times in the past. Lazar shared her thoughts about BT and this record.

"It's absolutely correct that BT has a way of implying harmonic activity that few others possess," she says. "Everyone knows that capturing sonic material to digital and analog mediums results in a different sound. What's interesting is that even if you've recorded digitally, transferring material to tape after the fact alters the way registers interact; the audio can take on more of a three-dimensional character. Audio tape is, in a sense, an input/output machine that can induce an incredibly pleasant change of character.

"On *These Hopeful Machines*, an earlier two-CD set of his, BT thought of the record in old-school terms. The first disc is labeled Side A, and the second Side B. One of the 'sides' was intended to sound like an old rock record. We did all kinds of things with the original digital material, transferring some parts to 1-inch tape, other parts to ½-inch tape, and working at different speeds. The result was a harmonically rich record that sounds beautiful.

"We took a different approach with *A Song Across Wires*. This was a return for BT, so we used a retro approach, going back to his old dance, electronic roots while still making a very modern-sounding record. His fans are going to love this record!"



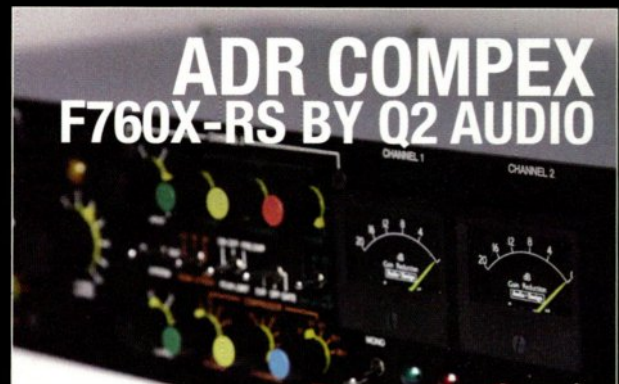
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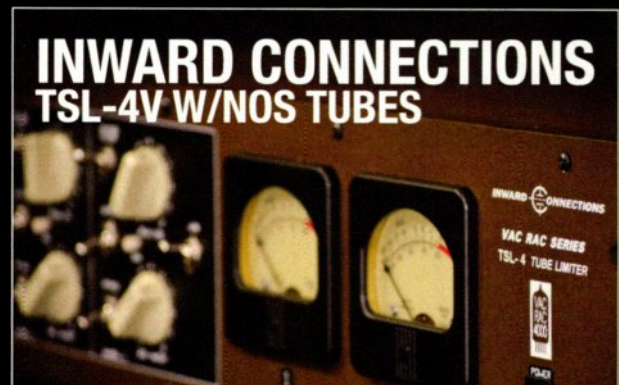
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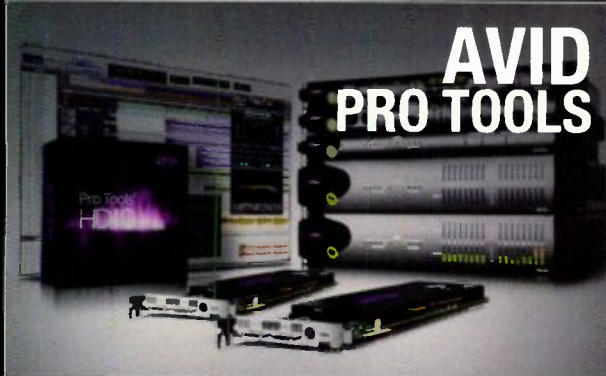


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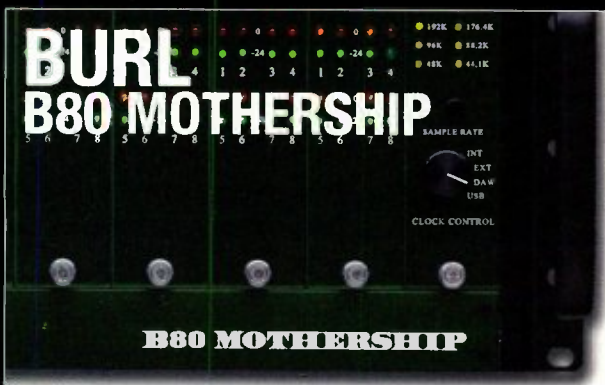
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NUMBER 9 STUDIOS: THREE ALBUMS FOR CHARITY



George Rondina

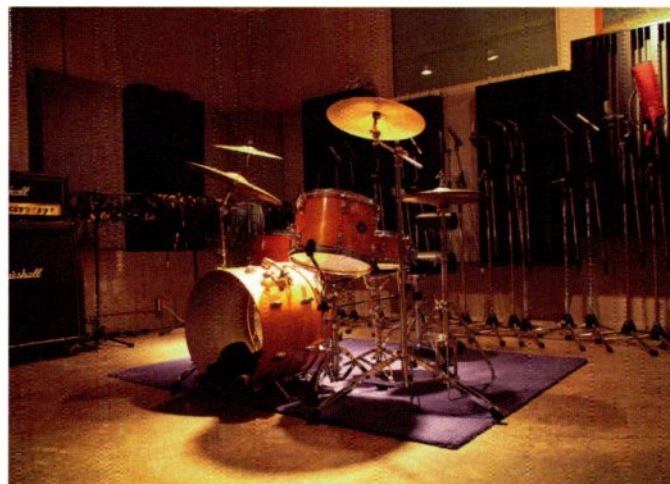
Giving to those in need has been a focus of George Rondina, managing director/owner of Number 9 Studios in Toronto. He recently spearheaded three benefit projects: *World Jazz for Haiti*, *Maple Leaf Sun Rising* and *Christmas on Seaton Street*, the first of which addressed the earthquake in Haiti.

"I was very moved by this horrible tragedy and felt that my own personal contribution would be

small compared to rallying the musical community in Toronto and creating a much larger contribution," Rondina says.

World Jazz For Haiti is a double-CD compilation of 23 original songs—12 vocal and 11 instrumental. All of the compositions on the album are either brand new or variations on recent works, and have been written and recorded by Canadian artists living in Toronto. Koller and associate producer Jesse Capon put together an eclectic mix of talent for the album, including industry veterans David Clayton-Thomas, Holly Cole, Guido Basso, Jane Bunnett and John McDermott.

For more information about Number 9 Studios, visit number9.ca.



Desert Fish Studios

Multiple Juno Award-winning engineer/producer Jeff Wolpert and longtime assistant, now business partner, Sydney Galbraith created Desert Fish Studios in the eco-friendly "401 Richmond" building in the heart of Toronto's entertainment district. Opened in April 2012, Desert Fish Studios is a 1,500-square-foot space divided into two control rooms, two live floors and a lounge.

An SSL 900+SE hybrid console is at the heart of the studio, allowing flexibility when working on multiple projects across genres, formats and mediums, including recording, music mixing, mastering, film mixing and post-production.

"The idea behind the technical design of the studio was to be able to integrate both analog and digital processing into our everyday workflow with ease and convenience," Wolpert says. "It's been my experience that a primary advantage of recording with an analog console is that it allows you to process while recording, fundamentally shaping and enhancing the sound early in the process while simultaneously providing an inspiring monitor mix. It's the best of both worlds—digital recording with an analog front end followed by hybrid mixing using the most appropriate processing, digital or analog, at any time."

The latest addition to the studio is the vintage keyboard room, opened in collaboration with Lou Pomanti Music. Keys include a 7-foot Schimmel Concert Grand, Hammond B3, Fender Rhodes 73, Hohner Clavinet D6, Wurlitzer 200A and a Minimoog.

Check out Desert Fish online at desertfishstudios.com.

Studio Frisson

A boutique studio specializing in vintage gear, Montreal's Studio Frisson has recently been playing host to a number of artists, including klezmer music group Kleztory. The group has been recording and mixing its upcoming album at Studio Frisson, and studio owner/musician/producer/engineer Michel Pépin is producing the project, while house engineer Don Murnaghan is recording and mixing, along with Pépin.

"We often work as a team on projects, complementing each other's sonic soundscapes," Murnaghan says. Both Pépin and Murnaghan have worked with Emmylou Harris, Rufus Wainwright, and Kate and Anna McGarrigle. You can also hear Pépin's guitar work on many Sarah McLachlan recordings produced by Pierre Marchand. "For Kleztory, we recorded the band—consisting of violin, clarinet, cimbalom, accordion, acoustic guitar and upright bass—live off the floor as much as possible."

The studio is equipped with an array of vintage mics and compressors, including original 1953 AKG C-12s, RCA DX-77s and 44s, a Neumann original KU 80 Dummy Head, original Teletronix LA-2As, RCA BA6As, and a Collins 26W tube compressor. The studio has a custom Neve 8034-8014 console and a McCurdy AU 300 tube console. For more information, visit studiofrisson.com.



SESSIONS: CANADA



Metalworks Studio 6

METALWORKS STUDIOS

Artist/rapper/songwriter/actor Drake worked on a project in Studio 6 with producer/engineer Noah “40” Shebib on an 80-channel SSL 9080 J Series...Rapper/producer Rich Kidd mixed his new album in Studio 2 on an 80-channel SSL 4080 G+, with Young Guru engineering...Rockers Broken Sons recorded new material, with David Bottrill producing and Kevin Dietz co-producing and engineering, in Studio 1 on a vintage 32x8x32 Neve 8036 console...Rapper Classified and engineer Jeff Crane did a choir recording in Studio 1 for the song “Inner Ninja,” which won Rap Recording of the Year at the 2013 Juno Awards...Artist/songwriter Kelly Rowland mixed a few songs with engineer Noel Cadastre in Studio 2 for her new album, *Talk a Good Game*.



Lynda Lemay and Mathieu Dulong

STUDIO PICCOLO

Engineers Denis Savage and Émile Beaudin worked on the French version of the TV show *The Voice* using Studio Piccolo’s mobile studio...French singer-songwriter Lynda Lemay worked on new material in studios A and B (produced by Lemay, engineered by Mathieu Dulong)...French singer Isabelle Boulay was in Studio A with producer Philippe B. and engineer Ghyslain Luc Lavigne...French singer-songwriter/musician Michel Rivard was in Studio A with producer Eric Goulet and engineer Lavigne...Jazz bassist Alain Caron worked in Studio A with engineers Pierre Messier and Beaudin (Caron self-producing).



Noble Street Studios

NOBLE STREET STUDIOS

Artist/rapper/songwriter/actor Drake worked on his song “Started From the Bottom” in studios A and B with Noah “40” Shebib serving as producer and engineer...Rockers Barenaked Ladies recorded and mixed in studios A and B for their album *Grimming Streak* with producer Gavin Brown and engineer Lenny DeRose...Rapper A\$AP Rocky worked in Studio A with Shebib—who served as producer and engineer—on his song “F**kin’ Problems”...Melodic punk-rock band Billy Talent worked on new material in Studio A with producer Ian D’Sa and engineer Eric Ratz...Rock band The Tragically Hip worked with producer Brown and engineer DeRose in studios A and B...Alt-rockers The Headstones worked with producers Hugh Dillon and Chris Osti, as well as engineers DeRose (recording) and Vic Florencia (mixing) in studios A and B.



