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The Record Plant / Los Angeles

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features

On the Cover: Record Plant (L.A.). Vincent Van Haaff redesigned Redesigned Record Plant's SSL 1 (9000 J) room, where diffusers on the back wall were replaced and a center baffle was added. **Photo:** Ed Freeman. **Inset Photo:** Steve Jennings.

TALKBACK

Can you believe it? *Mix* turns the big 3-0 this year, and we want to celebrate with you. Tell us your favorite recording/live/post/tradeshow—whatever!—moment from the past 30 years of pro audio. Talk to us by e-mailing mixeditorial@mixonline.com.

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Audio Retrospectivizing

Lately, we've been doing a lot of retrospectivizing around here. You see, next month marks *Mix's* 30th anniversary (we've got some cool surprises planned for the October issue), and we've been doing a lot of research for the TECnology Hall of Fame, looking back over decades of pro audio history. Yet the console—such as The Record Plant's Solid State Logic 9000 J that graces our cover—is one link that's remained *relatively* constant over *Mix's* three-decade run.

The key word here is "relatively." SSL debuted its first 4000 Series board (complete with Studio Computer) in 1977, also 30 years ago. Combining track-arming and dynamics on every channel, computerized automation and transport control with the in-line design that MCI's Jeep Harned and Dave Harrison pioneered five years earlier, the SSL 4000 ushered in the era of the modern studio console. But technology never stands still. High-performance analog and digital consoles, and DAW-based production have changed all of the rules.

The irony today is the feasibility of making a top-selling album without using a console at all. With some outboard preamps, a monitor controller and a reasonably equipped DAW, nearly anything is possible.

Yet the concept of screen-based, "in-the-box" mixing is hardly new. In fact, one of the first such systems I recall seeing was exactly 20 years ago, with visionary/futurist/wizard Todd Rundgren demo'ing WaveFrame's AudioFrame DAW at the 1987 AES convention in New York, showing the reality of the concept. Although almost any mix is possible with offline automation editing, my impression—then and now—is unchanged, and mixing with a mouse is a chore. In certain applications, the technique is great, but this is not the way humans (I can't speak for other species) were intended to mix music.

Legendary engineer/producer Tom Dowd is credited with first having the idea of using linear faders—rather than rotary knobs—for mixing music. Dowd felt that mixes shouldn't be static (a practice he affirmed with countless great records in his lifetime), and by moving the faders during the mix the engineer could respond to the performance.

Thankfully for the rest of us, Dowd's fader caught on with console-makers, revolutionizing the art of mixing. And the ergonomics of fader and hands-on control still applies to today's mixer/controllers. Modern consoles have the ability to pack hundreds of inputs, effects, routing and more into ever-shrinking packages, with owners selecting the size of a control surface for their needs. But even after the sale, your "new" console might be only a software update or a couple DSP cards away.

At the same time, our old friend analog maintains its popularity—as high-performance designs (vintage and new) or as digitally controlled systems combining full console functionality with a layer devoted to workstation mixing. Fortunately, there's no strictly defined way to work. Even within a single project, some tracks might be mixed in the box, others outside the box and still others as a hybrid.

Technology moves on, but whether using fingertips, VCA/DCAs or mouse control, having options makes life easier for all of us.

George Petersen
Executive Editor

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World Radio History

Letters to Mix

NATIVE PROCESSING, HERE I COME!

Thank you for a fine article ("Pushing the Limits of Native Processing," by Tony Nunes, July 2007), educating us on the ever-increasing capabilities of software-based DAWs. Multicore, multi-CPU systems, faster disks, gobs of RAM, etc., are all good things to understand for folks who are tracking and mixing music. The costs of these commoditized computing elements is far less than a dedicated hardware-based solution.

A couple of questions: Did you ever take a look at the RAM usage during your tests? I'm assuming it was maxed out all the time, but what results might more RAM have made on latency and "snatting"? A GB more of RAM is a cheap way to upgrade a system. Also, I got confused when you switched from 88.1 to 96 kHz; the transition wasn't clear. Was there much of a difference in system load between them?

My take-away from your article is that it's a good time to begin to build a total solution around a software-based computer system that has the power to handle a decent number of inputs and software plug-ins. Hardware-based systems don't require as much fiddling around to tune a performance, but once you get a solid configuration, a software-based solution can handle a reasonably sized session. This has a dramatic affect on where limited funds are spent. Now we choose to put more into better preamps, clocks, converter and monitors, to name just some areas that always seem to cry out for upgrades.

Francesco Bonifazi

Francesco, thanks for the interest. To address your RAM question, I recalled one of the original tracking sessions and ran an app

called SpeedUpMyPc, which provides real-time RAM-allocation monitoring. Surprisingly, the 88.2kHz recording session was only using 400 MB of RAM, regardless of buffer setting. Remember, I couldn't lower the buffer below 128 samples without experiencing snatting.

The CPU meter was being affected the most during buffer changes. However, as I installed plug-ins, the RAM meter began climbing. For instance, two Altiverb 6s bumped the meter up to 560 MB. In fact, it took three Altiverb 6s, three Waves TrueVerbs, three Waves Renaissance channels, eight SONAR VC64 channels and two instances of SONAR's Session Drummer 2 for the RAM meter to finally hit 1 GB. To compensate, I did have to increase the buffer setting to 384 samples to successfully record without oddities.

RAM is always a good thing, but during a tracking session, a fast CPU and good interface drivers will reduce latency and snatting. If you're planning on using numerous plug-ins during tracking, a RAM-fortified system is essential. As for mixing, increasing the buffer alleviates CPU stress, and the more RAM the better for tons of plug-ins and virtual instruments.

Regarding your question about the 88.2 to 96kHz transition, in the feature you'll notice that I am referring to two different sessions with two different interfaces. As there are many interfaces from which to choose, I thought it would be beneficial to use at least two diverse setups. As for the difference between the two sample rates, in my opinion there isn't much difference both sonically or on taxing a system. Some prefer 88.2 kHz because it's easier math for algorithms when downsampling to 44.1 kHz.

—Tony Nunes

AH, THE GOOD OL' DAYS

I wanted to commend *Mix* for the "Classic Tracks" article ("The Ventures' "Walk Don't Run") in the July 2007 issue. I was gratified to see The Ventures getting a much-deserved pat on the back for their many contributions to popular guitar music. There's nary a guitar slinger alive today that didn't get some ideas or techniques from these old pros. I can recall back in 1964 as I sat in my dad's real estate office with a Fender Mustang in my lap, wondering what to do with it. The very first thing I did was put on a Ventures album and pick out the bass line by pressing a finger on the E string and searching around—with the guitar still laying in my lap!

In a few months, I had learned the chord progression of "Walk Don't Run" and "Windy and Warm," and then started picking out the leads. What a wonderful feeling it was! It was like I was an explorer and had discovered a new country. In later years, I learned that feeling was one of the absolute truths to music: communicating to others with the thoughts and feelings evoked from simply listening to or sharing a good melody. And those guys didn't have "little black boxes" to create excitement for the listener; they did it with style and feeling. Alas, much of that concept is lost on many of today's current crop of players.

It was kind of ironic for me to read this article, as just a week or so ago I dug out all of my Ventures albums—I have 30 of them—and made a "best-of" CD for my car. It was tough picking out 70 minutes of music from that huge list of songs. And it also reminded me that a couple of years ago, I shared my love for instrumental music with an old friend, Stephen St.Croix. He and I both placed "Walk Don't Run" and "Green Onions" at the top of our personal best list. I made him a special instrumental CD and sent it to him. Last year, after his passing, [his widow] Teresa found that CD, still in the player of his favorite car. I hope she doesn't mind my sharing this little tidbit with you and your readers.

Bob Ketchum
Cedar Crest Studio

TALKBACK

As Mix celebrates its 30th anniversary this year, we've asked our readers to tell us about their favorite pro audio moment—in recording, live, post, tradeshow, whatever!—in the past 30 years. Here's one of those moments:

Up until this day, the key experience for me in music listening/engineering was when I was an intern at Mad Hatters Studio in L.A. Bernie Kirsh (longtime house engineer for Chick Corea) was mixing something on his Tannoy Little Golds (I think they were customized), and I was just blown away. I couldn't believe that recorded music could sound this good! That's how it all started for me, and I still remember the chills that moment gave me as if it were yesterday.

Jan Kroeni

> Send Feedback to *Mix*
> mixeditorial@mixonline.com

CURRENT

BREAKING NEWS: CHEROKEE STUDIOS CLOSES
SPACE REPLACED WITH MUSICIANS' LOFTS

Cherokee Studios (Los Angeles) closed its doors on August 31, 2007. The three-studio facility on Fairfax Avenue will be demolished to make way for a group of live-work musicians' lofts. The studio's current owners—producers Dee, Joe and Bruce Robb—will retain most of the studio equipment, including one of two original Trident A-Range consoles and two pairs of custom Augspurger monitors; the other vintage Trident will be put up for sale soon.

Says Bruce Robb, "I'm nostalgic about the end of an era, but I'm in the middle of a movie and have three albums to finish. So, luckily, I don't have time to get too sentimental right now."

The new lofts—a collaboration between the Robb brothers and developers RE-Think Development—will be built with "green" materials and will be acoustically designed to facilitate home recording.

Cherokee Studios' Fairfax location opened in 1975 when the facility was acquired from MGM Records. Studio 1 (right), with its 35x58-foot live room and five iso booths, is remembered from its MGM days as Frank Sinatra's string room. In addition to Sinatra, the studio's long list of clients comprises a who's who of pop and rock, including David Bowie, Aretha Franklin, Elton John, Paul McCartney, Bob Dylan and Michael Jackson.

HENRY EDWARDS, 1952-2007

Industry veteran Henry Edwards passed away on July 11 with his family around him. His decades-long pro audio career began at age 20, when he joined RG Jones as a technical engineer, working on location jobs with the BBC and independent television companies before moving on to Trident Studios in 1977 as technical manager of the recording studio, mix room, mastering and disc-cutting facilities.

There, he met a young Steve Angel, now HHB's sales director, who had just arrived for his first day at work. "I went for an interview and they started me making tea right there and then," recalls Angel. "Henry was kind enough to show me where the kettle was, and when he returned the next day he was surprised to find that I'd been there all night! I had to prepare for a Brand X session later that day, and I'd never seen a multitrack tape recorder before, let alone lined one up. If Henry hadn't been patient enough to show me how, my career in the recording industry probably wouldn't have lasted more than 24 hours."

In 1981, Edwards joined CTS and Lansdowne Studios, where, as technical manager of the recording complex, he witnessed the transition from analog to digital recording, helping the studio become one of the first all-digital multitrack recording facilities.

According to Chris Hollebone, then at Sony, "They were the pioneering days of Sony's CD mastering systems and DASH digital multitracks, and Henry was very much in the hot seat. While the feedback we received from some early adopters was perhaps understandably a little emotionally charged, the feedback we received from Henry was always carefully analyzed, fully documented and professionally delivered. Henry played a very important part in the digital audio revolution of the 1980s, and, of course, he did it in his typically modest and understated way."

In 1992, Edwards took a position as technical manager at Masterpiece Mastering (formerly Copymasters) with responsibility for all technical aspects of the nine-room facility. Six years later, he joined HHB as new products manager, where he worked on the PortaDrive and FlashMic, among other products, and developed the nickname "The Old Speckled Henry."

DIGICO BUYOUT

In addition to numerous weddings and other festivities held on July 7, 2007, this date marks the completion of DiGiCo's management buyout. The new management team at DiGiCo comprises, from left, marketing director David Webster, company secretory Helen Culleton, technical director John Stadius and managing director James Gordon; chief executive Bob Doyle is not pictured.

N.Y. NARAS EVENT
ALTERNATIVE RECORDING

Ryan Chohanovich of eSession leads an action-packed demo at the New York City networking event, hosted by the Academy's P&E Wing.
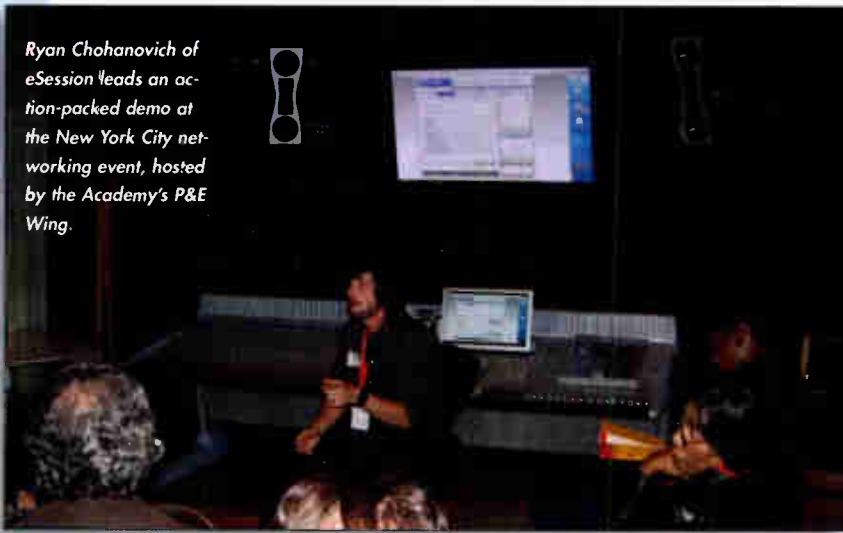
The New York audio engineering community came together again in June at the behest of the Recording Academy's New York Chapter and Producers & Engineer's Wing (www.producersandengineers.com) and eSession (www.esession.com). The location for what is emerging as one of the region's premier industry networking events was XM Productions/Effanel Music at Jazz at Lincoln Center.

Dubbed "New Alternatives for Professional Recording," the event continues to be a prime opportunity for producers, engineers and musicians to meet face to face. In addition, visitors had the opportunity to experience an info-packed demo led by eSession's Ryan Chahanovich, who showed the deep potential of eSession's highly advanced platform for enabling online production and collaboration.

Hal Winer, principal of studio BiCoastal Music, made the trip from upstate Ossining, N.Y., to attend the event. "The industry is changing so fast," Winer said, "and no one really knows what it's going to look like in the future. I thought it was my responsibility to investigate all of the options becoming available. eSession seems like a model that will really allow a lot more people to collaborate.

"The networking was totally invaluable," he continued. "It was a great chance for musicians and production people to be able to meet up outside of the studio, and that forum isn't available that often. This was a great get-together." —*David Weiss*

ORAM LAUNCHES
eMASTERING

Inventor/designer John Oram (below, right) and fellow industry veteran and multi-Platinum–selling record producer Ted Carfrae (left) have created Oram eMastering (www.orammastering.com), an online mastering company. Carfrae will serve as the start-up's chief mastering engineer.

"This new venture represents further expansion within the professional recording industry and is a natural forward leap for our studio," said Oram. "The power of the Internet enables high-quality transfer rates and extends our service facilities globally. The opportunity to work with Ted Carfrae and his many connections is indeed a privilege."

INDUSTRY NEWS

Non-Stop Music (Salt Lake City) appointed **Alice Kinnier** to director of music for the New York office...**StarCity Recording Studios** (Bethlehem, PA) added **Julie Miller** to its engineering staff...New VP of marketing/product management at **AKG** (Vienna) is **Alfred Reinprecht**...Sales for both **Soundcraft** and **Studer** (Hertfordshire, England) is now headed

Julie Miller

by **Bruno Hochstrasser**, who is Soundcraft Studer Group executive VP of sales, as well as president of Studer...Industry vet **Scott Pizzo** joins **EAW** (Whitinsville, MA) as director of U.S. sales...**Barry Seiden** joins the **Stanton Group** (Hollywood, FL) as national sales manager for Stanton DJ and Cerwin Vega Pro...**Harris Corporation** (Cincinnati) news: **Chris Pannell**, director North American radio sales; and **Al Jason**, district sales manager...**Symetrix**

(Mountlake Terrace, WA) fills its newly created Western regional sales manager position with **Tim Murray**...Stardraw.com's sales partner **American Music & Sound** (Agoura Hills, CA) hired **Scott Messler** as national sales manager for the installed products division...New faces at **Bosch Communications** (Burnsville, MN): **Antony Chliaropoulos**, sales application engineer; and **João Roberto "Cotô" Guarino**, sales engineer for South and Central Americas...Oxnard, CA.–based **L-Acoustics U.S.** hired **Nikki Keller** as sales and marketing coordinator...New distribution deals: **Allen & Heath** (Agoura Hills, CA) appointed **Sanecore Limited** (Hong Kong) as its distributor in China; **Face Audio** (Sandy, UT) added **Pro Media Marketing** (Ann Arbor, MI) and **Audio Source** (Redmond, WA) to its rep line; **HME** (San Diego) added **Q-99** for Slovakia, **TVC** in the Ukraine, Belarus, Kazakhstan, Latvia and Lithuania, and **Zimele Broadcasting Services** (Johannesburg, South Africa); and **Holophone**'s (Toronto) first sales rep in the Czech Republic is **Robert Dufek**.

CURRENT

AL KOOPER TO RECIEVE LES PAUL AWARD

Musician, producer and composer Al Kooper will be honored with the prestigious Les Paul Award at the 23rd Annual Technical Excellence & Creativity Awards, to be held on October 6, 2007, at the New York Marriott Marquis. Sponsored by Gibson Guitar, the award will be presented by Paul.

Hailed as a musical innovator for nearly 50 years, Kooper has played a pivotal role in some of rock's historic moments. Well known as a founder of both the Blues Project and Blood, Sweat and Tears in the 1960s, Kooper's work as a producer and musician has made a lasting impact on the soundtrack of some of rock's greatest hits. As a producer, he is best known for discovering Lynyrd Skynyrd and producing their first three albums. He went on to play sessions with Jimi Hendrix, The Who and George Harrison, and teamed with guitarists Michael Bloomfield and Stephen Stills to record Top 10 album *Super Session*. He has produced albums for such artists as The Tubes, Nils Lofgren, Ray Charles, B.B. King, the Staple Singers, Bob Dylan, Joe Ely, Green on Red and many others. Kooper also scored Hal Ashby's first film, *The Landlord*, John Waters's *Cry Baby* and Michael Mann's TV series *Crime Story*. Most recently, Kooper released a critically acclaimed solo album, *Black Coffee*, and his memoir, *Backstage Passes & Backstabbing Bastards*, will be republished in spring 2008.

TEC TICKETS ON SALE

Tickets for the 23rd Annual Technical Excellence & Creativity Awards are now on sale. *Letterman* bassist Will Lee will host the show for the third consecutive year, backed by the all-star 2Cold Chili Bone TEC Band. TEC Awards will be presented in 25 categories, including the newly introduced Sound Production for Interactive Entertainment; and renowned broadcast mixer Ed Greene will be inducted into the TEC Hall of Fame, sponsored by Dolby Laboratories.

Tickets are available online at www.mixfoundation.org or by calling 510/985-3214. Proceeds of TEC Awards benefit programs for hearing awareness and audio education, including the annual TEC Awards Scholarship.

GOOD VIBRATIONS, THE SEQUEL

Hollywood's hallowed Western Studios, most recently known as Cello, will be the scene of a grand re-opening in January, following an ambitious 22-week renovation. The renowned Philippe Starck was brought in to design the nontechnical areas, while the studios will be left just as they were. "It's going to be magnificent," promises new owner Doug Rogers of EastWest. "It was definitely worth preserving something that sounds so magical." The buzz is already starting; word has it that Rick Rubin asked for an 18-month lockout on the big room, which EastWest politely declined to give him.
—*Bud Scoppa*

CORRECTION

In the June 2007 "Class of" feature, the photo for Great Divide Studios should have been credited to David O. Marlow.

A **Symphony** that fills the dance floor.

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Vincent di Pasquale
Producer, Artist, Remixer

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Recent projects:
Nelly Furtado, Justin Timberlake
Mariah Carey, Missy Elliott, Nadia Ali

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SOUND AMAZING

Record Plant Los Angeles

By Tom Kenny

It's always been about the vibe. From the moment maverick owners Gary Kellgren and Chris Stone opened Record Plant L.A. in 1968, ushering in an entirely new level of client service and rock 'n' roll comfort, the vibe was ready and waiting. Jimi Hendrix felt it; so did John Lennon and Paul McCartney. Frank Zappa, The Eagles, Bruce Springsteen and three mega-years of mid-'70s Stevie Wonder. Prince, Michael and Janet Jackson, Pearl Jam. Celine, Mariah and Barbara. Nine Inch Nails, No Doubt and the Black Crowes. And just in the past few years, Kanye, Christina, John Legend, Evanescence, will.i.am and everything that producer (now Geffen/A&M head) Ron Fair brings through the door.

But it's not just the history or the amazing run of 38 years that we pay tribute to on this month's cover. We also salute the Record Plant's intangible vibe, which has remained vital all these years, yet continues to stay fresh.

"The overriding philosophy has always been to make this place a creative workshop, a place where artists can bounce off each other and interact on a creative level," says Rick Stevens, a former record company head and co-owner since 1991. "That's something you can't get at home, and I think that's why when you look at the artists who have come through here, they've been the top acts of their era. The access, the social and creative interaction will always be a big reason people come here."

"It's no different now than it was back when I started," says Rose Mann-Cherney, who virtually changed the profile of the modern studio manager before becoming studio president in 1998. "People made deals in the halls and popped their heads in to hear mixes, whether it was The Eagles or Guns N' Roses. And today, you just know that Ron Fair will be arranging strings for John Legend in a couple of weeks. You will see Tal Herzberg bouncing ideas off Pharrell."

Stevens and Mann-Cherney form a dynamic team, with the former handling business and long-term planning, the latter operations. But it hasn't been an easy past five years in big-studio world, both freely admit, as CD sales have dropped, label budgets disappeared and personal studios prolifer-

ated. Having weathered the storm, however, with the past two years being "very good, thank God," they have redone their flagship room (SSL-1, on the cover) and laid the groundwork for Record Plant South Beach (Miami).

"Rick and I are rolling the dice," Mann-Cherney says. "I am sick of the doom and gloom, and you can print that. It's been rough and it's

The monitor wall was rebuilt to complement the SSL 9000 J installation; the four plasma screens have been dubbed "the fish tank."

a fight to the finish, but I don't think the record industry is dying. The record industry is reinventing itself, redefining itself, and we have to do it with them. I'm proud of the fact that we're able to remodel our studios at this time. It's a real achievement."

The Record Plant was built on client service and ambience, on knowing who needs an air purifier, who doesn't like to sing with the A/C on and who likes only green M&Ms. At the same time, the technical backbone, with an impeccable attention to maintenance and readiness, has always provided the foundation for seamless, flexible, creative music-making.

The room was originally designed by Peter Grueneisen, and in December of last year, Vincent Van Haaff was called in to "update" SSL-1 to accept an incoming 9000 J Series. The front monitor wall was completely rebuilt, with the center custom Augspurger removed and replaced by a four-plasma array (above; dubbed "the fish tank"). The J was pushed forward just a bit and some outboard was moved to a sidewall. The producer's desk moved up, cabling was reconfigured and then they turned to the back wall.

"The room was well designed in the first place," says Van Haaff, of Waterland Group. "But there was an area of shallow RPG Diffusors in the rear that seemed to be overly reflective in the midrange. We ended up removing the largest portion. The unusual U-shaped couch helps there. We also added dual EAW subs. We didn't have to do much to the ceilings; most of my work was from

the waist down. [Laughs]"

As Van Haaff finished up at the end of 2006, 28-year-old Jason Carson led the install of the wrap-around 9000 J in the five days between Christmas and New Year's; a Pussycat Doll was booked for January 2. A graduate of Berklee College of Music, Carson served as a runner for two years before choosing tech over engineering. Mann-Cherney, a shrewd judge of talent, tapped him as chief engineer three years ago.

"We had a number of options," Carson says. "We had straight control surface, analog or something in between. The clients demanded analog. We found the right board in England; a single owner. Then the company we dealt with in getting it over, Sonic Circus, was amazing. It was in great shape. We just had to extend the cables and change the patchbay layout. It's been fantastic. A pretty amazing transition in this day and age that Rick and Rose are willing to make."

And it just keeps moving forward for Record Plant, the "Lady of Rock" that always stays young. Next stop is South Beach, Miami, a second home for Stevens since his UM days. The property is in escrow at the time of this writing, and legendary Latin producer Rudy Perez will be a partner and creative director. Three world-class rooms, with an umbrella for seven to eight on-site artist-owned Studiominiums™. More will follow, you can be sure. Bring on the vibe. ∎

Tom Kenny is the editorial director of Mix, Electronic Musician *and* Remix *magazines.*

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mixing strings

ACCENTUATING TIMBRE AND AMBIENCE IN POP TRACKS   BY KEVIN BECKA

ELTON JOHN'S "PHILADELPHIA FREEDOM." DIANA ROSS & THE SUPREMES'
"SOMEDAY WE'LL BE TOGETHER." TRAIN'S "DROPS OF JUPITER." PRINCE'S
"PURPLE RAIN." WHAT'S THE COMMON THREAD? ALL OF THESE SONGS HAVE
A MEMORABLE STRING TRACK. WHILE STRINGS ARE NOT CONSIDERED TO BE
THE FOUNDATION OF TODAY'S MUSIC AS THEY ONCE WERE IN THEIR GLORY
DAYS, A WELL-MIXED STRING SECTION CAN STILL LIFT A SONG TO NEW
HEIGHTS—WHETHER THE STYLE IS POP, ROCK, COUNTRY, BLUEGRASS OR JAZZ.

his article is not about orchestral mixing; rather, we're going to concentrate on incorporating a string section, quartet or soloist in a popular music setting: with drums, bass, guitars, vocals and even other ensembles. We're going to talk about overcoming unique string-mixing challenges such as building "sections" with a single player or dealing with audible click tracks. Tackling these little issues sets a great string track apart from a merely good one. For polishing these tracks, we'll outline techniques for using creative reverb tweaks to give your strings their own ambient identity, as well as panning techniques to draw the listener in by balancing the strings as a section and within the overall mix.

PANNING FOR FOCUS
After the faders come up, your first decision involves panning. Placing the strings in the overall mix will affect other decisions, such as how much and what type of reverb, or if you need to boost or cut EQ to make the strings heard above the other players. Traditional orchestral panning (violins left, violas center and cellos and basses right) should be your starting point, but when strings are integrated into a pop ensemble this approach can sometimes cause instruments in the string section to compete with the other instruments in the mix.

Placing the basses to the right, for example, drags the low end to the side, taking the focus off of the kick and bass guitar. The E string on a

double bass is 41.2 Hz, which is squarely in kick drum fundamental and bass guitar territory. Panning all of the violins to the left takes the listener's attention off of the main ingredients, such as a center-panned vocalist or solo instrument because they also often reside in the same range. Instead, pan your string bass parts to the middle to center the mix's lower end. Also, if your parts are all on separate tracks, start with them panned in the traditional way but pan some of the parts to their opposite side for a smoother balance of parts across the stereo image. (See Figure 1 on page 24.) This method of panning the strings across the center will make the individual parts more prominent because they're not fighting for shared frequency space in such a tightly panned group, but are spread across a wider soundstage.

If you're mixing a band that has varying soloists, such as a bluegrass or jazz group, then start by panning the instruments as you'd see them onstage. This method of panning works especially well if the players are trading solos or even trading fours, because the listener hears the solos coming from different points across the soundstage, just like they'd hear the band if they were playing live.

Traditional panning works well with a string quartet: violins left and left-center, viola right-center and cello right. This arrangement is effective because the cello doesn't present as strong of a low-end presence as bass, and it won't draw as much attention away from the center of the mix. This grouping also

mixing strings
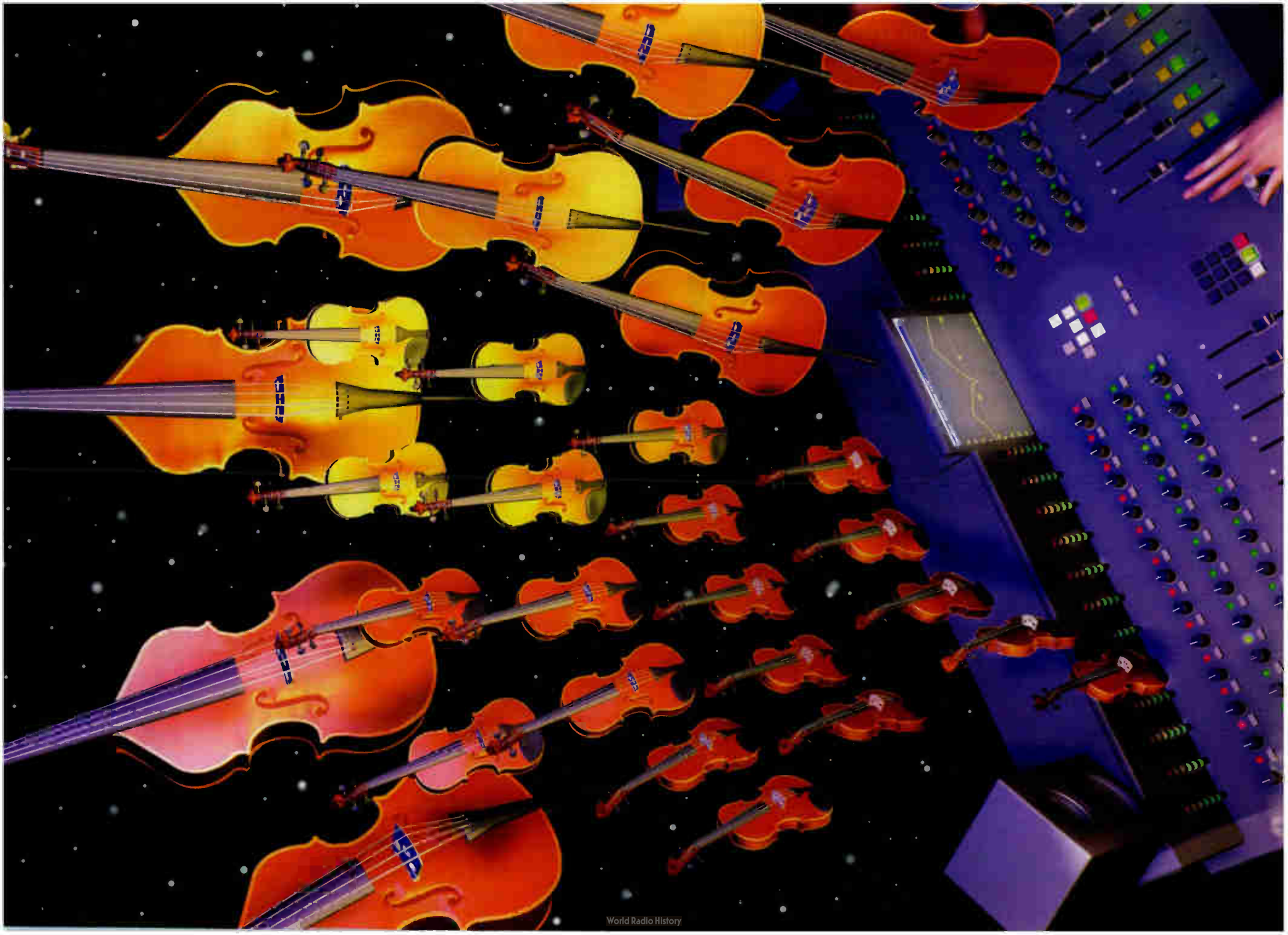
gives the quartet a "human" footprint in the track, a familiar aural element within the overall "band." Panning the quartet wider or narrower can give you even more latitude when trying to distinguish strings from competing instruments in the stereo space. For instance, if the strings are masking stereo background vocals, then pan the vocals in tighter and the strings wider. Or if the strings are sounding as wide as a house, pan them in tighter to give the group a more intimate feel.

EQ AND COMPRESSION

Once you've determined your panning scheme, you can decide if you need EQ to smooth out any strident spots in the tone or give individual parts a clearer identity in the mix.

Strings have inconsistent timbre across their range and some notes can be harsh and brittle sounding. This is attributable to instrument construction, bowing style and even the room, which can accentuate unflattering tones. "Screechy" quality is especially noticeable with a solo part; a section tends to mask individual timbre problems.

Harshness can also be minimized with selective mic placement while recording (see "Before You Mix," below) and during the mix by automating an EQ plug-in to smooth out problematic notes. You don't want to throw out the baby with the bathwater by cutting a band of EQ for the entire length track just to fix a momentary problem. First, find the offending band by looping a harsh section and boosting the EQ at a middle Q setting of 5 to 10. Once you narrow in on the target, write the EQ gain flat for the entire song, pulling the band's gain down only when the brittle notes appear.

After you've EQ'd away any tonal inconsistencies, check for notes that dynamically jump out of the mix. Here, try some mild compression to help keep the volume smooth over the entire track. For this application, if you are using a hardware box, choose a compressor that controls gain without putting too much of its own personality into the mix—heavy-handed compression can suck the dynamic life out of your mix. In this case, you want to lean less toward something that will change the tone like a Distressor and more toward something like the GML 8900 dynamic range controller or Manley Variable MU.

No matter which compressor you use, setting choice is critical in maintaining transparency. Set the ratio to a mild 2:1 or 3:1, find spots in the track where the part jumps out and set the threshold so that the compressor catches just the top volume offenders. Use a soft-knee setting on the attack and set it to a lazy 40 to 70 ms so the compressor doesn't clamp down on the signal immediately. If you're using a plug-in, automate the threshold so it's higher than the average level of the track but lower than the dramatic peaks. As an alternative to compression, ride gains during the mix by using automation. By just grabbing notes that stick out, you can avoid introducing the sonic signature from an extra plug-in or device onto the overall track.
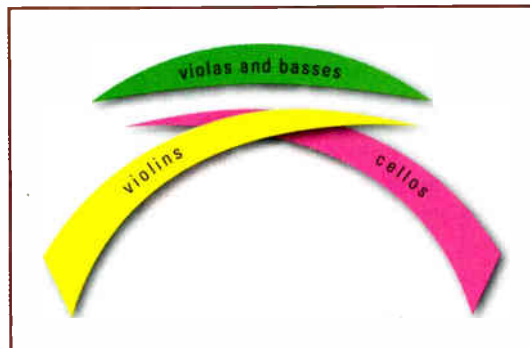
Fig 1: Pan parts to their opposite sides for a smoother balance across the stereo image.

USING "A, T & T" TO INDIVIDUALIZE LAYERED PARTS

When you need to create many layered parts from a single player on one instrument, it's easy for your finished "section" to sound one-dimensional. Break up this tonal monotony by varying ambience, tone and timing. By using standard recording techniques, you can introduce variances in timbre, room sound and timing to the parts as you record or even afterward during the mix. This way, you will introduce individuality in the parts, making them easier to distinguish and adding a richness of tone lost through repeated layering of the same instrument.

When layering a single player, use two different mics with different recording chains. Choose mics that display different personalities; for instance, one omni and one cardioid. The omni will capture more of the room, while the cardioid will sound tighter and more intimate. Achieve more variations in tone by setting the mics up on either side of the instrument: one at 2.5 feet above and the other at 3.5 feet above the instrument. (See diagram at right.) For more flavor, try one tube preamp and one solid-state unit; the tube preamp will exhibit more 2nd-order distortion while the solid-state will be cleaner and more clinical.

Alternate takes between rigs as you stack your parts. Vary mic placement on every second or third pass by increasing or decreasing the distance from the instrument, or put them on opposite sides of the instrument. Remember, while interrupting the session to move mics may give you more tonal variance, session flow is king. If players are in the "zone," don't interrupt the creative energy in favor of tone. Sacrificing performance and player well being to satisfy your audio sweet tooth is never a good idea.

If someone else cut the tracks, you still have some options. Slide some of the tracks back or forward in time a few milliseconds on the timeline using timing differences to mask some of the "sameness." Or, vary EQ on the parts: For example, boost 8 to 10k on a shelf to make some parts brighter while warming up others by adding 100 to 300 Hz with a wider Q setting of 5 to 7.

—Kevin Becka
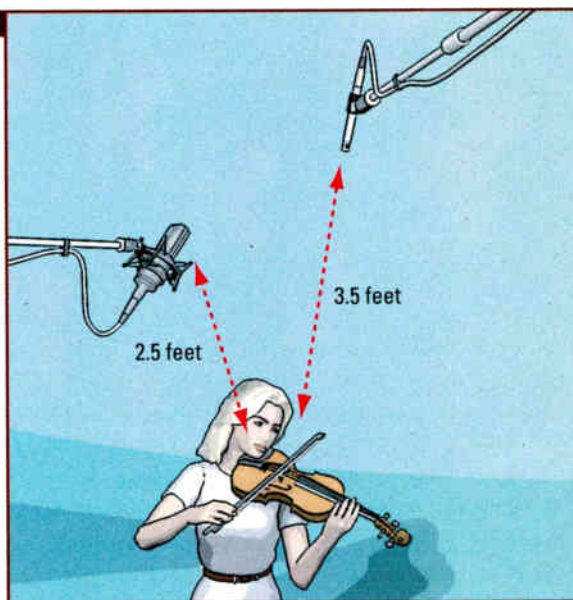
When layering string tracks, achieve variations in instrument sound by setting up mics at varying distances and angles from the player.

mixing strings

CUSTOMIZING STRING REVERB

Reverb is the mixer's best tool to create ambience for any instrument or soloist in a track. You can simply create an ambient space by calling up a reverb's preset—usually titled after a specific room, such as Warm Hall—and then adjust the room's dimensions to match the size space you want to create. Additional parameters can make the "room" sound more complex through added delays and reflections: Pre-delay is

Adjust reverb room parameters to create a "space."

the amount of delay before the reverb reflections start. Early reflection localizes reflective surfaces in a room and can define materials like curtains, wood and even multiple diffuse reflections such as seating. Modulation is a complex algorithm that models air movement in a room, simulating complex and random patterns in a space. Base the setting of each parameter on the application and type of music. In general, a string section in a spare vocal ballad can benefit from deeper reflections, more pre-delay and modulation because the strings and vocalist are not competing with many other mix elements.

However, if the song has a fast tempo and the string section is competing with both vocals and a band, then give the strings a more immediate, intimate sound by gluing the reverb to the track: In your reverb's Parameter pages, turn off the early reflections, set the pre-delay to zero and add more modulation by turning up the amount in the mix. Adding modulation slightly detunes the track, while lowering pre-delay and early reflections marries the effect to the track, making it sound less wet. The effect of reducing reflections and delay in your reverb while increasing modulation will also provide tonal variance that will richen timbre, giving your mix more dimension.

—Kevin Becka

VIBING WITH 'VERB

Now that you've panned, EQ'd and dealt with dynamic issues, it's time to play with your strings' ambient quality. Because reverb is sustained over time, it tends to build up energy that can mask such tonal issues as the transient detail of the bow crossing the strings. (For more reverb ideas, see "Power Tip" on this page.) However, you can preserve tonal and transient string detail while still giving the parts a unique ambience and creating the illusion of a wetter track: Use the reverb to accentuate the ends of phrases and key notes where the 'verb will be most obvious and de-accentuate it where strings are playing sustained notes.

First, using the ends of phrases where there is a pause, find a reverb level where the volume of the effect doesn't overpower other track elements. Use the reverb to bridge these gaps over rests—where there is a "hole" in the part. This level will be where the reverb returns during the "breaths." Then find a lower level for sustained sections where the reverb is audible but not overpowering the detail and "resin" sound of the bow. You'll need to apply at least a minimal reverb here to ensure a smooth transition between sections with varying levels of 'verb treatment. Then roll the track from

WAITER, THERE'S A CLICK IN MY RECORDING

One of the hardest things to deal with when mixing strings is eliminating the clicks that can sneak onto the tracks during the recording session. When players are recording, it's not uncommon for them to leave one side of the 'phones off the ear so they can hear pitch and timing cues from the other players or hear their own instrument better in the room. Of course, with a few open mics in the room and mic preamps cranked to pick up string nuance, the click will be audible in the speakers. While the click may be audible early in the session and easy to fix by lowering the cans, the sound

elements in the arrangement, such as drums, guitar, etc. But when the strings are more exposed, the click can become quite audible. The first line of defense is an artful fader move: At the end of a section or phrase, instead of fading supportive instruments completely out of the picture, let them hang a bit longer to mask the click. If the strings are still exposed and there is an audible click or two during a decrescendo, then you may be able to go in on some of the tracks—provided that they are separated and not submixed to stems—and duck them when the click is most apparent. Ducking selected parts will be less noticeable than a fader move across the section. A DAW makes this trick easy because you can zoom in and see the click and then draw in a very narrow fader move.

If the above techniques are lacking, luckily for us click-challenged mixers, there are some great spectral-editing software tools to remove specific frequency-domain information from any recording, even after it's mixed. Cedar's Retouch, Algorithmix's reNOVAtor or Adobe Audition's Frequency Space Editor have intuitive interfaces that use color to flag different audio frequencies in a recording. With this process, coughs, sneezes, bow squeaks or clicks can be quickly identified and replaced with surrounding sonic information, in effect removing the noise from the track.
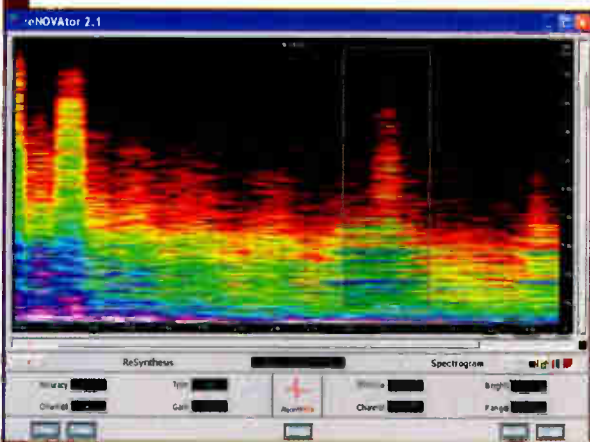
Use spectral editing software to remove clicks.

can be even more insidious when stacking a single player: The click may be below the noise floor on the first few passes, but when tracks are layered, energy doubles each time, making the noise more audible as you continue.

The good news is that a leaked click is not usually a problem when there are a lot of

—*Kevin Becka*

the top with the send automation in Write, raising and lowering the levels throughout the track, accenting chords, hooks and dry sections with more reverb and lowering the effect during sustained sections. This way, you'll have the best of both worlds: a track that has a unique ambient signature without the reverb being too big of a player.

While reverb can be a beautiful addition to a track, it is sometimes appropriate to leave a track completely dry. Lack of artificial ambience or effects brings the instrument directly to the front of the mix, giving the part an intimacy and urgency that can add to the drama of the song. This technique works especially well with a single instrument when juxtaposed against a single vocalist, or even a single player set against a group of singers. The dryness of the tracks will focus

attention specifically on the track and not on the effect. This technique can cause a dramatic mood shift when ordered after other tracks on the album that are wetter, or against other sections of a single song that have more reverb.

By using these incremental techniques to polish your string tracks, you can achieve results that are far beyond the simple sum of the parts. By creating or enhancing spatial variety, ambience and tone through panning, reverb and EQ, strings can sound like a section recorded in a rich environment, adding warmth and depth to your mix. ∎

Mix technical editor Kevin Becka would like to thank Gary Paczosa and Mark Cross for their contributions to this feature.

Tascam DM-4800 can be repatched at the flick of a switch.

Euphonix S5 Fusion digital audio post mixing system for HDTV

By George Petersen

Alesis' new MasterControl comes bundled with Cubase LE.

Mackie's Control Universal Pro mix controller connects to a Mac or PC via USB.

PreSonus' FaderPort offers USB transport control.

Mix Power

VERSATILE CONSOLE/ CONTROLLER UPGRADES

J ust when we'd thought we'd seen it all, new digital consoles and mix controllers keep coming. The good news is that your "new" console could be only an expansion card or software upgrade away, which can certainly soften the blow to anyone's budget. Speaking of capital, there really is something for every application and every budget, although with so many choices available, finding the right model becomes far more complex. With that in mind, we decided to look at developments in the field from the past few months, and we found a pretty healthy assortment of new releases.

MasterControl from Alesis (www.alesis.com) combines a control surface and FireWire interfacing with MIDI I/O, two XLR mic inputs, six line ins and 18 digital inputs (Lightpipe and S/PDIF at 44.1/48 kHz, or up to 10 ins at 88.2/96/192 kHz). The unit has eight channel strips (with solo, record-enable, Mute/Select buttons and motorized faders), a jog/shuttle wheel, dedicated transport controls and cue mix section with talkback mic. The monitoring section has six analog outs configurable as discrete 5.1 surround or three separate stereo outputs. Bundled with Cubase LE software but compatible with most popular DAW software, MasterControl was slated to begin shipping last month at a retail of $1,099.

The AMS-Neve (www.ams-neve.com) DFC PS/1 PowerStation is a single-user, slim-line, 384-path version of the company's DFC Gemini post console. It integrates with Pro Tools, Nuendo or Pyramix environments as a combined digital console/ DAW controller. Full surround monitoring and machine control are standard, as are support for sample rates up to 384 kHz, Star Command simultaneous control of multiple workstations, high-resolution TFT metering, 384 fader paths, reconform from picture change lists and insertion of premixes into larger mixes.

Earlier this year, Calrec (www.calrec.com) unveiled Omega, a new mid-level console that uses the manufacturer's award-winning, FPGA-based Bluefin high-density signal processing technology. Omega features 160 mono DSP paths packaged as 48 stereo and 64 mono channels, and up to 24 full 5.1 surround channels—all with full EQ and dynamics. Available in 24/40/56-frame sizes, Omega

with Bluefin's output complement includes eight 5.1 surround groups, 20 aux outs and 48 multitrack outs.

Digidesign's (www.digidesign.com) ICON continues its successful run, with more than 2,000 of these integrated digital console/Pro Tools controller systems sold since initial deliveries began in May 2004. More recently, the company announced an educational program that provides in-depth, hands-on Icon D-Control training by Digidesign-certified instructors. The Pro Tools 310I: Advanced ICON Mixing Techniques course is offered with numerous options, including expert-level Certified ICON Mixer training, at the company's headquarters, training locations worldwide or even at the user's studio. For more information, visit www.digidesign.com/training/icon.

The Euphonix (www.euphonix.com) S5 Fusion digital audio post mixing system for HDTV fuses DSP and DAW control technology with the company's EuCon protocol. This combination enables the console surface to control both its SuperCore engine DSP channels and channels from multiple external Mac or PC workstations simultaneously over high-speed Ethernet. To manage large numbers of tracks and DSP channels, S5 Fusion also provides comprehensive machine control, a router, film-style surround monitoring, 24 channel strips, motor joysticks (optional) and high-res screens showing metering, track info and routing displays. Each channel strip has a multiformat moving fader; touch-sensitive knobs for EQ, filters, compressor, expander/gate, aux and pan; and DAW control for TDM, VST and Audio Units plug-ins.

Fairlight (www.fairlightau.com) employs the groundbreaking Crystal Core FPGA processing technology in its DREAM II Series, which includes the flagship Constellation-XT and Anthem console/workstations. A single Crystal Core CC-1 PCI card can handle 230 audio channels (each with eight bands of EQ and full dynamics control), 72 user-definable mix buses (mono to 7.1), 192-track recording, integrated HD video and up to 220 physical I/Os. The new Dream II Version 1.1 software update adds fast, direct AAF and AES-31 file exchange, as well as multiple EQ selections on a per-channel basis. Users can choose from Constellation-XT, Anthem Split or Anthem In-Line EQs, each with a distinctive flavor and character.

The Alphatrack compact DAW controller from **Frontier Design Group** (www.frontierdesign.com) features touch-sensitive rotary encoders, transport controls, jog/shuttle strip and a single, assignable motorized fader. The $249, USB-powered desktop unit is XP- and OS X–compatible for Pro Tools, SONAR, Cubase, Reason, Digital Performer, Nuendo and other apps.

Harrison (www.harrisonconsoles.com) has revised and updated its TVD-SL large-format TV studio digital audio console, which now features TFT metering and Xrange native engine DSP and Xrouter digital audio signal routing. The 24-bit (96kHz-capable) TVD-SL is available in standard 44 or 60 faders for stereo or 5.1 surround mixing, and the main control surface can be operated from up to three additional locations using Harrison's Satellite Touchscreen technology.

Lawo (www.lawo.de) is now shipping its mc²90 digital console, which is designed to take the technology of the mc²66 mixer to a new level. The mc²90 has a redesigned user interface and integrates Lawo's Star2 topology, providing total console redundancy in no-fail environments. Compatible with both consoles, V. 1.10 software provides improved sequence automation; 10 new DSP configurations; the ability to meter up

World Radio History

to eight VCA-slaved channels controlled by a single fader (ideal for surround stems, etc.); more frequency points for EQ, filter and sidechain filter modules; full MIDI Machine Control remote access; a choice of MTC, LTC, Sony 9-Pin TC or internal timecode slaving; and more.

Also new is Lawo Plug-In Host (LPH), a low-latency PC host app that assigns tielines for the triggered plug-ins to the mc² HD Core that automatically appear on the GUI matrix screen. The console imports plug-in parameters in the same way as console-based EQ or dynamics parameters are assigned, and plug-in settings can be stored either statically using snapshots or dynamically with the automation data.

The Logitek (www.logitekaudio.com) Artisan control surface for its Audio Engine router is designed for small to medium-sized market TV, radio production and other applications. It provides 5.1-compatible operation, two master mix buses, eight submaster mixes, 24 mix-minus buses, multiple aux buses, onboard dynamics/EQ and frame delay at each fader. Full-color LCDs on each drop-in module show needed information in an easy-to-read format.

The $1,550 Mackie Control Universal Pro mix controller from Mackie (www.mackie.com) connects to a Mac or PC via USB and has nine motorized, touch-sensitive Penny & Giles faders, eight V-Pots, more than 50 master buttons and a large LCD. An $899 Mackie Control Extender Pro can add eight more channels for up to 32 channels total. The system is compatible with ACID Pro 6, Audition, Cubase, Digital Performer, Final Cut Pro 5, Logic, Live 5, Nuendo, Pro Tools, Reason 3, Samplitude, SAWStudio, Sequoia, SONAR, Soundscape, Soundtrack Pro, Tracktion and Vegas. Designed to be used with MCU Pro or stand-alone, the $1,300 Mackie Control C4 plug-in and virtual instrument controller provides real-time control of up to 32 simultaneous parameters with visual feedback via four backlit, alphanumeric LCDs.

Pyramix 6, a 48-channel DSD recording system from Merging Technologies (www.merging.com), takes another step forward with the new Ramses controller and Oasis I/O boxes, offering DSD and DXD recording with optional mic preamps. The multiformat Ramses MSC is a fully integrated re-

Merging Technologies' Ramses MSC is scalable from 16 to 256 I/O channels.

cord, editing, processing and fully automated mixing system that's scalable from 16 to 256 I/O channels and tracks in eight to 24 (plus dual-operator, 48-channel) configurations, with full static or dynamic automation of all parameters, including joystick surround panning control. Full support of VST plug-ins on all channels and buses are standard, as is support for sample rates from 44.1 to 384 kHz, plus 48-channel DSD and DXD options. Also available is Merging's VCube and VCube SE standard/HD video integration. Another Ramses option is a version of Smart AV's (www.smartav.net) ARC™ technology for instant access to large numbers of channels. Current Pyramix owners can upgrade their systems to Ramses MSC, incorporating

their existing Merging hardware.

FaderPort from PreSonus (www.presonus.com) provides USB transport control with a long-throw, Alps touch-sensitive motorized fader for writing fades and volume/mute/pan automation in real time. Solo and record-enable can also be easily controlled, along with window selection, play/stop/record and marker/locate points for fast and easy recording. A footswitch jack supports hands-free, punch-in/out recording. FaderPort retails at $229 and works with all Mac or Windows-based recording software, including Pro Tools, Cubase, Nuendo, Logic, Digital Performer, SONAR and more.

Solid State Logic (www.solid-state-logic.com) is shipping its Duality console/DAW controller, with recent deliveries going to Alicia Keys' The Oven Studios in New York and Atlanta's PatchWerk Recording Studios. Available with 48/72/96 faders, Duality (see review on page 94) is a large-format analog console offering full DAW integration, a split signal path, E and G equalizers, onboard dynamics, moving-fader automation and 5.1 panning—all with the SuperAnalogue K Series sound.

On the digital console front, SSL has rechristened its C Series digital broadcast consoles to C100 HD and C300 HD, while doubling the possible fader inputs to 512, adding MORSE routing capabilities and updated Century processing, and incorporating the workstation control from the company's AWS Series. Another launch is the C100 HD-S, essentially the C100 HD with an identical feature set but in a smaller footprint console designed for space-limited installs, such as small control rooms and trucks, packing 64 faders into a frame that's less than 92 inches. With the new V. 4 software, the C100 HD consoles support a high-density processing engine and control surfaces with access to up to 256 fully featured input channels and another 256 short-channel premix inputs, with fader control, panning and mono/stereo/surround busing.

Designed for film/TV production, the upgraded C300 HD from SSL is a scalable (8 to 96-channel, multi-operator–capable) solution, with more than 500 mix inputs and 80 mix buses (all with DSP) from a single Centuri processor. It also offers flexible DAW control and full multiformat surround monitoring. Other C300 HD features include an enhanced 96kHz feature set, tri-level sync support, optional PEC/direct switching, EQ and dynamics libraries, pull-up/down sample rate handling, advanced multi-machine control and more.

StageTec (www.stagetec.com) offers new software and a revised control surface for its AURUS digital consoles. An offline editor allows setting up presession console configurations using a Windows PC without physical access to the mixer. The NEXUS Audio network can also be similarly set up offline directly from the AURUS master section. On the hardware side, graphics-enabled OLED displays showing channel and layer configurations on the channel strip will replace the matrix displays previously used.

But the big news from StageTec is AURATUS, a compact console for TV/broadcast/remote recording and live sound applications where the full configurability of AURUS is not required. Among its features are audio-follows-video functions, eight separately configurable mix-minus buses, and a simple user interface with a short learning curve and OLED and TFT displays. AURATUS has a hardwired bus layout with a maximum of 32 input channels, eight groups, one stereo and one 5.1 sum, eight aux paths, eight mix-

minus sums and full integration with the NEXUS audio routing system.

Studer (www.studer.ch) now offers a 42-fader version of its Vista 5 digital console, which provides access to up to 1,700 channels. The 42 faders on its one-knob-per-function surface has 30 channel strips as input channels and 12 strips for operating I/O channels. The additional faders also permit two-operator applications, if needed. The Studer D21m I/O system—used on the Studer Vista Series and OnAir 3000 digital consoles—has been enhanced with a new optional I/O card for signals encoded with Dolby E, which lets users directly decode an AES/EBU stream into eight discrete channels.

The Tascam (www.tascam.com) DM-4800 64-channel digital console has 24 buses, 12 auxes and 24 studio-grade pre-amps (more can be added via expansion cards), and can be completely repatched at the flick of a switch. Additionally, the DM-4800 offers extensive DAW control and two TC Electronic reverbs. A fat channel strip in the center of the console gives instant access to 4-band parametric EQ, dynamics and aux controls available for the first 48 channels. Its remote layer provides transport keys and 24 faders for controlling workstations such as Pro Tools, Logic, SONAR, Digital Performer, Cubase and Nuendo, while the optional IF-FW/DMmkII interface card provides 32 channels to/from a computer at up to 96 kHz over a single FireWire cable. Other options include a full meter bridge and a surround monitoring card offering down-mixing, bass management and level control for mixing in up to 6.1 surround.

New from Wheatstone (www.wheatstone.com) is the E-6 Surface, the E Series Studio Satellite I/O and the E Series Network Switch, which combine to form a cost-effective networked audio system. Each operates independently, yet all sources and mixes can be shared via the network. The E-Surface features event recall, bus-minus, mix-minus and four aux mixes—all with dedicated talkback systems—as well as standard EQ, dynamics, panning and mic processing on all channels. Control surfaces are offered in 16- or 24-channel frames. Also new is the Evolution Series E-5 control surface, a simplified version of the E-6 available in 8/16/24-channel mainframes.

Yamaha's (www.yamaha.com/ca) DM2000 VCM is the second generation (V. 2) of the company's DM2000 digital production console, combined with a collection of pre-installed, add-on effects. Available as a free upgrade, the suite includes five plug-ins

that emulate legacy processors and more. Virtual Circuitry Modeling (VCM) technology creates models of classic compressor, EQ, analog tapedeck and stompbox effects, capturing nuances and subtleties of the gear. Also provided is the REV-X advanced algorithm used in Yamaha's latest reverb and ambience programs, which take advantage of the DM2000's 24-bit/96kHz processing capability, as well as Interactive Spatial Sound Processing surround post-production effects. The other side of the V. 2 upgrade incorporates advanced DAW integration (Nuendo,

Cubase, Pro Tools, etc.), 6.1 panning/monitoring and mix-minus capability.

Deva Mix-12 from Zaxcom (www.zaxcom.com) is a fully digital, 12-fader control surface that directly manages the audio mixer embedded within the company's Deva IV and V location recorders. Combined with either the Deva IV or V, Deva Mix-12 performs all location mix and record functions, reducing production costs by eliminating the need for external mixing consoles. ■

George Petersen is Mix's executive editor.

TECnology Hall of Fame

BY GEORGE PETERSEN

AUDIO INNOVATIONS THAT CHANGED PRO AUDIO

Edison's first cylinder recorder was born 130 years ago, and while other technologies—from automobiles to aerospace—emerged in that era, audio is what counts for us true devotees. Unfortunately, the history of pro audio is woefully neglected, with sources scarce, if not impossible, to find.

An offshoot of the TEC Awards, the TECnology Hall of Fame began in 2004 to spotlight significant innovations in pro audio history. Listed chronologically, here are the 2007 honorees. Note: For more information (including rare documents and photos) from this year's and past inductees, go to www.mixonline.com/TEC20/tecnology-hall-of-fame.

LEON THEREMIN THEREMIN (1919)

Created by Russian physicist Lev Sergeivich Termen (also known as Leon Theremin), the Theremin is described in its U.S. patent (#1,661,058) as a "novel method of and means for producing sounds in musical tones or notes." The key word here is "novel," as the system comprises two oscillator circuits where amplitude and frequency are controlled by the proximity of the user's hands to the Theremin's two antennae, with no need to actually touch the instrument.

During the years, there have been serious Thereminists, yet the instrument is best known for creating outerworldly effects/music for sci-fi films ranging from the classic *The Day the Earth Stood Still* to countless budget releases. A common myth is that a Theremin was used on the Beach Boys'

"Good Vibrations." That instument was actually a Tannerin, which uses a similar technology but substitutes a hardware slide controller for the antenna.

CHESTER RICE & EDWARD KELLOGG, GENERAL ELECTRIC CO. MODERN DYNAMIC LOUDSPEAKER (1925)

In a landmark article, "Notes on the Development of a New Type of Hornless Loudspeakers," published in the September 1925 edition of *AIEE Transactions*, two General Electric engineers—Chester W. Rice and Edward W. Kellogg—describe what we now consider the roots of modern loudspeaker technology.

After testing numerous approaches, Rice and Kellogg suggested a conical paper diaphragm attached to a coil of wire energized by an electromagnet. Beyond simply describing a new type of transducer, the pair laid out many of the basic tenets of loudspeaker design, such the importance of the baffle in preventing the "circulation" of the sound from the speaker's forward and backward motion and the need for more powerful amplifiers to provide adequate headroom required for quality reproduction.

WALTER WEBER AC TAPE BIAS (1940)

Born 100 years ago, Dr. Walter Weber was a Siemens engineer who was recruited by Dr. Hans Joachim Von Braunmühl to work for RRG (German Broadcasting) in 1932. While at RRG, Von Braunmühl assigned Weber to look into improving AEG's Magnetophon tape recorders.

With BASF's ferric-oxide tape debuting

in 1939, the Magnetophon was approaching broadcast standards, and one of Weber's interests was the application of bias currents. American research in 1921 had shown that a high-frequency AC bias signal could raise the quality of magnetic recording, but given the poor performance of wire recorders the improvement was minimal. During experiments with a DC biasing scheme in 1940, Weber inadvertently applied an AC current to the recording chain and rediscovered the benefits of AC biasing, offering a 10dB improvement in the Magnetophon's noise floor.

Weber's AC biasing technology was incorporated into AEG's Model K4 HF-Magnetophons, which launched a year later. And with a bandwidth of a then-astonishing 10 kHz, tape recording was on its way to becoming the world production standard.

NEUMANN STEREO DISK LATHE (1956)

In 1953, Neumann engineers began developing the AM 32, a disk lathe with the ability to vary groove pitch controlled by the amplitude of the input signal rather than a constant pitch. By mounting a preview head on the source tape deck, its signal could be fed to the lathe's drive, which made a small adjustment in the groove spacing before the cutter received that same signal from the playback head.

Co-developed with Teldec, the Neumann ZS 90/45 stereo cutterhead arrived in 1956 and combined vertical and lateral recording in a "v"-shaped groove, with each slope set at a 45-degree angle. In addition to controlling

Leon Theremin
1919

Walter Weber
1940

Neumann stereo disk lathe
1956

Nagra III tape recorder
1957

Cannon XLR connector
1958

groove pitch, the system used the difference between the left and right signals to modulate the depth of the cut and adjusted the groove pitch based on the depth of the cut, as deeper cuts require wider grooves. This first electrodynamic feedback stereo cutterhead system set the stage for the world-standard SX 45, SX 68, SX 74 and SX 84 cutterheads that followed.

STEFAN KUDELSKI NAGRA III TAPE RECORDER (1957)

After completing his college studies, Stefan Kudelski founded the Kudelski company in 1951 and began creating the Nagra recorder. Designed for high-quality portable recording, the initial Nagra I and II models were driven by a windup clockspring mechanism.

The breakthrough came in 1957 with the Nagra III, a compact, 11-pound mono 3.75/7.5/15 ips reel-to-reel deck with performance that rivaled larger studio machines. The deck's rugged aluminum chassis and Modulometer peak-reading level meter appealed to pros who needed a dependable, near-indestructible location recorder. And with the addition of Neopilot sync in 1963, the Nagra III became the standard for location film recording and received an Award of Merit from the Academy of Motion Picture Arts and Sciences in 1965.

CANNON XLR CONNECTOR (1958)

Originally, the XLR was intended for aircraft and instrumentation applications, but we're glad it's here. In use for pro audio for nearly 50 years, the 3-pin versions of Cannon's XLR connector are so ubiquitous in both analog and digital (AES/EBU) connections that most people in our industry don't even remember those pre-XLR days. Once upon a time, audio gear was fitted with whatever the manufacturer deemed appropriate, with DIN and Tuchel connections common in Europe and various Amphenol types in the States. The move to Cannon's XLR provided a universal solution, where a mic cable could double as a line cable and two cables could be connected to make a single, longer cord. The XLR name

stems from being Cannon's X Series, with a latching/locking (L) feature and having an elastomeric/rubber (R) insulator.

REIN NARMA FAIRCHILD 670 COMPRESSOR LIMITER (1959)

The Fairchild 670 is often referred to as the "holy grail" of outboard devices for its rarity, value (currently about $30,000 on the used market) and usefulness in a wide variety of studio situations. And this hand-wired stereo unit is a beast, with 20 vacuum tubes (21 if you include the 5V4 rectifier) and 14 transformers tucked within its 65-pound chassis.

The origins of the 670 (and mono 660 version) are fairly humble, coming from Estonian-born Rein Narma. In the postwar years, this refugee from Soviet Russia worked for the U.S. Army as a broadcast/recording tech during the Nuremberg trials, later immigrated to the New York and took a job at Gotham Recording. Narma and several others founded Gotham Audio Developments to build recording gear. Les Paul hired him to modify his first 8-track, and later Narma built consoles for Rudy Van Gelder, Olmsted Recording and Paul, who also asked him to build a limiter. After beginning the project, Sherman Fairchild heard about it, licensed the design and hired Narma as the company's chief engineer.

CROWN INTERNATIONAL DC 300 POWER AMPLIFIER (1967)

In many ways, the DC 300 ushered in the era of the modern, high-power amplifier. Offering 340 watts/channel (at 4 ohms), this four-rackspace, 40-pound beast came in at less than the "magic" $1/watt price point based on its original $685 retail. And with its rock-solid construction, the DC 300 was the ideal solution for high-SPL studio monitors and live sound systems coming into vogue with the summer of love.

Years later, the upgraded model DC 300A was immortalized in a magazine ad based on a real story of a truck filled with P.A. gear that narrowly avoided a head-on collision, but rolled over, with several DC 300As exiting through its roof and ending up partly submerged in a muddy field.

The driver escaped injury, as did the DC 300As—after a short time under a blow dryer. The truck didn't do as well, but today many DC 300s are still in daily pro audio use, a testament to Crown reliability.

RUPERT NEVE 1073 CONSOLE MODULE (1970)

In 1970, Rupert Neve designed the 1073 module, which is still regarded as one of pro audio's best preamps. Created as 80 Series console modules and not originally intended for stand-alone use, 1073s and 1084s were often removed from older mixers and put into third-party racks and housings. The discrete 1073 mic/line preamp has a fixed 12kHz HF band and switchable-frequency LF/MF cut/boost bands, and a passive low-cut filter. The circuit has been widely imitated and cloned (in hardware and software), and the Neve company now offers re-creations of the 1073 in rack and module form.

According to Rupert Neve, the secret to the original 1073's success "had to be in the input and output transformers. We built them out like filters to the maximum that we could squeeze out in terms of high-frquency response and then make sure they rolled off smoothly—with no peaking or things of that sort."

AKG C-414 CONDENSER MIC (1971)

The availability of quality field effect transsistors (FETs) in the 1960s opened the door for replacing tube mics with compact, solid-state models. In 1970, AKG's Karl Peschel took the CK 12 capsule from a C 12A tube mic and paired it with FET electronics, resulting in the C 412. A year later, adding a second bass roll-off position and a fourth polar pattern created the C 414 comb.

From 1974 on, engineer Norbert Sobol supervised the C 414 design, adding improvements in audio performance and features along the way. These included the C 414 EB (1976), C 414 EB-P 48 (1980), C 414 B-ULS and -TL (1986), C 414 B-TL II (1993) and the current C 414 B-XLS and -XL II.

Fairchild 670 compressor limiter

1959

Crown DC 300 power amplifier

1967

Neve 1073 console modules

1970

AKG C-414 condenser mic

1971

With more than 100,000 mics sold, the C-414 remains a popular choice whether in earlier versions or the latest models—now updated with LEDs and a fifth (wide-cardioid) pattern.

MCI JH-400 INLINE CONSOLE (1972)

MCI Electronics founder Jeep Harned was an innovator, from creating the first 24-track recorder in 1968 to the auto-locator and commercializing the inline mixer. Credit for the first inline-style consoles actually goes to Dan Flickinger, who designed a number of custom mixers that put tape monitoring within the channel modules, although track assignments were in a separate section. However, the popularity of the modern inline console stems from Dave Harrison (later founder of Harrison Consoles), who approached Harned with this new take on mixer design.

Harned and MCI engineer Lutz Meyer helped Harrison refine the JH-400. In a day when most studio consoles were custom, the JH-400s were revolutionary—standardized "production" models with numerous user options and Harris 911 IC op amps that lowered costs and simplified manufacturing. The first JH-416 models offered 24 I/Os with quad panning/monitoring and 3-band EQ. Options included a 32-input version, VCA grouping and automation. The JH-400 offered an affordable pro console to the burgeoning recording industry, and five years later a 1977 *Billboard* poll gave MCI the leading share among studios.

Harned sold MCI to Sony in 1982.

EVENTIDE H910 HARMONIZER (1975)

Name a product after a Beatles tune (the model number refers to the "One After 909"), and it better be good. However, when Eventide founder Richard Factor assigned his young designer Anthony Agnello to build a harmony processor in 1974, they had no idea they'd be creating an audio classic. The version demo'ed at AES that year hardly resembled the final product: It was a music keyboard perched on a hand-wired box, but the reaction was positive. Soon after (and with the keyboard controller offered as an option), the Harmonizer H910 was born.

Offering pitch shifting (±1 octave), delay, feedback regeneration and more, the H910

Eventide H910 Harmonizer

was an instant studio fave. Users found all sorts of applications, ranging from regenerative arpeggios to bizarre sound design effects to lush guitar or vocal fattening. Frank Zappa put one in his guitar rack. Tony Visconti used it for the memorable snare sounds on David Bowie's *Young Americans*. Eddie Van Halen had a pair as part of his trademark guitar sound. Tom Lord-Alge's setup for Steve Winwood's vocals on "Back in the High Life" also employed two slightly detuned H910s (one sharp/one flat) with an 18ms spread. The twin Harmonizer effect was so popular that Eventide re-created it as the "Dual 910" program in the H3000 UltraHarmonizer that followed it a dozen years later.

EMT 250 DIGITAL REVERB (1976)

Digital pioneer Barry Blesser helped launch Lexicon in 1971 and developed the EMT 250, the first commercial digital reverb, in 1976. EMT was no stranger to reverb, having created the Model 140 plate system in 1957.

Blesser and Karl-Otto Bäder designed the 250's algorithms; Dynatron's Ralph Zaorski designed the digital hardware; and EMT built the converters, I/Os, power supply and user interface, with its rocket ship controls for decay and delay. The 400 ICs and 16k of memory of this 1-in/4-out unit required three fans and heat sinks covering the entire cabinet exterior.

The EMT 250 carried a $20,000 price and some 250 units were produced, many still in use today and valued for their effects and reverbs. A later model, the EMT 251, added an LCD readout, improved HF response and more flexibility, but the algorithm was not the same as the classic EMT 250.

3M DIGITAL AUDIO MASTERING SYSTEM (1978)

The 3M Digital Audio Mastering System comprised two 45 ips machines: a 32-track deck (16-bit/50kHz) running 1-inch tape and a 4-track, ½-inch mastering recorder. Although the system was a year from deliveries, engineer Tom Jung (now of DMP Re-

cords) beta-tested the prototypes at Sound 80 in Minneapolis as a backup system during sessions cut direct-to-disk—lacquer disk, *not* hard disk! The digital session tapes were judged superior to the disk masters, and in December 1978 the first commercial albums cut on the system were released: *Flim & The BB's* by jazz group Flim & The BB's and Aaron Copeland's *Appalachian Spring* by the St. Paul Chamber Orchestra. The latter won a Grammy Award for Best Chamber Music Performance.

Priced at $150,000 ($115,000 for the 32-track and $35,000 for the 4-track), the first two-machine systems were installed in early 1979 at Sound 80 and in Los Angeles at A&M Studios, the Record Plant and Warner Bros.' Amigo Studios.