Saga Recording

SAGA RECORDING

Worship leader/songwriter Jeff Hawker worked on his album *Walk Humbly* with producer Michael Nowak (Hawker co-produced) and engineers Ben Huntus and Jordan Oorebeek (Nowak also engineered)...Celtic folk-rockers Amergin worked on *Ocean Song* with producers Danny Kenny and Nowak (Nowak also engineered)...Hip-hop group Ground Zero worked with Nowak (produced and engineered) to track live horns, bass and guitar over old-school R&B/soul loops for *Early Retirement*...Artist AJ Turner worked with Nowak (produced and engineered) on *Believe*.

CREW STUDIOS



Crew Studios (crew-studios.com) is a state-of-the-art hybrid facility built in the former Bakerstreet Studios location. Crew owner Sergio Cocchia enlisted the help of engineer Mike Cashin and Vancouver-based studio designer/mastering engineer Chris Potter to develop a new layout and workflow for the space, and after a two-year design and build-out, the new facility opened in 2012.

“They took this down to cinder blocks and rebuilt the entire thing,” explains Crew chief engineer Andre Doucette. “Originally, there was a skylight in the live room, but they flipped the studio so the room with the skylight is now the control room. The skylight is redesigned with numerous panels of glass, all reflecting at different angles, and two pockets of air so you don’t hear rain. Any engineer who’s sat at a console for years is going to appreciate having natural light above them.

“Another brilliant part is the visual sightlines,” Doucette continues. “There are visuals between all the rooms [main tracking room, piano room, two iso rooms]. And no expense was spared: room-within-room design, river-rock walls to diffuse, bamboo flooring, floating floors, and we have the first API 1608 on the west coast of Canada.”

The studio also offers Pro Tools with Avid D Control, Genelec 8040 and Yamaha NS10 monitors, and a collection of new and vintage outboard gear: “Our Teletronix LA-2A is one of the originals. It sounds really sweet,” says Doucette.

Crew caters mainly to regional musicians, but last year the studio hosted Elvis Costello and engineer/producer Steven Mandel, when they were tracking vocals for the upcoming Costello/The Roots collaboration *Wise Up Ghost*. For more about that project, check out the October issue of our sister publication, *Electronic Musician*.—Barbara Schultz

MARTIN PILCHNER

Toronto-Based Designer With International Reach

BY TOM KENNY

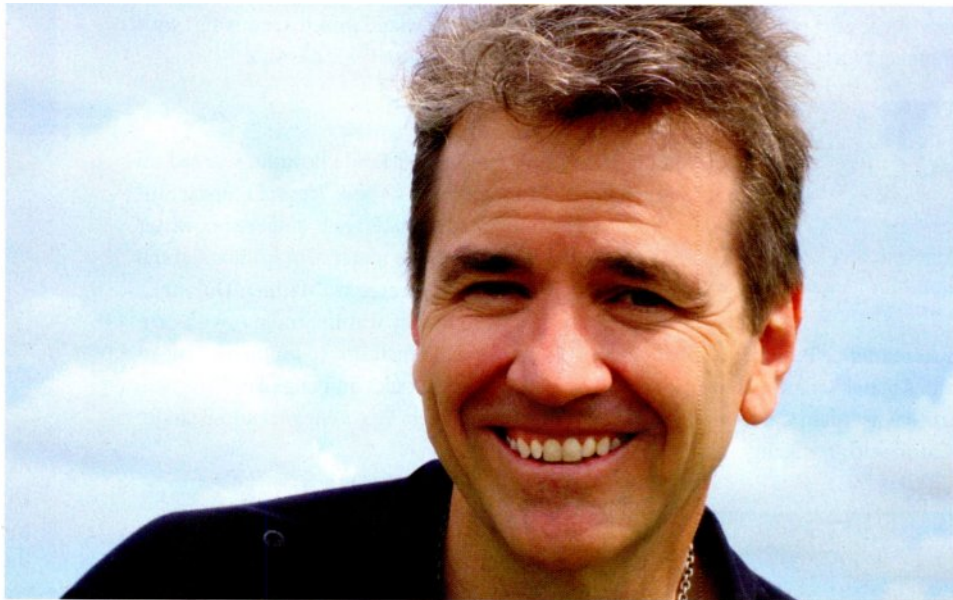
Martin Pilchner looks like a scientist and an international man of mystery, at the same time. He is equally comfortable with an acoustic guitar playing classic rock songs on a small club stage as he is wearing a hardhat on a construction site. He is a professor at Harris Institute in Toronto and he is one of the world's leading studio designers. He knows math, and he knows a few jokes.

A Saskatchewan native, he first learned accordion, then guitar, all the while running around the family construction business. He originally studied electronics locally and took a job with the phone company in the computer communications group before leaving to go on tour with a band. He got bit by the recording/production bug, eventually converting the tour bus to a mobile rig, and hasn't looked back.

He went back to recording school in Toronto, and in his second year he designed and built the campus studio, teaching there after graduation. In 1986, he formed Pilchner Associates, then went back to school for an architecture degree, designing low-budget rooms along the way. While designing a room at Fanshawe College, he met Rick Schoustal, an engineering/production student with a background in business who handled the installation. After Schoustal moved to Toronto, the two continued to work together, with one of their first projects being a studio for Jeff Healey. In 1994, they incorporated, expanding to Pilchner-Schoustal International Inc. in 1998.

Let's start with Canada. What's your view on the current music and recording scene in general?

I think it is difficult to generalize, as it is driven by so many local factors. Canada as a national market is analogous to the U.S. with its dramatic regional differences. A number of years ago many studios were lost by market conditions, and in many cases it created a void, which is now being filled by new studios. This doesn't happen without some level of available work. A commercial "for hire" studio is certainly not as common as in previous decades, but it is still necessary, and when positioned correctly can thrive. There has also been a large growth of personal studios of very high caliber. These are being developed for people who inherently need them and have cornered a particular market niche. They cover all uses



from post and music composition to recording artists. We cannot lose sight of the fact that there is growing demand for media content regardless of the ability to monetize it by the industry.

The press here tends to focus on Vancouver and Toronto.

In many ways it is the same as saying the press tends to focus on Los Angeles and New York. There is a lot of creative production work that originates in the Maritimes and the Prairies, but success is always measured by popularity in major centers, and to be fair, Quebec is a major market unto itself.

You have talked before about distancing yourself from tried-and-true studio design methods and embracing the modern. Yet you also are a scientist who understands the laws of physics and the capabilities of materials/construction.

I would not say we have rejected the tried-and-true studio design methods; on the contrary, physics is our language. The acoustics and the quantifiable performance has always been our hallmark. The performance must be a given. Unfortunately that is where vernacular design approaches stop. I think this is a mistake; this is where the real design begins. Years of acoustic rationalism have led to cold and austere environ-

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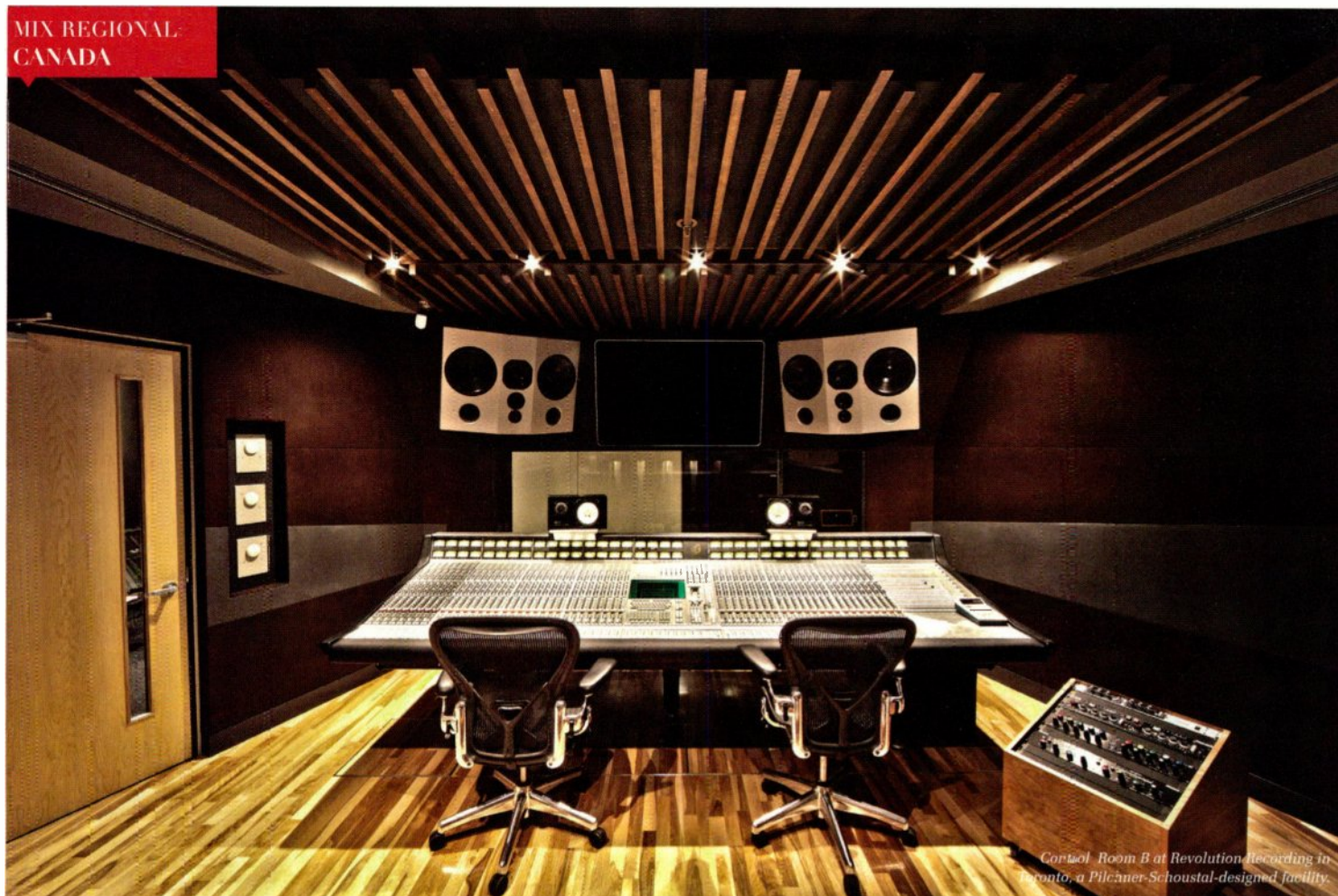
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ments where the technical dogma actually interferes with the underlying purpose of the studio. This is namely the imaging of art, or the changing of a performance into a product. A studio must carefully balance the technical and the creative to be successful. The technician and the artist must both be freely at ease in the environment. A studio should be an inspiring and not intimidating space.