SONY PCM-F1 DIGITAL RECORDING PROCESSOR (1981)

Originally designed for making home digital recordings, the PCM-F1 was a recording processor using the EIAJ 14-bit PCM spec for digitizing audio and storing it as a video signal. The concept of a two-piece system (connecting a PCM processor to any VCR—Beta, VHS or U-matic—for recording) was unpopular with consumers, but at $1,900, Sony's PCM-F1 was a hit with studios.

PCM processors from Aiwa, Akai, Sansui, JVC and Technics rigidly stuck to the 14-bit EIAJ standard; only Sony's PCM-F1, as well as the later PCM-701/501/601 units and the Nakamichi DMP-100—a black-finish F1 with improved analog components—offered switchable 14/16-bit performance.

Paired with the optional SL-F1 Betamax deck, the PCM-F1 was the first portable, DC-operated digital recorder. Alternatively, users could make simultaneous 4-track recordings by combining the PCM digital tracks with a video deck's "hi-fi" tracks. This was great for live recordings where a board mix went digital and room ambience or mix position mics were routed to the hi-fi tracks. A few brave souls—myself included—even made multitrack recordings using two (or more) synchronized PCM-F1s. But one thing was certain: Whether stereo or 4-track, the democratization of digital had arrived. ∎

George Petersen is Mix's executive editor.

MCI JH-400 Series inline console

EMT 250 digital reverb

3M Digital Audio Mastering System

Sony PCM-F1 digital recording processor

1972   **1976**   **1978**   **1981**

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BY HEATHER JOHNSON

Frigo Recording

Engineering Couple Sets Up Shop Near Penn State

In 2000, engineer Marc Frigo and his wife, engineer Amy Frigo, moved from Nashville to the chilly Northeast, ultimately settling in Boalsburg, Penn., to be close to family while they raised their daughter, Bethany. After getting comfortable in their new locale, Marc Frigo gradually began seeking out and recording local and regional bands—something he had done for years back in Music City. However, there is no Emerald, East Iris or Ocean Way in this modest Penn State University town, so to get the job done, Frigo tracked drums in his basement, mixed in his living room or commuted to a nearby church or similar venue when he needed more space.

PHOTO: AMY FRIGO

Keenly aware of the lack of commercial facilities in the area, the technically proficient couple filled the void with Frigo Recording.

The 900-square-foot studio comprises an 11x13-foot control room equipped with Digidesign's Digi 002 Factory workstation/control surface. (Plans for an upgrade to a Pro Tools HD system are in the works.) A set of Event Studio Precision ASP8s and a pair of Yamaha NS-10Ms provide near-field monitoring. The mic selection includes Shure and Audio-Technica models. The blue-painted main studio measures a 16x22 feet, suitable for drum tracks or small ensembles. A 12x22-foot lounge area doubles as an iso booth for vocals or acoustic guitar, while the bathroom and a closet serve as amp closets.

Frigo handled the majority of the studio design, construction and wiring, which proved a challenging learning experience. "None of it was usual for me," says Marc Frigo of the project, which involved everything from reinforcing and insulating walls to installing bathroom plumbing. "It seemed like there was always some little thing that needed to be done that would end up taking days! But it feels good to have done it."

With the studio fully operational since October 2006, the Frigos now have the opportunity to attract regional talent and clients with whom they developed relationships during their 10-year stint in Nashville. As graduates of Full Sail's Recording Arts program, the couple moved to Nashville in early 1991 and met later that summer at Woodland Studios, where they worked as staff engineers. Between the two of them, credits include the Indigo Girls, Patty Loveless, Bad Company, Bob Seger, Keith Urban, Jewel, Amy Grant, Kenny Chesney, Emmylou Harris, Larry Carlton and Gillian Welch, as well as a host of other country, rock and pop artists and songwriters.

Above: Marc Frigo monitors in the control room while Jason De León from the Wilcox Hotel cuts vocals in the lounge/iso room. Left: The main studio.

"Reconnecting with some of the major artists and producers that we worked with in Nashville is an essential part of making Frigo Recording a success, and will ultimately enable us to keep working with the up-and-comers," says Frigo. "We can make arrangements to record in Nashville or elsewhere, and perhaps bring the tracks back to our studio to mix or simply have clients send us their tracks." They have already completed one such project for recording artist Lucy Diamonds, whose debut album, *Poor Dream Redemption*, will be released in late summer.

The Frigos also see the studio as a focal point and breeding ground for the local music community. Acts such as Will Diehl, Kevin Giarnella, Nathaniel Hohol and rock band the Wilcox Hotel have all recorded promising albums here, with more on the way. Like many college communities, the clubs and bars generally hire cover bands, leaving original acts little opportunity to showcase their own music. The Frigos hope to not only help those acts get their music to the masses, but also unite and grow their fledgling community. "There are all these little pockets of talented people all doing good stuff, but it just hasn't been developed into a community yet," he says.

In the early to mid-1990s at Woodland Studios, the duo worked in the same windowless building, but rarely on the same session. Now that they have their own facility, they can potentially work together or trade off on sessions. "Frigo Recording is all about finding your passions and living them," says Marc Frigo, who currently assumes most of the engineering/production duties. "If you have God-given passions, you need to give into them fully, and my God-given passions are my family and recording and mixing music. That's what makes Frigo Recording successful and enables us to do great work and to continually please our clients. They see that passion and feed off of it." ∎

Heather Johnson is a Mix *contributing editor.*

KEN BURNS' *The War*

By Matt Hurwitz

Bringing the soldiers' experiences home, including this scene in Belgium, circa January 1945

During World War II, while the rest of the world followed the conflict through theatrical black-and-white newsreels with patriotic music and narration, soldiers on the field saw the action from an entirely different angle. It is the soldiers' grim reality that documentary filmmaker Ken Burns has captured in his new PBS mini-series, *The War*, which premieres September 23.

Having worked on the series for the past six years, Burns notes, "World War II has been smothered with gallant, bloodless myths, and when we do that we do ourselves a disservice." The series focuses on the lives of servicemen from four American towns, revealing not only the experiences the soldiers has in the battlefield, but also the effects the war had on those back home. "If you weren't in this war or you weren't waiting anxiously for someone you loved to come home, you're not in this film," Burns says.

Burns portrays the experiences of the soldiers as realistically as possible. Researchers at his Walpole, N.H., production office dug up pristine camera negatives of hours and hours of war coverage. But the most striking thing about the film is its soundtrack, which portrays in full surround—with lethal authenticity—the experience of the soldier in the field.

"Bullets whiz by your head, planes fly overhead and you turn your neck around," describes Burns. "And the debris from explosions seems to fall in your living room, at your feet. And that's the way we want it—to put you uncomfortably into the battle." The film is only Burns' second project to be mixed in 5.1; the first was the 2004 *Unforgivable Blackness: The Rise and Fall of Jack Johnson* about America's first African-American heavyweight boxing champ.

To achieve the sound image he wanted for *The War*, Burns turned to a number of familiar collaborators: sound effects editors Erik Ewers and Ira Spiegel, and re-recording mixer Dominick Tavella. Ewers, who was also picture editor for three of the seven episodes, has worked with Burns since *Empire of the Air* (1991), Spiegel since the seminal *The Civil War* (1990) and Tavella since *Baseball* (1994). "Ken's essentially been using the same crew for years and years," says Tavella. "We have a real history, a shorthand of how things are to go down."

Sound effects editing for the series was split between two teams: Ewers, along with his co-editor Ryan Gifford (who also assisted in picture editing) and dialog editor Magdalena Violotus worked

Authentic Sound Design
Re-Creates the Soldier's Experience

Okinawa; May 8, 1945 (VE Day)

Documentary filmmaker Ken Burns

on episodes 2, 3 and 6 at the Florentine Films offices in New Hampshire. Spiegel worked with sound effects editor Mariusz Glabinski and dialog editor Marlena Grzaslewicz (who worked on *Baseball*) in various locations, including home studios and 701 Sound in New York's Brill Building. Spiegel, Glabinski and Grzaslewicz worked on the remaining four episodes, which were picture edited by Paul Barnes and Tricia Reidy. Picture editing began in the fall of 2004, and sound effects work was done in winter/spring 2006. The teams were given five weeks per episode to complete their work.

First, spotting sessions were held with Burns, Ewers and Spiegel, along with co-director Lynn Novick, producer Sarah Botstein and supervising film editor Paul Barnes. "We'd watch through an entire episode, with everyone expressing their ideas," says Spiegel. "Ken has strong ideas about what he wants, but he's trusting and respectful of other people's ideas."

It was imperative that the two separate groups maintained consistency in their effects and preserved smooth workflow from editing to mixing. Ewers and Spiegel would stay in contact, when possible, to compare notes on various sounds. "One of us might ask, 'Okay, what are you using for a grenade?' or something like that," explains Ewers. "Due to the schedule, we didn't have a lot of time to talk—we just hoped that we'd come to the same conclusions. And I think you'll hear very little difference between his effects and mine."

The two teams also shared extensive effects libraries. While none of the sound effects heard were field-recorded specifically for the film, Florentine acquired massive libraries from previous films that had included original field-recorded sounds. Actor Tom Hanks not only provided the voiceover for journalist Al MacIntyre, but also the effects library from his acclaimed *Band of Brothers* HBO series. "We got a full drive of effects, probably 200 to 300 explosions, at least 200 different kinds of weapons. We

were quite fortunate," says Ewers.

Also used were the effects from Korean film *Tae Duk Gi* (2004), as well as a British archive that had recordings of the Mitsubishi engines in Japanese Zero airplanes—particularly useful in the first episode that depicts the attack on Pearl Harbor.

The remainder came from conventional sources, such as Sound Ideas, though these had to be used with care. "The trouble with [those sounds] is that they often sound too modern," Spiegel says. "They have automatic weapons or Abram 1 M1A tanks, which are too modern. That's why we went to *Band of Brothers* for the authenticity."

Authenticity was indeed the name of the game for *The War*. "When you see a German 88 [gun], you hear a German 88. When you see a Tiger Tank, you hear a Tiger Tank," says Spiegel. Adds Burns, "Even a Panzer tank in snow, a Panzer tank on wet road, a Panzer tank on dry road." The correct guns, correct arms, even correct airplane engines—lest a Japanese Zero sound like a P-41 Mustang.

During the mix, Tavella took care to ensure that Pacific battles sounded different from European battles. "It's very easy when you've got a ton of bombs and guns going off to make it too dense so it all sounds the same," he says. "Pacific battles were hitting islands, so the bombardment was from destroyers and battleships rather than long-range artillery. And Pacific battles weren't all-out assaults, but more sporadic firefights and skirmishes. The European battles tended to be all-out assaults."

Sometimes, if no library recording existed for a particular piece of armament, a sound needed to be created. "We discovered very early on that there are not very good recordings of German 88s," says Spiegel of the gun that could shoot down American planes and knock out tanks. "We had some recordings on an old German optical archive track. They were good as a reference, but they didn't convey the fright of the gun, and they had crackle on them and were recorded from very far away."

Okinawa, 1945
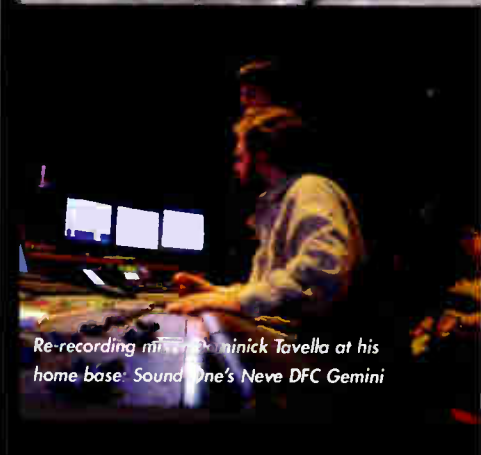
Re-recording mixer Dominick Tavella at his home base: Sound One's Neve DFC Gemini

Normandy, France, circa June 6, 1944

So he and Glabinski built the sound from scratch. "We used three or four very powerful Howitzer artillery sounds, slowing them down to give them more body and weight. And I added a growl from a crocodile, which we synchronized with the recoil of the gun. So at the precise moment it fires, the barrel starts to recoil, and we synchronize the kind of metallic growl with that."

"We tried our best to stick to the archival sounds," adds Ewers "But, of course, sound editors like to use sweeteners to make them a little scarier or a little more vibrant."

"Creative license trumps everything," adds Burns. "We're trying to wake up the past. If we're a few hundred yards away from a gun going off, we want to have that sound. If it's up close, we want to hear what the sound of a shell leaving the breach sounds like and the sound of the breach closing. And that recoil, and the sound of the artillery piece digging into the mud. All of these things create the verisimilitude that a veteran is going to respond to, and say, 'Yes, that's the way it was.'"

Most significant were the battle scenes,

Sound effects editor Eric Ewers

which made full use of Tavella's 5.1 mix. For Ewers, designing such scenes was helped by the fact that he had picture-edited his episodes. "I would actually start to work my picture around the sound to make a scene even more chaotic and more scary," he says. "We worked on the design two years before we even got to sound editing, so we were ahead of the game by that point."

Ewers and Gifford took particular delight in creating such incredible sound paintings. "Erik has a boy's affinity for this stuff," notes Burns. "Despite all the horror of war, it's also 'cool' at one level, with all the equipment and stuff. I just let Erik have free reign in just making all of that come alive."

Spiegel and Ewers would deliver the episodes as 48-track Pro Tools files, using a track layout pre-specified by Tavella. "I wanted to be able to bounce back and forth from show to show as easily as possible. So it was important to get everybody on the same page so that the layouts of their Pro Tools would be exactly the same," he says.

Tavella worked at his home base in New York's Sound One, working in Studio A. The room is outfitted with an AMS Neve DFC Gemini digital mixing console. And though it has a large theatrical screen with speakers behind, Tavella opted to view the film on a 42-inch plasma screen, listening through high-quality, near-field JVC powered monitors. "We set it up like a very high-quality home theater since the film wasn't intended for theatrical release."

In addition, after mixing the first episode, the engineer had a DVD copy made containing both his 5.1 and stereo broadcast mixes, which he brought home to give them a spin. "I checked it out on about six or eight different systems—everything from my own high-quality 5.1 home theater all the way to a little 11-inch mono TV. I could hear where we were going right and where we were deficient. So we knew that subsequent episodes would play well just about anywhere."

The complete mixing system included two Pro Tools rigs—one to play back dialog

and music, and the other for effects. These were passed through the DFC and out to four Akai DD8 random-access digital film dubber recorders—three for dialog, music and effects, whose outputs were then fed back into the DFC, and a fourth to record the final master. Tavella took full advantage of the Neve's "layering" capabilities. "These were very, very complicated and dense mixes. And since Ken's review time was limited, I had to come up with a desk design that would let me step back from the finished product and make any correction Ken wanted at the press of a button."

The typical process for mixing an episode involved mixing in three passes. In the first pass, which took typically two-and-a-half to three days, Tavella mixed the dialog and music, each to its own stem. The music included source material selected by the producers and editors, as well as new score recordings by jazz composer/performer Wynton Marsalis; his tracks were recorded at New York's former Right Track Studio (now part of Legacy Studios) in two sessions by engineer James Nichols and produced by the composer's brother, Delfeayo Marsalis.

Music editing was handled by Jacob Ribicoff, who made the jump from effects editing to music editing on Burns' *Jazz*. The majority of the music was placed by the picture editors. "We do music differently from anybody else," notes Burns. "We get it in advance so that the music becomes an organic and authentic part of our editing process."

The editors would place the tracks roughly in the correct area, leaving it to Ribicoff to fine-tune-edit the music to make specific onscreen "hits," as needed, using Serato Pitch 'n Time. "It typically involves time compression or expansion of a certain section of music," Ribicoff explains, "slowing it down or speeding it up to catch a particular hit," such as a cymbal crash to match an onscreen explosion.

Once the music and dialog mixes were set, a second pass was made to mix the effects, for which a third stem was created, after which a third pass was made to create the 5.1 mix. Working from cue sheets supplied by the sound effects editors, Tavella would build the sound picture from tracks that were often very complicated, particularly in battle sequences. "The Battle of the Bulge sequence was huge," he recalls. "In something called the Schweinfurt Raids, which were loaded with aerial bombardments, there were dogfights and lots of planes. You're inside the B-17s, the B-29s, and you have the machine guns shooting, the turret gunners, people yelling on the intercoms. And every episode is just filled with battles."

Not all parts of a battle sequence mean a barrage of sound. "I think nothing makes sound more effective than the absence of sound," says Burns, "particularly, say, during the surreal moments following an explosion. Sometimes we would purposely allow the music to suddenly rise up and the effects would pull back to an almost surreal experience, where you might just be hearing echoing, reverberating, distant sounds."

The resultant sound field takes what often has been a boring nuts-and-bolts recitation of strategy and armament and turns it into vibrant storytelling. "It doesn't have to be homework," says Burns. "There's an aesthetic aspect to history, and we're as interested in that as anything. This is much more emotionally immediate. It's like a big, huge sock right in our gut." ∎

Matt Hurwitz is an L.A.-based freelance writer.

World Radio History

Still Crafty After All These Years

Old Friends Reconnect to Celebrate Paul Simon's Gershwin Prize

By Bud Scoppa

This story I'm about to tell begs to be adapted as the screenplay for a buddy movie. The plotline goes back four decades to the leafy quadrangles of Princeton University, motors up the New Jersey Turnpike to Greenwich Village and then crisscrosses the country in a mobile truck with the King Biscuit Flower Hour crew before working up parallel subplots in New York and L.A. The climactic section, set in the present, is played out against a tableau of gleaming hardware and technological breakthroughs, which only serve to reinforce the deep and longstanding bond that connects the protagonists.

The main characters are Bob Kaminsky, once a producer for King Biscuit and now a partner at RipTide Music, a "business-to-business record label" in L.A.; XM Productions/Effanel Music head Randy Ezratty, whose remote trucks were once used by Kaminsky for King Biscuit remote recordings; veteran producer/engineer Robert Margouleff, founder of Hollywood's Mi Casa Multimedia; and studio architect/acoustical designer John Storyk, co-owner of New York–based Walters-Storyk Design Group and the Princeton classmate of Kaminsky's brother, Peter, and soon thereafter Kaminsky's roommate in a Village bachelor pad, as well as his bandmate in a blues combo.

Storyk and Margouleff became friends when the latter was recording Stevie Wonder's *Music of My Mind* album at Jimi Hendrix's Electric Lady Studios, which had been Storyk's first major studio project. Margouleff is one of two godfathers of Storyk's daughter, as is producer/engineer Eddie Kramer, who worked with Storyk on Electric Lady. He describes Kaminsky as an "unofficial godfather."

Spider-Man couldn't weave a web this tangled, but there's more. It was Storyk who introduced Kaminsky to RipTide founder Rich Goldman a quarter-century ago, when Kaminsky was doing A&R for A&M Records and Goldman owned and ran the Storyk-designed Fifth Floor Recording in Cincinnati. A quarter-century later, Goldman and Kaminsky are working side-by-side at a company whose musical range, Kaminsky notes, "goes from indie bands to the Library of Congress."

The joint mission that brought all of the above back together in 2007: creating and recording a concert and TV special for PBS commemorating Paul Simon being honored with the first Library of Congress Gershwin Prize for Popular Song.

The seeds for the event were sown in 1999 when the Kaminsky brothers approached Dr. James Billington—the Librarian of Congress and Kaminsky's professor back at Princeton—with the concept for be-
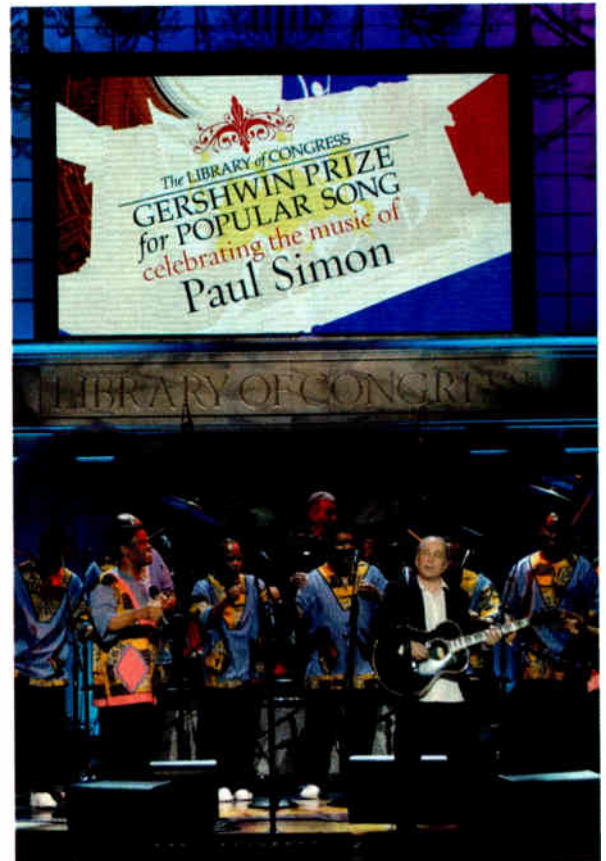
One of the highlights of the concert aired on PBS was Paul Simon's performance with Ladysmith Black Mambazo.

The production team at Mi Casa. Standing: Brant Biles (left) and Robert Margouleff; seated, Bob Kaminsky (left) with Mix's L.A. editor Bud Scoppa.

stowing what would be the nation's highest honor for songwriting. Fast-forward eight years to the moment when the Gershwin Prize finally became a reality, with Kaminsky as the executive producer and brother Peter functioning as head writer.

"When Paul said, 'Yes,'" says Bob Kaminsky, "the first call I made was to Randy at Effanel to make sure we could bring in John Harris, who worked with me during the King Biscuit days, and Mitch Maketansky, a great audio producer who was trained at King Biscuit. We then confirmed XM/Effanel Studios in New York for the mix. And then I decided to do the post-conform, sweetening and correction at Mi Casa because TV shows are all over the place and these guys know how to make it into a cohesive audio experience."

Hans Zimmer's Scoring Collective

Composer Collaboration at Remote Control Productions

By Matt Hurwitz

Film composer Hans Zimmer looks up from his computer monitor and keyboard to deal with an interruption. Although he's busy at work on a score, there is always time for this kind of intrusion: His small children have arrived for a visit and have brought dad some choice artwork to add to his collection.

Zimmer is master of his domain in the cavernous space known as "Hans' room" at Remote Control Productions in Santa Monica, Calif. With its exquisite wood paneling and flooring and plush furniture and accoutrements, the room "reminds me of a Viennese brothel," the composer jokes. While the fine-art books in the bookcases may say one thing about the space, the racks of vintage Moog synthesizer modules and patchbays and rows of other gear send a clearer message: If you come to this brothel, you'd better come equipped with a tune.

Comprising a dozen composing rooms, two state-of-the-art mixing studios and a recording space, Remote Control provides a home not only to Zimmer, but also to a great many other composers who have come up through the ranks to become some of the film and television businesses' top scorers. Harry Gregson-Williams, John Powell, Steve Jablonsky and James Levine are but a few who take refuge at the facility.

"Harry said to me, 'Do you know, in the summer, if you look at the box office, four out of the top five films were done

PHOTO: MATT HURWITZ

Hans Zimmer relaxes in his room at Remote Control Productions.

by people from here?" remarks Zimmer, who himself has written scores for such

Walking on Dead Fish

Film Documents Youngsters' Lives After Katrina

By Janice Brown

A new documentary by first-time director Franklin Martin follows the East Saint John high school football team of LaPlace, La., through its extraordinary 2005 season. A small Cajun town just outside New Orleans, LaPlace became a refuge for 20,000 displaced evacuees after Hurricane Katrina. Its high school system took in 1,700 displaced students, 500 of whom landed at East St. John. With personal ties to New Orleans, Martin had been following the disaster from his home in Los Angeles, but first heard about the East St. John football team while on a flight to New York for a 9/11 memorial.

"I bought every magazine with Katrina coverage, and by the time I got on the plane I'd already decided I had to go down there and do something," Martin recalls. "I read an article about this little high school coming up against its arch rival and how they had to integrate all these displaced players." Martin himself had been displaced in New Orleans for a brief period as a child, so the story struck a chord with him. He is also a former college basketball player, current NBA and collegiate-level basketball trainer, and lifetime New Orleans Saints fan. His passions for filmmaking, athletics and the Big Easy converged in an instant. East St. John's first game was coming up right after the 9/11 anniversary, so he left New York and flew down right away.

Six months of shooting followed, with only Martin and his camera taking initial footage and the camera's built-in omnidirectional mic capturing audio. "I made the decision to do this guerilla-

From left: Robert Wear, Guillermo de la Barreda, Dain Blair, Franklin Martin and Gerhard Joost

style because of the circumstances down there," Martin explains. "I wanted to become close to my subjects and knew I

Horror Audio
Mixing Mayhem Can Be Fun

By David John Farinella

Effects mixer Gregg Rudloff wants to make you feel uneasy. Granted, that's not usually the assignment for the two-time Oscar winner (for *Glory* and *The Matrix*) and four-time nominee (most recently for *Letters From Iwo Jima*, profiled in the January 2007 *Mix*). But his latest mixing job is for a shake-'em-up scary film—*The Invasion*, a remake of the 1956 classic *Invasion of the Body Snatchers*. Rudloff is one of many audio post-production professionals riding the current wave of horror popularity.

Rudloff says that from a mixer's perspective, the onscreen action in a horror film is obviously different from a romantic comedy (like *Must Love Dogs*, which he mixed in 2005), but the overall purpose of the audio is the same no matter the genre: "You are there to support and enhance the storytelling in whatever fashion the filmmaker wishes, but with a horror film you kind of go counter to what you might do in the other genres. A horror film is darker in tone; it's more ominous, it's brooding. So in the sound mix, you want to keep your audience uncomfortable.

"We do a lot of things sound-wise to help the filmmaker achieve this, whether it's misdirecting the audience or building false tensions or scares. We might build a false sense of security before something scary happens," he says. "Where in other films you might want to have nice, smooth transitions between scenes, in a horror film we might do the opposite: We might make an uneven transition so that it startles the audience a little bit—not spill-the-popcorn startling, but just something that's a little off and uneven about it. It can be something as subtle as a background sound."

For instance, he'll often set up an ambience track that includes a handful of elements, and as he wants the mood to change he'll take something out. "Hopefully, the audience won't be aware of it, but it will affect them," he says. "Sound effects and music are both great tools for doing this, but the key is that you don't want the audience to feel that you're [leading] them this way."

Melissa Hofmann, who recently completed work on the psychological thriller *Captivity* after working on such titles as *Black Christmas, Thank You for Smoking, My Big Fat Greek Wedding* and a slew of thrillers during her varied career, agrees that one difference in the horror genre is that the audience is kept off-balance, often by the lack of sonic build in the soundtrack. "You gotta keep coming at them," she says. "It's gotta be, 'Let's kill somebody now! Let's kill somebody else!' You have to keep the action going."

In the case of *The Invasion*, "The movie starts off going great guns," Rudloff says. "[The viewer] has no idea what's going on when this movie starts. They are with Nicole Kidman in the middle of her world, which is in utter chaos. So this isn't a nice, slow-building movie. The moments where Nicole's world is in total disarray are where the most apparent oddities are and where the weirdness in our sound is. By the same token, the soundscape of this movie is going to change throughout."

PHOTO COURTESY WARNER BROS. PICTURES

Nicole Kidman in **The Invasion**

Supervising sound editor Perry Robertson, who has worked on the latest *Halloween* project, as well as the Rob Zombie flick *The Devil's Rejects* and many others, points out that while horror has its own challenges, at times working on a loud movie is easier than a quiet, simple film. "You hear every detail [in a quiet movie], where in some of the bigger scenes [in horror films] it gets so loud that you can hide it if you have bad production [tracks] or whatever. As far as horror goes, we are trying to set moods."

"If the picture is leading them to be jarred, then we have to support that with sound or lead it with sound," Hofmann says. "If it's an environmental sort of thing, then sound can play a huge part of giving a feeling without necessarily the audience even knowing. Those subtle things can help to build up to or support the bigger things. Or on something that's more psychological, they can be a big element of that subconscious feeling. People don't even think about it; they just kind of squirm a little and that's what we are after. I love that—to be able to get to them without them even realizing it, to get them on that visceral level."

Hofmann had the opportunity to do just that while working on *Captivity*, as she manipulated the character's dialog tracks to up the film's creepy factor. "There are two captives in separate rooms who talk through a vent," she says. "The captor has an intercom between the two rooms, so they can hear each other through the intercom. You can hear some direct sound through glass. Then

Gregg Rudloff creates "uneasy" sounds for horror films, including **The Invasion.**

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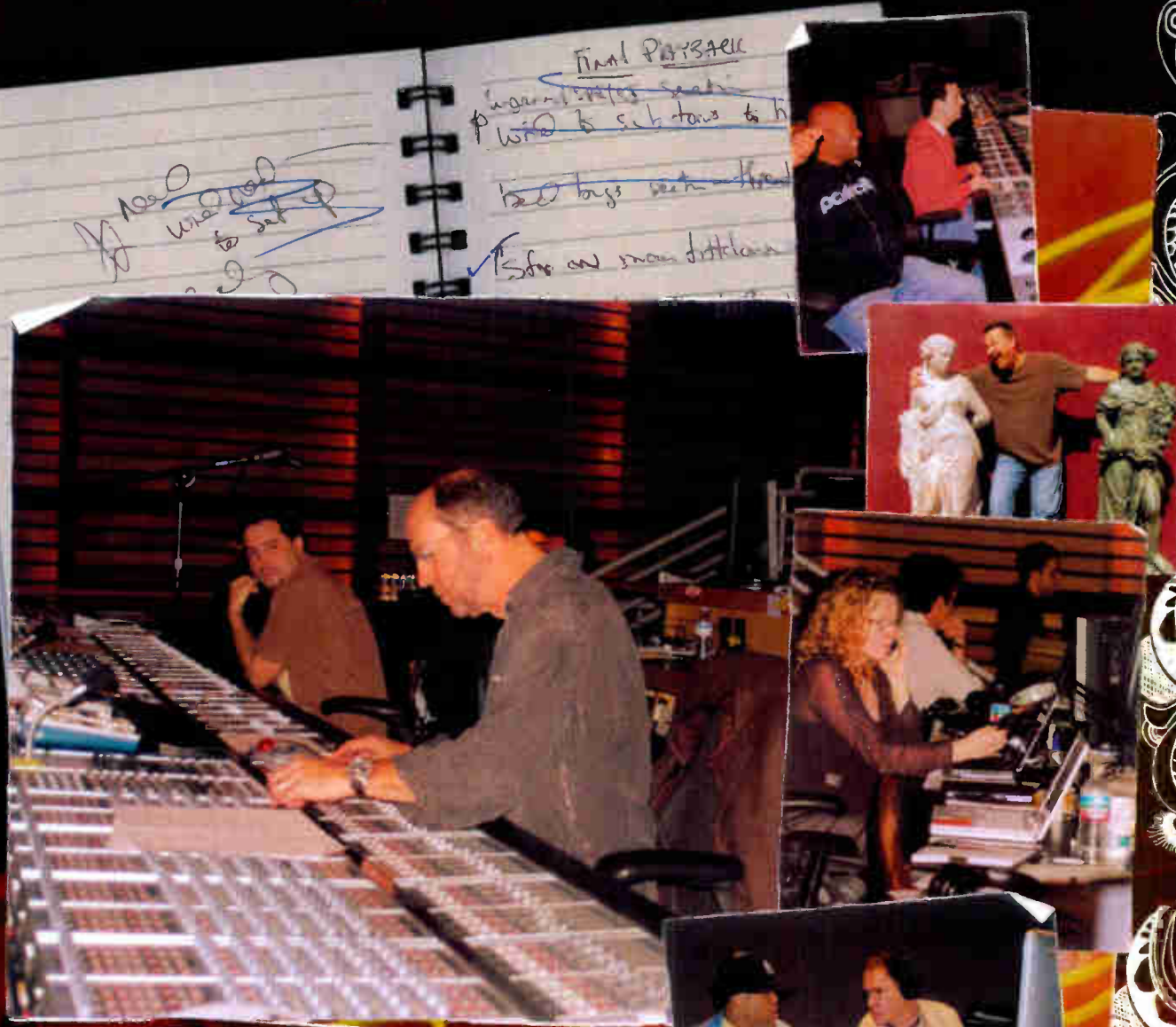
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Melissa Hofmann upped the creepy factor in Captivity by manipulating dialog tracks.

the captor has a horrible sound torture thing that he plays really loud."

One of the things that helped make this soundscape work, Hofmann explains, was the fact that the film's picture editor, Richard Nord, had ideas about the soundscape and temped in an interesting track. "I think that's one thing that helps a lot," she says, "if the picture editor is very creative and helps to get an idea of the sound as he goes through."

It also helped that the sound design team, headed by Scott Sanders and Robertson, had the musical score from Marco Beltrami before their work started. "It was a unique situation, because Marco did a lot of ambient stuff and we had that before we did the sound design, so they were able to integrate the sound," Hofmann says. "It all worked together to make this rich, thick and compelling soundtrack. There's a lot of detail."

"You can't tell where the design starts and the music ends," adds Robertson, "or where the music starts and the design ends. It is awesome-sounding."

Rudloff, Hofmann and Robertson agree that the subwoofer can be used effectively while mixing a horror film. The key, however, is to use that low end judiciously. "Live by the sub, die by the sub," Hofmann says with a laugh. "The standard is that if you want to make something louder, you make something softer before it. You've got to have dynamics."

"I do a lot of loud movies, but I don't think that very loud, bombastic sound is the best direction, even for action movies," Rudloff notes. "I like to use the sub for impact occurrences. Obviously, if there's an

explosion or if somebody kicks in a door, you can use the kick, but I don't like to have it as a steady element. I think it muddies up the sound; it clouds the details that might be apparent in other areas."

Sonic details, in fact, seem to be prevalent in horror mixes, Rudloff adds. "I would say that there are more abstract sounds in horror films, things that you wouldn't normally put in a scene because you're trying to create this odd world that's not quite in sync," he says. "We will use a lot of [sonic] treatment on a horror film. Even on something like a door close, I might add more low end. I may want to have a little weirdness to it. I might add a little flange or pitch it. Again, it's not a traditional sound that the audience is comfortable with and you can use it on anything, even dialog."

Then there are the times when you want to make an audience jump. "People go to horror movies because they want to be a little scared," Robertson says. "I think the problem that people get into is that they pre-sell the hit or the chop with scary music. I think you've got to use the element of surprise to make them jump. People are so jaded these days, and it's hard to make anyone jump anymore. Part of it has to be the picture, part of it has to be the music and part of it is the sound. You hit them with a loud sound using subwoofers. If you get that quick hit from the sub, you'll feel it in your chest."

From top to bottom, horror soundscapes are meant to be as fun as the films themselves. Hofmann recalls a time when she was working on a temp mix for the 2003 film *Freddy vs. Jason*, and director Ronny Yu was in front of the stage jumping up and down. "He would be screaming, 'Yes, yes! This is the WWE!' He wasn't trying to make a cinematic masterpiece," she says

PHOTO: SANDRA MOLINA

Perry Robertson judiciously uses subwoofers to make the audience members jump out of their seats.