What is your philosophy regarding the intersection, or integration, of Architecture and Acoustics?

Throughout history, acoustics has been an integral part of architecture. In modern society it seems to be only valued in specific applications such as studios and performance spaces. Designers need to spend more time “seeing” with their ears. Research in multi-modal perception is going a long way to help people realize how all of our senses work together to form our experience of space, and sound is certainly a big part of that.

What is the first thing you would say to an engineer/producer who comes to you asking for advice on how they can improve their high-end personal studio?

The first thing would be to come to an understanding of the fundamental truth of what they are trying to achieve. Embrace the constituent and let go of the transitory. This means stripping away all the urban myth and vernacular studio opinion to arrive at an honest understanding of what is needed and possible. This becomes the departure point for moving ahead.

Working with Low End. Is it the most challenging aspect of studio design?

Working with small space acoustics such as studios, the low-frequency uniformity is always a factor. Balancing the force and resonant response of the room and electro-acoustic systems seems best handled with a combination of prediction and experience. However, I would say the most challenging aspect of studio design is balancing the client’s ambition with their budget.

You have made a commitment to teaching at Harris Institute for many years now. What does the experience in the classroom bring to your professional life?

I have a passion for studio design—what could be better than to share that with captive audiences who are eager to learn? I find that having to explain things to others brings you to a greater understanding of the subject, as well. It is also gratifying to see your former students find their own success.

Clients and former students all mention your vast intelligence and your quick, sharp sense of humor. Is it important to have both in your field?

I’m not sure, but if you truly enjoy your work, I think you should also have fun doing it! It is good to have a sense of humor, but at first it takes the client awhile to understand we may be funny but at the same time are deadly serious about our work.

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RobairReport

500 SERIES AND EURORACK: A CALL FOR STRICTER STANDARDS



By Gino Robair

While manufacturers have gone to great lengths to make computer peripherals plug-and-play, there is still a lot to be done in the hardware realm. Two modular formats, in particular—500 Series audio products and Eurorack synth modules—are showing such explosive growth that it has led to a gold-rush mentality. As a result, there is a glut of products, an increasing number of which are designed carelessly and, at times, border on being dangerously incompatible.

I've been hearing complaints about 500 Series module and rack incompatibilities for years now, but I got an earful of stories while attending Sweetwater's GearFest in June. I'm spec'ing out a front-end for my home studio, and because a number of module manufacturers were attending the event, I went through my list of questions with each of the designers.

My final question was always, "Which rack and power supply do you recommend?" expecting a long list of pros and cons about each chassis. All but one designer said simply: Purple. By this they meant the Purple Audio Sweet Ten, a 10-space chassis and power supply that, they explained, sounded and performed the best.

Ironically, Sweetwater doesn't carry it.

A major factor that was given for suggesting the Sweet Ten had to do with the increasing number of modules that do not conform to the "standardization and consistency guidelines" of the VPR Alliance created by API Audio. That's because when one of the modules from these designers goes into a rack with an out-of-spec module and there is an issue (such as added noise, power issues, complete system failure), their module might be blamed, even though their own design conforms to API's spec and is on the list of VPR-approved products. Apparently, this hasn't been an issue with owners of the Sweet Ten chassis, though it's just one reason why module developers like it.

Similarly, the API rep told me that they get phone calls when someone puts a rogue module into an API rack and there's a problem. According to API, the VPR program "provides complete design specifications for manufacturers interested in producing third-party modules that physically fit and electronically conform to API's rack specifications." However, several of the module designers complained that the spec was "too loose" (I heard that specific phrase twice), which they believe has led to compatibility problems with some of the mod-

ules that have been brought to market. Yet it is often the guys who play by the rules who receive the brunt of the negative feedback.

Similar problems have arisen in the modular synth world, especially in the Eurorack format. While the huge variety of products is welcome, the range in design and build quality is too wide. One of the most common problems is the orientation of the ribbon cable that connects a module to the power bus board. Often user-error is the issue (plugging the module in upside down), but I own several modules that are wired improperly. We should be way beyond that by now. At the very least, the modular community needs to agree on a mandatory requirement that keyed connectors are used at the end of power ribbons, with the red stripe indicating -12. Imagine if you couldn't trust the wiring of a MIDI DIN plug?

The people buying Eurorack gear tend to be less savvy about the technology than 500 Series buyers because the entry cost of the synth modules is so low. Often, they'll buy the cheapest power supply and rack they can find and then connect as many modules with the coolest faceplates that they can, completely ignoring the operational manuals. When the system fails to work properly, who do they blame?

This came up in a recent conversation with Eric Barbour, owner of Metasonix and world-renowned tube specialist. He told me that, when the uninformed consumer tries to power a rack of his tube-based modules using an underpowered system, *he* gets the irate call. "Our modules do pull more current, but usually it's not a problem, unless they try to use a really cheap power supply," Barbour told me in a recent email. "All of the R-series Eurorack modules need 150-200 mA from both +12 and -12. Some of the newer DSP-based modules on the market also require a lot of power, usually at 5 volts." He suggests that serious users purchase the Monorocket cabinet that is designed to handle Metasonix modules, which also provides more than enough power for other Eurorack products. Retailers should offer this level of advice, as well.

Clearly API did the pro-audio industry and its customers a big service by forming VPR. But based on the feedback I've heard from respected designers, the guidelines need to go further and involve a lot more of the development community, in the same way that manufacturers got together to hammer out the MIDI spec three decades ago. Both formats would benefit from greater standardization, because at the rate they're selling, these products will be around for a long time. ■

se·lec·tion [sə 'lekSHən]

noun

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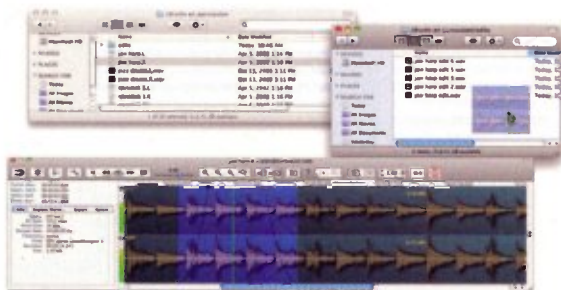
Shorties for Studio and Stage

Telefunken Elektroakustik (t-funk.com) has released two low-profile dynamic mics: the M80-SH (\$249), which provides the bright, open sound of the standard M80, and the M81-SH (\$249), which produces the darker, richer tones of the M81. The M80-SH dynamic mic features a wide frequency response and high SPL handling, plus a tight cardioid polar pattern, making it perfect for snare drum, vocals or instruments on both the stage and in the studio. The M80-SH is offered with either chrome or black grilles and ships with a leather microphone bag and 15-foot SGM5-5R XLR cable with right-angle female XLR. The M81-SH offers minimal proximity effect, superior feedback rejection and less high-frequency range than the M80-SH, yielding a flatter overall frequency response. It also comes with a leather microphone bag and 15-foot SGM5-5 XLR cable with right-angle female XLR.

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LOGIC PRO X

Simpler, Faster and a Musical Focus

The latest upgrade of Logic from Apple (www.apple.com, \$199.99) brings a variety of new features and tools including a single-window interface and advanced organizational tools such as TrackStack which allows users to manage, save and reuse common workflows. Other standouts include mouse-driven management and re-ordering of plugins without the need for a modifier key, an enhanced score editor and easier-than-ever export of files to other apps like Final Cut Pro X, iTunes and SoundCloud. There are also new music oriented tools such as Drummer, Drum Kit

Designer, Bass Amp Designer and seven classic stompboxes. If that wasn't enough, there's Flex Pitch performance editing, Smart Controls sound shaping tools, a new sound library and loop collection and a Logic Remote app which lets you wirelessly pair your Mac and your iPad.



ELYSIA XFILTER 500

Stereo, Vertical EQ

The xfilter 500 (\$1,049) from Elysia (elysia.com) offers 100-percent Class-A circuitry as well as versatile features for tracking, mixing, overdubbing and mastering. Both EQ bands can be switched into high- and low-cut filters with resonance—a feature borrowed from elysia's museq equalizer.

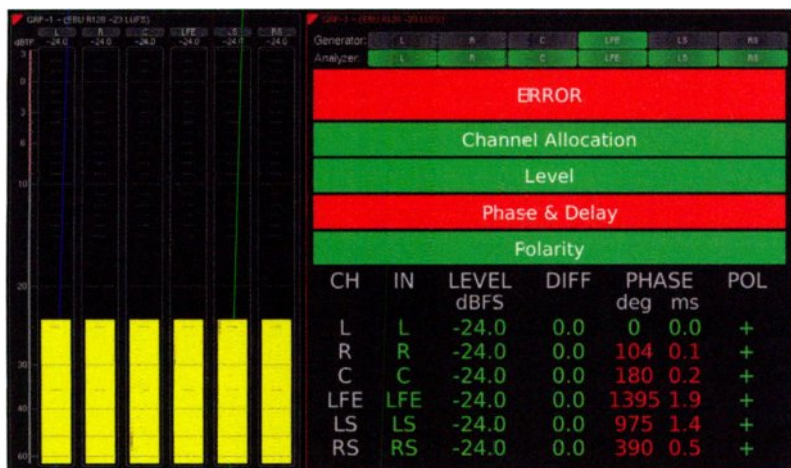
The xfilter 500 also provides two mid-peak filters with switchable (wide or narrow) Q factor, and features a unique switchable fixed LC filter for polishing the high-frequency range. This passive filter mainly comprises a capacitor and a coil per channel that produce a slight resonance peak around 12 kHz, focusing the saturation-like storage effect of the coil on the area around the peak without over-processing the complete high-frequency spectrum.



STEINBERG CUBASE ELEMENTS 7

Affordable, Full-Featured DAW

Cubase Elements 7 (steinberg.net; \$99.99) is Steinberg's newest addition to the Cubase 7 lineup, offering new sounds, effects and other features. The new MixConsole offers flexible routing plus 192kHz audio quality. The newly developed channel strip comes with high- and lowpass filters, gate, 4-band EQ with spectrum analyzer, three compressors, envelope shaper, tape and tube saturation, as well as brickwall limiter and maximizer modules. The Channel Settings window is redesigned to provide easy access to all channel parameters, including metering and routing assignments. The Remote Control Editor facilitates customized mapping of plug-in parameters to external controllers. MemZap stores positions and zoom factors within the project at any particular time. Easy Audio Driver Setup assistance is provided to users who connect Cubase Elements 7 with audio hardware.