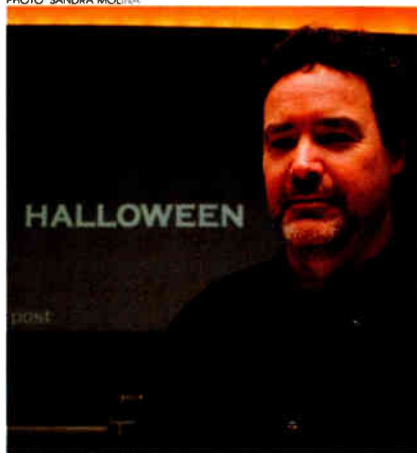with a laugh. "He wanted it to be a good time. These are two horror kings that are fighting it out, throwing stuff, but doing it in a gory movie fashion. That's when it's fun—when you can go for it and they are not taking it too seriously. If you're doing horror but they are trying to do some masterpiece, then it's tough to get those two to jibe together." ∎

Paul Simon

A week of rehearsals took place on a New York soundstage taped off to mimic the stage of Washington, D.C.'s Warner Theatre stage, with Effanel's Digidesign ICON–equipped L7 truck parked outside. "We then moved the whole thing to George Washington University and rehearsed there for two days, and then moved the whole thing again to the Warner Theatre," says Kaminsky. "So the band was playing together for 10 days. Paul was at just about all of the rehearsals. We had a fantastic afternoon watching him teach James Taylor 'Still Crazy After All These Years.' That was like seeing a master class in song interpretation."

The concert, which took place on May 23, featured Art Garfunkel, Taylor, Stevie Wonder, Lyle Lovett, Allison Krauss, Stephen Marley, the Dixie Hummingbirds, Ladysmith Black Mambazo, Yolanda Adams, Jerry Douglass, Marc Anthony, Jesse Dixon and Shawn Colvin. The three-hour show would be edited down to 90 minutes for the PBS special, which aired June 27.

The Pro Tools and RADAR files were transferred to Jazz At Lincoln Center for mixing on one of the facility's three ICON controllers, with Harris—who, like Ezratty, had recorded countless King Biscuit concerts with Kaminsky by his side—and Rob Macomber at the console. Phil Ramone mixed Simon's performances with the artist on hand.

Says Ezratty: "The L7 truck was designed as a clone of Jazz At Lincoln Center Studios, so everything that John worked on in preparation and during the show was instantaneously recalled. That made the project flow more efficiently than anything we've ever done."

From there, the mixes were sent to Mi Casa for 5.1 post-production sweetening, with Margouleff's partner, Brant Biles, at the Sony SIU 100 interface. Back in the '90s, Margouleff and Biles had come up with the idea for a facility dedicated to creating state-of-the-art audio for TV viewing. They set up the facility in Margouleff's Spanish-style home at the base of the Hollywood Hills; its

original owner was Bela Lugosi.

"This show is the real convergence of everything that's good about audio on television," says Margouleff. "It brings together the best possible audio in 5.1 and the best possible reproduction with high-definition video—and it doesn't get any better than that."

It took a lot of work to make the sound of the concert as aired seem completely natural. Biles worked primarily with the SADiE PCM-H64 recorder/editor running CEDAR Retouch and the same company's noise-reduction package. "We did the project in full surround," Biles adds. "There was an editor in New York who did his stereo version and that served as a template, with down-and-dirty rough cuts. Two recordings were done at the show—a Pro Tools recording of the band itself and a 24-track RADAR recording with all the announcer, ambience and voice-over mics. So it was a matter of taking the realized video edit and putting these pieces together—being able to push audience and emphasize response to jokes and things like that. There were also clips to integrate. You can hide a lot of things in stereo, but when you've got a mix of musicians and then ambience mics placed in your mix throughout, it's much harder to crossfade from one bit of audience to another and not hear the difference in audience attitude over the course of the show. So sometimes I would have to take their mix, sample-align it with the RADAR tracks and supplement the ins and outs of the songs."

Says Kaminsky of the process: "Thanks to DigiDelivery, we were able to take mixes from a studio in New York and have it translate perfectly to a studio here in L.A. One day we called Effanel in New York, and said, 'Hey guys, the piano in the Marc Anthony song needs to be a little bit louder and the guitar solo needs to be a little louder. Can you redo that and post it in two hours?' And they went, 'Yup.'" ∎

In 1980, while doing A&R at Arista Records, Bud Scoppa tapped Margouleff to produce the Bus Boys' album Minimum Wage Rock & Roll. *In another twist of fate, Scoppa wrote the liner notes for Columbia/Legacy's reissues of Simon & Garfunkel's studio albums; he recently completed the notes for* Simon & Garfunkel Live 1969.

Hans Zimmer

blockbusters as the *Pirates of the Caribbean* franchise, *The Da Vinci Code, The Crimson Tide, The Lion King* and so many others.

The facility began 10 years ago when fel-

low composer Mark Mancina suggested the two share some space. "I wanted to build one room for me, and Mark, who's a friend, said, 'Wouldn't it be nice if we could share space or something?' It made it cheaper, but, at the same time, it seemed like a nice idea to have a sort of collaborative facility." Thus was born Media Ventures, which recently changed to its current name, Remote Control Productions.

The collaborative atmosphere concept stuck. Composers routinely pop their heads in to check out colleagues' work, tossing in the occasional idea. "I probably get more ideas from Heitor [Pereira, composer and Zimmer team member] than I give him," Zimmer says. "I've done 100-odd movies, but every time I start a new one I just sit in front of a blank page.

"The other day, Harry was mixing something, and after hearing it I just went straight back to my room and threw my stuff away and started again. We are competitive and there is a challenge, on an aesthetic level, which is really great. I heard his piece, and thought, 'Hang on a second—I better live up to that.'"

ANOTHER SET OF EARS

One collaborator who can frequently be found alongside Zimmer is scoring mixer Al Clay (who alternates with engineer Alan Meyerson, depending on the project and schedules). The two met in London in 1983 at Trident Studios, where Zimmer was busy programming a Fairlight Series I sample sequencer for, as he describes it, "this horrible disco track."

"I was a tea boy," Clay recalls. "It was 10 minutes into my first day, while I was being shown my duties. I walked in, sheepishly looking around the room, and saw this guy in leather pants and a flight jacket beating away on something."

It didn't take long for Clay to make an impression. "I had just spent three days programming on this little computer," says Zimmer, "and he came in and tripped over the mains cable—ripped it out of the wall. I hadn't saved and three days' work went up in smoke, and I went hysterical."

"He was screaming, 'It's crashed! It's crashed!'" adds Clay. "I was thinking, 'Crashed—obviously a bad thing. I don't know what it means, but I'll help you fix it.'" Zimmer adds, "He didn't seem too phased by my screaming, so I thought, 'Whoa! Character strength. Guy can take a beating.'"

Not long after, Clay was hired by the composer, and the two began working long hours at Zimmer's tiny studio, Little Yard, in

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West London. "We used to do tons of commercials, which was a great way for Hans to pay for the new equipment he wanted to use," Clay says. "We'd literally do two or three jingles in the morning, and then we'd be back on the film score in the afternoon."

Clay certainly proved his worth on Zimmer's first big film project, Chris Menges' 1988 film, *A World Apart*. "There was one scene that I absolutely didn't know how to write," Zimmer recalls. The composer put picture up and simply played against the image. "I hated everything. And then about 9 o'clock, Al said, 'Well, come and have a listen to this.' He played me this really beautiful track, and I said, 'What's that? Where did you get that from?' He said, 'Oh, that's the first thing you played this morning.' He knew that I needed to go through the process, and he kept his mouth shut all day. He'd already done it."

Zimmer brought Clay with him from the UK for his first big American film scoring project that same year, *Rain Man*, recorded at the former Record Plant West on the Paramount Studios lot.

WRITING TO PICTURES

While the workflow might vary from project to project, depending on the film and its director, Zimmer follows a fairly unique process for his scoring work. Avoiding traditional spotting sessions, Zimmer begins simply by meeting with the director to go over the film. At the same time, he sometimes can base his themes on something as simple as a photograph. While director Gore Verbinski was shooting his 2005 film *The Weather Man* in Chicago, Zimmer was trying to get a grasp of the film's emotional experience without seeing any footage. "I said to him, 'I can't make heads or tails out of this. What is this going to be? Send me something.' And he sent me a photograph from the set, with those green hospital walls and with a clock in the corner. And I wrote pretty much the whole thing just from that photo."

The first thing Zimmer does is create a 20-minute suite containing all of the dramatic and character themes. Once the demo suite is completed, Zimmer will play it for the director and producer. "Hans will explain the parts for each character and the overall feeling," explains Clay. "It gives the director a chance to say, 'Yes, I like that,' or, 'No, that could be even more…' But what they hear, actually, isn't going to change drastically when they walk into the studio and hear the orchestra, so there are no surprises. Hans' 'demos' will be very, very close to the final product."

Once everyone is in agreement, Zimmer begins composing the film to picture, scene by scene, with director meetings continuing two to three times per week. "Some people work just writing it all out on manuscript and scoring three or four or five days," says Clay. "The director will come down and hear it for the first time in its finished state with a full orchestra, and they may not like what they hear. Doing it this way just saves you that big surprise at the end."

Even though he is not composing any of the music himself, Clay is involved in each of those meetings. Says Zimmer. "I don't see the recording engineer as being separate from the musicians. They can't do what they do in isolation; we're all part of the team."

The team also includes a handful of additional composers who help flesh out Zimmer's ideas after he's created his initial composition for each cue. Explains Clay, "Hans will have this great idea, and he'll pass it on. He'll rely on these people all around him to see it through."

"Hans gives you a road map of the cue," explains composer Henry Jackman. "He's written a 2:30 piano piece, with loads of key changes, the mood of the movement. So you've pretty much got all the ammunition, emotionally." Jackman will lock the cue exactly to picture and begin applying Zimmer's music to the scene. "If you don't do that by the frame and you start doing a massive orchestration, you might find yourself going, 'Hang on a minute, I'm missing all the cuts.' It's much better to apply the map first." Once completed, he can begin orchestrating the cue, with Zimmer dropping in every so often throughout the day to make sure Jackman's work maintains his original ideas.

Zimmer's own composing environment is made up of a mixture of state-of-the-art recording technology and vintage instruments and sources. Choosing which instruments will be used for which film depends on the project, he says. "And people constantly seem to mis-hear what I'm doing. They're criticizing synth sounds on *Pirates* when there are no synth sounds. All it is is an orchestra shoved through a big Marshall stack.

The composer has a great affection for analog synth equipment, including Moog modules recently used on *The Da Vinci Code*. "There just came one bit where I had to drag out the big old Moog because nothing else had that sort of resonance." He typically records to Pro Tools using a Cubase sequencer and GigaSamplers.

New equipment and software arrive fair-

World Radio History

PHOTO: MATT HURWITZ

Al Clay began working with Zimmer in 1983.

ly regularly at Remote Control, but it rarely is put to use straight out of the box. Upstairs in a loft space filled with cool old gear (like a Commodore 64 with its original ROM card and built-in MIDI interface), engineer Mark Wherry can be found taking things apart and making them fit. "[Wherry is] really a thinker and philosopher of musical technology," Zimmer says.

"Mark doesn't just screw around with stuff," Clay comments. "He actually has the ability to take the software and rewrite it."

According to Wherry, "There's a lot of things that Hans uses, like the touchscreen in front of him that has custom software that drives it. And we've customized things to allow the Gigas to work slightly better." He and his team also designed and built a custom network MIDI solution that can handle the facility's 14 GigaStudio computers with a large number of MIDI interfaces.

The mixing system includes three Pro Tools rigs—one for synth outputs of Zimmer's drums and percussion, etc.; one for orchestra; and a third to handle the mix. Clay says Zimmer remains quite involved down to the mixing stage.

"He'll have a definite plan of what he wants, and he thinks spatially," notes Clay. "For *Da Vinci Code*, he had a vision of the viols up in the gallery at AIR Studio, and as he was writing he knew that would be the case. So when it came time for mixing, he knew he wanted them in the surrounds, and we put them up there.

"A lot of people are either techno-heads or they're strictly composers and fumble with the technology," Clay says. "One of the great things about Hans is that he's got that technical head, but also the free composer head, and he somehow manages to marry the two." ∎

Walking on Dead Fish

could do that better alone, plus there was nowhere for me, let alone a crew, to stay." He settled at a motel in West Baton Rouge and drove the 170 miles round-trip to and from East St. John High every day, sometimes more than once.

The football team took on 20 displaced players from 20 different high schools, and the unique assimilation triggered remarkable results in that '05 season. Martin documented the entire thing, shooting throughout the season—starting out with a Canon XL 1 and moving to a Panasonic DVX-100A—and then returning to shoot the January awards banquet, spring graduation and concluding summer scenes.

"At the beginning, I told these people, 'Listen, I just want to be part of your lives and record history,' and I hoped I'd find a story that would be good enough for local cable or something," Martin shares. "But as I started shooting, I realized the story was an amazing one, and I eventually stepped up production by bringing in another cameraman and equipment." The addition of lavalier and boom mics dramatically improved the film's audio at this stage, but the proverbial damage was already done: The camera's omni had picked up copious environmental noise, and sound for the first portion of the footage was a serious problem.

"My thought was that the problems facing this little team—lack of equipment, lockers and playing time—would be a microcosm of the problems facing the school: lack of books, classroom space and teachers," he says. "Of course, that is a microcosm of the problems facing the community: lack of food, water and shelter. This amazing story and important message was all there, but I would say about 30 percent of it was inaudible."

Post-production for *Walking on Dead Fish* exposed Martin to the wonders of replacement sound design and the restorative abilities of a good sound mixer. But only after a distressing setback. "I've heard post can be a nightmare and this really almost was," Martin says. "I did my temp music and initial mix with my first music supervisor, and it was truly near-disaster. I had important scenes with inaudible dialog and an audio editor telling me we couldn't use them."

Surprisingly, it was through his Pro Development Camp that Martin found help. Dain Blair is the executive creative director at Groove Addicts in Los Angeles and the father of a young basketball player in one of Martin's clinics. "Franklin and I had spoken a few times about what we do here at Groove Addicts, and he'd been telling me

about this documentary," Blair says. "One day, he offered to play us a rough cut to see if we might be interested in getting involved. The moment I looked at that rough cut, I fell in love with the project, and we immediately worked out an arrangement that we would handle all the audio."

Groove Addicts made its 40,000-track production music catalog, staff composers, sound designer and chief engineer available to Martin. Sound designer Robert Wear and chief engineer Gerhard Joost took on the difficult challenges of "pulling out" or replacing inaudible dialog and sounds, and Guillermo de la Barreda—director of Groove Addicts' production music library division—signed on as music supervisor. All recording and mixing was done in Groove Addicts' two main Pro Tools HD studios, with sound design and production music sourcing happening in the auxiliary production/composition suites, also equipped with Pro Tools HD systems.

After initial spotting sessions, Groove Addicts tag-teamed the project. "At the same time, we were spotting the production sound, we were adding music and sound design," says Joost. Blair adds, "Robert had his work cut out for him dealing with some

of the poor production sound. He recorded a lot of sounds to enhance what Franklin wasn't able to capture that well initially with his one camera and built-in mic."

As Blair and de la Barreda worked with Martin on the music, and Wear improved production sound, Joost got to work on the mix, where, again, quality inconsistencies posed the biggest challenge. "Not only did Martin add cameras, but he started miking people and even using boom mics part of the way through, so it was a challenge to get the overall dialog sound to be consistent," Joost notes. "My BNR noise-reduction plug-in became very important on this project." The mixing process began in some fashion right away, as sound design, music and even *Walking* voice-over tracked. "I began mixing from the start so that we could develop an emotional map, a picture of how we were going to direct the sound. I'd have to say that the music played an important role in how the film moves, emotionally."

"This is almost wall-to-wall music," says Blair, "a big portion of which we were able to score from the production music catalog. Our custom compositions were the Cajun-inspired tunes that set the scene in the begin-

ning of the film." Groove Addicts composer and guitar master Carl Verheyen, touring guitar player for Supertramp, laid down a lot of the guitar parts on the original music.

Martin also brought composers Scott Gordon and Mark Mancina, who'd written two songs for the film, in to work with Groove Addicts. Scott Gordon's brother is *Grey's Anatomy* creator Mark Gordon, who also figures into this story. Before Martin even arrived at Groove Addicts, he and Mark Gordon had sold the movie rights to the *Walking on Dead Fish* story to Universal. Martin and Mark Gordon will be co-producers on the upcoming feature film, tentatively titled *Hurricane Season*, and have hired writer/director Billy Ray (*Breach*, *Shattered Glass*), who's currently writing the screenplay. Meanwhile, *Walking on Dead Fish* will reach audiences. "I've had a few people approach me about a theatrical release, as well as high-level cable and DVD," says Martin. "So there's no doubt the documentary's going to have a life now and a major part of that success is the sound."

For more information about *Walking on Dead Fish* and a charity Martin has established called the Katrina Wildcat Scholarship Fund, visit www.dutchmenfilms.com. ∎

World Radio History

BY ALEXANDER BRANDON

A Day at Obsidian Entertainment

Building an Audio Department From Scratch

I have built three audio studio/departments during my decade-long stint in interactive/game sound. The latest is a temporary setup for Los Angeles–based Obsidian Entertainment, of which I am the new audio director. Obsidian is not a multimillion recording/mixing facility on the scale of the new Sony game complex in San Diego or Electronic Arts' studios in Vancouver. We're a smaller, workhorse company focusing on integrating audio from outside providers. But in the world of games, companies like Obsidian do a lot of the work, and $25,000 is enough to equip a productive room if we choose our resources wisely.

Obsidian is run by Feargus Urquhart, who, along with the other four company owners (Chris Jones, Darren Monahan, Chris Avellone and Chris Parker), has been developing top role-playing games such as *Fallout* and *Knights of the Old Republic II*. (*Fallout* was one of the first games to use Hollywood voice-over talent—Ron Perlman, David Warner and Tony Shalhoub.) Now, Obsidian is branching into more settings with developing a role-playing game based on the *Alien* film franchise and an upcoming expansion pack in the *Dungeons and Dragons Forgotten Realms* universe: *Neverwinter Nights 2: Mask of the Betrayer*.

Life as a developer, as compared to a publisher, has come a long way. When I started in this business more than 10 years ago, you were lucky if you could afford a top-of-the-line sound card (which at the time would have not been an Audiomedia III but a Sound Blaster AWE64). Publishers began building über-studios when record industry and film industry talent started talking with top game publishers; I can remember back to 1995 when Spencer Nielsen built Sega's high-dollar in-house studio in San Francisco. At that time, developers had it rough. Budgets for games—in total—rarely hit $1 million and audio budgets would be, at most, $50k. Oddly enough, this is roughly the same as the 2 to 3 percent (up to 5 percent) that audio budgets in film allow (my sources being The Village's budget on *The Smoking Gun* and Oscar-winning sound designer Randy Thom's estimate on FilmSound.org).

These days, your average A-list game budget for any kind of action/adventure epic is around $15 to $20 million, with the top titles costing more than $30. You'd think that studios should at least be fairly generous to a developer with their audio budgets exceeding half-a-million. And sometimes they are, but not too often. At Obsidian, the top folks know the value that audio brings to a project, but as a developer they have to play the budget game with care. Not being a publisher with a

Obsidian Entertainment audio director (and Mix columnist) Alex Brandon designed this temporary studio for game audio integration.

profit margin the size of a small country's gross national product, developers are in the industry's most challenging position: to develop with just the right amount of risk and to yield fun and innovative gameplay without sinking your company if the market is fickle. Add to that risk the oversight of the publisher and licensors, and Obsidian has a huge set of challenges before it.

We're at a point now where I'm directing the build-out of a true audio department. We're starting small, even temporary, until we're able to move into bigger digs. Still, there's an awful lot to do. Right away, we have to integrate all of the audio in the aforementioned expansion pack, while coordinating integration, asset production and tech for two other larger-scale products, one of them being *Aliens*. What about "starting small"? Small means putting up about $25k to create a basic mix suite, complete with a top-of-the-line PC and two large LCD screens, decent control gear, a functional and pretty desk by Argosy, and acoustic diffusion and absorption by RPG. Oh, and a good set of sound libraries as a foundation for a custom one later on. I have the rudimentary tools to create killer music tracks, sounds and voice-over.

As far as workflow, the studio's purpose is to provide direction to outsourced content providers and do as much integration on-site as possible. This means we must have maximum flexibility with just the right amount of control. So the studio doesn't have to be top of the line for production, but it should provide an excellent monitoring environment and rudimentary asset-creation tools to fill in gaps, as well as prototype assets where needed.

Voice-over: I have an Audio-Technica 4040 mic on a tabletop boom with a good pop filter. This really is all you need for quick and dirty VO, especially for

World Radio History

prototypes and audio concepting in pre-production. The limiting factors? The room I am in has no isolation and is adjacent to a hallway with an elevator. Loud footsteps, voices, anything with heavy bass or mids cuts through my facing wall like paper and into the mix. I also have a very low-key pre-amp with an ART TubeAMP. It works, but it doesn't hold a candle to the hand-built Requisite at my last studio. A good Focusrite or TC Electronic preamp will be acquired for higher-quality VO. (Why provide prototype temp VO if it isn't at least fairly close to the final product?) I also have Mike Troke from Micworks popping by to provide quotes on room floating.

Music: The setup for capturing or creating music is pretty straightforward. I can record live players as the room is pretty dead. I also have plenty of Giga libraries and Nuendo 3 to throw it all together in a surround mix if I need to. I listen to 5.1 surround (the norm in games these days) through Genelec's Espresso system, which in my space (11x16 feet) is perfect. All that's left is calibration and perhaps some love from Vortex. (Vortex was covered in the July issue's column.)

Sound Effects: I've got 1.2 terabytes of sound effects ready for a database that I'll be building this fall using Netmix. What a lot of companies don't realize is that their sound effects, if they buy them outright, are available for future projects; we already have gigs available. As more audio staff come onboard, whether permanently or on a contract basis, we'll be upgrading to Netmix Pro so the search engine can be operated as an internal server with intraweb-like access.

Foley: No need for it. Assets are mostly created out of house, so high-end Foley production isn't a priority here. At studios like Technicolor and Soundelux, who've been doing it for years, Foley studios are great to have, especially if you have five-plus projects going at a time and have the same design criteria (for example, if you want an awful lot of differentiated dungeon doors and want to build them yourself beyond what you can find in libraries). In most cases, though, you're better off letting the pros tackle Foley and instead focus on what really counts: how those doors sound in-game.

Speaking of in-game, that brings up another point: Mac vs. PC. What's easier? Having a top-of-the-line PC that can run your game engine toolsets and your audio production toolsets, or creating audio on a Mac, networking them to a PC and then integrating them? Much easier to do the former. Only problem is, the recording industry is still very Mac-centric. There are two VO batch programs I'd love to get my hands on—voXover and VoicePro—but they're Mac only. An awful lot of game developers' lives would be easier if their tools were all on the same PC.

Another great thing about Windows XP is that it allows me to route output directly into my RME Multiface II and out to Espresso so that I can monitor gameplay at runtime (when you actually play the game, as opposed to working on it in an editor), as well as in the company's editors, one of which is the highly extensible Neverwinter Nights 2 Toolset. This means using high-quality monitors to hear levels of your game as you're playing it. Because the toolset is for use by anyone who buys a copy of the game, I'll cover some of its features in a future column so you can actually see what goes into game audio implementation on the engine side.

This is a great start for an audio department—albeit a temporary one—and it didn't cost much to get it going. The most important aspect of such an endeavor is having smart and professional teams to work with that understand audio's importance in modern games, and Obsidian has that in spades. ■

Alexander Brandon is the audio director at Obsidian Entertainment.

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Chris Cornell

Photos and Text by Steve Jennings

Chris Cornell played San Francisco's Warfield Theater at the beginning of a tour in support of his new solo release, *Carry On*. After concentrating on songs from the new effort, Cornell ended his set with the crowd-pleasing "Black Hole Sun" from his Soundgarden days. Front-of-house engineer Terry Pearson is not carrying a mixing console; he specs a Midas H3000, "but I have seen Yamaha 4ks and 5Ds, Soundcraft MH3 and MH4s," he says. "The only outboard I'm carrying is my Avalon 737 and BSS 901. I need 10 comps, five gates, three 'verbs and a dedicated delay.

"Chris is a powerful singer, so there's never an issue as far as input gain," Pearson continues. "I generally will use an extra gain stage—such as routing him to a group—to give myself added vocal volume to get above the band. The BSS 901 is a good tool for smoothing out some of the spikes in the upper registers." Cornell sings through a Shure KSM9.

While the tour relies on venue-provided P.A.s, Pearson is able to create a consistent mix. "Most of the comments I've gotten indicate I'm succeeding. I obviously look forward to a time when we can carry full production. We have a good crew who help make my job easier. [Cornell] seems to be really enjoying this freedom, and the crowds are really into hearing his solo material, as well as songs from his Soundgarden, Audioslave and Temple of the Dog days."

Monitor engineer James Bump works on a Digidesign Profile; it's the first time he's used a digital console. "The learning curve is minimal," he says. "I've had no formal training on it, but it's very user-friendly." The band is on Ultimate Ears UE7 ambient molds with Sennheiser G2 Series. "The volume onstage is intense," Bump continues. "Pete [Thorn, guitar] and Yogi [Lonich, guitar] like their amps kickin'! Corey [McCormick's] bass is more of an issue on wooden stages. Using IEMs, I have more issues with the variety of rooms we're playing in than the stage volume." Drummer Jason Sutter rounds out the band.

Monitor engineer James Bump (left) and front-of-house engineer Terry Pearson

inside

News

Il Divo front-of-house engineer Rod Matheson at the DiGiCo D5 Live board, provided by Capital Sound; monitor engineer Chris Pyne also works on a D5 Live.

On-Stage Rentals has taken delivery of a **D.A.S. Audio** loudspeaker system comprising products from the company's Aero and Compact lines...P.A. hire company **Pronorte Sonido** (Asturias, Spain) supplied **EAW** KF730 compact line arrays as part of an SR system for recent concert performances in Madrid by Argentinian comedy/musical group **Les Luthiers**. **Miguel Zagorodny** has been the group's sound technician for the past 10-plus years...UK-based **Essex Sound & Light** (ESL) upgraded its inventory with a new **KV2 Audio** ES system...Since 1986, **Meyer Sound** has been the official sound provider for the **Montreux Jazz Festival**, supplying sound systems for its many venues. The festival's largest venue, Auditorium Stravinski, featured Meyer MILO loudspeakers and 700-HP sub; and Miles Davis Hall saw a system based on the MICA loudspeaker and the 700-HP...The **O_2 Wireless Festival** and **Hyde Park Calling** (London) saw a **Turbosound** Aspect system on the second stage, brought out by **Britannia Row Productions**...Dealers spent a mid-June day at **Yamaha Commercial Audio Systems'** headquarters to check out the official launch and training of the new Yamaha DSP5D system and ADK LYVE Tracker.

FixIt

Rick Reith is currently tour managing and mixing front of house for Eric Johnson and Fuel.

Here's a technique to fatten up your front-of-house mix when using a Yamaha PM5D. Not only can compression be applied directly to the stereo bus, you can take it one step further. Patch the main left/right outputs from matrix 1/2. Assign stereo A to matrix 1/2; also assign stereo B to matrix 1/2. After adjusting your stereo to matrix levels, dial in your mix via stereo A as normal with the compressor off. With the fader at infinity, select stereo B and turn on the compression. Slowly bring the fader up under stereo A output. You will need to experiment with the compression parameters and level a little, but you can achieve a tighter, more punchy and controlled mix.

World Radio History

PHOTOS: DAVE VANN

On the Road

Amy Winehouse

Currently touring throughout Europe, UK darling Amy Winehouse flaunted her brazen attitude with which critics and fans alike continue to have a love/hate relationship. Fortunately for front-of-house engineer Dave Swallow, Winehouse maintains a professional demeanor when it comes to her sound onstage. *Mix* caught up with Swallow and the songwriter when the artist performed at Lollapalooza 2007 in Chicago. For a photo gallery from the festival, visit mixonline.com/photos/lollapalooza07.

How much gear are you carrying?
For Lollapalooza, we are only carrying mics due to the very short time we were going to be at the festival and our early afternoon slot. In Europe, we would normally carry a FOH rack containing a Crane Song Hedd 192, an Avalon 737, a BSS DPR-901, a TC Electronic M2000 and a pair of Sennheiser ew300 IEM transmitters. We carry Amy's wedges and amp rack to drive them and all our microphones. Depending on our slot on the festival, we might carry our own boards, as well. When we are touring, we will nearly always carry boards.

Any piece of gear you can't live without?
My Beyerdynamic DT770 headphones—these aren't the flattest-sounding headphones, but I find them to be very true sounding. I can line check on these when we can't put audio through the P.A. and it comes out pretty close to where I want it. Also, my Avalon is a godsend for Amy's vocal, especially when using a digital board. I find that due to Amy's unique vocal sound and the range that she sings in, digital preamps make her vocal sound very sharp and mechanical.

Where can we find you when you're not on the road?
I'm always on the road at the moment, but when the time comes for us to have a break, I'll get home and spend most of my time doing everyday stuff that everyone else does all the time—not very glamourous.

Now Playing

Buckcherry
Sound Company: LD Systems (Austin)
FOH Engineer/Board: Stephen Shaw/Digidesign VENUE
Monitor Engineer/Board: Mark Graham/Yamaha PM5D
P.A./Amps: Electro-Voice line array/Electro-Voice
Monitors: LD Systems custom
Outboard Gear: TC 2290, Eventide Micropitch
Microphones: Audix OM5, D6, D4, D3, D2, ADX51, i5
Additional Crew: Ken Floyd, guitar tech/stage manager; Kolby McKinney, guitar tech; Terry Gray, drum tech; Mike "Monk" Shear, systems tech; Anthony "Manchild" Didonato, systems rigger

Sounds of the Underground
Sound Company: Audio Analysts (Colorado Springs, Colo.)
FOH Engineer/Board: Brian Post (also systems engineer)/Yamaha PM5D
Monitor Engineers/Board: Chris Dietrich (also crew chief), Ryan Johnson/Yamaha PM5D
P.A./Amps: venue-provided/Crown MA-36, MA-1200, MA-3600
Monitors: Audio Analysts 12 VFX, 360 VFX, drum subs, sidefill subs
Outboard Gear: Lake Contour, Lake Mesa
Microphones: Shure Beta 58/57/98/91; Audio-Technica AT 3031/3035
Additional Crew: Aaron Fisher, stage tech

Gabriel Sound Heard Through Sonnox Plugs

Peter Gabriel recently wrapped up his European tour with longtime engineer Dickie Chappell manning a Digidesign Profile desk stocked with Sonnox Oxford plug-ins (EQ, comps, reverbs, etc.) at monitor world; Ben Findlay handled front-of-house duties with a Digidesign VENUE. Chappell, who has worked at Gabriel's UK-based Real World Studios and record label for more than 15 years, also recently used the plugs on a Sinead O'Conner recording date in Dublin.

Monitor engineer Dickie Chappell at the Digidesign Profile

Chappell used the EQ plug for Gabriel's in-ear monitors. "They don't need much EQ for Peter in the studio, but it's very different on the road and crucial that Peter hears himself clearly onstage," he says. Chappell says that he rolls off a lot of bass and boosts the high-mids and high frequencies to establish a full mix. Chappell also engages the Oxford Inflator plug-in to help keep Gabriel's vocals at constant gain. "It's a great plug for enhancing without taking over," he says.

Also heavy in rotation is the Oxford Reverb on a long plate setting. The drums are grouped and run through the TransMod plug-in and into an Inflator. "It's just like being in the studio," Chappell adds, "which is why we wanted to go with the VENUEs and Profiles. They, along with the Oxford plug-ins, help keep the sound as consistent as possible."

THE FRAY

Photos & Text by Steve Jennings

It's the story you don't hear that much anymore: Denver-based quartet The Fray started gigging at local venues, garnering a strong fan base and support from local radio, which led to a listener-driven campaign to get the band a record contract. The band won "Best New Band" honors from Denver's *Westword* magazine and got substantial airplay on two of Denver's top rock stations, creating such a spotlight on the burgeoning band that the band signed with Epic Records in 2004, signing on the dotted line onstage at the Fox Theatre in Boulder. Showing their love for the live performance, Fray enthralled crowds with their radio-friendly hits across the U.S.; *Mix* caught up with the party at the Shoreline Amphitheater (Mountain View, Calif.).

Front-of-house engineer Mark Maher

According to front-of-house engineer Mark Maher, he's manned DiGiCo D5s, and Yamaha PM1Ds and PM5Ds on previous tours, but this is the first time he's using a Digidesign VENUE. "The learning curve was almost non-existent," he says. "Having worked in a studio in the past with Pro Tools, I was very familiar with the plug-ins and how to get around the console. I also liked the clarity of the preamps—very transparent. I found the console to have a much smoother sound than the Yamaha digital consoles that I'd used in the past."

Maher is also using a pair of Avalon 737s, Manley VoxBox, Focusrite Liquid Channel and a pair of TC Electronic DBMAX processors. "This is my first tour with the DBMAX; I will never tour without it again," he says. "It 'masters' your mix. Every song heard on the radio is mastered; why shouldn't we do the same for live mixing?

"I have an incredible systems engineer from Eighth Day Sound, Michael Mordente. He had tricks up his sleeve to make my mix as consistent as possible in every venue on the tour. This is not an easy job—without a great systems engineer, every day can be a new disaster. Michael is on the top of my list for future tours."

Crew chief/systems tech Michael Mordente is taking the TC Electronic DBMAX to three Dolby Lakes for system processing, along with a SIA Smaart computer and a multitrack Pro Tools record/virtual soundcheck computer. "We are using Eighth Day Sound and are carrying 14 V-DOSC per side with three dV-DOSC downs, six d&b B2 subs and nine dV-DOSCs for side hangs with Q7 front-fills per side," Mordente says. "We are also using Lab.gruppen amps on them, and d&b D12 amps on the subs and front-fills."

Monitor engineer Brian Joseph (left) with monitor tech Chris Messina

Monitor engineer Brian Joseph is manning a Yamaha PM1D, recently making the move from a PM5D, using 54 inputs and 24 outputs.

"Four of the five musicians are using in-ear monitors," Joseph says. "They use a mix of the Westone ES-2 and ES-3, and also the UE 7-Pro. The transmitters and receivers are the Sennheiser EW300 IEM G2s."

Stage tech Justin Quade mikes the Glock with an AKG C 414. Guitar mics include Sennheiser e 906s, and Shure SM57 and KSM27.

Guitarist Dave Welsh plays a Gibson SG Jr., Gibson ES 330, Taylor 310, Benedict Groovemaster and a Fender Jazzmaster. According to guitar tech Jonathan "JP" Parker, his amps include an Ampeg Gemini and a MusicMan 1965 210.

Isaac Slade (vocals/piano/guitars) plays a Fender Stratocaster and Gibson L4, and uses a Fender Pro Jr. amp. He sings through a Sennheiser mic.
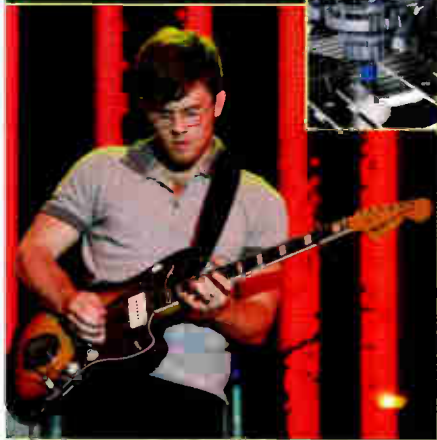
According to drum tech Jeff Linsenmaier, Ben Wysocki's kit is miked with Sennheiser e 602 and Yamaha SubKick (bass), Beyer M201TG (snare top), Sennheiser e 604 (snare bottom), AKG C 430 (hi-hat), Shure SM57 (tambourine), Sennheiser e 604s (rack/floor toms), AKG 460 (ride cymbol) and AKG C 414 B-XL II (underhead stage-right/left).

Guitar Tech Jonathan "JP" Parker

Guitar/vocalist Joe King plays a Gibson Les Paul Gold Top, a Gibson ES-335, J45, L4A and a Fender Stratocaster. According to guitar tech Jonathan "JP" Parker, his amp is a Divided By 13 FTR 37 and Fender Twin Reverb. He sings through a Shure Beta 58.

Smashing Pumpkins

Refitting the Fillmore for Comeback Dates

By David John Farinella

Billy Corgan, vocals/guitar

Bassist Ginger Reyes

Guitarist Jeff Schroeder

Drummer Jimmy Chamberlin

In support of their latest release. *Zeitgeist*, the Smashing Pumpkins' much-anticipated U.S. tour is drawing the same crowds and attention the band garnered the last time they toured—back in 2000 when the *Machina* album was at the top of the charts. Today, original bandmembers Billy Corgan (vocals/guitar) and drummer Jimmy Chamberlin are sharing the stage with guitarist Jeff Schroeder, bassist Ginger Reyes and keyboardist Lisa Harriton, booking out select venues for long runs. The tour began in Asheville, N.C., where the current lineup performed a sold-out nine-show residency at the Orange Peel, followed by another sold-out, 11-date gig at San Francisco's famed Fillmore, where *Mix* caught up with the tour in mid-July.

When a band sells out an 11-night stay, they're accorded a certain amount of respect. At the Fillmore, they were allowed to strip the club of its existing gear and install their own system. "Billy really wanted to

present a super show, so we negotiated to bring in our own P.A.," front-of-house engineer Jon Lemon reports. "Nobody's done that before. In the end, city engineers came in and told us we had to put in new structural beams in the ceiling to create new [hang] points. It's been pretty interesting." An L-Acoustics dV-DOSC line array system—12 per side with four dV-DOSC subs—was flown per side.

And after a one-off show in Santa Cruz (just south of San Francisco) that the band played because the Fillmore had previously booked another act, they placed plywood over the stage decking. "The stage [in Santa Cruz] was wood, and the band has always loved the sound of wood," says monitor mixer John Shearman. "So we came back in and asked what it was going to take to put wood over the stage. That's been done, and it's all for the better. It was tough the first few shows in here—we were having a battle over headroom on the vocals, but it's all smoothed out now."

As if remaking a club system wasn't enough work, Lemon and Shearman got the word that the band was going to work in songs from the Pumpkins' extensive catalog, as well as tunes that Corgan was coming up with during his stay in San Francisco. As of the middle of July, Lemon reports that he has 74 snapshots stored in his DiGiCo D5 console. "Part of the reason we're doing these residencies in clubs is that Billy wanted to work in a lot more songs," Lemon says. And those 74 songs aren't just sitting in a corner, considering the band is playing sets that run up to three hours and include at least 25 songs. "He changes the set list every night," Shearman says. "Then there will
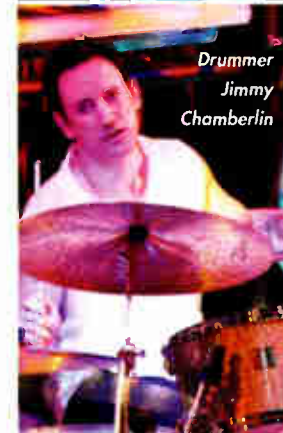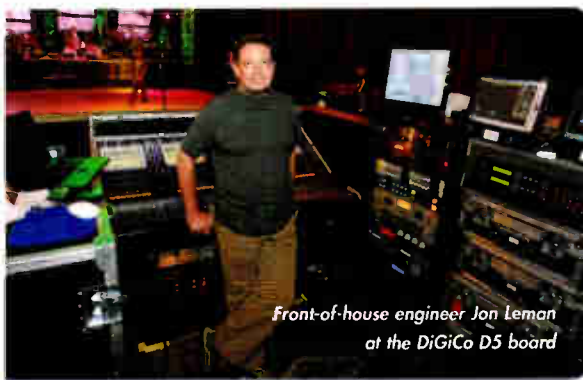
Front-of-house engineer Jon Leman at the DiGiCo D5 board

PHOTOS: STEVE JENNINGS

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Nelly Furtado

be two songs that they haven't done for a couple of weeks and then a new song that he wrote last night."

NO SLEEP FOR THE WEARY

"We work pretty much every day of the week, whether there's a show or not," Lemon says. "We'll do four hours of rehearsal during the day off, and on a work day we'll do four hours of rehearsal and three hours of show. It's almost James Brown-ish in its brutality." [Laughs] Plus, on the rare days off, Lemon has been heading into local studios to mix the performances for possible live CD or DVD releases. He is recording every show from a MADI split off the DiGiCo D5 console into a Pro Tools HD3 rig for archival purposes. Backstage, another pair of engineers handle two 96k Pro Tools rigs to record the shows for special releases.

Mixing for the band can be challenging for Lemon, but he's up to the task. The first key to making it happen, the mixer says, is that he doesn't mix loud, but aims for a sound that's big and full. The second is having the D5 on hand. "I can change the gains and open up the gates," he explains. "Without it, I think I'd be sunk. That's the big difference from when I did this in the

mid-'90s and doing it now. I know I have the dynamics well under control."

In addition to the D5, the tour is carrying an assortment of analog outboard gear at FOH, including a Manley VoxBox, two Smart C2s, an AMS Neve 33609, Summit TLA-100 and a DCL-200, and a Distressor to warm up the sound. Lemon will only add effects during one of the band's jams. "I'll pan things around a bit in the background to space things out, especially since we're here in San Francisco," he says with a laugh. "I add vocal echoes in the jams, but other than that it's pretty straight." Lemon uses a TC Electronic D-Two and System 6000, the D5's built-in delay and an Eventide Harmonizer "with the 'Pumpkinizer,' which is the setting that Billy came up with years ago," Lemon says. "I use that to give the old songs a different texture."

The final key to pulling it off, Lemon says, is that he and Corgan agree that live performance is its own entity. "So the song is going to end up where the song is going to end up, because they tweak it around with their arrangements and with the in-

Monitor engineer John Shearman with monitor tech Christy McCleary

struments that they use onstage. I have to take that and run with it as the Smashing Pumpkins live sound of 2007," he says. "It's just what it is at the end of the day, and it's usually good because the band plays really tight. I think the sound is far more sophisticated than it used to be."

Lemon spends extra time on microphone selection to ensure a clean sound. On guitar cabinets, he'll use Shure 57s and Neumann TLM 103s, which he calls the world's greatest all-around mics. Chamberlin's kit gets a Beyer TM88 and a Shure Beta 91 on the kick; the four rack toms are miked with Sennheiser 604 clip-ons; the

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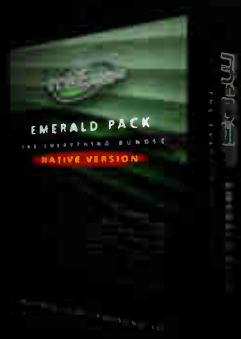
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two floor toms get Neumann TLM 103s; and the main snare sees a Shure Beta 56A and Sennheiser 904 on top with an SM57 underneath. "There are three mics on the snare because Jimmy is such a dynamic player," Lemon explains. "He'll rim-shot for half the show and then be back in the center." A second snare is miked with a 57. As far as cymbals, hi-hats get Neumann 184s and the overheads are TLM 193s.

Because Chamberlin has a full wedge and sub sitting behind him to monitor the show, Lemon has been careful about mic placement. "I've got the mics out of the way enough," he says, "although generally it sounds good through the monitors so I'm not really that worried about it. Any live kit, and I know this from years of doing live CDs and DVDs, is a bit of a jigsaw puzzle, and when you snap it right you're in."

The band added a Hammond B3 with a Leslie cabinet, and Lemon miked the top of the cabinet with a pair of Sennheiser 421s and one at the bottom.

Corgan's vocal mic is a bit unusual, Lemon reports. "It's a 57A with a 58 ball on it, so it pulls away more from the diaphragm than it would normally be with the 57A. It gives

him this mid-high thing that he likes and it cleans up the bottom end a bit." The backing vocalists are using Neumann KMS 104s.

PUMP UP THE VOLUME

Shearman, who is tucked behind the band against the wall at stage-right, is managing a loud monitor mix. Onstage are four Prism Blues and four Prism subs, two per side, as well as 12 SRM wedges and an ML18 sub for Chamberlin. Keyboardist Harriton is using a Sennheiser ew 300 ear system. "Billy feels that this kind of music needs the air movement that comes with speakers onstage," Shearman explains. "So we've got the big sidefill racks, but there's not much in it, frankly. It's mainly kick drum, but it looks rock 'n' roll, and maybe that's part of the reason we're using them. They are pretty loud because all the bandmembers wear ear plugs."

Strangely, that bit of news takes Lemon by surprise. "Does Billy? I didn't know that."

"Yeah, he wears the yellow ones cut in half so you can't really see them," Shearman answers with a laugh. "He's always worn them, but he has the amazing ability that if you change something, he'll look

over straightaway. He's got super-hearing."

One of the things that make the wedge mixes a little more palatable for both Lemon and Shearman is the fact that the band manages their backline mixes and can hear each other without monitors. "The wedges are there to emphasize what they can't hear," he explains. "So all Billy has in his wedges are vocals. Ginger has a little bass in there from time to time, and Jeff has a little guitar, as well. The drum mix is the one mix that changes from song to song and that's like a full-on front-of-house mix, basically. That's the main one I mix for the whole show."

After the Fillmore residency concluded August 1, the band was set to return to Europe for 10 headlining and festival shows, where Lemon and Shearman will face whatever new challenges arise from this evolved version of Smashing Pumpkins. "There's so much more texture now," Lemon says. "There's no doubt that all of them are better players and the new ones are great players. It's a natural progression and it's quite good." ∎

David John Farinella is a San Francisco-based writer.

BY SARAH BENZULY

Intellasound

Mid-Sized Company Finds Niche in Madison Area

It never fails: The summer months prove to be an adventure in phone-tag when trying to speak with the owner of a local SR company for this column. The bigger tours are coming through their towns, county fairs and festivals are cropping up left and right, and, during these warmer months, people are going outside to hear their favorite artists. The day I spoke with Tim Woodworth, co-owner of Intellasound (Verona, Wisc.; www.intellasound.com), he was prepping a system for that coming weekend's Crossroads Festival in Chicago, where the company will handle sound, lighting, staging and backline for the second stage. The following week, Intellasound will handle one of its biggest clients: radio station WJJO's event, which is similar to the WKRQ Weenie Roast.

Tim Woodworth (inset) brought out Intellasound's E-V array to the Winter Thaw Concert.

"They have 15, 20 bands in one day, 25,000 kids show up," Woodworth explains. "It's a whole lot of loud music and then everyone goes away! We do two stages: The one stage is pretty big—90x50—and we hang a line array on it and do several consoles, and then the B stage we bring in our Stageline SL250 stage." For this event, Intellasound will bring out its new Electro-Voice XLC DVX line array. "We had the XLCs and then they came out with an upgrade after we bought it, which includes a larger low-mid and a larger high-mid frequency," Woodworth explains. "So we went ahead and did the upgrade. We felt that to stay on top of the curve, we need to keep up with everything.

"We have all of the new E-V TG7 amps, which have IRISNet integrated into it so you can control everything from your laptop—you can see what your ohm load is at the amp to know if you lost a speaker at the end of the night in your array without having to fly it in and listen to each speaker. And then we have—well, a little bit of everything!" Indeed, Intellasound stocks a large selection of rider-friendly gear, including Midas and Soundcraft consoles, as well as a new Yamaha M7CL digital board, "which we're really happy with," Woodworth says. "We get a lot of engineers coming through who haven't been on a digital console and they can get the 10-minute digital one-on-one speech and be okay."

Also being packed into the truck to make an upcoming move into a larger warehouse space are several Turbosound Floodlight and TFM300 units, and a fine complement of regularly requested mics (AKG, Shure, Sennheiser and Neumann) and outboard (Lexicon, Yamaha, TC Electronic, Drawmer, BSS Audio, XTA). When it comes to responding to rider requests and anticipating upcoming equipment needs, Woodworth can draw upon his previous engineering skills to make profitable decisions.

He had been working in the area for other local providers for 10 years, as well as with a country band in town. "The drummer [co-owner David Maier] and I thought we could create a better wheel and so we started Intellasound 10 years ago," Woodworth recalls. "Since I had been working in the area for 10 years previously, I had a lot of contacts and then with Dave, the country band he was playing drums for was very successful in the area, so he had a lot of the festival connections.

"Most of our bread-and-butter is concerts of all scales—anywhere from 1,000-seaters up to 25,000 people outside." But the company's main gig is with the city itself and more directly, the University of Madison, Wisconsin. "Plus, Madison supports the arts, so we stay pretty busy," he adds. "Last year was the busiest I've ever been in my career in the months of December, January and February. We do stay busy with theaters; it's usually music-related—concerts of some sort here in town or within the tri-state area.

"The toughest thing is your people skills more than your engineering skills. You have to be able to decipher what certain requests actually mean. When they say they don't want it to sound 'woofy,' you have to say 'Okay, what does *woofy* mean? Let me go find my woofy knob and turn that down.' [Laughs] Madison's not a huge city and the campus is a big campus, but even with that there's only so much work in Madison. [The city] needs somebody that can serve on four, five different theater shows in one night. I feel that's what we're providing." ∎

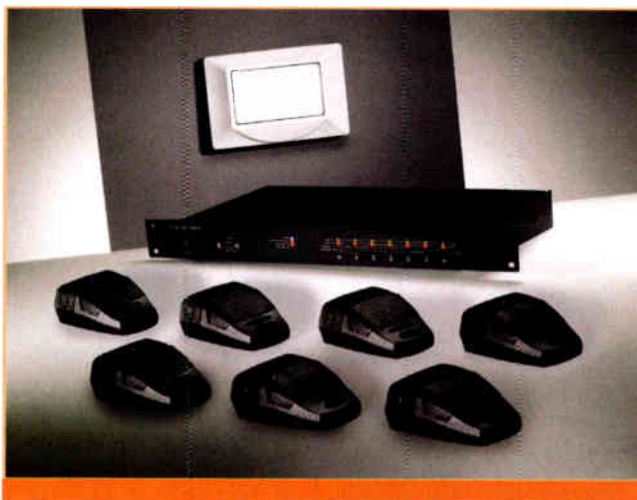*Sarah Benzuly is the group managing editor for* Mix, Electronic Musician *and* Remix *magazines.*

New Sound Reinforcement Products

AUDIO-TECHNICA SPECTRAPULSE WIRELESS

The SpectraPulse™ Ultra-Wideband (UWB) wireless mic system from Audio-Technica (www.audio-technica.com) offers near-hard-wired performance without concerns about RF competition, frequency coordination, white-space issues or infringement from other wireless systems. Rather than conventional carrier frequencies, UWB uses a series of nanosecond pulses within the 6GHz spectrum. The company's first UWB product is SpectraPulse, designed for conferences, courtrooms, boardrooms and more. The company eventually sees UWB wireless also coming into pro sound reinforcement, but in the meantime, more info—including white papers on the technology—is available at the company's Website.

KALTMAN RF SPECTRUM ANALYZER

The Spectran HF4040 from Kaltman Creations LLC (www.kaltmancreations llc.com) is said to be the world's first low-cost, handheld, field RF spectrum analyzer that addresses channel selection, interference identification, RF system monitoring, testing and exposure limits. The HF4040's frequency range is 10 MHz to 4 GHz, ideal for analyzing VHF, UHF and 2.4GHz environments. In addition to frequency-sweep readings and signal-strength readouts, the unit features display markers to indicate the three strongest peaks and their frequencies during each sweep; Zoom, for narrowing the frequency span to 100 kHz; and the ability to perform data logging and long-term peak-hold recording. Ten (user-configurable) hot keys are set to address the more popular U.S. RF bands: wireless mics, Wi-Fi, assisted listening, Telco/cellular, intercom and radio/TV. The system is priced at less than $1,400, and includes PC software for enhanced visual monitoring, a HyperLOG 700MHz to 2.5GHz directional antenna (other directional antennas available), mini-tripod stand and more.

AKG C5 AND D5 WIRELESS MICS

Wireless versions of AKG's (www.akg.com) C5 and D5 vocal mics are now available. The new C5 WL1 condenser and D5 WL1 dynamic mics offer two interchangeable capsule heads for the HT 4000 handheld unit as part of the WMS 4000 wireless system. Offering up to 1,200 selectable UHF frequencies, the WMS 4000 system comprises the SR 4000 receiver, HT 4000 handheld transmitter and a PT 4000 bodypack transmitter. The fully HiQnet-compatible WMS 4000 features a backlit display, battery life indicator, Silent mode, environment scan, auto-setup frequency search and rehearsal functions.

NADY SYSTEMS PSW 18A AND SSW-15A SUBS

Nady (www.nady.com) releases the PSW 18A ($869.95) and the stereo powered SSW-15A ($639.95) subwoofers. The PSW 18A combines an 18-inch woofer and a 1,200W amp for a max 123dB SPL. It has balanced XLR and ¼-inch inputs, adjustable 20 to 500Hz response, recessed handles and black carpet covering. The SSW-15A uses three internal amps to power a 15-inch woofer (300W) and two optional, external, two-way speaker cabs (2x160W). It has separate volume controls for all three outputs, a passive lowpass filter, separate left and right TRS balanced inputs, and parallel outputs.

RENKUS-HEINZ SYGMA INSTALL LOUDSPEAKERS

The Sygma line from Renkus-Heinz (www.renkus-heinz.com) comprises high-performance, installation-specific cabinets. Self-powered SG models can connect to RHAON, the company's Ethernet-based audio operations network, via each cabinet's built-in PF Series Intelligent Digital Amplifier. The SGX Sygma models are designed for use with external amps. Initial offerings in the series range include the two-way coaxial SGX41, with a 4-inch woofer and 1-inch tweeter, the SG61 and SGX61—with a 6.5-inch woofer and 1-inch titanium HF driver on a 150x60-degree complex conic horn—and the SG/SGX42, a stair-step/stage lip loudspeaker with dual 4-inch/1-inch drivers. Three full-range, two-way, multi-angled cabinets include the SG/SGX81 (8-inch woofer, 120x60-degree complex conic horn), SG/SG121 (12-inch woofer, 90x60-degree horn) and SG/SGX151 (15-inch woofer, 90x40-degree horn). A Windows GUI implements advanced network features such as half/quarter-latency modes of CobraNet, and drag-and-drop signal routing. RHAON lets users assign each speaker to one of 64 audio channels; control parametric EQ, delay and compression via onboard DSP; and monitor the amp/drivers. ∎
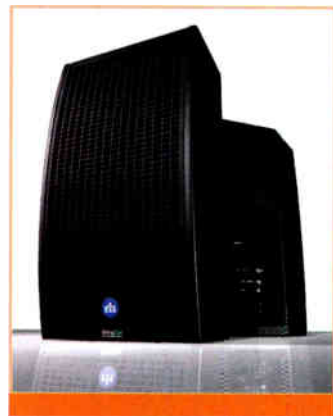
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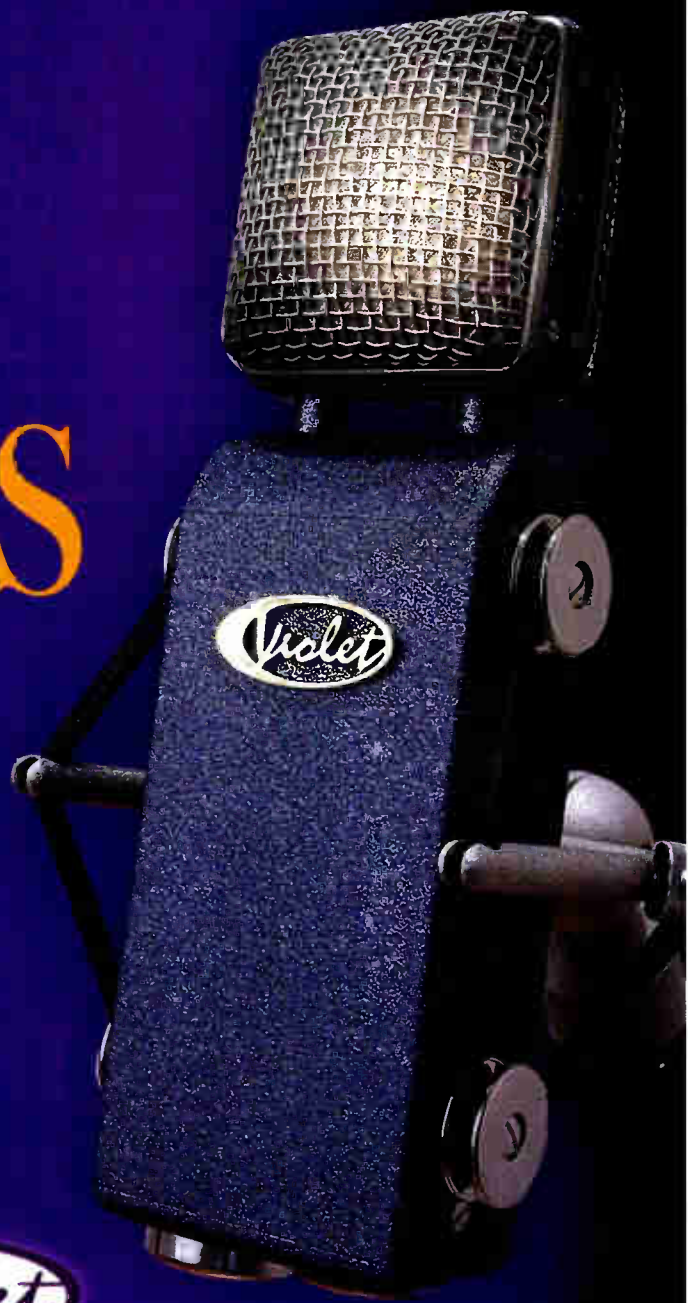
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World Radio History

BY EDDIE CILETTI
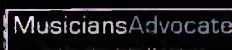
Learning From a Classic

Summer School Students Re-Record The Beatles

Inspiration comes from all kinds of funny places. Last year at this time, I was one of the judges for a local AES student recording competition. Ten songs were submitted; one caught my attention because it was so old school. I later met David Trampe, the engineer who also turned out to be that song's author and multi-instrumentalist. Checking out his bowler hat, I instantly imagined him playing bass and singing The Beatles' "Honey Pie" from side four of the *White Album*, which inspired me to revisit that old classic.

I pulled the vinyl, made a CD and listened to it in my car on the way to school. Along the way, it occurred to me that side four might make an interesting performance piece because it's so musically diverse. After I casually suggested this in my classroom, three students showed up after class, and each week another member came to jam until we had the necessary instrumentation—two guitars, bass, drums and keys. I recorded each jam, experimented with mic choice and placement, tweaking guitar amps and guiding each musician toward emulating the style and tone of a vintage performance.

From the first downbeat, the bass and drums laid a solid foundation. Jess Skadburg's cymbals were vintage Zildjians from the '70s. (His dad is a drummer.) Lead and rhythm guitars were covered by Nathan Reeder and David Hedding, respectively. Alex Ramsey handled keys. The son of blues guitarist Bo Ramsey, he can play back just about anything he hears.

THE MISSION

As things came together, I realized this could be my summer class—a chance to take musicians and students back in time for two full-immersion, 40-plus-hour weekly sessions. I wanted to examine the combined art of group performance and mixing on the fly—of committing to and living with sounds that will ultimately end up on one or two tracks. I was aided and abetted by the timely

Rear view of kit shows placement of "doo-rag" drum damping and snare mics. Packing blankets were used to absorb cymbal splash.
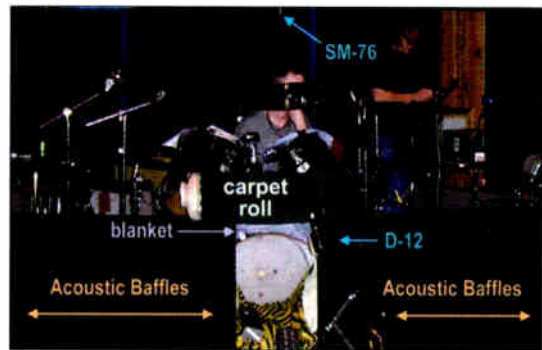
Front view of drum kit shows placement of acoustic treatment to minimize snare and hat leakage into the kick mic.

release of the Kehew/Ryan tome *Recording The Beatles*. Combined with Mark Lewisohn's *Beatle Sessions* logbook, there was ample reference material.

I wanted everyone to hear how engineers made decisions using monitors from that time; my own Altec 604E loudspeakers were pulled from the garage and put into service. Mounted in their original utility cabinets and very similar to the Altec 605 coaxial speakers used at EMI's Abbey Road facility, they were even powered by a vacuum tube amplifier: a modified Groove Tubes Dual 75 (with KT-66 output tubes). The Altec 604s' sonic window is solid from 80 to 10k Hz, focusing on what is most important—everything above and below was "there" but not distracting—with surprising imaging. (An optional Bag End subwoofer was available for "support" for anything from 80 Hz down to 40 Hz.)

Everyone was invited to bring familiar material; all were astounded. Peter Bregman, my technical assistant, was amazed that the Altecs sounded any good, but the proof came after we burned the first CD. (I really wanted disc-cutting ability, but that was above and beyond anything I could pull off for this class.) The midrange was remarkably smooth, and while we couldn't hear above 10 kHz as well as we did below, the top was right where it should be.

What we heard on the bottom translated equally well—neither overpowering nor wimpy. Music production is a lot like assembling a puzzle with the ultimate goal of making the seams disappear. To that end, we succeeded. Was it the tubes? The tape machine? The entire analog process? I'd like to think that our good sonic fortune was not just the gear, but the combined result of every step taken. Knowing we'd be mixing along the way rather than at the end put the emphasis where it needs to be.

ALT MONITORS

In addition to the Altecs, alt monitors included modified Polk consumer speakers and Electro-Voice MS-802 near-fields. A Furman Model SRM-80 conveniently allowed us to select between the console, two turntables (mono and stereo) and a CD player. Dynaco and Craftsman vacu-

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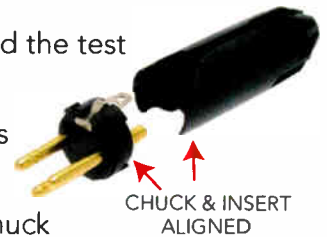How else does the XX help? Our new ground contact enhances conductivity between the chassis and cable connector. And our unique latch design improves security, ease, and speed. Your co-workers keep asking you why you're smiling.

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um-tube phono preamps rounded out the playback. We played a lot of records and vintage tapes that I have collected. For the latter, an American Harvest food dehydrator was on hand to reactivate the binder. I even pre-baked all of the vintage tape: Ampex 499 ½-inch and 406 ¼-inch stock.

INITIATION

Five tape machines were collected, all familiar names—3M, Studer, Otari, Fostex and Tascam—one per student. Day one was an introduction to basic editing. Students came to appreciate each machine's idiosyncrasies—how to thread, deal with tape on hubs instead of reels, and how some designs were better for editing, looping and flanging. On day two, we explored the finer points of "manual" tape flanging. During the two-week period, the machines had to be calibrated and repaired, just like "the good olde daze."

Day 2 continued with drum, microphone and placement "auditions," well before the musicians came in, giving us a leg up and minimizing wear and tear on the band. From the beginning, the emphasis was on the importance of taking the time to get the best tones and performances. Once all of the

drum mics were committed to one track of tape, there was no going back. These pre-mixes (and care during bounces) saved us much time in the end, although the mix engineers still found plenty to do with four tape tracks, tape echo/delay and a live chamber.

THE GEAR

The equipment and mic choices were made based on what was readily available. Vacuum-tube amplification was used wherever possible. The upside of repairing as much gear as I do is that I know who has what. Kipp Manske provided two Ampex MX-10 mixers that were used on drums during tracking. On day two, the drummers auditioned several kick mics—three from Electro-Voice (the N/D868, RE-20 and 664), a Sennheiser MD-421 and an AKG D 12. The D 12 was the first choice because it delivered a more authentic vintage kick sound. The RE-20 and the N/D868 were tied for being good kick mics. (The RE-20 and the D 12 were also surprisingly good vocal mics.) After optimizing the D 12's placement, we placed a pair of 2x4-foot acoustic baffles horizontally in front of the kit, on either side, to control the hi-hat and snare leakage into the kick mic. A carpet roll and blanket were also laid over the top of the baffles (and kick drum).

During the evaluation process, we learned rather quickly that it was easier to discern low-frequency microphone subtleties when the preamp's input transformers weren't saturated. (The MX-10s use tiny Beyerdynamic transformers about the size of a UTC "ouncer.") Our support tech, Peter Bregman, built a 4-channel pad/phase-reverse box to tame the incoming level and minimize low-frequency cancellation from the multiple mics.

We had six snare drums; a Red Gretsch "Catalina" with wooden shell (on loan from Tom Hambleton's Undertone Music) quickly became the fave. From there, the kick and snare (Cascade Fathead ribbon on top, transformerless Shure SM57 on bottom) were respectively routed into left and right channels of Manley's Massive Passive and Variable Mu compressor/limiter; the Manley delivered its magic in Limit mode, with fast attack and slow or medium-slow release settings.

A second MX-10 combined the processed kick and snare with two kit mics—a Shure SM76 omni dynamic directly overhead (supplied by Mic King's Jeff Roberts) and a Coles 4038 ribbon (behind the drummer's head, aimed at the toms). The mono mix was fed to track one of our 3M M-80 ½-inch 4-track. Provided by Colin McArdel, the M-80 was a prototype version based on M-79 parts with signal electronics on top with the meter bridge. It never made it to mar-

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ket, but it sure made music for us. Students were constantly commenting on how tactile the process was. Everything they touched had an effect on the sound.

MICS AND MIXER

From the first rehearsal, we had success with a Shure SM58 on an SWR bass amp. By the time of the session, we had also acquired an Altec 438 preamp/compressor that brought us that much closer to the "Paul McCartney tone." (Bass was routed to track 2.) Rhythm guitar amps alternated between a Vox AC-30 re-issue (provided by John Asche) and a Fender "Pro Junior," both with EL-84 output tubes and miked with either an AKG D 12 or a Coles 4038. Lead guitar was played through a Groove Tubes Solo Single (with a single EL-84 output tube) and miked with an RCA 74 "junior" ribbon mic. A modified Peavey stereo chorus 210 was the alt lead amp. Guitar mics fed the Dave Hill–designed Summit preamps and Pultec-style equalizers that were routed to tape tracks 3 and 4.

Four-track monitoring was handled by a mid-'70s-era Raindirk desk, a 12-input, 2-bus mixer that was "on loan" from David Corter and in for tweaking (timing is everything); all of the electrolytic capaci-

tors having been upgraded by Corter to the Nichicon MUSE Series. The Raindirk is a hybrid of mostly discrete transistors except for updated op amps on the mic/line inputs, EQ and summing amps. It has two aux buses, one of which was used for talkback and the other for our mono cue system. The mixer included two mono modules—AD&R model 670 compex limiters—that were not ready in time for the session. This console is rather odd in that all of the I/O connections were opposite to today's standard—XLR male for inputs and XLR female for outputs. This required quite a few adapters.

HALFWAY THERE

Days three and four were reserved for tracking, and in that time we captured five songs from The Beatles first album (the UK release entitled *Please Please Me*), four from the *White Album* and "The Medley" from *Abbey Road*. For everyone involved, the experience and the process was a fun-filled and highly challenging journey into the past that is to-

From left: David Hedding (rhythm guitar/vocals), Alex Ramsey (keys/vocals), Jess Skadburg (drums/vocals), Nathan Reeder (lead guitar/vocals), Tom Colvin (strings), Eddie Ciletti, Peter Bregman (tech), Rob Rogers (strings), Maynard Madsen (strings), Daniel Olivares (strings), Drew Hau (strings/backing vocals)

tally applicable today. I came away with an even greater appreciation of The Beatles as musicians. While that first album was never intended for stereo release, the ability to isolate the vocals from the rhythm section allows great insight into what a great *live* performing band they were. Simple, understated playing; remarkably precise vocals. Stay tuned for Part 2: overdubs and mixing. ∎

Eddie thanks everyone who helped make this Summer Session possible. Visit www.mixon line.com for sonic samples and pictures.

World Radio History

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If you're serious about audio, you're undoubtedly familiar with SSL. Their consoles are the heart of the most sought-after studios in the world, imparting a bit of sonic magic to everything that passes through their circuitry. But this magic carries a hefty price tag.
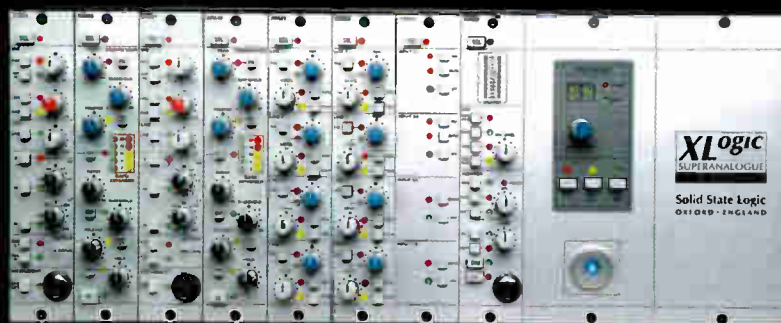
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Classic compression. Dynamics processing ripped straight from the XL 9000 K with compression, limiting, expansion, and gating.

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Integrate outboard gear. Four line-level inputs with solo, volume, and pan with insert points for each input.

Eight Input Summing Module
Eight Stereo Inputs. Input synths, submixes, multi-channel feeds from audio interfaces, or any other stereo signal into the X-Rack.

Master Bus Module
The final link in the chain. Mix insert and sum points, mono compatibility check, and master metering with monitor outputs.

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Tools of the Trade

RYCOTE S-SERIES WINDSHIELD SYSTEM

Field recordists will love this lightweight suspension and windshield system from Rycote (dist. by Redding Audio, www.reddingaudio.com). The S-Series system (starting at $349) allows the user to adjust and reposition a microphone quickly via a one-piece web suspension made entirely of durable, flexible, lightweight plastic that will fit all microphone diameters from 19 to 25 mm. A "pinch release" allows the user to change the position of the suspension, while the windshield features a twist-lock system that attaches it to the chassis ring for quick, easy release. An integrated acoustic fur covering features <30dB wind-noise suppression. All units include an XLR cable with Neutrik NC3 (XLR-style) connectors with gold-finish pins and a pistol-grip handle.