TC ELECTRONIC BLITS

Free 5.1 App for Broadcast

TC Electronic (tcelectronic.com) has released BLITS, a free, optional 5.1 surround app for its TouchMonitor. BLITS (Black & Lane's Ident Tones for Surround) is a tool that allows for testing channel allocation, level and phase of 5.1 surround signals. This special instrument was created to generate a BLITS test signal and use the BLITS sequence for a user-friendly and comprehensive analysis and display of level, channel allocation, phase, delay and polarity of incoming digital audio signals in 5.1 mode. Apart from the analyzer, the BLITS instrument features a signal generator that is capable of generating the 5.1 sequence and a stereo ident sequence. An identification header like a station ident can be placed optionally in front of the test sequence. The signal will be output through the AES3 or AES3id output feeds.

RASCAL AUDIO TWO-V

Double Your Gain Pleasure

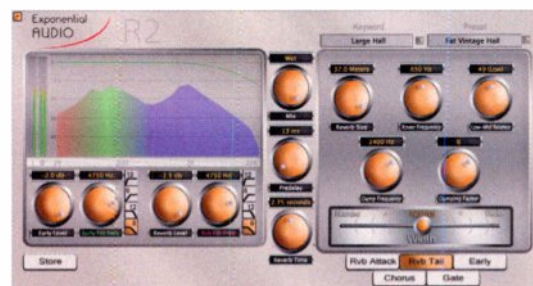
The Two-V, dual-channel mic preamp (\$1,289) from Rascal Audio (rascalaudio.net) promises vintage and flexible tone shaping from its twin Class-A gain blocks. Features include custom input transformers and stepped gain, plus continuously variable input and output controls. Other controls include switchable impedance, HPF and polarity invert. For those needing only a single preamp, the single-channel One-V comes in the same doublewide enclosure.



EXPONENTIAL AUDIO PHOENIXVERB AND R2

Choices of Plug-In Ambience

Exponential Audio (exponentialaudio.com) is offering two distinctly different reverb plug-ins for Mac OS X (VST, AU, RTAS and AAX) and Windows (VST), in both 32- and 64-bit formats. The PhoenixVerb (\$199) has Halls, Plates, Chambers and Rooms all in one plug-in. Flexible and easy-to-use controls over early reflections offer many ways to create small rooms for instruments, ADR, Foley or voice-over. Hundreds of presets are organized by keywords, and you can add your own. The R2 (\$299) promises reverb tails with character, offering flexible chorusing inside the reverb structure for gentle (or not so gentle) fluctuations of pitch, or it can fatten up the sound without obvious pitch changes. R2 also has a gate, driven by the reverb's input.



New Sound Reinforcement Products



RADIAL STAGEDIRECT DI

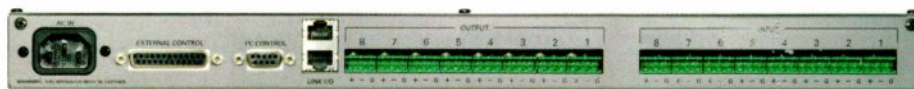
Stage Input Plus

Radial Engineering's Stage-Direct (radialeng.com; \$250) is a direct box that combines all the standard features one would find in a DI with the added convenience of being able to mute the signal using a footswitch. StageDirect is made from 14-gauge steel and finished in baked enamel for maximum durability. Connections include a 1/4-inch input for the instrument, a 1/4-inch output for the stage amp, and a standard XLR male output to feed the P.A. system. A separately buffered 1/4-inch tuner output is always on. When the footswitch is depressed, all outputs, other than the tuner, are muted. Top panel switches include a -15dB pad to handle extra high output instruments such as an active bass, a highpass filter to eliminate excessive bass and resonance, and a 180-degree polarity reverse to help tame acoustic hotspots on stage that can cause feedback.

JOECO REMOTE FOR IPAD

BlackBox Control In Your Hand

A new software app from JoeCo (joeco.co.uk; free), together with a specially developed hardware interface, enables remote control of both 24-channel and 64-channel BlackBox Recorders and BlackBox Players via iPad. An intuitive interface allows Play, Stop and Record to be remotely controlled from the iPad, as well as providing access to BlackBox settings menus. Accurate metering is provided, and the app can be used for remotely controlling and editing BlackBox Player playlists. Playlists that are stored on the Player's external hard disk or Flash drive can be viewed, edited and triggered on the iPad interface as required, offering a useful alternative for remote editing and playing of show content.



AUDIO-TECHNICA AT-DMM828

8-Channel Digital Matrix Mixer

The AT-DMM828 (audio-technica.com; \$2,169) is a microprocessor-controlled, programmable, daisy-chainable, automatic-switching 8-channel matrix mixer designed for installed sound, sound reinforcement, houses of worship, broadcast, recording and more. The AT-DMM828 features "correlation," which analyzes and interprets redundancy of source material between channels in real time and may in turn favor the dominant channel, simplifying the output and reducing feedback and phase issues. The AT-DMM828 can be used with low-impedance dynamic or condenser microphones (including wireless microphone systems), as well as line-level sources. Each of the eight balanced inputs provides switchable 48-volt phantom power; attenuation is also selectable on each input to allow use with line-level signals. The mixer's outputs are balanced and non-inverting. All audio connections terminate in block screw connectors.

BASSMAXX ZV28 PROFUNDO SUBWOOFER

Heavy LF Hitter

The ZV28 (\$8,740) from BassMaxx (bassmaxx.com) is a self-powered, self-processing, self-protecting, vented, direct-radiating subwoofer with a large internal volume and a very low tuned frequency. Features include anti-standing wave baffles and pass-through dampers to minimize upper resonances, while very large ports maximize low-frequency performance at high output. Protection systems and limiters control all manners of overload, including thermal, excursion and clipping. The ZV28 is optimized for full-power operation. It is designed to operate at full rated RMS power throughout its operating range while ensuring the woofers remain within their excursion and thermal limits. The ZV28's woofer cones are waterproofed.



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First Listen

JBL M2 MASTER REFERENCE MONITOR

By Tom Kenny

Last fall at AES San Francisco, JBL hosted a seminar on new technologies for next-generation studio monitors, just off the convention hall floor. Top engineers and producers were brought into the 30x40, three-story, not-ideal space to get a first glance and listen to the company's new flagship studio monitor, the M2. The feedback was overwhelmingly positive, and less than three months later, the M2 debuted at Winter NAMM 2013.

But the road to NAMM was much longer than that. It's not easy to create something new, truly new, in studio speaker technologies. They are transducers, and they follow mechanical rules. There are variations and choice in drivers and materials and size and shape and power and crossovers, but the technologies are mostly familiar. Still, there are a lot of good speakers out there, and there are big differences in how speakers sound.

Producer/engineer Frank Filipetti has a long history with JBL, and an even longer history with Peter Chaikin, senior manager, Recording and Broadcast Marketing. In 2011, Chaikin asked him to come and have a listen at what they were working on now. Filipetti spent a couple of hours, but needed only about 30 seconds.

"It was very uncomfortable for me," Filipetti recalls. "Full disclosure: I hate horn-loaded speakers, I always have. Horns sound peaky to me, and they beam high frequencies. I've never liked them in general, and I didn't really like them here. I could see the disappointment in Peter's face. It was tough. I'm loyal, but I'm honest."

In June 2012, Filipetti, working in Las Vegas, got another call from Chaikin, asking him to come back for another round. In the intervening year, the speaker had been completely redone. Ports were moved to the front, the geometry of the cabinet changed slightly, but most importantly, it now supported a new patent-pending Image Control waveguide.

"I flew in for an afternoon, I had about an hour total," Filipetti says. "Literally 20 seconds in, I said, 'Holy sh*t! These are something. Then I fly back to Vegas, then back to New York, and four days later I still have that sound of the speaker in my head. I couldn't sleep."

"The M2 with the D2 driver and this new waveguide sounds smoother and sweeter to me than even the best soft-dome tweeters," he



Frank Filipetti

adds. "It's clear, clean, efficient, remarkably free of beaming. The dispersion is ridiculous. The overall center image is so striking and coherent it feels like you have a center channel. And the clarity and lack of distortion is phenomenal. The depth, the image, everything is rock-solid and unbelievably precise.

"The crossover, at 800 Hz, in my mind is inaudible," he adds. "I've tried to listen for it and can't hear it. And this new waveguide? I've never experienced a speaker where I can walk up almost

to the plane of the speaker and hear the top end. Hear a center, hear everything; it's probably the most linear speaker I've heard. But it's not just linear coming out the front; it's linear coming out the sides. The cohesion no matter where you are in the room is tremendous."

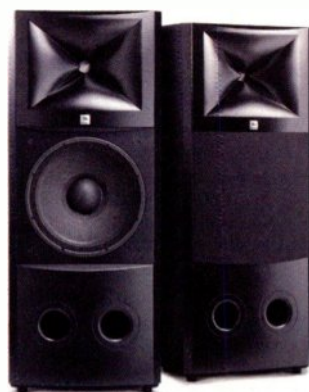
While he didn't have a lot of time at that first introduction, prior to getting his own pair, Filipetti did have his own material, the first cut of James Taylor's *Hourglass*, which he uses to get the feel for any new room. "I'm listening emotionally at first," he explains. "I first want to know if the speaker intrigues me, if the speaker produces an emotion in me. I either feel intrigued or I feel bored, right away. If I'm intrigued, then I start to analyze.

"The first thing I will tune into then is James' voice. To me, that is the defining characteristic. If his voice sounds like James, like I know James sounds, then I know the midrange is smooth, and I'll gravitate to the low end, to Jimmy Johnson's

bass and Carlos Vega's drums. Then I'll move to the top end.

"While that is going on I'll be listening to the center imaging: Is his voice coming directly from the center, does it feel a little smeared? Am I hearing the congas on the right side, am I hearing the bell of the cymbal left-center, the way I had them panned. If the cymbals appear full left and right or too close to the center, I know something is wrong. I only zero in on the detail after I feel the emotion.