TC ELECTRONIC DIGITAL KONNEKT X32

This all-in-one digital problem-solver from TC Electronic (www.tcelectronic.com) is a digital patchbay, format converter and FireWire audio interface offering integration possibilities across other external TC effects units. The Digital Konnekt x32 ($1,745) features eight channels of AES/EBU, eight channels of S/PDIF and Toslink, eight channels of ADAT (up to 96kHz SMUX) and word clock I/O. Any input format can be converted into either of the other formats and aligned to any sample rate from 44.1 to 192 kHz. Digital Konnekt x32 allows sample rate conversion on up to four separate stereo inputs at once. In addition, its included Integrator plug-in makes other TC hardware processor effects units act like standard VST/Audio Units plug-ins from within a DAW. The Integrator plug-in controls routing, levels and latency compensation of external effects processing equipment attached to Digital Konnekt x32.

SONIFEX RB-SC2 CONVERTER

This single-rackspace sample rate converter from Sonifex (dist. by Independent Audio, www.independentaudio.com; $1,150) supports rates up to 192 kHz, has two independent sample rate converter circuits using a common clock source, and offers two optional video synchronizing boards that can be synched to either an analog video signal or SDI digital video signal (HD or SD). Output formats include AES/EBU, S/PDIF and Toslink optical. The sample rate of the outputs can be set by an internal clock or from various external synchronizer sources. A special X-Lock mode allows the unit to function as a full bi-directional sample rate converter that can be inserted between two digital devices running at different rates, ensuring that the two devices remain locked. The box can also be controlled remotely via the RS-232 port.

M-AUDIO PULSAR II MIC

The Pulsar II ($199) small-capsule condenser microphone from M-Audio (www.m-audio.com) replaces the company's original Pulsar and features a ¾-inch-diameter, 6-micron Mylar evaporated-gold diaphragm that promises to deliver 2dB SPL over the model's predecessor. It also features a -10dB switchable pad and 12dB/octave highpass filter. It offers max SPL of 144 dB at 0.5% THD (with pad engaged) and equivalent noise of 16 dBA. It is available individually or in matched sets, and ships with a wooden box, windscreen, mic clip and manual.

WAVES API COLLECTION

Promising accurate digital rendering of classic API analog console hardware, the Waves (www.waves.com) API Collection ($2,000, TDM; $1,000, native) features four processors: the 550A 3-band equalizer, 550B 4-band EQ, the 560 graphic equalizer and the 2500 stereo compressor. The 550A features the familiar dual-concentric rotary knobs offering 12 dB of boost/cut across five frequencies per band. The 550B offers four bands with seven selectable frequencies per band, while the 560 graphic EQ features 10 separately addressable bands on sliders, each offering 12 dB of boost/cut. The 2500 compressor features separate threshold, attack, ratio and release controls with a second fine adjustment for release set in milliseconds. There are also separate knee, tone and

detector controls, and a rotary switch allows the user to select the degree of stereo linking from 100% to independent.

AURALEX ACOUSTICS STUDIOFOAM SMARTPAK

This versatile studio acoustic solution from Auralex (www.auralex.com) comes in several combinations that start at $179. The 2-inch Studiofoam® SmartPak™ totals 48 square feet with 12 wedge- or pyramid-shaped 2x2-foot panels per pack. The 4-inch Studiofoam SmartPak totals 24 square feet with six 2x2-foot panels packaged together, and the LENRD SmartPak includes four bass traps. All SmartPaks are available in charcoal, purple and burgundy. Alternate colors and alternate sizes, such as 1- and 3-inch products, are available via special order in standard packaging.

BLUE SKY EXO DESKTOP SYSTEM

Blue Sky's EXO ($399, www.abluesky .com) active desktop speaker system comprises two 3-inch, two-way satellite speakers that are 35 watts and 8x5x5 inches (HxWxD), with 1-inch tweeters, a separate 8-inch subwoofer that is 90W and 13.8x12x13 (HxWxD), and a desktop remote control and connection hub. The sub carries the amplifiers and bass-management circuitry for the system, while the hub allows the user to input and monitor an assortment of peripherals simultaneously via XLR, TRS, RCA and 3.5mm mini-jack inputs. The hub allows separate volume control of the sub and main speaker set, and has a 3.5mm mini-jack headphone output.

FABRIK SIMPLETECH SIMPLEDRIVE

The Pininfarina design has the Fabrik SimpleDrive (www. simpletech.com; 80 GB, $99; 1 TB, $450) looking more like a race car than a hard drive, but this head-turner is more than just stylish. The 7,200 rpm FireWire/ USB 2 desktop drives offer an oval drive capacity meter on the top that surrounds the one-click backup button. The button engages the included One-Click™ backup software, ensuring an easy solution for busy engineers who are looking to keep

their data safe. The drive also comes with 2 GB of storage at the MyFabrik.com site to store, access, organize and share personal or professional content online.

KJAERHUS MPL-1 MASTERING PLUG-IN

This mastering plug-in from Kjaerhus (www.kjaerhus.com) uses an oversampled peak-detecting algorithm designed for excellent high-frequency performance with no overshoot or clipping in the final D/A conversion. The MPL-1 ($98, VST/Audio Units/ Windows; $118, Mac

OS X VST/RTAS/Audio Units) uses a new stereo-linking technique that allows peaks to be limited individually on each channel while longer-lasting overall gain reductions are linked. This means that peaks in one channel will not produce artifacts in the other channel, while the average program compression remains the same overall. A Program-Dependent Release (PDR) function minimizes pumping effect and increases loudness. The MPL-1 offers TPDF dithering for 8, 16 and 24-bit output resolution. Four stereo meters show the peak input and output levels, as well as compression and RMS output.

AVLEX SUPERLUX E531/BCS

The battery-powered E531/ BCS ($49) M/S stereo field microphone from Avlex (www.avlex.com) features a cardioid polar pattern for its mid-section and a figure-8 polar pattern for the side. The mic offers control over the stereo image during mixdown and is powered by a single 1.5V AA battery that is capable of providing upward of 200 hours of use. It also provides an on/off switch to help users maintain the battery when the unit is not in service. The E531/BCS comes with a microphone stand clip that supports $3/8$-inch and $5/8$-inch threads, plus a foam windscreen.

LIGHTWAVE G5 BOOM POLE

This lightweight and affordable mic boom pole from Lightwave Audio Systems (www.lightwavesystems.com) uses a patented triple-cam locking system, allowing for a minimal 15 degrees of twist to lock/unlock, facilitating cleaning and reducing the likelihood of jamming. As an option, the G5 News Pole ($299, without cable; $385, with cable) is available with an internal coiled cable using Neutrik NC3 (XLR-style) connectors with gold-finished pins. The collapsed length is 2 feet/2 inches, while the extended length is 8 feet/2 inches. The tube comprises five carbon-fiber sections and weighs only 20.5 ounces with the coil.

SOUNDCRAFT FX MIXERS

These three new FX mixers from Soundcraft (www.soundcraft.com) offer a variety of pro features, as well as 32 Lexicon 24-bit digital effects using the same AudioDNA® processor found in many Lexicon and DigiTech outboard products. The Soundcraft FX16ii ($1,079), which descends from the Spirit FX16, offers 26 inputs, 16 direct outputs, four stereo returns and rotating connector pod, allowing cables to be connected conveniently behind the rack to save space. The EFX ($539) is the smallest console in the Soundcraft multipurpose range and is available in 8- and 12-channel versions. It features the GB30 mic preamp, one aux send and one FX send on each channel. The MFX (starting at $749) offers two group buses, two aux sends, one FX send on each channel and two stereo input channels, all offered in three frame sizes: eight, 12 and 20 inputs.

UNIVERSAL AUDIO 88RS, LA3A PLUG-INS

These two plug-ins for Universal Audio's (www.uaudio.com) UAD DSP system model legacy hardware from Neve and Teletronix. The Neve 88RS plug-in channel ($299, Audio Units/VST/RTAS) offers EQ and dynamics from Neve's flagship analog console, including 4-band parametric EQ with high- and low-shelf filters, and a limiter/compressor/gate/expander dynamics section. The LA3A compressor ($149, Audio Units/VST/RTAS) features gain and peak-reduction controls, plus a limit/compress switch, and is modeled from a "golden" vintage unit in the company's collection of hardware.
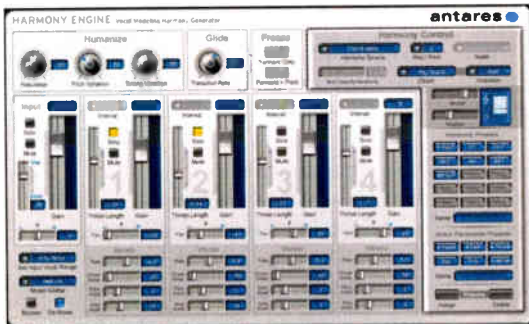
ANTARES AUDIO TECHNOLOGIES HARMONY ENGINE

The Harmony Engine ($349) native plug-in from Antares (www.antarestech.com) is a real-time, vocal-modeling harmony generator featuring four independent formant-corrected harmony voices, a variety of harmony-generating modes, humanization features and a real-time preset system for harmony and vocal type. The plug features Antares Throat Modeling technology that processes each harmony voice through a physical model of the human vocal tract. Other features include fixed or scale intervals, chord by MIDI, and spread and register controls that let users quickly set the pitch range and harmony style of their vocal arrangement. Harmony Engine is available for RTAS (Mac OS X and PC), VST (Mac OS X and PC) and Audio Units (Mac OS X).

SENNHEISER EVOLUTION 912 S BOUNDARY MIC

The Evolution 912 S ($375) boundary microphone from Sennheiser (www.sennheiser usa.com) has a frequency response of 20-20k Hz and offers a maximum SPL of 134 dB (at 1 kHz). The pre-polarized condenser offers a half-cardioid pickup pattern and is acoustically optimized for speech applications. An internal DIP switch bank allows the e 912 S' frequency response curve to match the response of the e 912, or may alternatively be switched to select low cut, low and high boost (factory preset), or low boost. In addition, the mic may be switched on or off using the integrated programmable membrane switch. A second internal DIP switch bank provides additional feature selection, including on/off (factory preset), push-to-talk button (PTT), cough button (PTM) or permanently switched on (ON).

DEVA 5.8 RECORDER

The new Deva 5.8 ($12,500) hard disk audio recorder from Zaxcom (www.zaxcom.com) features eight integrated hardware faders, 10 tracks, an internal DVD-RAM drive and a Flash media slot. For a complete solution in the field, the unit integrates with the Deva Mix-12 control surface, which handles location mix and record functions, eliminating the need for an external mixing console. It is capable of recording 10 tacks directly to the compact Flash memory card, which is mounted on the control panel for quick and easy transfer of material. ■

Solid State Logic Duality Analog Console

Legacy Signal Path With DAW Control and Editing

Duality, SSL's newest large-frame analog console, not only melds Legacy E, G and K analog components with key components of the C Series and AWS consoles, but also interfaces directly with a connected DAW system through its own controller layer for mixing, recording, editing and plug-in parameter manipulation. You might say Duality is DAW-agnostic: It works with all popular software-based DAWs, using both HUI and Mackie Control Universal (MCU) emulation protocols.

The unique channel strip "split" design allows for dividing any desired channel strip's analog processing between two separate signal paths, to and from the DAW. For instance, you can record using the DAW system like a multitrack tape deck and then switch to Duality's controller for elaborate hybrid mixes. You can rely on the DAW's "in-the-box" editing and processing with Duality's analog summing, processing and optional automation with Total Recall™.

DUALITY PHYSICALITY

Duality is available in three console sizes: 48, 72 and 96 channels. You can order the console with 12-degree wings, a producer's desk and an integrated or remote patchbay.

The board's analog side combines SSL's SuperAnalogue capacitor-less, servo-coupled and fully balanced design from the XL 9000K Series with a "best-of" list of features from the venerable E and G Series consoles, as well as new features including the Variable Harmonic Drive™ (VHD) microphone preamp section. The VHD emulates either the second-harmonic (tube) or third-harmonic distortion (transistor) in any combination or amount using the input and drive controls. This section is available for either microphone inputs or DAW tracks on playback.

On the controller side, you'll find features from the AWS 900+ and the 480 TFT channel displays of the C Series digital consoles. Surface-mount technology is used throughout, and all of the channel strips and other modules easily slide out after you remove two or three screws. Each console section is individually powered by its own built-in power supply; this

is a "plug-and-play" board. The 48-channel model draws less than 15 amps from a single 110VAC circuit.

For superclean installations, all connections to Duality are lined up across the back of the console, where a convenient cable trough is provided. The console's end supports are hollow, allowing wiring to be passed to sub-floor conduits. Connectors are standard: XLRs are used for mic/line inputs; monitor/cue system outputs, external stereo and 5.1 sources; DAW sends and returns; and bus outputs via DB-25 connectors. Sixteen MIDI ports provide HUI or Mackie controller interface and MTC/MMC paths. Duality also has an RJ45 jack for 100baseT Ethernet connectivity and its own IP address for network access and possible future remote diagnostics.

SCREENING PROCESS

On a 48-channel Duality, each of the eight impressive TFT displays shows the settings for a group of six channel strips. When a channel strip is selected at Central Routing, that channel's section on the TFT is highlighted in green. Stereo and multitrack bus assignment, VU level, automation fader level and the associated DAW track status (selected, record or edit) are always visible.

LED meters used in the K, G and E Series dynamics sections are replaced by larger and higher-resolution versions on the TFT. The TFTs schematically show the signal chain routing order and any active processing on both paths. The new Eyeconix feature offers a library of icons and images to substitute for track names. These show up in place of the TFT's 24-bus assignment area. Eyeconix images, track names and projects are managed using a Java application called Duality Remote; it runs on any computer connected to Duality's Ethernet port.

In the center section, the Plug-In Editor interface uses a smaller, inset TFT screen and is similar in function to the AWS 900+. This screen doubles as the interface for Total Recall and fader/mute automation. For those jumping between platforms, the Master DAW control panel comes with software templates for Pro Tools, Nuendo, Cubase, Digital Performer, Logic and SONAR.
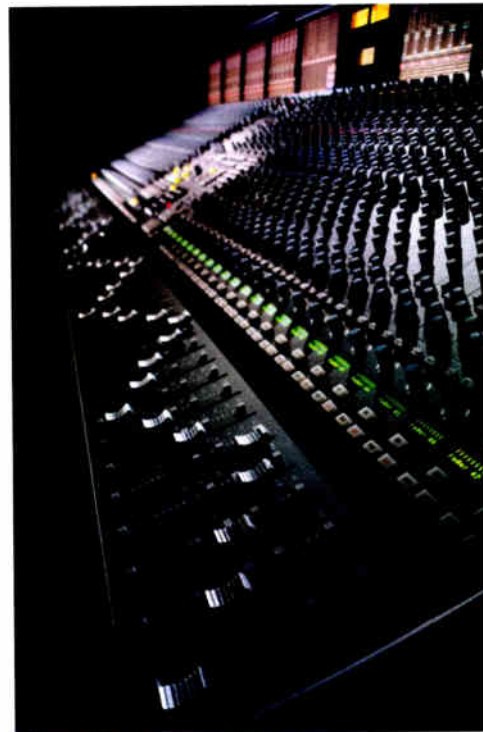
DYNAMICS AND EQ

The dynamics section is nearly identical to that of the 9000K Series (but adds sidechain listen and variable hold to the gate/expander) and to the company's XLogic range of outboard processors. Next are the third-order, 18dB/octave highpass and second-order, 12dB/octave lowpass filters, followed by the 4-band parametric equalizer, which can be switched between E and G modes.

Channel panning on the Duality is accomplished using the L/R, front/rear Focus and LFE knobs. The Focus knob continuously varies panning between phantom L/R imaging and hard LCR panning. This control solves myriad panning and routing problems that can occur during surround sound mixing. The LFE knob sets the amount of channel output feeding the LFE bus. At the bottom of the channel strip is the D-Pot rotary controller and a 100mm channel motor fader. Either the fader or the D-Pot can be used for analog channel record level if you want to use the other for DAW playback.

SMOOTH OPERATION

The Master Fader, like all of Duality's large faders, is a smooth-feeling, 100mm motor-

For a 48-channel board, each of the eight TFT displays shows the settings for a group of six channel strips.

ized unit. The master fader uses three 12-bit (36-bit resolution) multiplying digital/analog converters (MDACs) to control all three stereo buses. MDACs are used throughout to control analog audio.

The main output function controls the three stereo buses, which also double as a full 5.1 surround bus. Mix A, B and C are represented in a matrix. Each stereo bus pair has a switchable insert point—either pre- or post-master fader. You can also choose which stereo pair is to be compressed and/or summed together for master output. With so many output capabilities, deriving simultaneous, specialized multiple mix stems is a breeze.

The eight group faders work as master/slave like the old-style SSL VCA faders or in Fader Link mode, where fader and/or mute activity on one is replicated on all other linked faders. A good-working DAW trackball is built in, but there is no QWERTY keyboard.

BUS COMPRESSION, MONITORING

The main bus compressor (as well as all of the channel dynamics) uses VCAs in Duality because it's the same design found on the SL4000 console. It can be used on any or all of the stereo buses, or as a 6-channel surround compressor. You can also include LFE channel information in the sidechain (or not), and a clever sidechain-summing scheme can be substituted for the typical "loudest-bus-in-the-mix" surround sound sidechain derivation.

A digital readout lets you calibrate the large monitor knob (it goes to 11!) using the onboard pink/white-noise generator. There are three console monitoring modes: mono, stereo and 5.1, with two stereo and two 5.1 loudspeaker monitor choices. Pro-

grammable fold-down choices switch from 5.1 to stereo to mono, and four external 5.1 monitor sources like DVDs or SACDs are possible.

Solo options are plentiful, with destructive solo-in-place, AFL, PFL, PFM (where PFL signals are fed to the small speakers) and ALT, where pushing another Solo button resets previously solo'd channels, MOM (momentary solo) and my fave, SIF, or solo in front.

LET'S DO A MIX!

I began a surround remix of a 48-track Pro Tools production I had mixed inside the box for a stereo CD release. Because all Pro Tools automation moves show up on the controller layer, it's easy to start a mix inside Pro Tools and finish it on Duality. I could retain my extensive breakpoint automation vocal moves and my "re-arrangement" mutes to tweak on Duality. Essentially, all I did was stem out the existing mix to 5.1 channels, re-adjust balances and massage the ambient effects.

There are so many ways to set up a session, but changing to a different DAW system channel setup requires rebooting Duality—it takes five seconds. I opted to split the console in half: The left side had 24 physical analog outputs from Pro Tools and the right side was a 24-channel controller with its scribble strip showing the session track names. As a first-time user, I found this split setup easier. I was never confused if I was changing something inside of Pro Tools or on Duality. I never had to think if I was changing stem 23 or track 23 in Pro Tools.

HUI protocol provides access to banks of up to 32 channels, and I had access to all Pro Tools channels (65 total) and effect returns by just switching banks of those 24 controller channel strips using the left/right arrow button on the Master Control panel.

With a minimal learning curve, mixing on Duality is a breeze; just like a 9000K, everything happens in the best way sonically. The default E Series EQ works the same as always—great 99 percent of the time. That EQ is the sound of SSL I've always liked: It can be aggressive or mellow. The G EQ mode applied to a tom-tom track made it poke out of the drum mix to which I had assigned to four analog channels.

On kick and snare channels, the gate

and compressor worked better than a 9000K because I could read the meters more precisely on the TFTs. Gate "rattling," when the gate jumps quickly between being open and closed, is one of my pet peeves. I usually go into the Edit page and chop/crossfade the tom-tom tracks if I have excessive cymbal spill into them. The new gate asymmetrical threshold scheme is a winner for me for toms and noisy guitar amp tracks—it's like an intelligent agent working for you, keeping the gate working smoothly. I especially like all the metering visible. The 24 analog DAW output levels shown on the left side and the 24 DAW track levels on the controller side are much better than trying to pick them out on the Pro Tools Mixer window. I found that once I got set up and rolling, I hardly ever looked at the Pro Tools screens when mixing—and that is a good thing!

Selecting Drive In and winding up the mic preamp gain put that channel into loud overload using VHD. After backing the channel knob down so I could A/B at the comparable levels, I was sold. VHD sounds especially good on bass and electric guitars to add more "hair." I used VHD on DI guitars: I removed the guitar amp simulator plug-ins in Pro Tools, and VHD sounded more realistic.

I also liked that all Solo buttons follow their exact purpose. Solo'ing on the controller side solo'd in Pro Tools while soloing on the analog side solo'd the console—sweet! Being immediately able to hear the difference between tracks panned LCR or phantom L/R is something no surround mixer/producer should be without. I also liked the LFE Blend control. You can look at the LFE VU meter and add a track to the LFE bus and see if that track has any (below 80 Hz) information to contribute. If not, I would not use LFE blend for that track.

DUALITY REALITY

Duality caters to the DAW generation of music-makers with its smart controller layer coupled with classic analog processing/summing. It incorporates the best of SSL's C Series, AWS and venerable E, G and K consoles. Amazingly, it was an easy transition from my past SSL experience and did not require any change in my in-the-box DAW workflow—I kept all previous work and went on to elevate the mix further using a modern, top-notch–sounding analog console. Price: 48-channel, $275,000.

Solid State Logic, 212/315-1111, www.solid-state-logic.com. ∎

Barry Rudolph is an L.A.-based recording engineer. Visit him at www.barryrudolph.com.

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Digidesign RM2 Two-Way Powered Monitors

Console-Top Speakers Offer PMC Design, Digital I/O

Digidesign is a noted market leader in DAW technology and has established itself in the live sound market, but the workstation powerhouse is new to the studio monitor market. Digidesign enlisted the expertise of PMC, a UK-based manufacturer of speakers since 1991, to develop the RM family of powered monitors, featuring analog and digital inputs (24-bit, 96kHz) and onboard DSP that controls the crossover, bass port emulation and trim. We reviewed the flagship RM2.

JUST THE SPECS, MA'AM

The RM2s use a 6.7-inch, "doped-cone" LF driver for lows and a 1-inch, soft-dome HF driver with ferrofluid cooling for top end. Published frequency response is 40 to 25k Hz. Bi-amped using Class-D amplification, these boxes produce a maximum of 113dB SPL @ 1 m. There's 100W for the lows and 50W for the highs.

The crossover point is 3 kHz, with duties being performed by a 48-bit, fixed-point processing engine. This engine is designed to maintain imaging characteristics when using the onboard, user-selectable HF and LF adjustments. The HF gives you a tilt starting at 1 kHz, -4 to +3 dB in 0.5dB steps. The LF corners at 750 Hz, with the same cut and boost. These can help the speakers compensate for various room positions and varied listening distances from these positions. Also on the back are a gain trim of 0 to -15 dB in 1dB steps; analog and digital inputs, both on XLR-F; two RJ45 connectors for AES/EBU in and thru; a left/right selector for the digital signal; and a small toggle switch to engage the Bass-Port Emulation circuit.

A key feature is the Advanced Transmission Line™ (ATL). This design uses baffles in the interior of the cabinet (creating a "tunnel") to effectively increase the cabinet volume, extending the LF output. For a tiny little box, this design works well to extend the LF response, giving you that "in your face" bass punch needed when using them at the bridge position.

THE ONE-ZERO CONVERSION

Digital input can be connected to the AES-3 jack and the RJ45 connector simultaneously (along with the analog ins), with AES-3 tak-

ing priority if it sees a signal. To switch between AES-3 and RJ45, the monitors must be powered down for a period of 10 seconds. When using the AES-3 input, the RJ45 thru connector will send the digital signal to the next speaker via the included Cat-5 cable. Simply select which channel of the AES signal you wish to reproduce via the Channel Assign toggle switch on the back.

These RJ45 connectors are simply that: digital connections. There is no networking, auto-calibration or remote control implemented in these speakers. It is noted in the documentation that the RM2's clock to the incoming digital source and the analog input are converted via 24-bit, 96kHz ADCs, locked to a "discrete, low-noise clock oscillator." No provisions for external clocking are provided.

HOW DO THEY SOUND?

Digidesign recommends a 14-hour break-in period, and I can attest to this. At first, the bass was too forward, masking midrange instruments such as a guitar. After a couple weeks running, the surrounds started to loosen up and get faster, taming the low end and letting vocals come through. Once that period was over, I started to like these speakers more. Compared to my reference system, JBL LSR6328Ps, the RM2s exhibited a distinct increase in volume or level in the 2.5- and 5kHz frequency bands that was verified by a 31-band RTA. This volume increase was evident when I monitored the digital and analog input. It was most evident on vocals, snare and the upper-harmonics of electric guitar. It wasn't sibilant or exceptionally bright—there was just a difference at the top end that I found to be revealing and usable. Sixteen-bit mastered references, such as Steely Dan's *Two Against Nature* and Prince's *3121*, exhibited the same results. The RM2s were also bass heavy compared to the JBLs, which are rear-ported, but this difference was easy to adapt to.

The Bass-Port Emulation seemed to extend the lower octave in some rooms, but not in others. This feature was way too hot in my room to be usable, but you have the option and that's a good thing. I A/B'd the DACs with Digidesign 002 and Masterlink converters, and, as with all converters, there were

subtle differences. They were a little brighter than the Digidesign 002 and Masterlink converters, particularly in that 2.5- and 5kHz range, with a slight reduction in snare volume but virtually identical in imaging characteristics. Vocals stayed squarely in the center, piano imaging was precise, drums stayed in perspective, and the reverbs and delays had virtually identical placement in the soundstage. This increase in treble energy did have a tendency to bring out the strumming of acoustic guitars and the upper harmonics of strings and vocals. The bottom end was punchy, with no loss of definition.

ARE THE RM2S 4U?

These speakers will not be all things to all people, and for $3,498 a pair, they lack technology that their competition offers (remote control, auto room calibration, networking, etc.). But what they lack in ease-of-use parameters they make up in accurate, transferable sound reproduction. After a lengthy break-in period, these speakers opened up and became virtually transparent, with vocals having a solid, 3-D center soundstage. These speakers deliver imaging and transferability, but I would like to see Digidesign and PMC take the next step in studio monitor technology.

Digidesign, 650/731-6300, www.digidesign.com. ∎

Bobby Frasier is a digital audio product specialist, pro audio consultant and educator.

Audiokinetic Wwise 2007.1 Videogame Software

Tools for Interactive Music and Audio Spatialization

Wwise 2007.1 features independent attenuation of several volume properties as part of the redesigned 3-D positioning system.

Audiokinetic first introduced the Wwise 2006.1 audio authoring tool for videogames at the Game Developers Conference in March 2006. (See "Technology Spotlight" in October 2006 *Mix*.) It was an off-the-shelf solution designed to help game developers implement interactive audio in an environment that would feel comfortable to an audio pro.

Since then, Wwise earned the prestigious *Game Developer* magazine's Frontline Award and continues to attract the game industry's attention: The company signed a long-term agreement with Microsoft Game Studios to use Wwise on such newly released games as *Shadowrun*, developed by FASA Studio. I test-drove the recent 2007.1 update, which introduces an interactive music tool set, coupled with a redesigned 3-D audio spatialization system.

INTERACTIVE MUSIC PRIMER

Interactive music can mean many things to many different people. In videogames, getting music to shift dynamically with constant changes in game states (as dictated by the player's actions) is a formidable challenge. Imagine the dizzying array of transitions between different cues. If you look at the way games usually implement their interactive music, the extent of music transition from one cue to the next is dependent on the game and its style of play. Sure, there have been several games with very good interactive music implementation, but most used proprietary tools to achieve it. Middleware providers, such as Audiokinetic, are beginning to introduce tools that make sense.

THE TEST DRIVE

Game developers can demo Wwise 2007.1—with the SDK (which allows integrating Wwise into game engines) and application—by submitting a form on Audiokinetic's Website. Audiokinetic is only available as a licensed solution; a license fee must be negotiated with Audiokinetic. Wwise includes *Cube*, a first-person shooter game (with *Doom 2*–era graphics), with the Wwise SDK pre-integrated into the *Cube* engine, which is what I used to test Wwise. Once you download Wwise, pay attention to the install instructions as there are a lot of

things working together to make the magic happen (which, with all of the support files, takes up roughly less than 300 MB). I found the documentation to be extremely well-written; it even includes a comprehensive example project and a highly polished set of tutorials that allowed me to get up and running quickly and smoothly. For content providers, students and educational institutions, Audiokinetic provides a limited licensing agreement with online support and access to help forums.

The big news with V. 2007.1 is that Wwise now employs a sample-accurate interactive music engine, enabling composers to tie music objects to game event/triggers to create smooth musical transitions as changes in game states occur. With the new Interactive Music Hierarchy, I was able to easily manage music objects by placing and defining object properties/behaviors on an individual or group basis. These new objects include Music Segment(s)—which correspond to actual WAV files of music—and Music Switch(es) and Music Playlist(s), which are containers designed to handle either switching music segments or playing music segments in a particular order, as their names suggest. The user interface is the same as in previous versions, although I must say that I am not a fan of Audiokinetic's custom interface, which limits window resizing and multiple monitor support.

FEELIN' THE RHYTHM

To facilitate sync and transition points for my music files, each music segment must be told its tempo and meter based on how I authored each file outside of Wwise. Along with tempo and time signature, I used the grid settings to specify how each music segment is to be virtually partitioned. By adding another level of granularity to the music segment, I had a great deal of flexibility by determining sync points for music transitions, state changes and stingers. Music
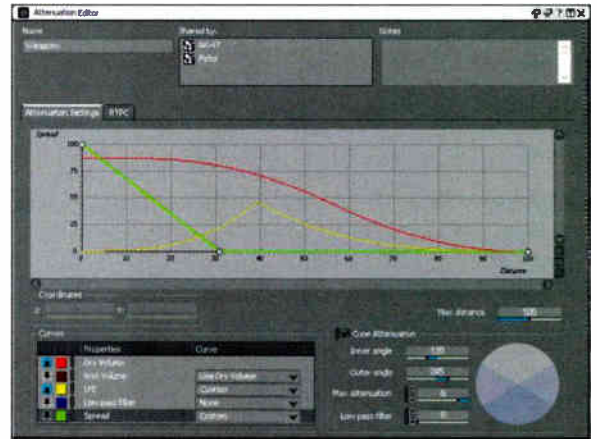
Switch containers allowed me to group pieces of music according to the different alternatives that exist for particular elements within a game. For example, the container might have switches for fight sequences, stressful situations and character stealth mode.

Each switch/state contains the music objects related to that particular alternative. In this example, all of a game's music segments related to fight sequences would be grouped into the Fight switch, all of the music segments related to stressful situations would be grouped into the "Stress" switch and so on. When the game calls the Switch container, Wwise verifies which switch or state is currently active to determine which container or music segment to play. With the Music Editor window, I was able to control how a music segment behaved and in what context the segment should behave. With Wwise, I layered multiple segments on top of each other, allowing me to create more textures musically. I was also able to dynamically introduce layers (tracks) of music segments based on game events. With this, I got killer music interactivity for games. To add more interactivity to your music, you can play stingers at key points in the game action.

One of the coolest interactive music features in Wwise is the ability to use rules known as Transitions, which can be used to help bridge the gap between two music segments that sound strange when switched. Think of this as a custom fix that can be written by the composer to help resolve the segue between two segments. When a

The interactive music layout features the Music Segment Editor.

transition is required, Wwise scans the Transition Matrix from bottom to top to find a transition rule that matches the situation. It will stop as soon as it finds a transition that fits, whether or not this is the best transition to apply. To apply transitions optimally, I defined rules in the Transition Matrix in descending order, from general to specific.

SPATIALIZATION, CAR SIMULATOR

With the newly redesigned 3-D Spatialization system, spatialization and attenuation are now independent. I controlled the attenuation of dry volume, wet volume, LFE and lowpass filter independently. Using the Spread functionality, I was able to gradually control whether a sound emitted as a point source or as a completely diffused sound, changing over distance and essentially acting as interactively controlled divergence.

In addition, for sound designers working on games with vehicles, one handy tool is the Car Engine Simulator (known as CarSim), a small app that simulates vehicle physics tied to real-time parameter changes (RTPCs), which can correspond to a game's throttle, rpm, etc., values. This app will be indispensable to sound designers who want to ensure that the different rpms that were recorded are properly crossfading (using a Blend container) and to find any anomalies as to how the overall sound of the car engine is performing. However, this is only an offline tool: The only way to be certain if the car/vehicle engine will work properly is to operate the vehicle in the game, ensuring that the engine sound is performing as expected.

NEXT-GEN INTERACTIVE AUDIO TOOL

Overall, I found the interactive music toolset within Wwise to be extremely powerful, and I see this as a great first step in addressing a formidable challenge to both videogame developers and composers. I say first step because I wish that the interactive music toolset/engine supported time stretching, allowing more automated music cue synching, such as that found in Ableton Live or Sony Acid. In addition, I would like to see more pro audio–quality algorithms (such as better reverbs, filters, etc.) featured in audio middleware packages.

However, I would highly recommend Wwise for any interactive audio creator or music composer looking for a commercially available interactive system that is built to bridge the gap between technology and audio/music authoring for videogames.

Audiokinetic, 514/499-9100, www. audiokinetic.com. ∎

Michel Henein is a freelance sound designer and co-owner of Diesel Games in Arizona.

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World Radio History

MOTU 8pre FireWire Interface

I/O Box Offers Lightpipe, Acts as a Stand-Alone Converter

With native-based DAWs coming into their own as they ride atop multi-core mega-machines, today's audio enthusiasts are turning their attention—and dollars—to a marketplace full of affordable and quick FireWire interfaces. With fierce competition and plenty of 8-channel interfaces for users to choose from, MOTU's 8pre puts an enticing spin on things with its ability to double-up as a stand-alone A/D converter and a 16x12 FireWire interface capable of 24-bit/96kHz audio.

Setup was easy with MOTU's Universal Audio Installer, which includes WDM/ASIO/Core Audio drivers and a few apps, including the MOTU Audio Setup, which allows you to manage a single or multiple MOTU units, along with control parameters that designate which unit is the clock master, buffer setting, sample rate, etc. The CueMix Console app controls the onboard, DSP-driven hardware mixer for tracking sessions without latency or CPU overhead, also allowing for different monitor mixes for the main outs or the headphone outs. For sync purposes, the MOTU

prefer the MOTU's converters hands-down. The shining combination was a BLUE Woodpecker and the 8pre. At three feet above the kit and dead-center, the kit sounded well-balanced and full.

To audition the instrument DI inputs, I used a Fender Jazz bass with active pickups and compared the 8pre's preamps to a PreSonus MP20. I used the 8pre in Interface mode and recorded two takes: Take one was the bass patched directly into the 8pre as a DI, and take two was the MP20 functioning as the DI and patching the out-

FACE VALUE

The 8pre's 1U chassis includes independent controls for all eight analog inputs, including input potentiometers with up to 40 dBs of gain, each accompanied by a -20dB pad and a 48V switch. Metering is via eight five-segment LEDs, with a range of -42 to -1 dBFS. A rotary encoder multitasks as a volume control for the front panel ¼-inch headphone jack or the main ¼-inch TRS outputs on the rear.

Rear panel connections come on eight analog XLR/TRS mic/instrument connectors, while two ¼-inch TRS +4dB balanced analog outs provide a feed for amplifiers or active monitors. Digital outs are on four ADAT optical Lightpipe jacks that support sample rates ranging from 44.1 kHz to 96 kHz (SMUX). It also has a proprietary "Type-2" protocol to connect optically to other MOTU interfaces. IDI I/O and two FireWire ports allow the 8pre to daisy-chain up to four MOTU FireWire interfaces.

APPS OF STEEL

The 8pre is compatible with Mac OS X (Intel) and also supports late-model G4 and G5 PowerPC Macs, as well as Windows XP and Vista. For this review, I interfaced the 8pre with a PCAudioLabs machine running Windows XP Pro powered by two dual-core 2.41GHz AMD Opteron Processor 280s and fortified with 3 GB of RAM.

SMPTE Setup allows the 8pre to generate, re-generate and read any frame rate via any of its analog I/Os with any DAW that supports the ASIO-2 sample-accurate sync protocol.

CHECK IT OUT

The 8pre was used in stand-alone converter mode feeding a Pro Tools HD2 system at 24-bit/44.1kHz. I connected the 8pre to a Digidesign 96 I/O with a Lightpipe cable and resolved Pro Tools to clock off the 8pre. I used the 8pre to capture a drum kit that I previously recorded with my MOTU 828mkII but have always been limited to its two preamps. On a 24-inch kick miked with a Shure Beta 52, the results were identical to those received with a 828mkII: full-bodied with well-defined lows and good attack. On snare, an Audio-Technica ATM-23HE yielded a nice balance of stick attack and snare depth. For overheads, I used the Neumann U87Ai in a spaced pair. The setup reflected good stick detail on the cymbals and a balanced tom sound. The mids were a bit uninspiring, most noticeably with the snare, but this was easily fixed by bringing local mics into the mix.

At high sample rates of 96 kHz, the high-end detail was good, especially for the price ($595), but it lacked that open, airy quality found on much more expensive converters. However, compared to my Digi 002 Rack, I

put of the MP20 into one of the 8pre's line inputs. The results were almost indiscernible. Both had great lows with a full, robust sound. The MP20 just edged out the 8pre with slightly better mids. Again, the MP20's two preamps cost as much as the 8pre.

8(PRE) IS ENOUGH

The 8pre was a breeze to set up and sounded good in a variety of uses. If you have an 828mkII or a Traveler, then you're already familiar with the sound: good highs and lows with satisfactory mids. The ADAT Lightpipe connections are a great addition for expanding other interfaces with eight more inputs. The addition of a S/PDIF and word clock connection would be nice, but that might affect the attractively low price.

Even with all the competition in this price range, the 8pre sets an example by being able to work as a stand-alone converter. The PreSonus Firepod and Focusrite Saffire Pro 10 I/O both have eight dedicated preamps but no Lightpipe connectivity or front panel metering. As a stand-alone converter and a FireWire interface with eight good-sounding mic preamps and SMPTE sync to boot, the 8pre is a strong addition to the MOTU roster.

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Phoenix-based Tony Nunes is an audio engineer.

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BY KEVIN BECKA

BY RICK SPENCE

IK Multimedia AmpliTube Jimi Hendrix Software

Classic Guitar Sounds From a Familiar GUI

The late great Jimi Hendrix is revered nearly as much for his love of technology and experimenting with new sounds and effects as he is for his guitar virtuosity. IK Multimedia's AmpliTube Jimi Hendrix™, available as a plug-in or stand-alone software, allows you to experiment with a wide variety of Hendrix-esque guitar rig setups without filling a room full of gear.

The software builds on the familiar AmpliTube interface and is powered by the AmpliTube 2 engine. Once you open the GUI, the options are plentiful, with four power amp models, seven cabinets, five mic emulations, nine stomp effects, four rack effect models and a tuner. The software comes with presets; each setup can be saved and recalled for later use.

BACK TO THE '60S

Guitarist Tony Poulos from my band T-Bone & The Butchers helped with this review by emulating the sounds of Hendrix's records on the cover tunes we play. (Check out some of the guitar sounds and clips on the *Mix* Website in "Mix Media.") he played a Strat-type guitar with single-coil pickup and stacked humbuckers, using pickup selections and playing styles he thought appropriate for what was used on Hendrix's recordings—i.e., the neck and middle pickups set out of phase, choosing only the neck pickup or just a high-output lead humbucker.

I recorded the tracks directly into an M-Audio Delta 66 with the Omni breakout box tied to a Dell P4, 2.4 GHz with 1 GB of memory. AmpliTube Hendrix was used as a VST plug-in within Cakewalk SONAR 6. It installed without a hitch. Each test used the Jimi Hendrix AmpliTube presets for "Fire," "Little Wing" and "Castles Made of Sand." Nothing else was done to the recording—no EQ, no other effects, no additional compression. I tested the software in stand-alone mode and as a playback-only effects plug-in. Used either way, the interface is virtually the same. However, the stand-alone mode adds SpeedTrainer and Metronome options to help those looking to learn new licks or practice at anything less than light speed.

HOW WAS THE EXPERIENCE?

Inspired by various Hendrix albums and songs, the presets also include several settings for particular songs, such as different guitar sounds for the intro, verse or solo. It also includes many other popular and useful types of guitar rigs—American to British, clean to dirty. Take your pick. Because this

The IK Multimedia AmpliTube Jimi Hendrix software showing full amp interface with preamp, EQ and amp models, plus I/O and other info

package simulates all the gear between your guitar and a recording input, it's truly a full rig simulator.

The company has always done a good job of making clean, easy-to-use GUIs for its software. AmpliTube Jim Hendrix benefits from this design experience as I found that the manual was not necessary. The look of the stompboxes, amplifiers, cabinets, mics and racks is authentic and inviting, and makes you want to start turning knobs and trying the endless combinations to see how they sound.

Mixing and matching amp heads to cabinets to mics gives you worlds of tonal possibilities. I enabled the oversampling option for the best possible sound quality and it never taxed the system. A built-in CPU meter monitors your PC rig so you can watch how much processing power the Hendrix rig is consuming. I experienced no dropouts or other problems while using the software.

IMPRESSIVE PERFORMANCE

I was impressed with the authenticity and detail that was put into emulating Hendrix's rig. One of the most important and difficult things to simulate is realistic amplifier overdrive, and AmpliTube Hendrix sounds pretty darn good, especially at this price ($249 retail). Soft-clipping, like on the "Castles Made of Sand" preset, exhibits just a hint of clipping during the louder peaks of the guitar passages. However, I

should mention that some of the mixing effects and techniques used on the original records—mostly time-based effects like flanging, echo and side-to-side panning—aren't part of the Hendrix rig. After all, this is a rig simulator and doesn't re-create the console or the ears of the engineer at the controls.

Manipulating the output to avoid overloads—which is dependent on the selected pickups, input level, gain, tone settings and master volume—took a bit of work. Also, when switching from preset to preset, you have to keep tweaking the levels and clearing the overload indicator. Some sort of auto-leveling feature would be helpful here as the output from a guitar is very dynamic, especially for anyone who likes to plug in directly without any outboard gear.

Overall, AmpliTube Jimi Hendrix is certainly worth adding to your VST arsenal, especially if you're looking for authentic and carefully constructed Hendrix sounds without filling the room full of gear. Yes, they're emulations, but a lot of love went into making these some of the best around at an affordable price. That—combined with the ability to save endless rig configurations—makes this a compelling package to own.

IK Multimedia, 954/846-9101, www.ik multimedia.com. ■

Rick Spence is the owner of AVT Pro, a production company in the Silicon Valley.

World Radio History

CROWDED HOUSE
BACK TOGETHER, NATURALLY

By Heather Johnson

When Crowded House co-founder Neil Finn started working on a new album, he thought he was recording his next solo project, a follow-up to his own *7 Worlds Collide* (2002). But life has a funny habit of evolving in ways we don't expect. In this case, Finn's intended solo material morphed into what would become *Time on Earth*, the first Crowded House studio album in 14 years. The winsome pop combo began their decade-long string of memorable singles in the late 1980s with such hits as "Better Be Home Soon," "Don't Dream It's Over," "Something So Strong," "Weather With You" and "It's Only Natural," while even lesser-known albums such as *Woodface* (the first album to feature both Finn and brother Tim Finn, who joined the band for a short time in 1989) were critically well-received. Crowded House dissolved in the mid-1990s and the Finn brothers went on to release acclaimed albums both on their own and together as the Finn Brothers. (Their 2004 release, *Everyone is Here*, is especially sublime.)

After a lengthy hiatus, *Time on Earth*, released in July on ATO Records, brings founding members Neil Finn and bassist Nick Seymour back together, as well as former guitarist/keyboardist Mark Hart. Matt Sherrod assumes the role of original drummer Paul Hester, who passed away in 2005. The album is dedicated to Hester's memory.

Produced and engineered by Ethan Johns and Steve Lillywhite, the album marks the first major production recorded at Finn's recently completed Roundhead Studios, a spacious two-room facility in Auckland, New Zealand. Located in the converted Fountain of Friendship Lodge, a former Masonic Temple, Roundhead's two main-floor studios were still under construction when Finn began fleshing out material, so he and the

Crowded House today (L-R): Nick Seymour, Neil Finn, Mark Hart and Matt Sherrod

group retreated to the upstairs ballroom for the Johns-produced sessions. With albums from Ryan Adams, Kings of Leon, Rufus Wainwright and Ray LaMontagne to his credit, among others, Johns' discography points to an inherent tendency to work with "artists who have something to say," whether it's under the guise of garage rock, sensitive singer/songwriter or a veteran melodic pop group such as Crowded House. Johns' keen musical sensibilities and affinity for organic recording methods further enhanced what would become a creatively fruitful and educational partnership.

Finn and Johns had met years before onstage at Largo, a popular L.A. club that is home to producer/songwriter/performer Jon Brion's Friday night performances, which regularly attract a mix of local luminaries and surprise guests. "I had always wanted to work with Neil because I was a big fan of his, as a writer and as an artist in general," says Johns, "and this time, it just seemed like everything lined up and we were both ready to go ahead and do it."

It turns out Finn had a similar appreciation for the young producer/drummer's work. Over the years, he "became more enamored with the records Ethan had been making," Finn says. "They seem to have a great sense of joy about them, but they also felt live to me—very classic record-making. You feel as though you're listening to a record that's incredibly modern but also totally timeless, which is kind of what we were after."
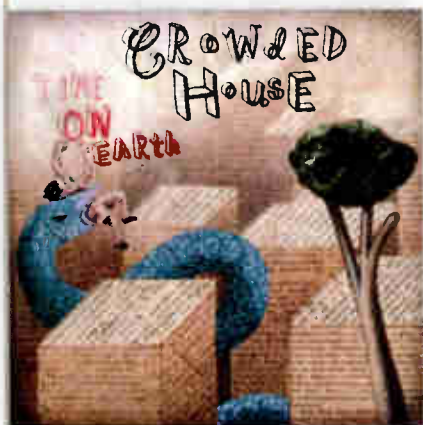
BÉLA FLECK AND CHICK COREA

ENCHANTING MUSIC FROM AN UNLIKELY PAIRING

By Chris Walker

On paper it looks like an unusual marriage of virtuosos, yet the wonderful recent duet album by Béla Fleck and Chick Corea, *The Enchantment*, sounds perfectly natural—for the both of them.

Fleck is unquestionably one of the most talented and versatile banjo players on the planet—in fact, he's been nominated for Grammys in more categories than any other artist. He grew up in New York City, influenced by a variety of genres and extraordinary musicians, encompassing bluegrass and country from banjo wizards like Earl Scruggs and Tony Trischka; rock by the Allman Brothers, Little Feat and The Byrds; Chopin, Beethoven and Debussy in the classical realm; and in jazz, saxophonists Charlie Parker and John Coltrane, along with keyboardist extraordinaire Chick Corea, well-known for his associations with Miles Davis, Stan Getz, Sarah Vaughan and many others, and a long distinguished career as a leader.

Fleck was so affected by Corea's famous composition "Spain," after first hearing it in a high school jazz-appreciation class, that he immediately started pondering banjo interpretations of the pianist and his band, Return to Forever. After Fleck saw RTF perform in concert, he stayed up all night trying to figure out ways to transpose their

Chick Corea (left) and Béla Fleck created The Enchantment with Corea's longtime engineer, Bernie Kirsh.

brilliance onto his banjo fingerboard. Yet despite his interest in jazz and other genres, he followed a more traditional path for his instrument, migrating to Nashville and garnering acclaim as a remarkable player, most notably with the New Grass Revival, led by mandolin player Sam Bush in the early '80s. Also during that period, Corea and his Elektric Band played at Vanderbilt University in Nashville and Fleck felt compelled to give the keyboardist a copy of his Grammy-nominated CD. A short time later, Fleck formed his groundbreaking group, The Flecktones, which uniquely blended bluegrass, jazz, rock and even classical styles, and quickly drew a wide following for its dynamic concerts.

At the Jacksonville Jazz Festival in Florida in the early '90s, Corea and Fleck's paths crossed again, but unlike previous encounters they both were on the same bill. The musicians started becoming acquainted (Fleck recalled getting on the pianist's bus by mistake) and a few months later at the Grammys, Fleck mustered the courage to ask Corea to play on his group's CD *Tales From the Acoustic Planet*. The pianist enjoyed the experience so much that he subsequently came to Nashville to perform at the landmark Ryman Auditorium with The Flecktones and some of Fleck's other Nashville cohorts. Corea then reciprocated by having Fleck as a guest for some of his concerts, most notably during the taping/recording of his *Rendezvous in New York* CDs and DVDs.

Corea has made a career of restlessly exploring different genres and group configurations, so his connection to Fleck is no surprise, really. "One thing kind of naturally leads into another," Corea comments from his home studio in Clearwater, Fla., where he has lived for the past 10 years. "From when I was a kid, I found that it was fun in life when I got interested in something to go into it—to try to do it. In music and art, it's the same way. I not only want to learn about it, but *do* something with it. That's what usually gets me into all these things, but it's normally one at a time."

Fleck, while on tour in Australia, notes that Corea has long been on his "imaginary wish list" of people he wanted to work with and says that their new duo album "is actually the optimum scenario I could have hoped for. I always love the various duos Chick does, and he is an incredible partner. There is a high-jump factor to making complete music with only two musicians, especially if there is a groove involved. Plus, the acoustic side of playing is something I have become more and more eager to do. Dropping the volume down creates a lot of room for tone and nuance."

The initial stages of *The Enchantment* began in late 2006 with Corea and Fleck composing separately after agreeing to record together. While touring with Gary Burton, Corea came to Nashville a day early to jam and see how things would jell

THE TURTLES'
"HAPPY TOGETHER"

By Robyn Flans

If Disneyland is the happiest *place* on Earth, then "Happy Together" is the happiest *song* on Earth. It isn't enough that the lyrics start out with, "Imagine me and you/I do/I think about you day and night/it's only right/to think about the girl you love and hold her tight/so happy together." When you listen to its infectious melody over the steady drum cadence, you can't help but smile.

And smile The Turtles did when the song rescued them from a bleak period of two bombs in a row. In 1965, the L.A. band, led by high school friends Mark Volman and Howard Kaylan (who would later be known and loved as Flo & Eddie), first hit the airwaves with the Bob Dylan–penned "It Ain't Me Babe" from their first album on the independent White Whale label. Beginning to blend folk with rock, their sound was still undefined with such covers as "Eve of Destruction" and "Like a Rolling Stone," but with "You Baby" and "Let Me Be" they got closer to the good-time sound with which they would become associated, and both tracks made it to the Top 30. Then their next two singles—"Outside Chance" by a then-unknown songwriter named Warren Zevon and "Can I Get to Know You Better"—failed to hit the mark, and two bandmembers announced their departure. They needed a hit, and in 1967 they got it.

"We met the writers of 'Happy Together,' Gary [Bonner] and Alan [Gordon], at a gig that they opened for us in Long Island. They were called The Magicians and they asked if we were looking for material," Volman recalls. "The Turtles were always looking for great songs and going through boxes that were sent to the record company all the time. They sent us the song. The demo was amateurish, lacking any kind of professional performance. [Laughs] It only included a singer and a guitar, but we could hear the melody and chorus. We were very careful because we had had those records that had been done poorly and we needed something to be great. It could have easily been our last recording. After all, how many failures were we going to be given by a small, independent record label?"

Having built a sizable live audience, the band worked up an arrangement and performed the song in concert. The response was very strong so they took it into Sunset Sound, Studio 1, with Joe Wissert producing and Bruce Botnick engineering. As Botnick recalls, "I loved the song the minute I heard it. I knew immediately it would be a great radio song and I was inspired. We tried to get as punchy of a sound as possible."

Botnick recalls using the tube console built by Alan Emig, who had originally built the studio. "A lot of music went through that console. I used the same one for The Doors,

Brasil '66, Tijuana Brass, the Beach Boys, Love; it was a great-sounding console. The rhythm section—drums, bass and guitars—were all recorded live to the first three tracks. We recorded on an 8-track 3M recorder at 15 ips with no noise reduction, and the track placement probably looked like this: track 1, guitars; track 2, drums [overhead, snare, kick]; track 3, bass [DI with some amp]; track 4, lead vocal; track 5, second vocal and lead double; track 6, background vocals; and track 7, brass/sax overdub. The mics I used were a Sony C-37 for the overhead, another C-37 under the snare and an Altec salt shaker microphone on the kick—no more, no less. On the guitars and vocals, I used Telefunken U47s.

"On almost 100 percent of that song, I used the Sunset Sound acoustic echo chamber, which was, and still is, one of the greatest echo chambers ever built," Botnick continues. "I had EMT plates, which we did use, but I don't remember using it for this, at least not for the mix. The 3M 8-track was the first one built; the second one was The Beatles'. For monitoring, we used Altec Lansing 604E, which was standard in the industry."

"When we brought it into the studio, we performed the song pretty much the way we had done it live," Volman says. "There were some very key instruments that were part of that record—horns and oboe in the second verse. One of the key things about the horn arrangement was that it didn't get in the way of what we did as a group. The arrangement on the record is really a support arrangement to what we had created as a group that could be played as a musical performance."

According to Volman, the song didn't take long to record. The group rarely fussed over things in the studio and, at the time, the process and outcome were fairly unremarkable. "All of this is significant now, looking back at the song, but it wasn't at the time," Volman says. "We were never afforded the luxury to really enjoy the recording studio that much. In fact, it was probably 'Happy Together' that gave us the opportunity to have a little more luxury in the studio."

Botnick comments that part of the record's charm is in the simplicity of the recording. "In those days, we used to record everything pretty much live. Since there weren't very

World Radio History

many tracks, we had to make decisions, so we would print our echo on the drums. If we got an effect live, we printed it and it was locked in forever more. That was a good thing. Today, everything is on a separate track so you can make a decision later. There's something about making a decision right then when you feel it.

"When I teach at USC, I like to tell interested people to open up all the mics and get a balance, and listen to the whole thing," Botnick continues. "You can print it separately, but stay in that room and don't focus on just the snare drum all the time. We didn't have the time to do that. I bet you anything that when the guys in The Turtles came in, I was all set up, I already had my EQ up and I listened to [drummer] Johnny Barbata a little and had him play a couple of things, and said, 'Let's go,' and that was it. I would be surprised if we took more than three hours to cut the track without the horns. Maybe another three hours to do vocals, and it was basically done."

After mixing the record, Botnick took an acetate down to the Whisky a Go Go where The Turtles were performing and played it over the P.A. system during the break. "I remember I was horrified because it didn't

A vintage shot of Sunset Sound Studio 1's control room, with its original Alan Emig–designed console.

seem as punchy as it had in the studio," Botnick remembers. "But once it hit the radio, it was perfect."

Perfect it was. It rose to Number One, stayed there three weeks and became The Turtles' signature song, putting them on the map in a big way. Volman and Kaylan still handle the licensing for the song. "In the last decade alone, the record has been significant as a multimillion-dollar busi-

ness for the publishers and songwriters," says Volman, who, along with his singing partner, still performs around 60 shows a year, as well as teaches at Nashville's Belmont music college. "It has sold product for everything from Coldwell Banker homes to Heineken Beer, and is used any time there is the bringing together of two different images, even for the sale of steak and shrimp as a team on a plate."

Volman says he is gratified by the fact that the musicians in the group actually played on the track instead of L.A. studio players such as the Wrecking Crew, who recorded the lion's share of great pop records in the mid-'60s. "I'm proud of all the records we made, but I'm most proud that the band really played the music, even as far back as 'It Ain't Me Babe.' When you hear 'You Showed Me' or a beautiful song and record like 'Elenore' [another hit for the band] explode out of the 5-inch speaker in your car…that is what I am most proud of. I remember making every part of those records and how every member of the band was just a kid expressing himself. That, to me, is what made The Turtles such a great experience. We didn't get caught up and overwhelmed by the need to be successful.

We became successful by making our music in a very honest way."

By the end of the '60s, after a string of hits and more misses, the group disbanded and Kaylan and Volman made a bizarre career turn: They joined Frank Zappa's Mothers of Invention for two years, billing themselves (for legal reasons) as the Phlorescent Leech & Eddie, as well as appearing on a number of cool sides by English band T. Rex. They would later cut a number of albums as Flo & Eddie, but once legal matters over the use of The Turtles name (and their own!) were sorted out, they began to appear occasionally as The Turtles again, and to this day, they have been known to haunt rock revival stages, leading ebullient crowds through sing-alongs of "Happy Together" and other hits. ∎

CROWDED HOUSE

For *Time on Earth*, the ensemble recorded very live and very fluidly. Johns played on, produced and engineered a large portion of the material, but also observed and learned from the musicians he was loosely guiding. At the end of the two-week pre-production session, he says, "I ended up with more questions than answers." For Finn, that's the beauty of the creative process. "Songs evolve through the recording, and sometimes that's the bit about it I like the most," he says. "It's like the plan that goes wrong. I like that because it usually leads to somewhere better. I think if you start off with a song too stitched up, you're a bit closed to the evolution that you might actually have. I'm always looking for a new angle on things from beginning to the end—the possibility of a transformation."

The transformation from idea to finished form began during those first two weeks, and Johns recorded everything. A few trace elements from those initial run-throughs may have ended up on the final recordings, but after several arrangements and edits, the path becomes more difficult to trace. During the tracking sessions, one of two drummers (either Johns or New Zealand–based session musician Riki Gooch), bass, guitar and vocals were all set up in the Roundhead ballroom with nary a gobo between them, only a wall to separate the makeshift control room from the rest of the studio area. Johns usually spent more time in the studio than the control room, either playing a part or helping the group work through material. "It was

a collaborative process on all levels," he says. Finn's son, Elroy Finn, even stopped by to add a few guitar parts.

"I found myself wearing several hats on this project," says Johns. "I was often in the storm, if you will, cutting the tracks and trying to catch the same wave, and then storming back into the control room, listening to everything and trying to help the band focus on what was working and where the magic was in the take, as well as working on the arrangement and the song itself."

In the control room, Johns settled in behind Roundhead's Neve 8088 console, which arrived to the studio by way of Bearsville Studios in upstate New York and, earlier, The Who's Ramport Studios in London. For most of Finn's vocals, Johns used a Shure SM7. He miked the drums with a combination of Coles and Neumann U67s, although such decisions weren't given much thought outside of choosing

> Songs evolve through the recording, and sometimes that's the bit about it I like most. It's like the plan that goes wrong; I like that because it usually leads to somewhere better.
>
> —Neil Finn

whatever mic worked best at any given time. Johns brought his Universal Audio 610 mic pre's and used them often, although the classic Neve took on the brunt of the work.

Keeping in line with the band and the producer's organic inclinations, they recorded onto a 16-track Ampex MM1200. "The nice thing about tape is the time it takes to wind back," says Finn. "It gives you a little breath to consider what you just did and to get you ready for the next performance. It's a little bit like e-mails versus letters. You can send e-mails that you regret when you read them the next day, whereas with letters you have time to reflect on your thoughts." In the end, however, they did transfer the analog tracks to Pro Tools for editing and mixing.

With the 2-inch tape quietly whirling

in the machine room, the band played off one another much like an improvisational jazz combo—very intuitively and never the same way twice. "It was a continual evolutionary process," says Johns. "We'd work on a track for several days and end up losing everything. Neil might walk in, and say, 'Let's change everything.' Or, 'Let's go back to the bass and acoustic guitar [from a previous take] or the bridge from three takes ago,' then three hours later you're in completely new territory. They're constantly striving to see how far they can go and then coming back into the control room to see whether or not it works. We really ran the gamut, from completely live performances of songs that arrived almost complete with the whole band on the floor to things pieced together from different sets of recordings started a year before I even showed up. It was a fantastic experience for me, a great challenge."

Once Finn and Johns finished the bulk of the overdubs and editing, they moved to Peter Gabriel's Real World Studios in Bath, England, to mix most of the album. Johns then flew to L.A. for another project, and Finn and band commuted to RAK Studios in London to record the remaining tracks with producer Lillywhite and engineer Jonathan Schakhovskoy.

Lillywhite, known for his work with Gabriel, U2, Morrissey, Talking Heads and a host of others, complements Johns' musical approach with his own keen sense for strong melodies and excellent vocal recordings. "Their producing styles are quite different," says Finn, "but there's a lot of mutual respect that runs between Ethan, Steve and Tchad [Blake, who mixed several songs at his Mongrel Studios]. It was a great meeting of the minds, and the different angles that were brought together made the record stronger."

Finn had initially planned to record two songs with Lillywhite, but the band had such a good groove going that they ended up with four songs on tape. One reason for the burst of creative energy came from the addition of their new drummer, Matt Sherrod, as well as the return of Mark Hart, who had joined the group in 1993. The lineup felt more complete. It felt like Crowded House.

The band debuted their new material and reconfigured lineup at this summer's Coachella Festival in Indio, Calif. "It feels right to us that the band should re-emerge at this time," Finn said in a press statement. "We aim to make the new music as vital and spirited as what has come before."

It seems they have succeeded. "Their

Keyboardist/guitarist Mark Hart in Neil Finn's Roundhead Studios.

records sound initially very simple because they're so recognizable," says Johns of the Crowded House catalog. "But there's a tremendous sense of structure to what they do. They have these beautiful melodies, but when you pick up a guitar and try to play it, you realize how complex these arrangements are. Neil's one of the finest talents around and can make the most complicated stuff sound so simple." ∎

BÉLA FLECK & CHICK COREA

with the banjo player at Flecktones bassist Edgar Meyers' studio. Needless to say, both were astounded by the unique blend and how easily they worked together. In early December, the musicians began to concentrate on putting the CD together, doing the tracking and mixing at Mad Hatter Studios in L.A., a facility that Corea previously owned.

"Mad Hatter was established in '81 and its first production was a recording I did with Michael Brecker, Eddie Gomez and Steve Gadd called *Three Quartets*," Corea recalls. "I recorded all my '80s stuff and the Elektric Band music there. Now it's with other owners and they really did a wonderful job of renovating the place—it's gorgeous and I still record there as much as I can." Corea and his longtime engineer, Bernie Kirsh (going back to Corea's 1975 solo album, *The Leprechaun*), especially love the studio's 50x40-foot tracking room, vintage Neve 8078 board and preamps. Corea also appreciated returning to L.A., where he lived for 25 years.

Still, Corea, who currently has been focusing more on live recordings with Kirsh doubling as his touring engineer, prefers not to spend a lot of time in studios. *The Enchantment* was essentially recorded and mixed in six days, an accelerated schedule for Fleck. "Chick likes to work a bit quicker than I do and likes to simplify the decision process," Fleck comments. "In other words, do a few takes, choose one and patch anything that is not satisfactory. I tend to do more takes and edit my favorite takes together, trying to avoid overdubbing. The benefit that I find is that I can include more of the spontaneous things that happened, a great intro or a certain mood or feel for a section that happens only once and cannot be patched into existence.

"Now we had to learn the stuff, create viable arrangements, record and mix in six days," Fleck continues. "After my quiet internal freak-out, we went to work! Sure enough, by early on the fifth day we were mixing. I was still fussing with edits in another room while they began to mix the first stuff we had recorded. In the beginning, I think he was not thrilled that I was so hands-on with the editing, but as we went along I think he began to like what I was doing—at least I hope so!" Corea, who admits he is not a very technical person, composes and records with Logic, but leaves all of the engineering to Kirsh. "We agree a lot about balance, the naturalness

and smoothness of the sound. Also, he makes sure the quality of the recordings is high; sometimes I don't care about that so much and just want to get it done," Corea explains.

As far as working with Fleck, Corea was much more interested in composition and the unusual pairing of their instruments. "It's a pretty natural blend between banjo and piano," Corea continues. "The timbres are a good complement. Rehearsals in Nashville kind of solidified what direction we were going into and we mostly wrote new tunes for the recording. The exceptions were a standard ["Brazil"], a children's song of mine ["Children's Song #6"] and 'Sunset Road,' an older song of Béla's. We tried to have a lot of fun creating, experimenting and improvising. That was some of the basis, but he loves to write and I do, too."

Kirsh notes that the musicians adapted well to produce "a great sound and a terrific combination." He says he used a combination of mics on the piano: a pair of Schoeps CMC 6s with MP-4 capsules, a pair of Neumann 149s and AKG C 12s, Corea's favorite, along with the C-12/EI. For banjo, Kirsh used a Neumann U89, Fleck's regular mic, and a C 12A closer to the fingerboard. "Béla wanted

to make sure his banjo had a warm sound," Kirsh stresses. "Then you have some good equipment, a nice environment to record, a place that's distraction-free, and they just did their music and had fun.

"We had some great help in the control room with [assistant engineer] Buck Snow—he contributed greatly and it was a team effort," Kirsh continues. "It wasn't a complex, problem-solving session; it was one of just capturing the music and helping to make the environment a place they could create easily and freely." Fleck adds, "With banjo and piano, the hardest part was finding the right mix and tones. There is the potential for cancellation since they share registers. But since Chick has played a lot with other pianists, he has a great sense about registers and playing in a way that complements the banjo.

"For a while, it seemed like the banjo wasn't sounding full because there didn't seem be room for the lower part of my sound to come through," Fleck says. "But working with Bernie and being a little more aggressive with EQ really brought it around. I have to say that going to half-inch tape on the mixdown stage really made me happy. All of a sudden the sound

I hoped for was there. Bernie knew this was coming the whole time, so he was right on target. But I couldn't really know what it would do till I heard it, and it was a profound change."

Kirsh recorded to Pro Tools at 24-bit/96k using the Neve preamps in the console and Neve 1073s as outboards to get the warmth and detail that he loves. The album took about a week to mix, he says, "with Chick and Béla around for the initial mixes for a day or two, then both of them had other things to do. Buck and I stayed in the control room to mix the rest of the record. Then we just sent out the mixes for comments from them and made what changes were necessary—the usual process.

"Both of these guys are great improvisers and they enjoyed playing together—you can hear that in the record," Kirsh concludes. "I've heard a lot of Chick's music through the recordings I worked on and touring, and it never, ever gets boring or old, and there's a freshness that he brings to each project. But without a doubt, this is his most unusual one. Banjo is not an instrument you find interacting in the jazz world and I don't know who else does it, except Béla." ∎

The Mix Staff Members Pick Their Current Favorites

Jennifer Warnes
Famous Blue Raincoat: The Songs of Leonard Cohen
(Shout Factory)

With the great Leonard Cohen suddenly being all the rage these days (hit documentary; singers left and right covering "Hallelujah" and other songs), it's no wonder that this luminous 1987 album has been re-released in an expanded "20th-Anniversary Edition." Honestly, I'd forgotten how good it is: This is really one of those albums that transcends the "tribute" label; rather, Warnes embodies the songs so well it feels like the perfect match between singer and songwriter. It should: She sang backup for Cohen in the early '70s and was very close to him for many years before recording this right at the peak of her pop success in the mid-'80s. The album features scads of well-known L.A. session cats of the era, including guitarist Robben Ford, keyboardist Russell Ferrante, drummer Vinnie Colaiuta and keyboardist Smitty Smith, as well as such distinctive instrumentalists as Stevie Ray Vaughan (blistering on "First We Take Manhattan"), David Lindley and Little Feat's Bill Payne. Some of the keyboard textures sound a tad dated, but in general the arrangements are tasteful and elegant, the sound impeccable. Cohen duets with Warnes on "Joan of Arc," and it's wonderful to hear that *basso profundo*. "Bird on the Wire" is the best-known song here, but it's been transformed into a sleek, driving tune quite different from Cohen's. "Ain't No Cure for Love" and the Cohen/Warnes tune "Song of Bernadette" are other standouts. There are four unreleased bonus tracks, two of them beautifully simple tunes where Warnes is accompanied only by guitarist/keyboardist/producer Mitch Watkins.

Original album produced by C. Roscoe Beck and Jennifer Warnes. Engineers: Bill Youdelman, Tim Boyle, Larry Brown, Csaba Petocz, Frank Wolf, Steven Strassman, Charlie Paakari, Paul Dieter, Paul Brown, George Massenburg (mixing), Henry Lewy (mixing). No studios listed. Remastering: Bernie Grundman.
—*Blair Jackson*

Northern State
Can I Keep This Pen?
(Ipecac)

Something about hot weather makes me extra-susceptible to mindless party music. It's like a vacation fling—sexy and fun, but destined to fade into memory. And just as the girls of summer—M.I.A., Rihanna, Lil' Mama—had started their slow creep out of my playlist rotation, I found Northern State, a trio of sassy rappers from Long Island who mix rap and alt-rock in a genre-bending style that's familiar, but elevated with irresistible hooks, smartly kitschy lyrics and a refreshing lack of pretension. I don't want to be the 500th person to compare them to the Beastie Boys and/or label them trailblazing white girls in hip hop, but hell yes, these ladies can rhyme. And with Beastie Boy Adrock and Wu-Tang's Chuck Brody at the board, the album's breezy old-school production takes you back to the days when rap equaled carefree summer fun.

Producers: Chuck Brody, Adrock. Engineers: Brody, Steve Halpern, Hesta Prynn, Spero. Studio: Fireplace, Sony Music Studios (NYC). Mastering: Dave Kutch/Sony.
—*Sarah Jones*
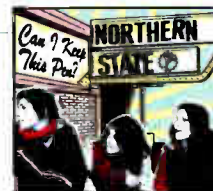
Chuck Prophet
Soap and Water
(Yep Roc)

There's something very Velvet Underground about *Soap and Water*, the Yep Roc debut of rock 'n' roll singer/songwriter Chuck Prophet. Prophet half-talks/half-sings his way through a dozen beautifully crafted, bass-heavy originals. Various tracks are embellished by a children's choir, string and drum samples, and vocal effects, yet the basic tracks remain very raw and low-fi in a great way. Prophet has held a special place in my heart since his '80s days with Green on Red, but this is the first of his solo projects that I've felt has that band's combination of passion, punk-poetry and wit at its core. If you're with me so far, also check out the historical *Green on Red: BBC Sessions*, just released on Cooking Vinyl.

Producers: Chuck Prophet, Brad Jones. Engineers: JJ Wiesler, Jones. Studios: Play Record Play, Closer Studios (both in San Francisco), and Alex the Great (Nashville). Mastering: Jim DeMain/Yes Master (Nashville).
—*Barbara Schultz*

Jean Luc Ponty & His Band
The Acatama Experience
(Koch)

Jean Luc Ponty has been the pre-eminent violinist in jazz and fusion so long it's easy to take him for granted. That's a mistake, because he continues to produce satisfying music that combines virtuosity with an underlying emotionalism that stems directly from his expressive playing. Ponty is also perfectly in sync with his band, which includes the remarkable keyboardist William Lecomte and the always fluid rhythm section of bassist Guy Nsangue Akwa on bass, drummer Thierry Arpino and percussionist Taffa Cisse; guests are guitarists Philip Catherine and Allan Holdsworth. Tracks range from spare, introspective ballads to breezy jazz numbers and darker fusion pieces. Ponty says this music was inspired by the band's world travels; you can definitely hear that in the polyglot of styles.