"The first thing that literally hit me this time was that it almost sounded like there wasn't a speaker there. It sounded so remarkably clear and free of all those things we take for granted in a transducer. That's why I couldn't sleep for four days. I had this sound of clarity in my head that I hadn't heard before."



stand•ard ['stan-dərd]

noun

1. an object that is regarded as the usual or most common form of its kind
2. something established by authority, custom, or general consent as a model or example
3. the stuff no studio is complete without



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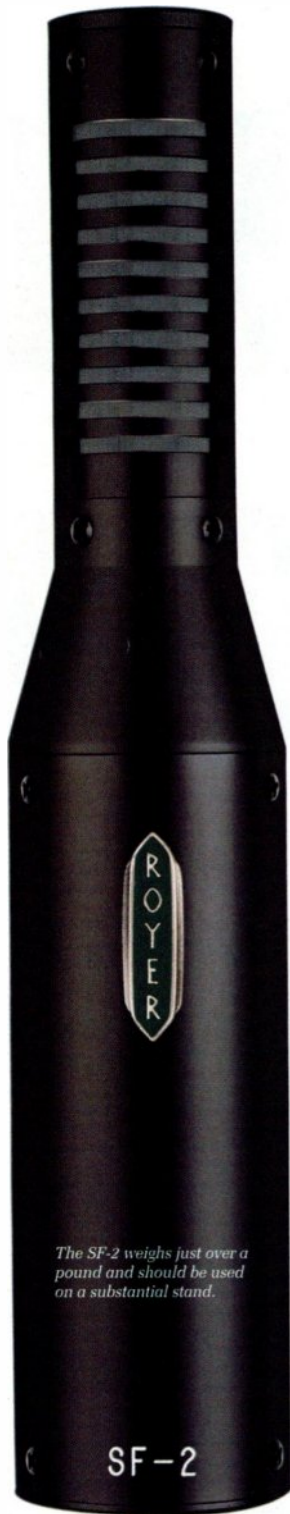
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Tech // reviews

ROYER SF-2 ACTIVE RIBBON MICROPHONE

Phantom-Powered Model Designed for Classical, Acoustic Instruments



The SF-2 weighs just over a pound and should be used on a substantial stand.

SF-2

The SF-2 is one of the newer offerings in Royer Labs' superb line of ribbon mics. With an active power supply and internal preamp, all of the old issues regarding the dangers of phantom power—as well as gain/preamp—are effectively resolved.

The SF-2 is an electrodynamic pressure-gradient ribbon microphone with active electronics, and as such requires true 48-volt phantom power at 4mA. Its 1.8-micron aluminum ribbon pickup pattern is a symmetrical figure-8, with a Rare Earth Neodymium magnet motor. Frequency response is specified at 30 to 15k Hz, ± 3 db. It's a hefty package, weighing in at 15.8 ounces (448 grams), and comes with a serious shock-mount. Its finish is an attractive matte black-chrome.

LIVE PERFORMER

Over several months, I had numerous opportunities to try a pair of these mics on a wide range of instruments, with superb results. Beginning with recording the Artosphere Festival Orchestra in Fayetteville, Ark., in the summer of 2012 (and again in 2013), I got right down to business with the SF-2s. My first use was on orchestral harp; actually, two harps. I was able to make creative use of the mic's figure-8/side-rejection pattern and place the mic between the two instruments, and capture them as a blended whole on a single track. For the festival's final concert featuring Brahms' "Symphony No. 1 in C Minor," I was thrilled with the results I got when using the two SF-2s on a killer brass section: solid, robust, detailed, rich tones from trumpets to trombones and tuba. The SF-2s took everything that was thrown at them, in close quarters, staring down a battery of brass, with surprisingly little bleed from the rest of the wind and percussion sections.

During a few chamber music run-outs at the festival, I got a chance to hear it on cello in a more intimate setting, and as I'd hoped, the results were warm, detailed and non-hyped.

Next, I used the SF-2s as spot mics for live recordings on a variety of instruments, including concert double bass soloist Joseph Conyers, as well as trumpet and reed duets with Rodney Mack and Jeffrey Deemer, all live recorded performances with the Chamber Orchestra of Philadelphia.

For a three-day recording session with the Atlantic Guitar Quartet at Loyola College in Baltimore, the SF-2s in an M/S configuration sounded smooth, full and nuanced. Coupled with spot mics on each guitar, the SF-2s provided a beautiful, main stereo image, as if one was sitting right in the middle of the group.

INTO THE STUDIO

In my home studio, I normally record my Yamaha C3 with a pair of DPA 4006TL Omnis or DPA 4023s for demos and personal projects. Going against the grain with a pair of the SF-2s was a trip down memory lane for me; full-bodied, round, warm tones were the result, and the stereo imaging was superb with the SF-2s set up almost side by side, facing out in an X-Y pattern. It was not what I'd been used to hearing, and a wonderful surprise for future reference when looking for a different set of colors in the sound with my small grand.

TRY THIS

Arrange your favorite vocal or instrumental group in a circle around a pair of SF-2s set up in a Blumlein pattern, tip to tip, one on top of the other, on sturdy mic stands. After tracking each mic's output separately, create a second copy of each track in your DAW and flip the phase for each, so you'll have +Left, -Left, and +Right, -Right. For surround, you can pan each track to its own region (FL, FR, RL, RR), or for stereo, blend to taste for as wide/narrow sound field as you like.

PRODUCT SUMMARY

COMPANY: Royer Labs

PRODUCT: SF-2

WEBSITE: royer.abs.com

PRICE: \$2,295

PROS: Warm, clean, lushly detailed ribbon sound with built-in preamp.

CONS: Price. Minor issue with shock-mount angle/articulation; SF-2 now shipping new mount.

With the SF-2s, I'd found a new way to get that vintage, warm vinyl-era sound from my modern acoustic piano.

Similarly, a pair of SF-2s on vibes provided more warm, rounded tones; excellent stereo imaging; and plenty of body to cut through a jazz combo recording. As one might expect, it's great on reed instruments like solo tenor saxophone; key noises are less pronounced, while the tone of the instrument comes forward. (Great for noisy players, too.)

The SF-2 performed the best for me in almost every case when recording cello, either solo or with piano and in ensembles. It remains one of the best-suited mics I've heard for capturing the overall sounds and subtlety of this instrument. Bowing and instrument noises can sometimes be over-hyped or too strident with some condensers, and there can often be "bloom" in the lower end. The SF-2 provided a smooth, non-spiky, warm tone on a variety of artists I had the pleasure to record with the SF-2.

The only two, and very minor, issues I found with the mic involved the mounting support/basket that shipped with the review mics. However, Royer has told me they are no longer shipping this particular mount, which addresses the issues I had. While I never had a chance to audition the new mount, it has to be better than the review unit's system.

SERIOUS CONTENDER

There's hardly an acoustic instrument the SF-2 didn't shine on, or at least bring me a new (old?) perspective on what modern mics have shown us till now. With its fairly steep price tag, this is a serious microphone aimed at serious professionals, and it doesn't disappoint. For studio or live performance recording, coupled with a good preamp and the right talent in front of it, the SF-2 delivers gorgeous sound. Whatever acoustic instrument you're working with, the SF-2 will add some interesting colors and shading to your recordings—as well as bring some new perspective to them when creating analog sounds in a digital world. Buy two of them; you won't regret it. ■

Joe Hannigan has been running Weston Sound & Video in the Philadelphia area for 25 years.

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PRO AUDIO DSP DYNAMIC SPECTRUM MAPPER V2

Multiband Compression Plug-In Lends Powerful New Approach to Processing

Hey, mix and mastering engineers: Want to control dynamics and spectral balance in one fell swoop? The Dynamic Spectrum Mapper applies a target spectral profile to your mix while plying adaptive compression in multiband fashion. The plug-in also includes a mastering-grade limiter and can be used on individual vocal and instrument tracks to simultaneously corral changes in level and tonality.

Designed by Pro Audio DSP and distributed by Plug-in Alliance, Dynamic Spectrum Mapper is available in Audio Units (AU), Audio Suite, AAX (native and DSP), RTAS, VST and VST3 formats, and launches in either mono or stereo configuration. I reviewed Version 2.0.4 of the AU plug-in in Digital Performer V. 8.03, using an 8-core Mac Pro running OS X 10.8.2.

NOT YOUR GRANDFATHER'S COMPRESSOR

Unlike a typical multiband compressor, the DSM splits its audio-input signal into at least 16 bands using an FFT-based process, a method whose linear spacing of bands inherently produces far greater resolution in the high-midrange and high frequencies than in the bass. After applying quasi-dynamics processing (literally by manipulating the FFT data) in each band, DSM recombines the outputs of the individual bands at the plug-in's output in either 16- or 24-bit resolution. Latency is just over 1 millisecond.

At the top of the plug-in's GUI, an X-Y display plots frequency versus level (see Fig. 1). Click the Capture button during playback, and the plug-in captures and displays as a yellow curve the program's transient frequency response across the spectrum. This



Figure 1: The Pro Audio DSP Dynamic Spectrum Mapper V2 uses FFT-based multiband compression to make your mix's tonal balance dynamically approximate or match that of a captured spectrum.

response of the captured spectrum. You can save threshold spectrums discretely and load them into any project you wish (applying them to a different mix). You can also save presets (comprising a threshold spectrum and control settings) for later recall.

In the bottom section of the GUI, you can adjust so-called parametric threshold controls—center frequency, Q and threshold—in each of three independent bands to modify the shape of the threshold spectrum curve non-

threshold spectrum, as it's called, will alternatively plot an average of the program's spectra if you click and hold the capture button.

Your program's spectral balance will vary over time and rarely be exactly the same as that illustrated by the threshold spectrum. In the plug-in's X-Y display, a blue curve shows the current spectrum of the input signal changing in real time; the curve turns red when you link left and right channels for stereo operation.

Here's the crux: DSM applies compression—or, dynamic equalization—only in parts of the spectrum where the blue or red curve is higher than the yellow one in the X-Y display. Put another way, whenever your program's level rises above that of the captured response curve in any frequency band during playback, DSM will compress that band to make it more or less mirror the

TRY THIS

Warm up an occasionally strident lead vocal track by first capturing its spectra during a warm-sounding passage in the singer's lower register. Dial in a 1ms or faster attack time to quell sibilance and brightness in the singer's high range and during louder passages. Crank the LF ATT control to let their chest register speak. The vocal will sound a lot warmer where it previously offended.

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destructively. (These controls don't equalize the audio input or sidechain.) A bypass button is provided for each band, to restore the original curve.

Click on the Freeze Gains button to apply—in similar fashion to static equalization—the processed program's spectral response occurring at that moment to the program from then on. Click on the Limiter button to prevent transient overloads. The brickwall limiter in DSM V. 1.3 and higher provides a transparent safety net, only acting on signals that exceed -1 dBFS.

Left and right I/O meters and clip indicators straddle the GUI's X-Y display. In V. 1.3 and higher, both meters display levels up to +6 dBFS and the output meter shows levels pre-limiter. Virtual LEDs above the limiter's threshold display light yellow—showing gain reduction—when the limiter is activated.

Below the X-Y display, sliders control various compression parameters. Dragging the global threshold control up or down similarly moves the X-Y display's threshold spectrum curve. A dry/wet control lets

"When using a traditional multiband compressor, you typically analyze which frequency bands need taming (and how much) and then set the crossovers, thresholds, ratios and time constants to achieve that goal. DSM's approach is arguably more direct: Find a section of your current (or another) program where you like the spectral balance, capture the spectrum, and then condition any mix or track to dynamically morph toward that timbre."

you mix processed and unprocessed signals at the plug-in's output, enabling parallel-compression effects. Gain controls are provided to make up gain caused by compression and to attenuate the plug-in's output level, respectively. Controls for ratio, knee, and attack and release times (release is dubbed decay) affect all bands at once, with a major caveat: Two additional controls—LF ATT and HF REL—modify the global time constants by progressively increasing the attack time below 1 kHz and decreasing the release time above 1 kHz as you raise

PRODUCT SUMMARY

COMPANY: Pro Audio DSP

PRODUCT: Dynamic Spectrum Mapper V2

WEBSITE: plugin-alliance.com

PRICE: \$329

PROS: Sounds fantastic. Provides unique processing. Easy to use, once you grok it. Terrific for both mixing and mastering.

CONS: FFT-based architecture provides few low-frequency bands.

their respective sliders. Undo, Redo and four workspaces facilitate editing and comparing settings.

HOW YOU USE IT

DSM's basic operation is similar to that employed by traditional multiband compressors, but different in one key respect. When using a traditional multiband compressor, you typically analyze which frequency bands need taming (and how much) and then set the crossovers, thresholds, ratios and time constants to achieve that goal. DSM's approach is arguably more direct: Find a section of your current (or another) program where you like the spectral balance, capture

the spectrum, and then condition any mix or track to dynamically morph toward that timbre. Set DSM's global ratio and parametric threshold controls to govern to what degree you want each band to morph to the captured spectrum: slightly, completely or not at all. (Making all bands initially morph completely is a good starting point because it lets you evaluate what your captured spectrum sounds like.) Set the attack and decay controls to determine how fast you want the mix to morph (attack) and subsequently return (decay) to its original spectrum.



Figure 2: With these settings, Dynamic Spectrum Mapper warmed up a fizzy electric guitar track.

IN SESSION

I first used DSM to remaster a rock mix that sounded too bass-heavy and muddy. During playback, I clicked and held DSM's Capture button for several bars during the brighter chorus where the spectral balance sounded more even. Because the chorus was very loud, the captured threshold spectrum was initially at too high of a level to initiate gain reduction during most (quieter) sections of the song. To ameliorate this, I lowered DSM's global threshold control. Adjusting the parametric threshold controls, I further lowered the threshold at 100 Hz, using a broad Q (Fig. 1 shows this). That tamed the bass guitar nicely but robbed the kick drum of a little too much thunder. Slightly raising the LF ATT control delayed compression in the lowest bass frequencies just enough to let the kick drum speak. To preserve air in the mix, I raised the threshold at 10.4 kHz. A 2-second decay time leveled the mix, and lowering the wet/dry control a hair (to 85 percent) restored a touch of dynamics across the spectrum. Activating DSM's transparent limiter, I raised the

plug-in's makeup-gain control 9 dB to shave off the highest peaks. The end result of all my tweaks was a mix that sounded much clearer, more present, airier, louder and more exciting—all without audible pumping. I was hooked!

DSM also did a terrific job warming up an electric guitar track that suffered from fizzy high-frequency distortion due to overloaded transistors (see Fig. 2). I captured the spectra of the guitar track where it sounded the warmest and least distorted (playing some fuller low notes). I boosted the midrange band's threshold to prevent compression in that band at all but the loudest levels. I lowered the threshold at roughly 7 kHz to deepen compression in that band. Cranking the LF ATT control let bass frequencies breathe. A fast decay time quickly restored the track's

original timbre after distorted transients had expired. Generous makeup gain and limiting lent fullness and urgency to the track. It sounded fantastic.

Although I didn't have a chance to test DSM in post-production sound applications before going to press, I have no doubt it would excel at leveling timbral fluctuations in dialog tracks. Used on an occasionally harsh lead vocal track, in music production, DSM impressed the heck out of me (see "Try This").

WHERE DSM SHINES THE BRIGHTEST

Where you need fine-grained control over bass frequencies, DSM's relative dearth of bands in that range may not make it the optimal tool. For all other applications, Dynamic Spectrum Mapper is an eminently precise processor that sounds fabulous and is easy to use. Unique, innovative, powerful and transparent, Dynamic Spectrum Mapper is a winner. ■

Michael Cooper has written more than 400 articles about pro audio over the past 25 years.

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KORBY FET MICROPHONE

Handmade Condenser Offers Big Sonics, Versatile Options

The Korby Audio Technology FET condenser microphone is an updated version of the company's FET cardioid-only model and is offered in two versions: the Studio version (tested here) with its single-backplate design, and the Broadcast version with a dual-backplate capsule. The Studio version produces an extra 10dB output over the Broadcast model by using a custom-wound Cinemag output transformer. The two versions are identified with either a red (Studio) or black (Broadcast) painted-dots marker at the XLR connector to indicate which model.

The Korby FET Studio microphone uses a newly designed 1-inch diameter Mylar gold-sputtered 3-micron diaphragm. All Korby mics use their own handmade and ear-tuned capsules, and the company does its own in-house sputtering. Said to "lean toward" the sound of a Microtech-Gefell M7 capsule, the Korby has a center-terminated front diaphragm (active side of the mic) and a rim-connected backplate.

The capsule itself is encased in a white colored Teflon "collar," and there are two vertical rubber straps that straddle the capsule's active surface area on the left and right sides. These straps also wrap around the back of the capsule in the same fashion. Said to protect the capsule from severe damage if the mic were ever dropped, this entire system is mounted on a pedestal machined from nearly invisible acrylic that rides on two rubber shock absorber standoffs attached to the top of the amplifier compartment below. With the update, this capsule can handle higher SPL—up to 140 dB—due to its new design. Designer Tracy Korby remarked that the capsule's output level can exceed his head amp's input capability—I found this when I got a little too close to the front head of a kick drum.

The FET head amp uses 0.8mA of phantom power current and is point-to-point, hand-wired using individually selected and tested premium components. The entire capsule and head amp assembly fits into the mic's stainless steel case with a finely weaved stainless steel mesh windscreen that is internally attached to the case with an adhesive. There are no attenuator or roll-off switches—only the Korby logo indicating the front of the mic.

The updated Korby FET retains the gimbal U-shaped mounting system but adds isolating rubber bushings on both sides of the body that shock-absorb vibrations that are transmitted up the mic stand. Overall, this new version is more rugged than before with accidental changes in the mic body's tilt in the gimbal less likely.

ON THE JOB

The Korby weighs about 380 grams, and its demure size makes for a less intrusive setup than larger studio mics for placement in front of acoustic guitar players.

The first of two different acoustic guitar recordings was of an Ovation Celebrity—a bright-sounding, steel-string acoustic that the Korby FET captured brilliantly. I used the studio's API 1608 console mic pre with minimal mic gain and no pad. When I raised the console's fader, my guitarist (who was playing on mic) immediately commented that the guitar's sound in his headphone mix was huge! I had the mic out about 4 inches over the 12th fret and aimed toward the sound hole. For loud strumming or to get more "body" into the recording from this thin-sounding instrument, I liked the mic directly over the sound hole and close in.

I found a new favorite microphone for nylon-stringed guitar at a project studio where I used the mic pre in an old Digidesign 002 interface. The new Korby FET sounds like a small-diaphragm microphone with good transient reproduction for a clear, thick and tonally balanced sound, as if EQ'd. Every nuance of this instrument (including fret squeak noise) was easily heard along with the reverberant qualities of the room my musician and I were sitting in.

The cardioid front lobe of the pickup pattern is wide in the low frequencies, and small changes in aim are definitely noticeable, though I never felt the need to do any corrective equalization; I would just move the mic around and try different distances, aiming and/or tilting the mic down from above the instrument.

Next, I used it as a mono drum

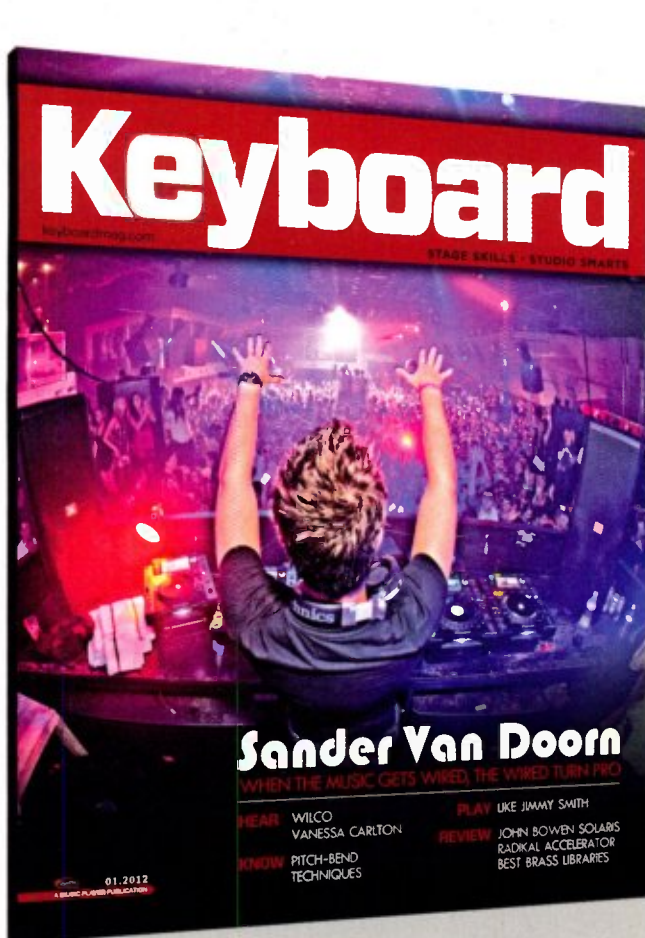


TRY THIS

One of the studios where I tried the Korby FET on electric guitar cabs has a terrazzo tile floor that's very hard and reflective. Instead of aiming the mic directly at the speaker cab, I went for a bounce off the floor in front of the amp. After tilting the amp at the floor and moving the mic and adjusting its angle, I arrived at just the right comb filtering sound—a 50/50 mix of both the direct and reflected sound off the floor that worked unbelievably well for a funky rhythm part. I put gobos all around this setup to reduce additional reflections off the studio walls—I was looking for only the mix of the direct and bounce off the floor in front of the amp.

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overhead, where the Korby FET's bright sound worked well. The hi-hat sounded clear with good "chick" presence, and the ride cymbal was captured with excellent stick definition. At about 3 feet above the rack toms, there was plenty of low frequency coming from the snare, toms and kick—all I can say is I wish I had a pair of them to try for overheads!