Producer: Jean Luc Ponty. Engineers: Karim Sai, Ponty. Studios: Enigmatic, Studio Meudon, Studio Pigalle (all in France). Mastering: Greg Calbi/Sterling (NYC).
—*Blair Jackson*
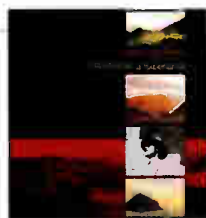
UNKLE
War Stories
(Surrender All)

Electronica super-duo UNKLE (James Lavelle and Richard File) releases another fine example of computer-savvy production complemented with the warm tones commonly associated with ambient/techno. *War Stories*, a collection of desert songs out on Lavelle's new Surrender All label, is a departure from the group's previous two offerings. Instead of working "inside the box," UNKLE played the entire album live, bringing in a top cast of characters to round out instrumental tracks and vocals. Jeordie White (aka, Twiggy Ramirez) lends bass to "Burn My Shadow"; Nada Surf's Matthew Caws adds his axe grinding to "Broken"; and co-producer Chris Goss (Queens of the Stone Age) comes out from behind the board, adding guitar/synth/bass/organ on many of the tracks. And, yes, that's The Cult's Ian Astbury singing on "Burn My Shadow."

Producers: Chris Goss, UNKLE. Mixer: Chris Allen at J Sounds. Studios: Joshua Tree (L.A.), Surrender Sounds (London). Mastering: Howie Weinberg/Masterdisk.
—*Sarah Benzuly* ■

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L.A. GRAPEVINE

by Bud Scoppa

The joint is jumpin' when I descend a flight of stairs that leads to The Cave, a bona fide tracking room situated in the basement of Billy Bob Thornton's sprawling Beverly Hills home. Guitar cases cover the floor and lean against the walls of the main room, and the road crew is moving double-time to load gear into the truck that will haul everything over to CenterStaging in Burbank (see June 2007 *Mix* for a profile on CenterStaging) for several days of rehearsals. In the midst of

Billy Bob Thornton (with guitar) and engineer Jim Mitchell in Thornton's The Cave home studio

the activity is Thornton, hands on his hips, a black baseball cap pulled down over his eyes and a boyish, Christmas-morning grin on his 51-year-old face. It's obvious that this cat is just itching to get on the road behind his new album, *Beautiful Door*.

Back in 2000, when the news spread that Thornton was recording an album, a lot of people figured it was just another case of a movie star tossing off a vanity project. Seven years and four LPs later—two of them certified Gold—the actor/screenwriter/director has provided ample proof that his creative resources extend to writing, singing and playing music. *Beautiful Door*, his first self-produced effort, marks an impressive evolutionary step in what now has to be considered a parallel career for the restless Thornton. In recent months, he's also produced projects for Mike Shipp, his former bandmate in '80s ZZ Top tribute band Tres

Hombres and The Boxmasters, a "hillbilly punk" combo put together by Thornton and guitarist J.D. Andrew, who also happens to be the assistant engineer.

"I grew up as a musician and songwriter," says Thornton, "so instead of a movie star making records, I'm actually a musician who's making movies. What happened was when I came to L.A., after years of struggle I started to make some kind of living as an actor, and I kind of had to go with what kept me alive. Then it took off, and there wasn't a whole helluva lot of time for music until I got to the point where I could choose when to work in terms of movies."

Each of Thornton's four LPs was recorded here at The Cave and engineered and mixed by Jim Mitchell—who "came with the house" when Thornton bought it from Slash in 1999—and mastered by Joe Gastwirt.

Like *Hobo* (2005), the new record has a small, dedicated cast. The principals this time are guitarist Brad Davis, bassist Lee Sklar and keyboard player Teddy Andreadis, with Thornton behind the drum kit. (He started drumming at the age of 9.) Davis, a Nashville-based Dallas native who was playing with Marty Stuart when the latter produced Thornton's first album, *Private Radio* (Lost Highway, 2000), is also Thornton's secret weapon, co-writing all 12 songs, co-producing and providing the album with its central textural element via his expressive use of the Gretsch guitar. "The Gretsch is a theme that cruises through the whole record, the way Brad weaves it around Billy's voice," says Mitchell.

The Gretsch's rich, creamy tone suits the material—which Thornton says deals with "life and death on a personal level and on a global level, as well"—while providing a delectable textural contrast to Thornton's commanding, emotive baritone.

The record's songwriting process went

NASHVILLE SKYLINE

by Rick Clark

The demise of Masterfonics and the inevitable closing of Emerald (the building is up for sale as of press time) has left a noticeable void in the Music Row studio community. One effect of these seismic shifts has been some of the work in the Nashville market has spread out to the Berry Hill neighborhood and Cool Springs in the Franklin area—still in the neighborhood, at least, which should be viewed as a positive.

Owner/engineer Fred Paragano, who opened Paragon Studios (www.paragon-studios.com) in Cool Springs five years ago, points out, "Every business goes through ups and downs forcing change; the music business is not any different. The closing of Masterfonics will help distribute more work to other area studios."

Paragano also is quick to state that his facility was designed to evolve into other areas that many studios haven't addressed, particularly post for film. "We have actively pursued new avenues in music and post-production," says Paragano, who recently acquired Nashville's first digital film-dubbing console, the SSL C300. Since its installation, Paragano has completed mixes for multiple feature film, TV and DVD projects, including *One Night With the King* (feature film score), *Secrets of the Heart* (upcoming TV series) and the recently released four-disc DVD set *The Rolling Stones: The Biggest Bang*. And although clients are seeking out Paragon for the studio's reputation in post-production, its Control "A" continues to serve many high-profile music artists, such as Faith Hill, Sara Evans and Aaron Neville, among others.

In Berry Hill, producer Richard Landis has opened a new studio called Fool on the Hill (www.outlandis.net) that is attracting steady business because of its quality sonics and exceptional rates. Landis says, "Being a producer myself, I have made a lot of records and know what is important in a studio environment for engineers. Vincent Van Haaff and I tried to keep that in mind when we were designing and building this facility. No longer can recording budgets afford to go to these high-priced

NEW YORK METRO

by David Weiss

studios. We built one that looks and feels like a high-end studio, has all the bells and whistles equipment-wise, but does not have the expensive rate attached."

Mike Paragone, studio manager for East Iris (www.eastirisstudios.com) in the Berry Hill area, states, "I think the state of the studio community in Nashville is looking up. I have been here at East Iris since 2002 and came in when the business was at its worst. I remember back when I was an intern here seeing a month go by with only four days out of the month booked. As we all know, a studio cannot survive, much less make a profit, off of four days booked a month. It kind of gave me a bleak outlook on what to expect in my career, but over the last five years it has gradually gotten better.

"As I see it, there are two major changes that have affected the studio business," Paragone adds. "Technology and what I like to call risk management, "Paragone adds, "Under the technology umbrella, I would put the cost of recording equipment as one of the things that affected studios the most. It used to be that you *had* to go to a studio to record. You had no choice, unless you wanted to invest $90,000-plus in a 2-inch machine. Because there was no access for the end-user to the professional recording equipment, people had no choice but to

Sound Kitchen studio manager Sharon Corbitt-House says the Nashville recording industry is "still very much a community."

On an afternoon early this summer, it became official: Sony Music Studios (SMS), one of New York City's largest audio (and video) production facilities was closing. Although rumors had been circulating for months about the demise of the five-floor facility on West 54th Street, the news still came as an extremely unpleasant jolt to the recording industry, as well as the studios' 127 employees.

"Thursday, June 7, 6:30 p.m.—I'll never forget it," says Glenn Swan, SMS' studio manager. "The reaction was everything you would expect—like General Motors announcing a plant closing. This is a first-class institution, and when they announced it everyone was very heartbroken. There were a lot of tears, a lot of discussions and a lot of great memories. I felt like it was a great family here, and that got broken up."

Adding to the pain of the announcement was the fact that, although a rescue plan had been organized by SMS president Andy Kadison and a backing group of investors to purchase the complex and rename it Evolution, that plan was not allowed to come to fruition. "He was in negotiation to buy the building from Sony," Swan says. "Andy made it clear he wasn't looking to lay anyone off or cut salaries, and he intended to put some money in to upgrade it. He had a great plan in place, but for whatever reason it fell through."

A massive presence in the Northeast since the building was purchased by Sony in 1993, SMS was the home of a staggering 50-plus rooms (yes, there was a Studio Z) dedicated to audio recording, mixing, mastering and post, as well as video production and post. It was the site of Nirvana's famed *MTV Unplugged* recording, the center for PBS' *Sessions at West 54th Street* series, and a hub for scores of pop, jazz and classical artists; produc-

Glenn Swan, Sony Music Studios studio manager

ers; and engineers creating for labels under the Sony umbrella and beyond.

After August 31, however, the building will have hosted its last session and be on its way to becoming condos or a hotel, following the sale of the ultra-precious real estate underneath to developers. Like the vaunted Hit Factory that went before it in 2005, SMS was the rare New York City facility that actually owned (rather than leased) its space. Combined with the revolving door atop parent company Sony Music and a marketplace with slipping profit margins, those factors put the writing on the wall.

"There were several top-level executive changes," observes Brian McKenna, a former VP of audio operations and marketing at SMS, who departed the company in April after 14 years to found his own media firm, www.4mediamanagement. com. "This meant we had to repeatedly showcase the facility to validate its worth to them. Some executives embraced the studio; others did not."

While bookings were reportedly relatively strong throughout SMS, the fact that the audio department was unionized via Local 802 of the American Federation of Musicians tended to offset the studio's gains. "It was the last union facility in the industry," McKenna says. "I fully respect the union and worked closely with them;

OZ NOY'S *FUZZY*
BI-COASTAL EFFORT ON A TIGHT BUDGET

Since relocating to New York City from his native Israel, guitarist Oz Noy (www.oznoy.com) has supported such artists as Harry Belafonte, Chris Botti, Toni Braxton and Jeff "Tain" Watts. But Noy is a distinctive artist in his own right. His edgy, urban sound is rooted in jazz and rock, but incorporates myriad influences. Following two solo releases, *Oz Live* (2003) and *Ha!* (2005), Noy has begun to be recognized for groove-based music that is also notable for his creative use of guitar effects and loops.

Like many recording artists, Noy must produce his albums on shoestring budgets. However, because he works with top-tier musicians and is highly particular about his guitar sound, Noy spends his money recording his groups live in premium commercial studio facilities as quickly as possible. "I couldn't have an extra day or two in the studio," Noy says. "I didn't have the money, and it's kind of good that I didn't because it was a lot more focused."

West Coast sessions took place at Mad Dog Studio.

For his third release, *Fuzzy* (Magna Carta, 2007), Noy booked three sessions. Two took place at Bennett Studios in Englewood, N.J.—first with drummer Anton Fig and bassist Will Lee, and then with drummer Keith Carlock and bassist James Genus. A week later, Noy recorded at Mad Dog Studio in Burbank, Calif., with drummer Vinnie Colaiuta and bassist Jimmy Johnson.

Bennett Studios is a converted 100-year-old Victorian railroad station owned by Dae Bennett since 2001. "I just pay for the day and I can do whatever I want," Noy says. "I wouldn't record in a studio that [says], 'You've got 10 hours and you're out!' It's just too hard."

Noy called on freelance engineer Eli Lishinsky for the sessions in Bennett's North Room, which has a 25x47-foot live room, three iso booths and a Neve VR60 console. Lishinsky used Bennett's older Pro Tools TDM system to take advantage of the studio's Apogee AD-8000 AD/DA converters. Lishinsky used the room's vast space to create sufficient isolation between the drums and guitar amps; drums were set up in one corner, to the far-left of the control room, while Noy's amps were placed inside the iso booth in the farthest-right corner from the control room. Noy kept the door to the booth partly open to compensate for the feeling of isolation. "I stand by the door so at least I get some air moving between my guitar and amp," he says. Noy used two Bad Cat amp heads connected to Celestion speaker components, and Lishinsky miked the amps with three pairs of mics: Shure SM57s up close, Royer R-121 ribbon mics slightly off-axis and about 10 inches farther back, and Neumann U87s for ambience.

Although Bennett offers a bountiful selection of outboard gear, Lishinsky mainly relied on the Neve VR60. "There was a Neve 1073 [EQ/preamp]. The kick and the snare went through it," Lishinsky says. "I believe that everything's supposed to sound natural."

Noy says that guitarist Lyle Workman recommended both Mad Dog

Oz Noy (standing) with engineer Eli Lishinsky at Bennett Studios

and freelance engineer David Bianco to him. Mad Dog's Studio A is a 2,500-square-foot space with high ceilings, a large iso booth and movable baffles. "They have a good mic selection, the outboard gear is really good—anything you'd really want is there." says Bianco, who adapted the room to Noy's project by placing Colaiuta's drums inside the iso booth—which has wood floors and is surrounded by glass windows—and Noy's amps in the main room behind baffles. "We decided that a real articulated drum sound would be the best thing," Bianco says, "because Vinnie's such a nuanced player that you want to get everything that he does. So the tight sound seemed to suit, although the iso room had enough 'live-ness' to it that I could blow it up with compression if I wanted to." Bianco recorded bass direct, and employed a similar miking scheme on Noy's dual guitar cabinet setup, using SM57s, R-121s and U67s. Bianco tracked the musicians through Mad Dog's Neve 8088 console into a Pro Tools HD2 system.

Bianco used Mad Dog's API 312 mic preamps and API 550 equalizers on the drums. "I would compress the kick drum with an 1176 compressor," Bianco says. "On the drums I would maybe compress the overheads with dbx 160s, and I'd use Distressors on the room mics to blow them up a little bit. I own a Neve stereo compressor that I used on the room, as well. With Oz's guitar stuff, I think I pretty much brought that through the 8088. There might have been a light amount of compression on the 67s on the cabinets, and that was probably 1176s, as well."

Noy edited tracks in his personal studio and added keyboard overdubs from Shai Bachar, Jim Beard and George Whitty, as well as acoustic guitar overdubs (which were done at The POD Studio in New York City). He then brought the album to The Document Room in Malibu, Calif., where Kevin Shirley mixed it.

Bianco observes that Noy's method of working quickly in high-end rooms and then editing at home reflects a new niche for commercial facilities. "There's no budgets," he says. "People were just saying, 'We don't need these studios; let's just set up at home.' Now everybody's realizing, 'Gosh, we don't really sound like the Foo Fighters. Why is that?' Well, because the Foo Fighters go to a real studio with real acoustic design, great mics and great front end. I think it's coming back. I'd like to think that people need some guidance on how to make records and maximize what they have." —*Matt Gallagher*

BEHIND THE GLASS

FOSTER'S FOLLOW-UP
INDIE SESSIONS AT EAST IRIS

From left: Greg Droman, Fred Eltringham, Sean Hurley, Jen Foster, Peter Stroud, Rami Jaffee and Heather Sturm

Artist/producer/songwriter Jen Foster recorded an independent follow-up to her critically acclaimed 2006 release, *The Underdogs,* at East Iris Recording Studios (Nashville) in June. Foster's co-producer, Greg Droman, engineered the project with assistance from Heather Sturm. Additional photos of the sessions can be viewed on Foster's Website, www.jenfoster.com.

DRIVE-BY TRUCKERS
MAKING THE ROUNDS

The Drive-By Truckers with producer David Barbe (front, center) and Spooner Oldham (second from right) at Transduction Studios

The Drive-By Truckers have collaborated with some legendary talent lately, including soul singer Bettye Lavette (The DBTs serve as the backing band on her next album for Anti) and organist/songwriting great Spooner Oldham, who recently joined the band in Transduction Studios (Athens, Ga.).

SOUTHEAST
Blackbird Studio (Nashville) news: John McBride has acquired a second API Legacy Plus console, reported to be the largest board of its kind, with 96 channels, 192 inputs and 200 faders. The new console has been installed in its large Studio D...At Catalyst Recording (Charlotte, NC), studio owner Rob Tavaglione produced and engineered new releases for Stella Kidd, Epycentre and Tricia Lyons, and mastered some unreleased recordings from '80s band Paragon... Mark Capps recently completed restoring and remastering Conway Twitty's *Merry Twismas* album (originally released in 1983) at Soundshop Studios (Nashville)...At Bluefield Mastering (Raleigh, NC), Jeff Carroll mastered albums for Vision of a Dying World, Schooner and hip hop artist PJay...Dave Harris of Studio B Mastering (Charlotte, NC) worked on a new John Vanderslice CD, *Emerald City,* for Barsuk Records.

NORTHEAST
The Foo Fighters mixed a new album, *Echoes, Silence, Patience, and Grace* at Electric Lady Studios (NYC) with producer Gil Norton and engineer Rich Costey. Other recent projects at Electric Lady: Steve Earle tracking *Washington Square Serenade* with producer John King and engineer Josh Wilbur; Alter Bridge mixing *Blackbird* with engineer Brian Sperber and producer Michael "Elvis" Baskette; and Puscifer tracking vocals with producer Maynard James Keenan and engineer Matt Mitchell...In Avatar Studios (NYC), film director Jonathan Demme continued recording source music for a documentary about President Jimmy Carter for Real Peace Productions. Gary Chester recorded and mixed the music, assisted by Chad Lupo and David Tolomei. Other recent sessions at Avatar include the East Village Opera Company recording in Studio A with producers Kevin Killen and Peter Kieswalter, engineers Killen and Anthony Ruotolo, and assistant Rick Kwan; and artist/producer Lisa Sokolov tracking in Studio B with engineer Joe Barbaria and assistant Justin Gerrish.

NORTHWEST
At Hyde Street's (San Francisco) Studio C, producer/engineer Justin Phelps completed album projects for Naomi and the Courteous Rudeboys, Slough Feg, Michael Joy and The Blacks. Phelps also recorded and mixed on sessions with the Mars Volta, Jolie Holland and the San Francisco Youth Symphony.

Standing, from left: Aaron Gandia, Brent Carter, Lane Thaw. Seated: Bruce Swedien (left) and Ed Kraut.

SWEDIEN VISITS PHAT PLANET
Bruce Swedien recorded and mixed Lane Thaw's debut CD, *Tokyo Belle*. Several studios were used, including Phat Planet (Orlando, FL), where the above photo was taken. Swedien was assisted by engineers Aaron Gandia and Ed Kraut. The finished release was then mastered by Bernie Grundman.

SOUTHWEST
Texas country artist Charlie Robison is tracking a new album at Premium Recording Services (Austin), with Robison producing and Kevin Szymanski engineering.

SOUTHERN CALIFORNIA
Avenged Sevenfold tracked/overdubbed a self-produced album at Eldorado Studios (Burbank). Dave Schiffman and Fred Archambault engineered. Drum tracks were recorded at Sunset Sound...Speaking of Sunset Sound, numerous sessions there include Metallica editing their new album with producer Rick Rubin, engineer Greg Fidelman and assistant Clifton Allen; Powderfinger tracking and mixing with producer Rob Schnapf, engineer Doug Boehm and assistant Graham Hope; Human Nature tracking with producer Paul Wiltshire, engineer Phil Threllfall and Hope assisting; and Café Tacuba recording with producer/engineer Tony Paluso and assistant Hope...New Hollywood facility BETA Studio hosted sessions with the latest incarnation of The Temptations; their new album, *Back to Front,* was produced and engineered by Steve Harvey. Georg van Handel assisted...Punk band Orange released *Escape From L.A.* this month on Hellcat Records. The album was produced by Phil Jaurigui and recorded by Robin Holden at Swinghouse Studios (Hollywood). The mix engineer was Warren Huart...Wyn David is in Total Access Recording (Redondo Beach) mixing a surround DVD of a performance by Heaven and Hell (Black Sabbath with Ronnie James Dio fronting) recorded in January at Radio City Music Hall. ∎

Please send session news to bschultz@mixonline.com.

down in intensive chunks of a week or two, whenever Davis' schedule of playing solo shows and conducting guitar clinics permits. "The way Brad and I do it is, we write a song, record it that night and finish it," Thornton explains. "I have OCD, so I can't leave something unfinished. We don't usually even start recording until 7 or 8 o'clock, and we'll go till dawn usually. I'm kind of a night owl anyway. And then, when J.D. started working for us, I discovered, 'Oh, here's a guy who doesn't want to do anything except be in the studio.' So if I'm not doing a movie, we're doing something every night."

Once Thornton and Davis had a song ready to go, they'd put up a click and Thornton would sing a scratch vocal while Davis played a scratch acoustic, laying drums and bass over that guide immediately thereafter. Then the overdubbing—acoustic guitars, lead vocals, harmonies and lead guitars—after which Andreadis added keys and Sklar replaced Davis' bass lines.

Mitchell recorded everything into the Pro Tools HD3 system through a Trident 80B console that also came with the house. Slash got it because he loved the Trident Series 80 board at Rumbo, where Guns N' Roses cut *Appetite for Destruction*, which Mitchell worked on with producer Mike Clink. There are racks of Neve 1073s, API mic pre's and other analog gear. The vocal chain connects a Neumann M149 mic through a 1073 and a UA 1176 and then into Pro Tools.

"We use the usual cool, old classic stuff in tracking," says Mitchell, "and I build the rough mixes in Pro Tools as we overdub. When we mix, I break all the tracks out on the Trident, so I'm not actually mixing inside the box, and I essentially mirror the roughs with my panning and all the other stuff, 'cause as we go we try to get the song where we're happy with it, and once I break it out into the Trident, the whole thing just opens up—and the studio has this sound that's so rich. It's a really cool process—Billy loves it when we break it out into the Trident. And because I have a lot of my rides already done in Pro Tools, it comes together really fast. We mix to 1-inch 2-track +3, 30 ips, no noise reduction, with GP9 on a modified APR 102 that we rent from Design Effects."

"Billy's a musician first and foremost," says Mitchell, "and it's contagious being around him. He's got an amazing work ethic and he's so dedicated—he takes his music really seriously. His writing is truly from his heart and soul. I hope more and more people get to experience it." ∎

Send L.A. news to Bud Scoppa at bs7777@ aol.com.

use a studio. Studios had a huge leverage point, and rates and bookings were up. With the advent of professional-quality DAWs, and as the cost of equipment in general has gone down, many of the traditional studio barriers have been broken.

"Risk management is what the record labels are doing and has also affected us greatly," Paragone continues. "What I mean by this is that labels are no longer taking as many risks on as many artists as they used to. This means that not as many projects are being recorded, so not as much studio time is being booked. As a manager, I have to set the bar higher and higher each day to separate myself from the rest. The business has become more about people than anything else for me. I build relationships with people first and then build a business trust. Without the best personal relationships, your studio will not survive."

One of Cool Springs' most popular recording destinations is The Sound Kitchen (www.soundkitchen.com) run by studio manager Sharon Corbitt-House, who previously was a key factor in the success of Ocean Way Nashville for a number of years. Corbitt-House feels that, in spite of the lumps the industry has taken during the past few years, things are still evolving in a positive way for the diverse local studio community.

"The Nashville music community has grown so much over the past few years," she reflects. "So many great and talented musicians and artists are now coming to Nashville to record, and some are staying and buying homes. Why do you think that is? I believe it is because we are still very much a community. I still strive to provide the same quality, hands-on service that I always have, even with budgets being up and down the way they are these days. I find that people want that place that they can come to and create and not feel they are doing it alone.

"I have clients who have home studios, who come here just to reconnect with other clients and feel supported. I don't care what anyone says—creating music is still a 'family' thing, much better in a group than alone. You need that energy and feedback around you to feel inspired and to feel like you are moving forward. Which is better—a live performance alone or in front of an audience or with a few close friends to cheer you on and to give you feedback? With anything in life, there has to be balance." ∎

Send Nashville news to Rick Clark at mrblurge@mac.com.

however, that model, combined with the large amount of non-union staff, became challenging to uphold."

As big as New York City is, whether or not all 127 SMS employees (comprising both audio and video specialists) will be able to continue on in their chosen fields remains to be seen. The mastering department was a consistent profit center, staffed with strong players such as Vic Anesini, James Cruz, the legendary Vlado Meller, Joseph M. Palmaccio and Mark Wilder; most of them should be able to find new rooms in the area. Others may be re-positioned within Sony, but for the remainder the future remains uncertain.

"I hope to stay with Sony because this is the best company I've worked for," Swan states. "This job is the first time that I've been treated with respect for my qualifications. Sony gives you a tremendous amount of benefits, and they took care of a lot of people that they didn't have to take care of in this closing, so it was done with class.

"Can New York City absorb the rest of the people that Sony doesn't retain? These engineers are in a difficult position," Swan continues. "They were working here all the time, and other studios have their own people moving up. I've been an employee in two major facilities and a producer in all of them, and the assistants here are the best I've ever seen—they would smoke a lot of engineers in a lot of other facilities."

Although it would never appear in any accountant's analysis, a major loss that affected SMS deeply was the untimely death of one man in the giant complex: resident genius/chief engineer Dave Smith, who passed away unexpectedly in June 2006.

"From the time of Dave's passing, it didn't feel the same," seconds McKenna. "He was my mentor and inspired the staff. That said, I think he'd be proud of what we're doing today."

McKenna and his partners are looking to boost the still-formidable, albeit diffuse, Manhattan recording scene with their own advanced audio facility. "Our facility's model is tailored to today's and the future's market," McKenna says. "We love the older studios, but ours will be incredibly efficient and allow us to offer competitive rates while providing five-star treatment in a pro audio environment.

"Despite the closing of SMS, the staff and I are very proud of the work and service we provided to create some of the top recordings in the industry." ∎

Send New York news to David Weiss at david@dwords.com.

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Waves has long been synonymous with quality plug-ins, and the Waves Platinum Bundle contains a huge range of top-quality Waves processing for your DP5 studio. The Platinum Bundle now includes Waves Tune LT, L3 Ultramaximizer, and IR-L Convolution Reverb as well as all the plug-ins found in the Waves Gold and Masters bundles. Platinum brings extraordinary signal processing power to DP5, for tracking, mixing, mastering, and sound design. From dynamics processing, equalization, and reverb to pitch correction, spatial imaging, and beyond, Waves Platinum Bundle is a must-have for every MOTU studio.

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The Presonus Central Station is the missing link between your MOTU recording interface, studio monitors, input sources and the artist. Featuring 5 sets of stereo inputs (3 analog and 2 digital with 192kHz D/A conversion), the Central Station allows you to switch between 3 different sets of studio monitor outputs while maintaining a purely passive signal path. The main audio path uses no amplifier stages including op amps, active IC's or chips. This eliminates coloration, noise and distortion, enabling you to hear your mixes more clearly and minimize ear fatigue. In addition, the Central Station features a complete studio communication solution with built-in condenser talkback microphone, MUTE, DIM, two separate headphone outputs plus a cue output to enhance the creative process. A fast-acting 30 segment LED is also supplied for flawless visual metering of levels both in dBu and dBfs mode. Communicate with the artist via talkback. Send a headphone mix to the artist while listening to the main mix in the control room and more. The Central Station brings all of your inputs and outputs together to work in harmony to enhance the creative music production process.

Lexicon effects processing

With the Lexicon MX500 you can have, in a purely digital form, the rich Lexicon sound that has defined studio reverb for three decades, with the convenience of an automated plug-in right inside your Digital Performer studio environment. The new MX500 takes Lexicon's "Hardware Plug-in" feature to the next level by actually streaming dual stereo audio via FireWire. Like the MX200, MX300, and MX400, all parameters of every reverb, delay and dynamic effect can be controlled from a plug-in window in Digital Performer. The MX500 houses 17 classic Lexicon reverbs, delays, and modulation effects plus dbx compression and de-essing. Front-panel control is easy, too, with a generous LCD display and big comfy knobs you can get your hands around. A wealth of routing options from quad mono to dual stereo are possible. You get 99 Factory programs and 99 user programs for Stereo mode, another 99 Factory and user programs for Dual-Stereo mode, and 25 Factory/25 user surround programs. Also included is Lexicon's intuitive MX-Edit™ Editor/Librarian software, for convenient yet advanced programming.

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The Akai Professional MPD24 is the velocity sensitive pad controller for musicians and DJs working with sampled sounds. The MPD24 features 16 MPC-style velocity and pressure sensitive pads plus transport controls for interfacing with Digital Performer and your virtual instruments. You get Akai's exclusive feel: either MPC 16 Levels or Full Level features for ultimate pad control. Now add four selectable pad banks totaling 64 pads, six assignable faders and eight assignable and 360 degree knobs for transmitting MIDI Control Change data. Included editor/librarian software gives you complete, intuitive programming and control for DP5 all of your other software titles. The MPD24 provides unprecedented creative freedom for manipulating sampled material.

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Apple Logic Pro 7

Automation Shortcuts, Plug-In Tricks to Speed up Production

With legions of dedicated professional and pro-sumer users, Apple's Logic Pro 7 is arguably one of the most popular DAWs on the market. Many users have followed the program from its humble beginnings as a sequencer to its current incarnation as an audio/MIDI powerhouse, while recent converts have been brought into the fold based solely on the strength of the bundled soft synths and effects. With Version 7, Logic sheds its dated Emagic-era GUI and took on more of the look and feel of the larger Apple Pro Applications line. Here is a collection of tips and tricks that are intended to benefit the seasoned pro and those users who may be migrating over from another DAW.

D.I.Y. DRUM REPLACEMENT

Even though Logic doesn't ship with its own sample-replacement plug-in, that doesn't mean you have to spend extra just to replace a less-than-ideal drum sound. To replace a drum sound with Logic, drop a gate onto the offending drum track. Dial the gate in until there is absolutely no bleed from the other mics. It won't sound like much at this point, but all you're looking to do is isolate the transients of the drum that you intend to replace. From here, engage the Audio-to-Score function, which will create a MIDI file based on the drum track. From here, simply call up your drum machine of choice on the newly created MIDI track and blend to taste.

AUTOMATING BUSES, MASTER FADER

Adding automation to the buses, outputs and associated plug-ins is a very easy procedure. Create a new track in the Arrange window and assign it to either a bus or the master fader. You'll then be able to automate the faders themselves, as well as any plug-ins in exactly the same manner as audio and instrument tracks. Not fast enough? An even quicker way to automate a bus or master fader is simply to turn the Automation mode to Touch on your desired track and make some quick moves, and the program will automatically add a new track to the new Arrange window.

FORCING PLUG-IN VALIDATION

The Logic Audio Units Manager is designed to prevent system crashes and nudge users into keeping their third-party products current. When a plug-in fails the initial validation process, for whatever reason, all is not lost. To get around this, open up the Audio Units Manager (Logic Pro > Preferences > Start Logic AU Manger), find the plug-in and simply force the system to recognize it.

Most of the time, a plug-in fails for very minor reasons, and you can easily keep a session moving by forcing the program to use it. However, in the instance that you authorize a plug-in that's causing more harm than good, you can easily reverse the process by returning to the Audio Units Manager and reversing the process.

ALL LINED UP

With the last major Mac OS release (10.4), Logic users were finally able to enjoy full plug-in delay compensation, but it wasn't a perfect fix. If you intend to run latency-inducing plug-ins on buses, sends and outputs, it's best to wait until a project's mixing stage, because with the current implementation, if you attempt to record or overdub a track—especially audio instruments—with latency-compensation engaged for all tracks, then the track you're trying to record will be out of time with the rest of the session.

If you have to track additional material once you've started adding a latency-inducing plug-in to the buses, the best workaround is to simply bypass each latency-inducing plug-in. If you're using any of these plug-ins on an output, the most workable option is it to save those channel strips as presets, clear the inserts, resume recording and recall the settings when you're finished.
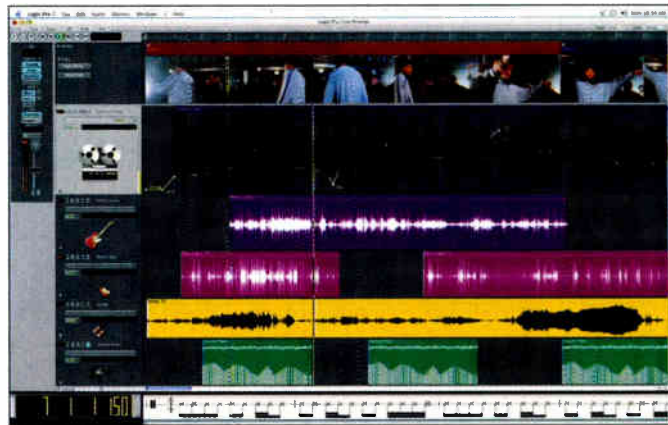
Apple's Logic Pro 7 offers breakpoint editing of all automated parameters.

QUICK, DIRTY QUANTIZE

A seldom-noticed audio effect that came with the 7.1 update is the Enhance Timing effect. Though not the most elegant or robust time-correction method on the planet, Enhance Timing is a great way to remove minor flams and other less-than-egregious timing errors quickly.

The only real trick to using the effect is knowing where and how to use it. Enhance timing can only be inserted as the first audio effect on a track, and it's not available if you try to audition it in a different slot. You can dial in a desired grid resolution and percentage (i.e., how much it will force the audio to adhere to selected resolution). If you like to record dry guitar and use an amp modeler, then Enhance Timing can be an effective way to tidy up your guitar or bass performances without having to perform a hard edit.

REXING HAVOC

Having trouble getting REX files to work in Logic Pro 7.2? The most likely culprit is that you don't have a current version of the REX Shared Library installed on your machine. Luckily, this little item is available as a free download from Propellerhead's Website (www.propellerheads.se), and the whole procedure takes about five minutes. ∎

Robert Hanson is a former Mix *and* Remix *editor.*

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- Stand-alone mixing
- 6 TRS analog inputs
- 10 TRS analog outputs
- Separate main outs
- Main volume knob
- Headphone volume knob
- S/PDIF digital I/O @ 96kHz
- Metering for all inputs & outputs
- Sample-accurate MIDI
- On-board SMPTE sync
- Expandable
- 2 FireWire ports for daisy-chaining
- Mix & match with other interfaces
- Includes AudioDesk® software
- Across-the-board compatibility

MOTU
motu.com

Studio to go
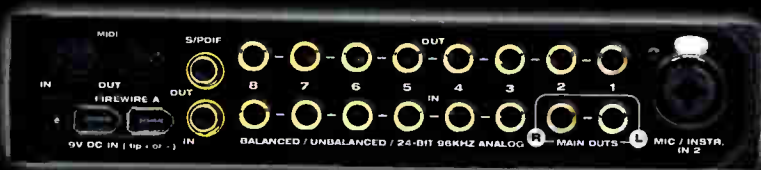
UltraLite
Compact bus-powered 10x14 FireWire audio interface

The award-winning 828mkII FireWire audio interface turns your Mac or PC into a top-notch desktop studio. Born from the same innovative design, the award-winning bus-powered UltraLite lets you take your studio to go. And it's the only half-rack audio interface that offers stand-alone operation with programmable mixing from its unique backlit front panel LCD, plus all the analog, digital and MIDI I/O that you need.

Winner
2007 Editors' Choice Award
Best Audio Interface
— Electronic Musician

Winner
2007 ACE Award
Best Audio Interface
— Future Music