THE LOUD AND CLOSE

The Korby Audio FET is rated at max SPL of 140dB THD @ .5 percent with a self-noise of 17dB A-weighted; total dynamic range to the head amp is 122 dB.

For the rest of my testing of loud sources and close lead vocals, I used a Pete's Place blast filter between the mic and source. As with any thin-diaphragm capsule, you risk the diaphragm "bottoming out" against the backplate with any significant wind plosive from close-by vocalists, air pumping out of kick drums, loud guitar or bass cabs—whatever is moving air around the studio. Tracy Korby, who designed the mic's pressure plate, says it: "aids in reducing the pressure of the leading wave and serves as additional shock protection."

I think a good addition to the kit for any thin-diaphragm condenser mic like the Korby FET would be a form-fitting plastic sleeve for covering the windscreen section (and capsule) when storing, moving or setting it up.

I tried the Korby FET about 18 to 24 inches out in front of a 22-inch kick drum fitted with a DW KickPort. I used it exactly how I would use a Neumann U 47 FET in a covered bass drum tunnel. The microphone preamp gain setting in the ML530 Analog Mic-Line Preamp in the studio's Euphonix S5 Fusion was at minimum, and I captured more than enough beater attack and low-frequency content from the front head with no EQ. When time-slipped in Pro Tools, the Korby FET track and the AKG D12 VR placed in the KickPort added up to great kick drum sound.

Next I tried the Korby on a Fender Blues Junior amp in all the same mic positions I normally placed a Shure SM57 dynamic. It sounded great, although it exhibited none of the SM57's "compressed" qualities and not as much "nose," or midrange honk. I liked it for a more transparent sound that suited my player's clean lead playing style. For overdriven sounds, I used the proximity effect to dial

PRODUCT SUMMARY

COMPANY: Korby Audio Technologies

PRODUCT: Korby FET Studio Condenser Microphone

WEBSITE: korbyaudio.com

PRICE: \$1,800 (includes velvet carrying bag). Optional flight case: \$175

PROS: Excellent transient response for a very detailed sound.

CONS: Sensitive to plosives and requires a windscreen most of the time

in the low-frequency content level required—at a foot away from the amp I got a cabinet sound where the Korby FET pulled in the ambient room along with the amp's sound.

VOCALS

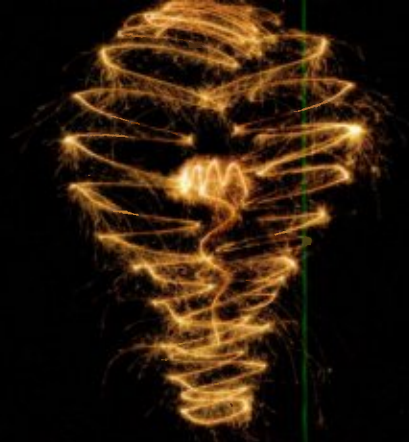
I recorded lead vocals with my male singer using a BAE 1073 channel strip. I used minimal gain—20 to 30dB gain and the 1,200 ohm input impedance position, and no EQ. (The Korby has a 500-ohm output impedance.) My singer had been using the studio's Neumann U 87Ai, which sounded good, but the Korby had a more open and airy sound with less of low midrange thickness. When singing close, the sound of the 87 is much more proximity-dependent than the Korby. Output levels of the two mics to the BAE were about the same and we tried to keep a consistent 4- to 6-inch mic distance and the same windscreen.

Particularly for vocal recordings, I do wish the gimbal mount assembly could be completely removed from the mic's body for conventional shock-mount usage. If you wanted to set up the mic vertically like a stage vocal mic stand, the mic's cable rubs the bottom of U-mount and sometimes limits final position tweaking.

GOOD INVESTMENT

The new Korby Audio Technologies FET Studio condenser makes a good workhorse and is great for capturing any source. It's excellent for drum overheads, acoustic guitars and certain vocalists who would benefit from the way it captures sound in a bright and detailed manner without need for EQ. ■

Barry Rudolph is an L.A.-based recording engineer/mixer who has worked on more than 30 RIAA certified Gold and Platinum award-winning records and three Grammy Award winners.



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CAKEWALK SONAR X2 PRODUCER

New Features, Plug-ins and Touch Integration



Fig. 1: The Skylight interface allows the user to break SONAR into custom, multiple views

The company originally known as Twelve Tone Systems, founded in 1987, changed its name after it became so widely known for its flagship product: Cakewalk MIDI sequencing software. Fast-forward to 2013, and we now have SONAR X2, the latest DAW to emerge from the Cakewalk team. X2 comes in three versions: Producer (\$499.99; reviewed here), Studio (\$149) and Essential (\$99). The software (PC-only) is supported on Windows 7 and 8 and comes in 32- and 64-bit versions.

Cakewalk made it easy for existing SONAR X1 users to dive into X2. X1 users do not need to un-install X1 to install X2. Plus, each installation can coexist independently of the other, allowing for the easy migration of projects. So if you are working on a project, or looking to tie up some loose ends in X1 before taking the plunge, you can do so without worry.

FIRST IMPRESSIONS

When opening SONAR X2 for the first time, you'll be greeted by the user interface named Skylight (see Fig. 1). Launched in X1, the Skylight interface is different from typical DAW layouts in that the screen is divided into compartmentalized sections. For example, the transport and control panel are located at the top of your screen; your standard-fare track view is in the main part of your middle window; the Console view is docked along the bottom of the screen, where you can also dock other panels such as MIDI interfaces and virtual instruments; and to the left is the

TRY THIS

Using a touch monitor and a standard monitor, duplicate your desktop instead of extending it, so that your two screens are identical. Keeping the touch monitor angled in front of you, use the touchscreen as a pseudo-trackpad. This allows for standard use with mouse and keyboard, but also incorporates touch gestures for quick swipe, scroll and zoom functions. I found this type of setup to be really helpful with editing, and in my opinion, it's the best way to use SONAR X2's new touchscreen support.

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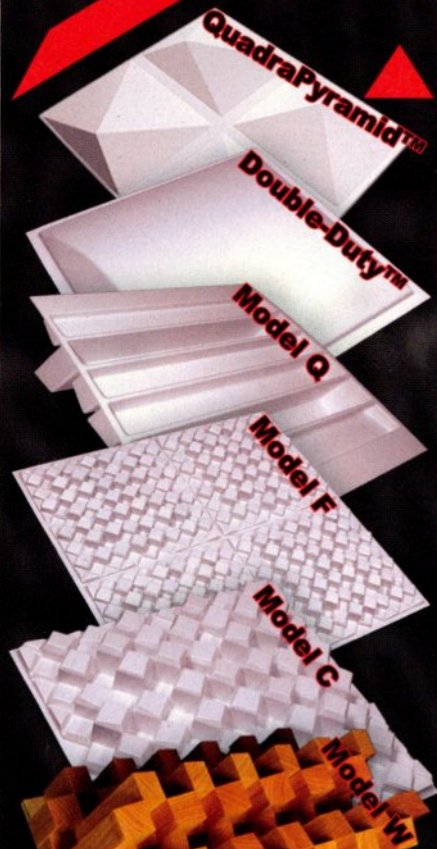
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Fig. 2: The ProChannel brings a fully customizable group of processors to every channel.

Inspector panel, where there is a full height view of any track that you select.

The drawback of this multiview approach is that the screen can become cluttered in a full session if you do not organize your workflow properly. The upside is that in SONAR you can float windows in a multi-monitor scenario. If you are using a single monitor or laptop, you will most likely need to revamp your setup to accommodate the available screen real estate. There are keyboard shortcuts (B, I, C and D) that allow users show/hide alternate views, as well as a Screenset module in the Control Bar. Screensets are essentially a set of 10 templates that can be used to accommodate just about any production scenario. I found that once I was absorbed into the X2 ecosystem, I was able to use this feature to pacify my OCD workflow. Ultimately, by day two of my test mix, I was zipping through edits and sample workflows that felt ergonomically sound, despite my initial impression.

BELLS, WHISTLES AND MORE

Console emulation that's legit? Yep—X2 has it. X2 Producer comes with the new ProChannel (see Fig. 2), a mix console emulator that offers a fully customizable channel strip on every channel. Full of presets, FX Chains, tube saturation, gain staging and inserts, the ProChannel is a virtual mixing console with an easy-to-use, drag-and-drop user interface. With three emulation models to choose from, this new version is a big improvement over its predecessor.

The FX Chain in SONAR X2 is an inter-

esting feature that allows one to combine and customize a series of plug-ins into a single modular chain. Although there are a variety of presets, users have the option to create their own go-to sounds and save them for later mixes. For example, in Cakewalk, you could combine a Compressor, Reverb, Delay and Channel Tools for an "Acoustic Guitar Spread." Before my test mixes, I went in and set up my own "clutch" FX Chains, which later helped to dial in my mixes more efficiently.

Cakewalk has also added two new stellar plug-ins. The first is a guitar amp-simulator called Overloud TH2. This plug-in suite has quite a selection of amps, cabinets and microphones, as well as a full range of stompbox-style pedals that you can add to your setup. It comes chock-full of presets, and has an easy-to-interpret user interface. With both integrated and stand-alone modes, the biggest surprise with Overloud TH2 was how little it impacted my processor. Historically, guitar emulation plug-ins tend to be a bit cumbersome when it comes to CPU efficiency. This is definitely not the case with TH2.

The second new plug-in is the Overloud Breverb SONAR VST. It is one of the best reverbs I have ever auditioned. Besides being efficient and low latency (which is great for tracking), it has flexible textures and depth, and sounds great in the mix. Cakewalk used a team of engineers in developing the factory presets to emulate the analog output of your hardware to better replicate the audio source. I don't often gush about stock plug-ins, but Breverb has some serious mojo working.

PRODUCT SUMMARY

COMPANY: Cakewalk by Roland

PRODUCT: SONAR X2 Producer

WEBSITE: cakewalk.com

PRICE: \$499

PROS: Easy to upgrade. Great new features. Stable software. Impressive sound.

CONS: Default layout is cluttered (multiple monitors recommended). GUI doesn't lend itself well to touch-screen support.

TOUCHING SONAR

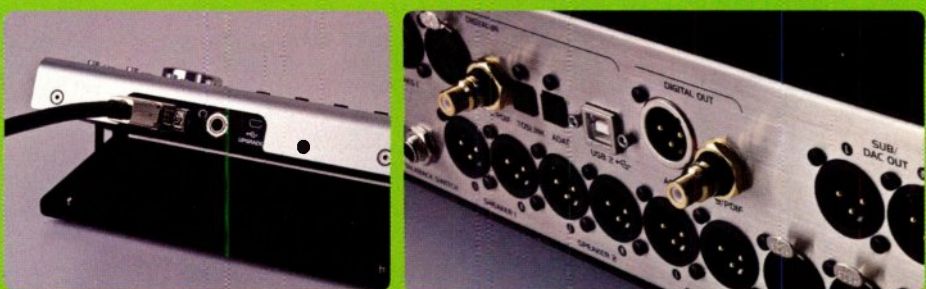
Last, but certainly not least, there is SONAR X2's X2a update, which takes SONAR into the realm of touchscreen genesis. From your standard touch gestures (pinch to zoom, swipe, etc.), to setting up your touchscreen as a pad controller for samples, an entirely new workflow structure is evolving. While fun and new, I will say—for the record—that touch gesture in SONAR X2 unfortunately felt like an afterthought. The Skylight user interface just doesn't lend itself to touch-based functionality. Pulling faders, opening menus, turning knobs and the other mechanical fundamentals of production just don't fall under the thumb, as I had hoped. Furthermore, while there are crafty workarounds, leaning forward to touch a monitor is not quite conducive to good posture across a lengthy mix session. Despite these minor qualms, I am excited to see how Cakewalk will transform touch from novelty to functionality.

A WORTHY UPGRADE

At first glance, X2 comes across as a shinier version of X1. However, once you begin to see the little perks and upgrades like automation and take lanes, snap grid, ProChannel, new plug-ins and touchscreen support, clearly X2 is more than just a pretty face. This attention to detail shows that Cakewalk is evolving as well as listening to the demands of their loyal user base.

For those using X1, the upgrade is definitely a worthy one. There are a few new toys, a seamless upgrade path that runs X1 and X2 in tandem, and an awesome upgrade to true 64-bit in the mix engine. For those who are new to the Cakewalk culture, I suggest downloading the demo version and taking it for a test spin. My final verdict on SONAR X2 is that while it may not have other DAW users abandoning their faves, the new SONAR is a powerful, efficient, stable DAW that once again presents itself as a feature-rich powerhouse right in there with the best of them. ■

Jami McGraw is a New Jersey-based musician, producer and IT professional.



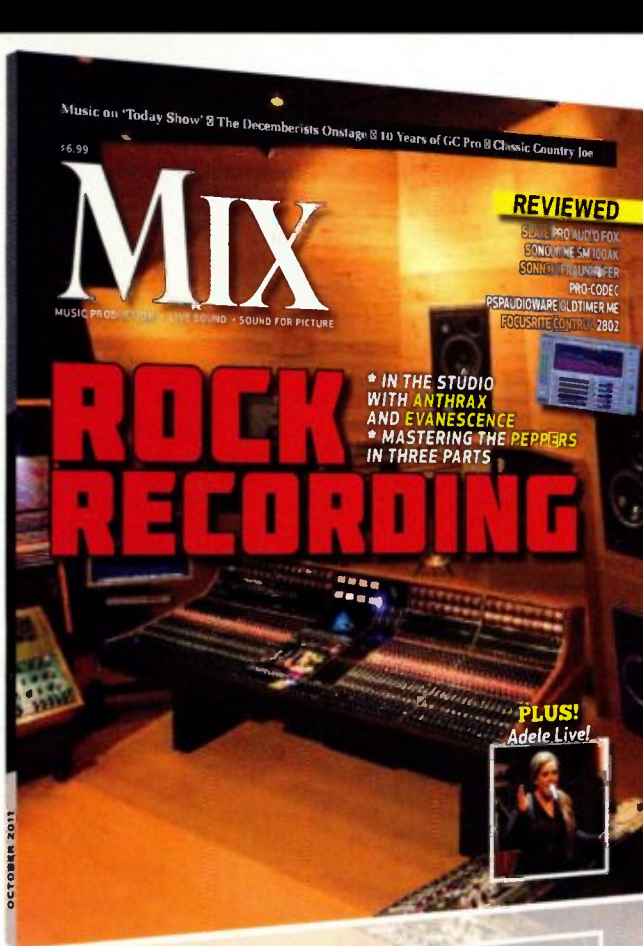
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SUMMER NAMM RETURNS?

By Kevin Becka



Last month, Summer NAMM was held for the first time in Nashville's beautiful new Music City Center, in what the organization is calling "the biggest Summer NAMM in five years." Being a new Nashville resident, I was drawn to the event, which I'd not attended since 2004, after which pro audio manufacturers opted out in droves.

From the late '90s, Summer NAMM had been on my regular trade show route through my years at *PAR*, *Audio Media* and *Mix*. It always had a refreshing, unique vibe; it was small, yet I could find many of the high-end audio companies I'd see at AES. Being a musician and engineer, the musical side was a plus—I'd always see some of the best musicians, engineers and producers the city offered at manufacturer-sponsored, off-site events. One year, Rodney Crowell and Vince Gill played for a small group of attendees at Ocean Way on the Row. At another site, I sipped moonshine and talked shop with audio heads at a listening party. Overall, the show had a good buzz (ha!) and it was time well spent.

Then came the blight. A combination of pro audio being sick of the arena, the show moving out of Nashville for four years, and the financial crisis slowed show attendance and exhibitors to a trickle. Even after it returned from exile in Indianapolis and Austin in 2008, times were still tough, with 2009 showing a 26-percent decrease in registration from the previous year. Can Summer NAMM un-jump the shark? It just might.

After this show, NAMM's Website reported 1,150 brands from 422 exhibiting firms and a 12 percent increase over last year's event—not huge numbers, but an uptick nonetheless. But numbers and a seasoned NAMM-goer's experience are two different things and after entering the venue with low expectations, I was surprised.

The new venue is gorgeous, and parking is plentiful and an easy in and out. The exhibition space is upstairs, the ceilings are high and there are huge windows letting in tons of ambient light. There are some tasty new restaurants within blocks—the fried Shrimp BLT at Southern is to die for (literally, if you eat enough of them). I didn't sample the food inside the Music City Center but there were plenty of good-looking options, including healthy fare. In true Nashville style, when I went to registration, the attendant said, "I remember your name!" (Being a Californian more than anything, the friendliness of this city still takes me aback.)

At first, entering the exhibit hall on Day 2 was disappointing. Attendance was light, and audio booths were organized poorly and

scattered throughout the space. The entire show was smaller, by far, than a single hall at Winter NAMM, but the quality of exhibitors was very good. It was mostly small distributors and owner-operated audio companies. PMI, Prism, Rupert Neve, Tonelux, Essential Sound Products, Pro Audio Design, MXL and Antelope Audio were there, to name a few. The bigger players like Sony, Korg and Yamaha were also present. The show had completely different feel than past Summer NAMMs; the floor was more like a large Potluck Conference, the Tucson-based audio event. Exhibitors had extended time to chat, and some had impressive new products. I had a chance to shake hands and chat with Chuck Surack and Mitch Gallagher from Sweetwater who were walking around the show.

Part of the experience of a great trade show is the learning factor, and I learned a lot. Dave Malekpour from Pro Audio Design told me about a remote speaker tuning he did for a studio in Australia. It was a multi-hour Skype session for a client who bought the Augspurger GA-215VS-A3 monitors (which sounded great in the booth). It was a test case offered to save the client about \$9,000, and it ended up being the solution—they were pleased with the results.

I had a great chat with Karl Kusssmaul of Sony about the company's PHA-1 portable headphone amp. It has a built-in D/A converter (24-bit/96kHz), mini jack, micro USB, iOS device inputs and 1-inch and 1/8-inch outputs, and a built-in battery. It is a pocket unit that steps up the quality of a portable listening device.

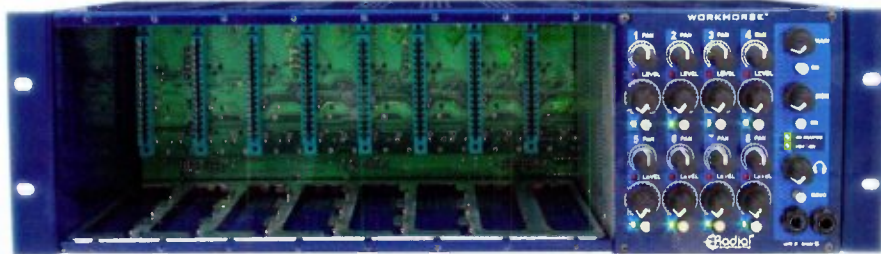
I got a sneak peak at an IO/preamp/converter coming out later this year (I promised not to name names, but it's impressive). I also saw the latest version of a product I'd been following for a few years now. It's not strictly audio but it affects what we record—guitars. Tronical has brought its tuning system down to a much simpler system where you don't have to alter your instrument. Calling it elegant is an understatement. The microprocessor-controlled, servo-based tuners all sit on the headstock and it is amazing. I'm a guitar player and I immediately "got it." Check it out at tronical.com.

So has Summer NAMM returned? I was impressed. Another factor that may drive its return is cost of exhibiting, which, according to one exhibitor, was very affordable. The show, on the last day, was mobbed. It was open to the public (anyone can get in for \$25), making it seem more like Winter NAMM. Next year it will grow for certain and I think this show may be a contender. It's well between other big audio shows, it's well-positioned, back where it should stay, in the greatest city for music and audio recording on the planet: Nashville, Tennessee. ■

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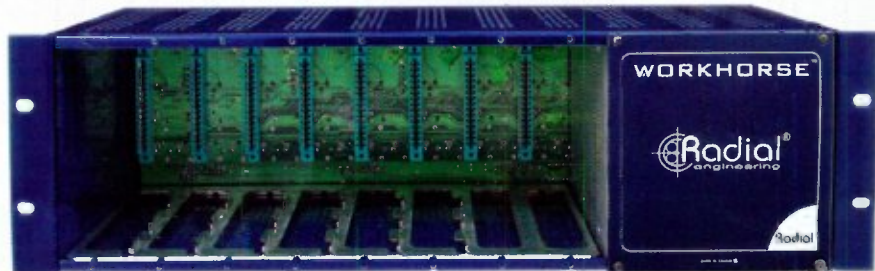
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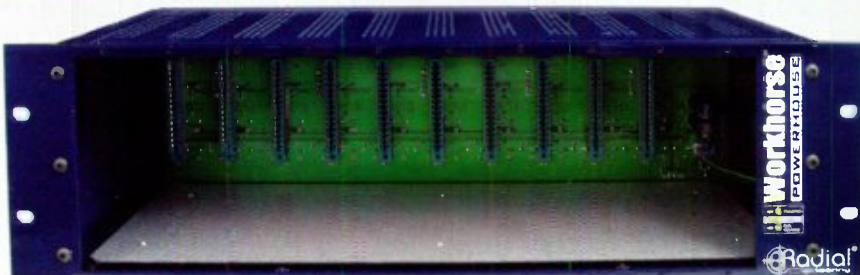
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